NORTHERN POWERHOUSE

MIDLANDS ENGINE

Humber Clean Growth Local White Paper

November 2019

Humber Local Enterprise Partnership

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The Humber Energy Estuary: A local response to a global challenge

The Humber must be at the forefront of the UK's carbon transition. Industry across the Humber Estuary emits 12.4MtCO_2 per annum, or 13.9 tonnes per Humber resident – over twice the national average. Paradoxically, the region is vulnerable to the associated climate impacts of greenhouse gas emissions, with the second highest flood risk in the country after the Thames Estuary.

This Local White Paper sets out our vision for how the Humber will rise to this challenge. We are under no illusions: this will require concerted effort across the region, over decades. It will span industry, transport, homes and commercial property, and is made more complex by the wider global economic context in which Humber businesses operate.

Doing nothing is not an option. The choice facing the Humber is to act, and shape our own destiny, or to be acted upon. Done successfully, this move to Clean Growth could enhance the Humber's productivity, create new business opportunities and improve the lives of all Humber residents, while making a significant contribution to the UK Government's 2050 Net Zero Carbon Emissions target.

We already have the building blocks in place. The Humber's ports have enabled the region to become the main hub for the UK's world-leading offshore wind sector, and to attract new assembly and logistics activity to nearby sites. The developing site at Hornsea, on completion, will be the world's largest offshore wind farm, providing 1.2GW of capacity: enough energy to power over one million homes. The Humber is also centrally located for future planned developments.

Wind farms off the Humber are being supported by the Siemens Gamesa facility at Greenport Hull that manufactures wind turbine blades and brings components together for installation, together with the world's largest offshore wind operations and maintenance hub in Grimsby. But it does not stop at wind power: the Humber makes an important and diverse contribution to the UK's clean energy mix including biomass, biofuels, energy from waste, and storage; and there are exciting projects coming forward from across our region that will enable us to spearhead this transition, whilst reaping more of the economic benefits.

In June 2019, the UK became the first major economy to pass legislation to end its contribution to global warming, committing the UK to achieving net zero greenhouse gas emissions by 2050. Despite the great strides made by the Humber in recent years, it remains one of the highest CO_2 emitting regions in the country. Energy intensive industry across the Humber Estuary makes up 23% of the value of the Humber economy, and one in ten jobs in the region. It must decarbonise at a pace that supports national

decarbonisation targets, but in a way that protects the long-term competitiveness of existing strategically important industries.

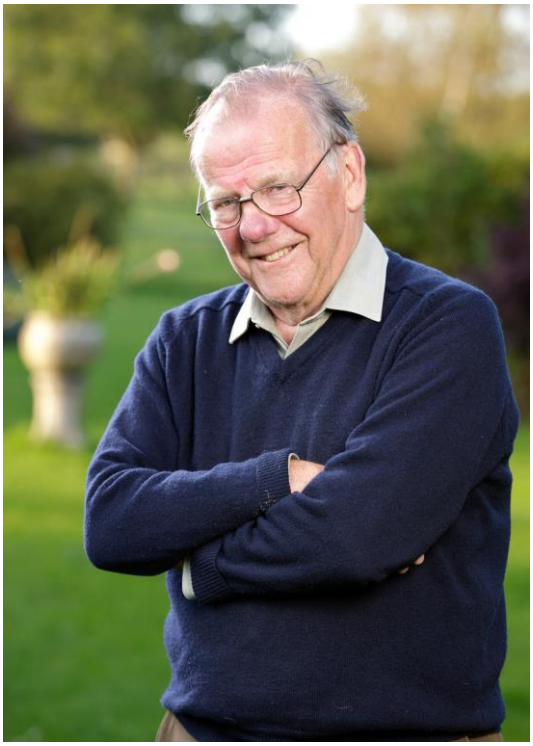
This Local White Paper sets out our ambitions, which will inform the basis of the future Humber Local Industrial Strategy:

- The Humber will aim to be a net zero carbon industrial economy by 2040. In doing this, we will seek to protect strategically important industries, maximise benefits for local communities and businesses, and maintain economic and social progress;
- The Humber will be a trailblazer for clean energy generation, growing the Humber energy cluster and establishing the region as a global leader in smart offshore wind operations and maintenance by 2030; and
- The long-term competitiveness of the Humber's energy-intensive and continuous process industries cluster will be safeguarded, with support for firms to decarbonise and expand by identifying and pursuing complementary opportunities. This includes working with sectors that are strategically important to the UK, like steel, chemicals and oil refining, and exploring the potential for diversification and industrial symbiosis.

We will act to realise these ambitions, including by establishing an Energy and Decarbonisation Board that will bring together industry, the public sector and local institutions committed to helping the Humber achieve net zero carbon emissions by 2040. The Board will call on leading expertise and take steps to design and implement the Humber's transition, including developing a roadmap for decarbonising energy-intensive industries; providing targeted support to building retrofit and SMEs; and supporting the development of a Local Natural Capital Plan.

Close collaboration locally and with central government will be essential to successfully tackle a challenge and opportunity of this scale. The next step is to agree a Local Industrial Strategy to put this into action, setting out how we will work across the 'Foundations of Productivity' with local and government partners to realise this vision. This Local White Paper provides the basis for finalising those discussions.

Foreword



The biggest global question today is how to address climate change while maintaining economic growth.

The Humber is essential to the UK's transition to a net zero carbon economy. Our large cluster of energy intensive industries produces products like steel, oil and chemicals that the economy depends on – but in the process emits more carbon dioxide than any other industrial cluster in the UK. At the same time, our region is especially vulnerable to climate change, with the second highest flood risk after the Thames.

Doing nothing is not an option. Decarbonisation is the greatest risk facing our local economy – but it is also a significant opportunity. Our region is already at the forefront of delivering clean electricity, with the largest offshore wind farm in the world under construction, and in future should be a leader in developing and deploying decarbonisation solutions across industry, transport and homes. By being proactive at a local level we have a chance to protect what we already have, and ensure our businesses and residents can benefit from this transition.

Clean growth is at the heart of our local industrial strategy. Alongside a great deal of local engagement and support, we have been in detailed discussions with Government on this over the last few months and I believe we now have an excellent plan for the future of the Humber economy. It gives the next Government, whatever the colour, a compelling proposition from the Humber which I hope ministers will get behind straight away after the election.

What has come across clearly from the businesses, local authorities and other organisations involved in this work is the level of ambition from the Humber and the desire to get on with this quickly. There are a lot of exciting projects being developed which would accelerate the progress our region is already making.

We are committed to putting in place the measures that will ensure the Humber can make the most of the opportunities that lie ahead. This Local White Paper sets out the first steps that we will take, and the support we will need from the next Government, to turn this vision into a reality.

Lord Chris Haskins
Chair, Humber Local Enterprise Partnership

Introduction

The Humber Energy Estuary: A local response to a global challenge

The Humber Energy Estuary is at the heart of the UK's energy supply, and one of its main industrial clusters. The Humber is essential to the government's vision of achieving net zero carbon emissions by 2050, and is ideally placed to develop, test and roll out renewable energy innovations, building on its strong foundations in clean growth.

The Humber Local Enterprise Partnership is in the process of developing a Local Industrial Strategy based on a comprehensive evidence base, broad stakeholder engagement and detailed discussions with government. This Local White Paper will inform the priorities set out in the future Humber Local Industrial Strategy and focuses on the interrelated areas of:

- Decarbonising the Humber;
- Clean energy generation;
- Energy intensive and continuous process industries; and
- How the five foundations of productivity – Ideas, People, Infrastructure, Business Environment and Places – can support clean growth.

The Humber generates a significant part of the UK's energy and is leading in the deployment of renewables, especially offshore wind power. The area is central to the further roll-out of offshore wind in the North Sea and hosts the largest wind farm under construction in the world.

The Humber's cluster of energy-intensive industries create products that the wider economy and society depend on, including steel, petrol, chemicals, plastics and cement. These are strategically important to the UK. However, through these processes the Humber emits more CO_2 than anywhere else in the country, whilst also being one of the places most vulnerable to climate change.

The actions in this Local White Paper will contribute to the UK's global leadership in renewable energy and low carbon technologies and support its energy-intensive industries to adapt for the future.

The Humber will achieve this by expanding the region's clean energy cluster and using it to drive change across its communities, whilst securing the long-term sustainability of its vital energy-intensive industries. In doing this, the Humber's ambition is to become the first industrial region to reduce its net CO_2 emissions to zero by 2040.

Decarbonising the Humber

Decarbonisation is the most significant challenge and the greatest opportunity for the Humber.

The UK is the first major economy in the world to pass laws to end its contribution to global warming by 2050.

Decarbonisation matters more to the Humber than most places in the UK:

- The Humber is especially vulnerable to climate change, with an economy dependent on water and the second highest flood risk in the country;
- The Humber's industrial cluster emits more CO_2 than any other UK cluster (30% more than the next largest)[1]. Total emissions stand at 12.4MtCO_2 per year, or 13.9 tonnes of CO_2 for each Humber resident – more than double the national average[2];
- Energy intensive industries, which are also directly and indirectly large emitters of CO_2, account for 23% of the value of the Humber economy and around one in ten jobs. If not carefully managed, decarbonisation could be a serious economic shock;
- Decarbonisation is a major economic opportunity. Nationally, low carbon sectors are growing significantly faster than the wider economy, and the Humber has already become a magnet for the renewable energy sector.

Government and local leaders agree that we will need to be ambitious in reducing the Humber's net CO_2 emissions to enable the UK to meet its climate change obligations. The Humber could make a greater direct contribution to reducing UK emissions than any other place, but there is no one solution or organisation that can achieve this on its own. Realising this opportunity will require sustained action over the coming years, and collaboration amongst many organisations.

The Humber's contribution towards the UK's decarbonisation goals is multi-faceted:

- it is a leading location for the transition to clean energy, with a substantial concentration of renewable energy generation assets and businesses;
- it has a large and dynamic industrial cluster that is ideal for piloting an ambitious approach to decarbonisation, in support of the government's Industrial Clusters Mission;
- the Humber is committing to an innovative "whole place" approach to decarbonisation, integrating activity across the economy and society through its future Local Industrial Strategy.

By acting across these areas, the Humber aims to become a global exemplar industrial region that transitions to net zero CO_2 emissions across its economy and society, delivering maximum economic and

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/803086/industrial-clusters-mission-infographic-2019.pdf
[2] UK local authority and regional carbon dioxide emissions national statistics (2017); Humber Local Energy Strategy (Siemens, 2019)

social benefits to its residents, whilst pioneering a model that could be replicated nationally and internationally.

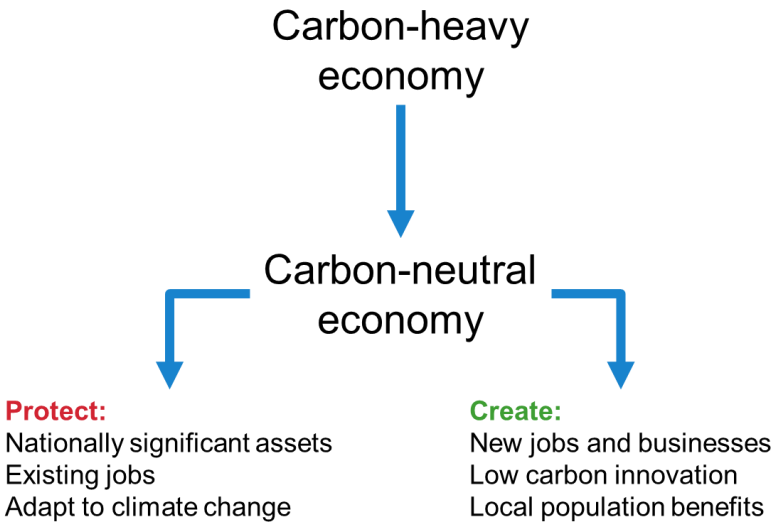


Figure 1: The Humber model

Whole-place decarbonisation

The Humber's ambition to become a net-zero carbon industrial economy will require the active support of institutions, businesses and residents throughout the region and beyond. There is no single organisation or project that can achieve decarbonisation for the Humber on its own.

The Humber's vision is for a whole-place transition that will see sectors come together to address common challenges, and work with others to achieve shared goals. It sees workers and residents as contributors to delivering the changes required, and beneficiaries of the results. Local institutions will have a key role in enabling change in collaboration with others.

Figure 2: Whole-place transition

Progress is already being made. For example, in Hull the City Council is working with new clean energy producer Energy Works and Hull College to develop the first phase of a heat network, which could later be expanded to cover NHS buildings. Elsewhere in the city, homes are being improved with solid wall insulation that will help to reduce energy usage and benefit residents through reduced energy bills. In the East Riding new business space is being provided to support low carbon innovation; while in Northern Lincolnshire SMEs are being provided with support to implement energy efficiency measures. North East Lincolnshire Council is also developing heat network proposals linked to the South Humber Industrial Investment Programme, and there is potential for community energy developments across the region such as that being developed by the Enrolled Freemen of Grimsby. The University of Hull is leading research on decentralised energy generation and has submitted a transformative proposal to the Strength in Places Fund, while membership organisation Marketing Humber is delivering a new campaign, The Waterline, to encourage more businesses to get involved with decarbonisation. This is the kind of multifaceted approach required for the Humber to achieve a transition to net zero carbon emissions that works for all its people and businesses.

The Humber will need to go further and faster than other places to make the change whilst safeguarding its industrial base and communities. This will require cross-sectoral collaboration and innovative models for financing and delivering the changes required. Through this Local White Paper, the Humber is committing to putting in place the shared leadership required to pursue decarbonisation across its economy and society and will act quickly to identify the full range of actions that will be required to deliver it.

Managing remaining carbon emissions

The Humber is already making a significant contribution to reducing carbon dioxide emissions from clean electricity generation.

However, at this time not all carbon emissions can be eliminated in a cost-effective way or with current technology. Carbon capture and storage is therefore an essential part of the decarbonisation of the Humber.

The Humber is particularly well placed to deploy carbon capture and storage at scale in two forms:

- A technology and infrastructure led solution – deploying carbon capture technology in industrial and power generation facilities and connecting these to a pipeline network that would store the captured CO_2 under the North Sea. This prevents remaining emissions from entering the atmosphere, without ceasing (or displacing overseas) key industrial processes. It could also enable large-scale generation of blue hydrogen.
- Natural sequestration – enhancing the Humber's distinctive natural capital, including intertidal habitats, to capture and store more CO_2 from the atmosphere.

Carbon capture and storage in the Humber

The Humber's sizeable industrial cluster and power generation assets provide the critical mass required for large-scale deployment of carbon capture technology with transportation infrastructure. The area's close proximity to large available storage sites means there is capacity to deliver substantial reductions of carbon emissions in a relatively short period of time.

Businesses in the region are actively developing projects that capitalise on this opportunity. For example:

- VPI Immingham, one of Europe's most thermally efficient gas-fired combined heat and power plants, supplies steam and electricity to the Humber's two oil refineries, as well as up to 2.5% of UK electricity demand. Together with owner Vitol, the company is developing proposals for producing blue hydrogen and using it in its fuel mix, reducing the CO_2 footprint of VPI and the adjacent refineries by 2.75 Mt per annum. Remaining CO_2 created by the power plant, and potentially the refineries, would be captured and stored under the North Sea.

- Drax Group, Equinor and National Grid Ventures are exploring how scaling-up bioenergy carbon capture and storage (BECCS) could make Drax Power Station the world's first carbon negative power station in the 2020s and enable the development of a large-scale blue hydrogen demonstrator at the Drax site. This would anchor the development of a pipeline network that could also transport CO_2 captured from industry to permanent storage in naturally occurring aquifers under the southern North Sea, and supply hydrogen to industry.

Projects such as these would support the Humber to become a net zero carbon industrial region and further develop its hydrogen economy.

Natural capital and carbon sequestration

The value of the Humber's natural capital

The Humber is recognised as being rich in natural capital. Most of the Estuary is designated as a Ramsar site and as a Special Area of Conservation for its extensive intertidal habitats such as mudflats, sands, coastal lagoons and sand dunes, and its populations of grey seals and lampreys. It is also a Special Protection Area for its breeding, migratory and overwintering bird populations, the third largest Site of Special Scientific Interest in England, and home to three National Nature Reserves.

The Humber's natural capital makes an important economic contribution through attracting tourists to areas such as Flamborough Head and Spurn Point; helping to retain the Humber's deep water channels essential to shipping; saltmarsh acting as a natural buffer to tidal flooding; while the rivers and aquifers provide water for farming and other industries.

The Humber's natural capital will play a vital role in helping the area achieve net zero carbon emissions and increase resilience to the impacts of climate change. The Estuary's ecosystems, distinctive saltmarsh, reedbeds, mudflats and coastal marine sediments capture CO_2 and provide effective flood management.

A systemic, large scale intervention in the land use management across the Humber could yield significant natural carbon sequestration, while enhancing flood resilience and establishing a self-sustaining environment.

Initial estimates are that existing natural habitats (25% of land cover) around the Humber sequester around 0.6MtCO2e/yr. Changes to land management use, such as increasing wetland area within the flood risk zone, which has the added benefit of additional flood storage capacity, and restoring peatland, could increase this by 2MtCO2e/yr – approximately 21% of the current carbon footprint of the Humber area.

A joined-up approach

Government and the Humber have long agreed that the Humber's natural capital matters, which means it needs to be managed and invested in like any other form of capital. Just as the Humber economy requires a shared vision and plan, so does the Humber's natural capital – building on and joining up existing activity and maximising overall outcomes. In particular, the Humber Estuary and its related landscape need to be managed as one, supporting the area's industrial ambitions and protecting and improving this important finite resource.

Building on the Humber's strong collaboration with statutory agencies through its unique Single Conversation approach, the Humber will work with the Environment Agency and Natural England to develop a joint single integrated Local Natural Capital Plan for the Humber and identify how the Humber's natural capital can support greater carbon sequestration and be improved for future generations.

Adapting to the impact of climate change

Acting on decarbonisation will reduce the Humber's contribution to climate change, but it will not eliminate the impact. Government and Humber partners are already working together to adapt to the risks the area faces, including with substantial investments in flood defences. For example, by 2021 over £150m will have been invested in flood defence improvements as a result of the current Humber Strategy, improving the standard of protection to 70,000 properties.[3]

The Living with Water project, a collaboration of Hull City Council, East Riding of Yorkshire Council, Yorkshire Water and the Environment Agency, is exploring how communities can be more resilient to flooding. An early win for the project was a competition run with the Royal Institute of British Architects to design high-quality water-resilient housing for Humber Quays West and Hull Arena, one of the city's most prestigious redevelopment opportunities.

Clean maritime and decarbonisation

Through the Clean Maritime Plan and the Environment Route Map of Maritime 2050, the government has set out its ambition for the UK to lead the way in transitioning to a future of zero emission shipping. The Humber is well placed to support this ambition by accelerating its transformation into a clean maritime cluster.

The Humber ports are already playing a vital role in enabling the transition of the energy sector, hosting an expanding offshore wind cluster as well as biomass handling facilities.

Fittingly, the port cluster that includes Greenport Hull is itself also becoming greener, with main operator ABP installing solar panels on large warehouses across its port estate. The Port of Immingham installation alone totals 4.5MW, with electricity generated on site used to power port equipment such as cranes, conveyors and lock gates, and a small excess exported to the national grid.

[3] https://consult.environment-agency.gov.uk/humber/strategyreview/

The international nature of shipping makes decarbonisation challenging. However, the Humber can support the UK to play its part. For example:

- The Humber is well placed to scale up supply of alternative fuels, such as hydrogen and ammonia, to the volumes required to support refuelling of ships, as well as trains and road vehicles. The Humber's established chemicals cluster is adjacent to its largest ports, a proposal for a hydrogen distribution network is being developed and the feasibility of scaling up electrolysis from clean offshore wind is also being explored. This could mirror some of the production capacity available at common destination ports on the Humber's short-sea routes to continental Europe.
- The Humber is connected to a network of inland waterways. The Canal and Rivers Trust has identified the Aire and Calder Navigation, which connects the Humber with central Leeds, as a priority waterway for development as a freight route – offering the potential for materials for large construction projects in the city centre to be brought in by low emission barge instead of road.
- The greater use of rail freight can help reduce emissions from road transport, reduce congestion and improve air quality to the benefit of local communities. The Humber LEP and partners have already invested to increase capacity from the Port of Immingham, but further investments are required elsewhere.
- The availability of electricity in the Humber, increasingly from clean sources, is a necessary enabler for installing the portside electricity infrastructure required to power – and in future potentially charge – vessels while in port, reducing emissions.

Actions

To make the Humber a net zero carbon industrial economy by 2040, protecting strategically important industries and maximising benefits for local communities and businesses, the Humber LEP commits to working with local partners to:

- Develop integrated leadership and governance of the decarbonisation agenda by establishing a dedicated Energy and Decarbonisation Board as part of the Humber LEP, bringing together a broad coalition of businesses, public sector bodies and local institutions committed to helping the Humber achieve net zero. As part of its programme of activity the Energy and Decarbonisation Board will:
    - Conduct an inquiry through a Net Zero Commission of leading academics, businesses and other experts to identify the whole place actions required to achieve net zero carbon emissions by 2040. This will begin in early 2020 and report to the LEP Board on proposed actions and implementation by autumn 2020.
    - Review how the Humber LEP's, local authorities' and other partners' policies could be adapted to support the Humber to achieve net zero carbon emissions whilst maximising local benefits.
    - Work with businesses developing proposals for carbon capture and storage, such as Vitol/VPI Immingham and Drax/Equinor/National Grid Ventures, providing advice and coordination with relevant stakeholders.
    - Identify options for accelerating the decarbonisation of Humber's maritime cluster in support of the government's Maritime 2050 strategy and Clean Maritime Plan.

- Design a single integrated Local Natural Capital Plan for the Humber, which will incorporate the value of natural capital in supporting carbon sequestration and identify the best places to invest in improving the area's unique environment to support productivity, growth, and wellbeing. The Humber LEP and local authorities will engage with Defra and – building on the existing collaboration - the Environment Agency and Natural England to develop a joint plan through an inclusive process involving wider partners.
- Subject to ERDF Managing Authority funding approval, deliver an expanded programme of decarbonisation and energy efficiency support to local SMEs through the Humber Business Growth Hub.

Through the development of the Local Industrial Strategy, the Humber LEP will seek support from government to:

- Work in partnership with the Humber LEP through the Energy and Decarbonisation Board, advising on the design of the Humber's decarbonisation plans in a challenge and advisory role and providing access to specialist expertise.
- Explore options for appropriate delivery vehicles and financing models for decarbonisation interventions, including potential business and community incentives, through the Energy and Decarbonisation Board.
- Explore how the Department for Business, Energy and Industrial Strategy could facilitate greater collaboration between UK industrial clusters, and support clusters to build relationships with international industrial clusters alongside COP26.
- Identify new trade and inward investment opportunities linked to decarbonisation and supporting the Humber to develop its investment proposition, through a closer relationship between the Northern Powerhouse Investment Hub (Department for International Trade) and the Humber.
- Co-fund the development of a decarbonisation roadmap under the Industrial Clusters Mission and continue ongoing discussions with respect the pipeline of projects that will enable the Humber to achieve net-zero carbon emissions by 2040.

Clean energy generation

Energy is an essential foundation for economic growth. The UK is transitioning to clean sources of energy, and the pace of change is set to accelerate. Over just a few years, the Humber has transformed into one of the world's leading hubs for clean energy. The Humber Energy Estuary has a vital role to play as the offshore wind sector scales up to deliver the Sector Deal, and the opportunity to create more sustainable new jobs and business opportunities throughout the energy system.

The Humber Energy Estuary makes an important and diverse contribution to the UK's clean energy mix, including:

- Offshore wind: Manufacturing of blades, assembly and installation from Siemens Gamesa's facility at Greenport Hull; and operations and maintenance from the Port of Grimsby, with Ørsted, Innogy, Centrica and E.ON amongst others. The Humber also has over 20 operational onshore wind farms.
- Biomass: The Ports of Immingham and Hull import biomass for Drax power station near Selby, with Immingham capable of unloading 2,300 tonnes of biomass an hour. Drax is the UK's largest decarbonisation project, having converted four of its six units from coal to biomass.
- Gas: A third of the UK's gas is landed and processed at Easington by Gassco, Centrica and Perenco. The Humber is home to several gas-fired power plants including VPI Immingham, one of the largest Combined Heat and Power plants in Europe with the opportunity for blue hydrogen creation.
- Biofuels: Greenergy's Immingham plant fulfils a significant part of the UK's biodiesel requirement from waste and rapeseed oil.
- Energy from waste: Innovative plants like Energy Works in Hull, and more facilities planned such as for the manufacture of aviation fuel.
- Storage: Underground storage sites for gases, both onshore and offshore; and growing interest in battery storage.

Offshore wind cluster

As a result of the Offshore Wind Sector Deal, low-cost offshore wind could contribute up to 30GW or a third of UK electricity by 2030 – an investment of over £40bn in infrastructure over the next decade. This includes a commitment to increase UK content to 60% by 2030, and a £250m investment in the UK supply chain. The industry has predicted that the sector could support 27,000 jobs by 2030, up from 7,200 directly employed today, and has committed to increased diversity. The Committee on Climate Change found that as much as 70GW may be required by 2050.

Offshore wind manufacturing, installation, operations and maintenance all now have firm foundations in the Humber, creating sustainable skilled jobs and attracting a wider supply chain. The Humber has more companies in the offshore renewables sector than anywhere else in the Northern Powerhouse and

Scotland[4]. The Humber is centrally located for the largest offshore wind farms under construction and planned, and has the land, ports, and is continually developing the skills required to support the sector, meaning prospects are also strong. Building on earlier investments, the Humber has the ambition to deliver at least 10GW of deployed capacity by 2030 – one third of the UK total.

The Humber ports are ideally situated for further installation activity, with the whole of the southern North Sea in easy reach. The location supports the Humber's position as a leading part of the UK's offer for attracting further manufacturing activity throughout the supply chain, having already secured one of the most significant manufacturing investments to date – Siemens Gamesa's blade factory in Hull, a £315m investment creating over 1,000 new jobs.

Siemens Gamesa, Hull

Building on the Humber's leading capability in offshore wind operations and maintenance (O&M) is an immediate opportunity for securing high-value and sustainable growth. The UK's O&M sector is worth around £600m/year today and forecast to exceed £2bn by 2030. The UK has the potential to leverage its competitive advantage in O&M to develop UK solutions for a global market, and the Humber is positioned to be at the front of that drive.

The Humber's O&M cluster is centred on the Port of Grimsby and includes Ørsted's expanding East Coast Hub employing over 360 people, Innogy's base for Triton Knoll, E.ON's for Humber Gateway, and a significant number of associated suppliers. It is supported by expertise in the wider Humber area, including Aura and the Offshore Renewable Energy Catapult, and helicopter operations from Humberside Airport. Local business networks such as Team Humber Marine Alliance and Grimsby Renewables Partnership continue to support SMEs to access opportunities in the sector, helping to build a local supply chain.

In the medium term, the Humber's role in blade manufacture and installation means that it is well-placed for repowering existing Round 1 and 2 turbines as well as Round 3 and 4 in the future, creating an opportunity to develop new industry in the Humber in the recycling and remanufacturing of old turbine equipment. This will require innovation in material separation as well as the development of new products from the

[4] ORE Catapult and Technopolis analysis (2017) in Offshore Renewable Energy Science and Innovation Audit

materials. The Humber could be at the heart of an offshore turbine circular economy industry which by 2030 will see the need to decommission around 750MW of wind capacity and recycle more than 600 turbines each year – a huge economic opportunity.[5]

Diverse and secure energy supply

The Humber is also contributing to other parts of the energy mix, supporting energy security and resilience. Two thirds of the UK's biomass is imported, with dedicated facilities at the Ports of Hull and Immingham handling biomass for Drax power station. Investment is also being attracted in energy from waste facilities, including Spencer Group's Energy Works in Hull and Altalto's plans to develop the UK's first commercial scale waste-to-jet-fuel project on the Humber Enterprise Zone near Immingham.

The Humber is well-placed to support the development of a hydrogen economy, expanding on existing production with the help of carbon capture technology and future deployment of electrolysis for green hydrogen using clean renewable power, creating a zero-carbon energy system. For example, ITM Power, Ørsted and Element Energy are being supported through the BEIS Hydrogen Supply Competition to investigate the potential delivery of bulk, low-cost and zero-carbon hydrogen through electrolysis. Increased availability of hydrogen would support industry, transport and domestic heat to transition to a clean fuel source. Similarly, the Humber also has potential to support the further use of ammonia as an energy vector.

Complementing this, the Humber has significant energy storage potential underground and under the North Sea, with depleted gas reservoirs, natural aquifers and salt caverns. Providing grid-scale battery storage close to offshore generation and mainland connection provides the opportunity to reduce short-term transmission losses.

The Humber also plays a vital part in the global battery supply chain, with the Phillips 66 Humber Refinery being the UK and Europe's only producer of petroleum graphite coke. This product is exported around the world at an industrial scale for the manufacture of electric vehicle batteries and consumer electronics.

Collaboration with other parts of the North is important for the further development of the sector. The Humber LEP is joint lead for energy (with Tees Valley) on the NP11 board comprising the 11 Northern Powerhouse LEPs, and the LEPs are working together to identify supply chain opportunities and market the North for new investment.

Clean local energy

In addition to playing a vital role in the UK's current and future energy supply, there is an opportunity for the Humber to explore how smaller-scale clean energy generation can support local growth and prosperity and increase energy resilience and security. The Humber LEP's Local Energy Strategy will set out the first steps towards this, recognising the Humber's attractiveness for both on-site industrial power generation and community-level infrastructure that can lead to lower costs for businesses and consumers.

The Humber's existing energy generation capabilities and variety of users, and the substantial interest in clean energy amongst local businesses, institutions and residents, makes it an ideal location for piloting new technologies and business models. The University of Hull has led, with industry, the development of ambitious proposals for the Strength in Places Fund, which would pilot a range of innovative approaches to

[5] https://www.energylivenews.com/2018/10/01/investing-e1bn-in-port-facilities-could-cut-offshore-wind-costs-by-5/

clean local energy with community benefits, building on the Humber's existing reputation for large-scale clean energy generation.

Actions

To continue to develop the Humber as a trailblazer for clean energy generation, growing the Humber energy cluster and establishing the region as a global leader in smart offshore wind operations and maintenance by 2030, the Humber LEP commits to:

- Work with the Offshore Wind Growth Partnership and the Offshore Renewable Energy Catapult to support the expansion of the offshore wind supply chain in the Humber, unlocking the potential for cluster development outlined in the Offshore Wind Sector Deal. This will include targeted support to SMEs through the Humber Business Growth Hub, a growing portfolio of sites and purpose-built facilities, and access to established sector networks; and in the medium-term exploring opportunities for the Humber to support decommissioning and repowering work.
- Support energy innovation including through the Aura partnership and, by building closer relationships with the Humber's tech cluster, encourage the commercialisation of new ideas and emerging technologies.
- Work with the offshore wind sector and local providers to respond to skills requirements, enabling the Humber to become the national centre of excellence for offshore wind skills, and support the sector to improve the diversity of its workforce through initiatives like Women into Manufacturing and Engineering.
- Work in partnership with energy intensive industries, the transport sector and other potential large-scale users to develop the demand required to support blue and green hydrogen production and distribution and support the building of coalitions between companies to further develop hydrogen opportunities.
- Collaborate with other LEPs with energy specialisms, including through the NEYH Energy Hub, to share learning and commission joint activity across LEPs where appropriate.

Through the development of the Local Industrial Strategy, the Humber LEP will seek support from government to:

- Develop the Humber's innovation capacity in offshore wind operations and maintenance, building on recent investments.
- In the context of the Offshore Wind Sector Deal, explore what further actions may encourage the offshore wind sector to establish manufacturing and O&M facilities in the UK for the European market.
- Build up the Humber's capacity for energy innovation, including by supporting the Strength in Places bid led by the University of Hull as a first step.
- Support the LEP's commitment to collaborate on energy through BEIS's Energy Hub programme; and through the DIT Northern Powerhouse Investment Hub work with the NP11 LEPs to develop a shared proposition and international marketing plan for energy investment.

Energy intensive and continuous process industries

Saltend Chemicals Park

The Humber is home to a well-established cluster of energy intensive and continuous process industries[6] that are strategically important to the UK and the wider economy.

The cluster accounts for almost a quarter of the Humber's GVA, with the highest concentration of direct employment in the Northern Powerhouse and further employment in supply chains. It has the potential for further growth, but also faces challenges from global competition and the need to decarbonise.

Key assets include:

- Two of the UK's six oil refineries, Phillips 66's Humber Refinery and Total's Lindsey Oil Refinery, accounting for around 25% of UK capacity, and biofuel producers like Greenergy.
- British Steel's Scunthorpe steelworks, one of two integrated steelworks in the UK.
- Two major chemicals clusters, Saltend Chemicals Park and the South Humber Bank, making the Humber one of the UK's four main chemicals-producing regions.[7] Businesses include Air Products, BOC, BP Chemicals, Ineos, Nippon Gohsei, PX Group, Tronox and Solenis.

[6] Energy intensive industries are industries where energy usage makes up a significant part of production costs. Continuous processing describes manufacturing where materials are undergoing chemical reactions or treatment continuously 24 hours a day.

[7] https://www.parliament.uk/documents/commons-committees/Exiting-the-European-Union/17-19/Sectoral%20Analyses/7-Sectoral-Analyses-Chemicals-Report.pdf

- Cement, lime and glass manufacturing plants, with companies like Cemex, Singleton Birch and Guardian Industries.
- One of the UK's largest concentrations of food manufacturing and cold storage, with businesses including Cranswick, Youngs, Seachill and Morrisons.
- Leading healthcare technology and pharmaceuticals businesses like Smith & Nephew, RB and Indivior.

Global competitiveness is vital for the many large businesses in these sectors that supply European and North American markets from the Humber. The Humber produces both high quality commodity products, which face competition from low-cost overseas producers, and speciality products. Some businesses have regularly reinvested large sums to maximise efficiency; for example, Phillips 66 has invested £1.5bn in capital and maintenance since 2005. However, a few plants face an investment gap – highlighting an underlying vulnerability in the Humber's industrial base.

With large multinational businesses prevalent in some sectors, the Humber needs to compete for investment and expansion projects against other sites around the world, and risks being negatively impacted by global strategic business decisions. Attracting new R&D investment and diversifying into new products has helped some businesses to strengthen their positions in the Humber.

A growing challenge for the Humber cluster is decarbonisation. Its carbon emissions are the highest of any UK industrial cluster, and it consumes an estimated 8,000GWh of energy per year – 6% of England's industrial and commercial energy usage – at a cost of around £330million[8]. The investment required to reduce or eliminate emissions will be significant and needs to be made in a way that does not undermine the competitiveness of these sectors in the Humber or offshore the UK's carbon emissions. Achieving this balance would position the Humber as a global exemplar in transitioning to clean growth and support the area's potential for attracting new low carbon manufacturing.

The Humber's priority is to develop a proactive, managed approach to decarbonisation that aims to protect the long-term competitiveness of existing strategically important industries whilst generating new value from the UK's transition to a net zero carbon economy.

Clean steel

Maintaining a competitive steel sector in the Humber is of vital importance to the local and UK economy. The integrated British Steel works at Scunthorpe employs over 3,000 people and supports many more jobs through its supply chain. While British Steel Ltd entered insolvency on 22 May 2019, an Official Receiver has been appointed and the business has continued to trade as a buyer has been sought. The Official Receiver confirmed on 23 October 2019 that the focus remains on achieving a sale of the business and assets of British Steel as quickly as possible and that all options available to secure steel-making operations in Scunthorpe are under consideration. The Humber will continue to do all it can to support the government as it leaves no stone unturned to finalise the sale, and will use its future Local Industrial Strategy to ensure the long-term resilience and growth of the region.

The Humber is committed to supporting the government's plans to decarbonise UK steelmaking, in line with the UK's goal of net zero by 2050. The Humber welcomes the government's announcement of a £250m Clean Steel Fund and £100m Low Carbon Hydrogen Production Fund and will work with local partners

[8] https://www.humberlep.org/study-of-the-humber-energy-intensive-industries-cluster/

including neighbouring LEP areas to maximise the economic and environmental benefits of these, and other, decarbonisation programmes.

Opportunities for expansion and diversification

The Humber's capabilities, including existing feedstocks, energy availability, skills and land for expansion at established industrial locations, underpin its potential to attract complementary new investment. For example, Ineos has announced plans to build a £150m Vinyl Acetate Monomer plant at its Saltend Chemicals Park site, bringing an important raw material back to the UK. Phillips 66 could anchor the development of an electric vehicle value chain; proposed developments like the Yorkshire Energy Park would combine on-site power generation with new industrial users; while the British Steel site in Scunthorpe has been shortlisted for the development of a logistics hub for the expansion of Heathrow.

Industrial symbiosis, using the waste from one process as the raw material for another, is an opportunity to strengthen the Humber's industrial cluster whilst contributing to the development of a circular economy that supports clean growth. New income streams, such as from selling heat that is currently wasted, could support some plants to become more sustainable. Industry research found that potential symbiosis for industry in the Humber include[9]:

- Hydrogen production
- Upstream and downstream chemical intermediate manufacture
- Use of waste such as dusts, tars, oils, effluent, sludges, ash and used filter media
- Capture and sharing of excess heat, steam and chilled water

Case study: Altalto

Altalto, a collaboration of Velocys, British Airways and Shell, are planning to develop Europe's first commercial scale waste to sustainable transport fuels plant on the Humber Enterprise Zone near Stallingborough. Once fully operational, the plant would take up to 600,000 tonnes per year of household and commercial waste left over after recycling, otherwise destined for landfill or incineration, and convert it into over 60 million litres of clean burning sustainable jet and road fuel each year.

Each tonne of jet fuel produced at the plant is expected to deliver 70% net greenhouse gas reduction and up to 90% reduction in particulate matter emissions compared with a tonne of conventional jet fuel. This will lead to an estimated net CO2 saving of over 40,000 tonnes per year.

Case study: Cemex, Ineos and Omya

Hull was one of the five European demonstrator clusters to take part in the EPOS project under Horizon 2020. Cemex, Ineos and Omya worked together with other European partners including SMEs and research institutions on the development of a tool to identify cross-sectoral industrial symbiosis opportunities, with the aim of enhancing energy and resource efficiency. Several opportunities were identified, such as using liquid waste from the petrochemicals industry to improve cement kiln efficiency whilst reducing the use of primary fuels.

[9] https://www.humberlep.org/study-of-the-humber-energy-intensive-industries-cluster/

The transition to alternative fuels also brings potential for new manufacturing in the Humber cluster. Some, such as hydrogen and ammonia, are already used in some local industrial processes, meaning that there is existing expertise in safely transporting and storing them. In future, clean hydrogen could replace fossil fuels in some high-energy, high-temperature processes. Increased industrial demand could support the case for new manufacturing, with the resultant increase in availability enabling a wider transition in the economy as part of the Humber's ambition to achieve net zero carbon emissions. Projects being developed by industry, such as those described earlier, could make the Humber an early leader in this.

The processing of waste also continues to be an opportunity for the Humber. For example, Phillips 66 Humber Refinery has developed projects to enable the processing of waste oils, converting these to high demand products. The refinery continues to invest to expand this capability.

Food and drink manufacturing

Over the last 30 years food and drink manufacturing in the UK has reduced emissions from energy use by 42%[10], showing a strong commitment to reducing the environmental impact of food production. The government has committed to further reduce emissions across the food and drink value chain, through the latest Courtauld 2025 and the net zero carbon ambition. Locally, food producers and manufacturers have the opportunity, through close collaboration and innovation with the agri-tech sector and the adoption of circular economy[11] principles, to reduce the environmental impact of the sector and support the decarbonisation agenda. Decarbonisation of food and drink manufacturing will therefore be a priority in the Humber Local Industrial Strategy.

Case study: Yorkshire Greens & GWE Biogas

Yorkshire Greens is based on the same site as GWE Biogas, located to the west of Driffield. Organic food waste generated by Yorkshire Greens is used by GWE Biogas to generate energy through its anaerobic digestor, which it then supplies to Yorkshire Greens to power its plant on the same site. Waste generated as a result of the anaerobic digestions can then be returned to the food sector (in the form of bio-fertiliser) which can help return nutrients to the soil and improve and maintain productivity.

To support the Humber's ambition to achieve net zero carbon emissions, there is a need to facilitate further R&D in the food sector aimed at lowering emissions and improving energy efficiency. This includes modifying land management practices to reduce emissions and increase natural sequestration. As part of the Humber's focus on leveraging its natural capital to support decarbonisation, the LEP will consider viable opportunities to pilot incentives aimed at encouraging this.

Humber horticultural producers could also benefit from proposed investment in carbon capture and storage technology with a ready supply of CO_2 to improve yields and reduce water consumption. This could reinvigorate the Humber's once-thriving glasshouse industry, building on a pilot project already under way near Drax power station. Similarly, the improved availability of hydrogen could enable glasshouse heating to be switched to a clean fuel source.

The Humber has a substantial packaging sector developed around food production, including companies that innovate with leading brands. With recycling and waste increasingly at the forefront of consumers'

10 Source: BEIS, Food and Drink: Industrial Decarbonisation and Energy Efficiency Roadmap Action Plan, 2017

11 Ellen MacArthur Foundation, 2013; Towards the Circular Economy: an economic and business rationale for an accelerated transition. A circular economy (often referred to simply as "circularity") is an economic system aimed at minimising waste and making the most of resources. ... This regenerative approach contrasts with traditional linear economy, which has a 'take, make, dispose' model of production.

minds and industry's thinking, the Humber has an opportunity to build on this position to develop innovative solutions to packaging sustainability.

Actions

To improve the long-term competitiveness of the Humber's energy-intensive and continuous process industries, supporting them to decarbonise and expand by identifying and pursuing complementary opportunities, the Humber LEP will work with local partners to:

- Strengthen cluster leadership and co-ordination to encourage joint responses to opportunities and challenges, including through continued local support for the development of CATCH as a best practice cluster management organisation. CATCH will provide representation for the cluster on the Humber LEP's Energy and Decarbonisation Board, enabling synergies with wider work on decarbonisation. CATCH will also continue to work with other UK clusters, sharing learning and identifying opportunities for collaboration.
- Through this strengthened cluster leadership and co-ordination, the Humber LEP and CATCH will take forward the opportunities outlined in the Humber Energy Intensive Industries Cluster Study, including by creating an industry-led cluster roadmap that will contribute to the Humber achieving net zero carbon emissions whilst protecting competitiveness (subject to funding from the Industrial Clusters Mission).
- Work in partnership with energy intensive and continuous process businesses to explore opportunities for diversification, attracting complementary businesses to the area and developing local supply chains.
- Champion the use of British-made steel and construction products in public and private sector infrastructure projects, supporting the UK Steel Charter.
- Work with local partners to secure the goal of long-term low carbon steelmaking in the Humber, including maximising the economic and environmental benefits of steel sector decarbonisation programmes.
- Work with Greater Lincolnshire and York and North Yorkshire to identify and prioritise actions which would support the food sector to reduce its net carbon emissions including exploring opportunities for agriculture and horticulture businesses to benefit from possible future carbon capture and storage and hydrogen pipeline networks in the area.

Through the development of the Local Industrial Strategy, the Humber LEP will seek support from government to:

- Take forward the actions required to decarbonise energy intensive industries in the Humber, and leverage the Humber's unique combination of assets and capabilities to attract new jobs and investment to the area.

Foundations of productivity

The five foundations of productivity – Ideas, People, Infrastructure, Business Environment and Places – identified in the national Industrial Strategy will be integral to accelerating clean growth in the Humber. The Humber Local Industrial Strategy will set out the approach being taken across these areas and the new commitments being made.

Ideas

The Humber's ambition to achieve net zero carbon emissions will require new technology to be deployed, as well as innovation in business processes, public policy and societal change. Many of the individual solutions are already available but have not been integrated at a regional level before. The Humber can become a testbed for putting these into effect, as a living laboratory for the transition to net zero. This could create further opportunities to stimulate the development and commercialisation of new ideas – testing them locally, and then marketing them around the world. The University of Hull-led bid to the Strength in Places Fund would be an important first step towards this.

The continued growth of the offshore wind sector, in the Humber and internationally, will be supported by innovation. The Humber in particular can contribute to innovation in offshore operations and maintenance, with the Aura Innovation Centre and Offshore Renewable Energy Catapult catalysing the creation and testing of new technology and processes. Their reach will extend far outside the Humber, but Humber SMEs will be well-positioned to take advantage of them and there will be potential for new start-ups building on the Humber's existing tech cluster.

Case study: Aura

A partnership of the Universities of Hull, Sheffield and Durham; the Offshore Renewable Energy Catapult; and industry, aims to create a world-leading, multi-disciplinary offshore wind and low carbon energy innovation hub. The new Aura Innovation Centre at Humber Bridgehead *(above)* will be a focal point for this work and will work with SMEs at any stage of the innovation process. The £5.5m Aura Centre for Doctoral Training will meanwhile create opportunities for over 70 post-graduate PhD students focusing on offshore wind and the environment. A £7.6m research partnership is already under way.

The Humber's potential to produce and use green and blue hydrogen, including through trialling the scale-up of electrolysers, could also be a stimulus for further innovation such as through fuel-switching in industrial processes and piloting wider-scale deployment in a manageable geography. The expertise gained through doing this would equip Humber businesses to contribute to similar projects elsewhere.

For the Humber's energy intensive industries, there will be opportunities to explore around carbon capture and decarbonising industrial processes, such as in the steel sector. The industrial clusters roadmap described earlier will help to identify relevant opportunities for this. Where such industries are clustered close together there is also an opportunity for energy-led industrial symbiosis to optimise energy use at a system level.

However, the Humber has been less successful in SME innovation in these sectors and lacks open access R&D facilities that could support it. The proposed development of a low carbon bioinnovation corridor, with an open-access testing facility at Saltend Chemicals Park, will position the Humber to support the commercialisation of ideas in synthetic biology, supporting high-tech bio-based businesses to develop their products in the region.

Developing a low carbon bio innovation corridor

BP and the University of York (as BioYork) have developed a proposal to establish a Low-Carbon Bio Innovation Corridor that will facilitate the manufacture of low-carbon products from sustainable renewable bio-resources.

To enable this, a unique open-access facility would be established at px group's Saltend Chemicals Park to the east of Hull by transforming an existing demonstration plant into a multi-feedstock biorefining demonstrator.

Biorefineries allow multiple products (such as plastics, chemicals and fuels) to be produced from single feedstocks, in a similar way to oil refineries. The global market for biorefineries is around £350bn, set to rise to almost £550bn by 2021.

This ecosystem would foster spinouts from the UK knowledge base, provide a new route to commercialisation for synthetic biology and seek to attract high technology bio-based businesses from across the world to develop their products for clean growth in the North of England.

Management of flood risk is a further opportunity for product innovation, such as in construction materials and sensors, that is relevant to several of the Humber's key sectors. The Ark project will establish the first testing facility of its kind in the UK, supporting businesses in the Humber and across the country to demonstrate their ideas work, building on the world-class expertise in the University of Hull's Energy and Environment Institute.

Case study: Ark – National Flood Resilience Centre

Humberside Fire and Rescue Service and the University of Hull have come together to create Ark: the National Flood Resilience Centre. Ark will make the UK a world leader in flood rescue, research and resilience by creating a unique, purpose-built facility for training, research and innovation.

Combining simulated full-scale urban and rural environments that can be inundated, Ark will provide flood emergency responders with safe and realistic training in swift and still water. Ark will also act as a hub for new undergraduate and postgraduate engineering programmes at the University of Hull and provide unique experimental facilities to support research and innovation, with capabilities that cannot be replicated at any existing research establishment.

People

The ambitions set out in this Local White Paper to accelerate clean growth require the energy and commitment of partners across the region. Effective collaboration will transform the skills profile of the Humber, generating new and better paid jobs, maximising training resources and propelling the ambitions of individuals, business and the public and voluntary sectors. This focus includes:

- Building on the success of the Humber Energy Skills Campus, Aura and the region's investment opportunities to enable the Humber to become the national centre of excellence for offshore wind;
- Strengthening the local skills base to support plans for clean growth and decarbonisation while ensuring the long-term competitiveness of existing strategically important industries; and
- Responding to the challenge of automation and digitalisation to support globally competitive industries.

Actions already under way in the Humber are supporting workforce development and local residents to access the new jobs being created. Investment in the Humber's provider training facilities is creating improved opportunities for innovative curriculum development, while there have also been business investments such as Siemens Gamesa's decision to relocate and expand its training centre in Hull. Providers are working in collaboration in many areas of skills delivery, such as the new Yorkshire and Humber Institute of Technology and the virtual Humber Energy Skills Campus to respond to the industry's

requirements. This includes encouraging greater diversity in the industry through projects such as Women into Manufacturing and Engineering.

Case study: HETA

Humberside Engineering Training Association (HETA) celebrated its 50th anniversary in 2017 with the announcement that it would relocate to a new Advanced Engineering Training Centre. Total investment of £4.5m, which included funding from the Humber LEP's Growth Deal with Government, enabled HETA to acquire and equip the premises, enhancing its ability to prepare young people for key roles in future industry. This has increased HETA's capacity to teach the skills young people must have to meet the needs of modern automated manufacturing operations.

The investment has also strengthened HETA's ability to develop programmes for the process industries, and in renewable and low carbon technologies. HETA continues to maintain its focus on traditional engineering, including fabrication and specialist welding, and a new approach to delivering apprenticeships for the maritime sector.

The Humber Energy Intensives Industries Cluster Study underlined the importance of strengthening the Humber's skills base to support the sectors to expand. Many businesses in the cluster are active in supporting the development of the Humber workforce, including through apprenticeships and involvement in local careers initiatives. Technical skills development is supported by the University of Hull, colleges and training providers, which respond to business needs. However, some employers continue to report difficulties in recruiting skilled operatives, managers and executives to the region, and awareness of career opportunities in the sector still needs to be improved.

The Humber LEP has led on a number of innovative pilots and can evidence success with improvements in key areas of skills delivery. However, despite making progress there is still a way to go to meet national benchmarks and the needs of local employers.

Infrastructure

The unique geography of the Humber, with the Estuary at its core, demands improved infrastructure targeting low carbon modes which can help the Humber reduce carbon emissions and increase economic opportunities. This means connecting firms to local, national and global markets, people to jobs, employers to talent and innovators to wealth creators[12]. It can enhance the area's resilience to climate change, helping it exploit the opportunities and manage the economic risks of decarbonisation of industry, energy and transport systems.

[12] Magnet Cities, KPMG 2014 defined wealth creators as young people who create the jobs of tomorrow and with that, a city's future wealth. The more young wealth creators there are in a city, the more that city will be assured of long-term economic growth

The Humber Local Industrial Strategy will set out the next steps for delivering improved infrastructure around the Humber, including on transport and flood defences.

Transport

Decarbonising the Humber's transport infrastructure will require a range of interventions. These include increasing the uptake of electric private vehicles, which currently lags behind the UK average, supported by an expansion of charging points; and switching rail, buses and goods vehicles away from carbon-heavy diesel propulsion.

Modal shift will be integral to this to avoid further increasing congestion as the economy grows. This means encouraging greater usage of public transport; moving more freight on to rail and inland waterways; and substantially increasing active travel (walking and cycling) which will also deliver health benefits. Currently 46% of commuting trips under 2km in the Humber and 72% of trips between 2km and 5km are made by car – distances that could easily be walked or cycled.

Flood defence and infrastructure to facilitate living with water

The Humber has the second highest flood risk in the country, behind only the Thames Estuary. Between 1993 and 2015 sea levels increased by up to 2mm per year[13], having a significant impact on the Humber region due to its topography. There are currently 90,000 hectares (ha) of land around the Humber Estuary at risk of being flooded which would affect 400,000 people[14].

A lagoon under construction as part of the Cottingham and Orchard Park Flood Alleviation Scheme

13 European Environment Agency, 2017 https://www.eea.europa.eu/data-and-maps/indicators/sea-level-rise-5/assessment

14 The Humber Flood Risks Strategy, Environment Agency, 2008 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/308281/Humber_Strategy_Summary.pdf

By 2021 over £150m will have been invested in flood defence improvements as a result of the current Humber Strategy, improving the standard of protection to 70,000 properties. However, further action will be required to enable the Humber economy to continue to grow and adapt to climate change.

The Environment Agency is working in partnership with 12 local authorities and the Humber LEP to develop a new Humber Flood Risk Management Strategy, which will redefine the strategic approach to managing tidal risk for the next 100 years. It is currently due to be submitted for approval by the end of 2021. The Living with Water Partnership has meanwhile brought together Hull City Council, East Riding of Yorkshire Council, the Environment Agency and Yorkshire Water to ensure a strategic joined up approach to effective flood management is taken; while a group of local businesses has funded the development of a concept for a lagoon in the Humber. The ambitious project would also create a new road link and development land.

Business environment

The Humber's transition to clean growth can create new opportunities for local businesses in sectors as varied as home energy efficiency improvements, industrial engineering, logistics and vehicle manufacturing amongst many others.

Deepening local supply chains can have a range of benefits including strengthening the local economy, improving reliability and resilience, reducing costs, encouraging social responsibility and building better networks and relationships between local businesses. However, consultation with business has suggested accessing the supply chains of larger businesses and organisations can prove a challenge.[15]

One issue for SMEs has been awareness of opportunities and the capabilities required to access them. Local networks like Team Humber Marine Alliance and Grimsby Renewables Partnership have been instrumental in promoting opportunities in the offshore wind sector to their members, while programmes like Green Port Hull have provided support to businesses to enter new supply chains. This has helped to enhance the value of investments made by the sector in the local economy.

Case study: Green Port Hull

The £25.7m Green Port Growth Programme was funded by the RGF to maximise the economic growth opportunities of the renewable energy sector, underpinning the strategically important Siemens/ABP investment in Green Port Hull.

Through the programme, over 800 local businesses were provided with assistance to enter the renewables supply chain and contracts exceeding £249m were awarded to businesses in the area.

The experience of the programme is now being used to help businesses access opportunities in other sectors, through the Supply Chain Network supported by the Humber LEP's Business Growth Hub.

Businesses in the Humber have been able to access a range of incentives to support growth over recent years, with the Humber LEP's Growing the Humber capital grant programme supporting businesses to create over 2,700 new jobs through capital investments primarily in plant and machinery, and the Humber

[15] Hatch Regeneris, 2019; Productivity and Supply Chain Study

Enterprise Zone providing simplified planning and discounted business rates or enhanced capital allowances.

The public and private sectors have made several recent investments in new and improved business accommodation that supports business growth, such as C4DI, ERGO and the Grimsby Offshore Centre. E-Factor will shortly expand its Enterprise Village in Grimsby with seven new units, while East Riding of Yorkshire Council is working with the private sector to deliver high quality business and innovation space in some of its towns, based on the successful ERGO model.

The Humber Local Industrial Strategy will set out how the Humber LEP and partners will build on these actions to develop a business environment that supports the area to maximise the benefits of clean growth.

Places

The Humber is home to almost one million residents and over 30,000 businesses, spanning 3,600 square kilometres across Hull, East Riding of Yorkshire, North Lincolnshire and North East Lincolnshire, forming a unique and varied economic geography.

There is a diverse mix of economic centres across the Humber, including the city of Hull and the towns of Beverley, Bridlington, Goole, Grimsby/Cleethorpes and Scunthorpe, which are important hubs for employment, housing and transport, with each centre having a different role to play in the region's economy and identity. The Humber ports, Humberside Airport and many international businesses give the Humber national and global reach.

The Humber Estuary is a unifying natural and economic asset on which a significant part of the Humber's economy depends, but it also forms a barrier to movement with only one crossing, the Humber Bridge. High tolls used to limit usage of the Bridge, but since the government wrote off a large part of the historic construction debt in 2012, crossings have risen by 52% - opening up new employment and business opportunities. With most of the traffic growth made up of cars, this is evidence of strengthening labour market links across the Humber and the area's economy becoming more integrated.

The development of the pan-Humber offshore wind cluster has shown how the complementary offers of different parts of the Humber can work together to achieve economic success – with manufacturing and installation in Hull, innovation at Aura in the East Riding, operations and maintenance in Grimsby, and helicopter transport from Humberside Airport

Every part of the Humber has a role to play in the Humber's clean growth, and each will be able to draw on its own, complementary strengths – from energy-intensive industries in Scunthorpe and the South Humber Bank, to the emerging knowledge centre of Hull, to the rich natural capital surrounding the Humber Estuary that can help to sequester carbon.

The Humber Local Industrial Strategy will set out how places across the Humber will contribute to the area's future prosperity, including through clean growth.

Implementation

The Humber Local Industrial Strategy will set out the implementation and governance arrangements for achieving the priorities in this Local White Paper, alongside other priorities for the region and commitments across the foundations of productivity.

Partners

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Humber local authorities

Hull City Council

EAST RIDING OF YORKSHIRE COUNCIL

NORTH EAST LINCOLNSHIRE COUNCIL

NORTH LINCOLNSHIRE COUNCIL

Business membership organisations

CATCH

CBI THE VOICE OF BUSINESS

fsb Experts in Business

HULL & HUMBER Chamber of Commerce

Marketing Humber delivered by Bondholders

Neighbouring LEPs

Greater Lincolnshire Local Enterprise Partnership

ENTERPRISE PARTNERSHIP York / North Yorkshire / East Riding

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