HUMBER INDUSTRIAL CLUSTER PLAN: SKILLS ANALYSIS & ENGINEERING CONSTRUCTION OPPORTUNITIES

Report

April 2023

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SKILLS ANALYSIS & ENGINEERING CONSTRUCTION OPPORTUNITIES

Humber Industrial Cluster Plan & Importance of skills provision

The industrial cluster in the Humber is the UK's largest in terms of emissions and a vital component of the national economy whilst providing a source of high value jobs to the region. As the UK economy becomes increasingly carbon-constrained, it will be vital to safeguard the value that the Humber cluster generates by investing heavily in new, low-carbon assets.

The Humber Industrial Cluster Plan (HICP), set up in January 2021, aims to support the transition towards a Net Zero cluster by 2040. The cluster is based on a roadmap of multiple projects (centred mainly around CCS and Hydrogen technology) which are set to commence construction starting in 2024. As such, there is an urgent need for preparation, investment and collaboration in the near future.

This analysis focuses on Lot 8 of the cluster plan – skills demand for the engineering construction sector. In order to ensure that the regional economy maximises benefits from investment it will be vital to have a strong pipeline of engineering construction labour to maximise employment opportunities and meet the demands of planned Net Zero projects. This will ensure projects are delivered on time, prevent the leakage of value outside the region and UK, and help developers manage the economics of their projects.

Purpose & methodology

This analysis presents:

1. High level estimations of the likely demand for industrial skilled labour to develop a Net Zero industrial cluster in the region;
2. Market inefficiencies and opportunities for skills provision on Net Zero projects in the region and their relative drivers;
3. A set of recommendations to prepare the region to meet anticipated demands.

The study is based on evidence obtained from **economic literature reviews** and **stakeholder engagement**, and the work was conducted in 2 iterative phases:

1

Skills analysis – demand for industrial skilled labour

Presenting high level estimations of the likely demand for industrial skilled labour, and identifying initial market factors to skills provision in the region.

Evidence gathered from:

- Economic literature review
- Stakeholder engagement with industrial firms, national and local government and industry bodies.

2

Market inefficiencies

Deeper dive into barriers to engineering construction skills demand - Identifying prominent market inefficiencies in the region, their relative drivers, and current strategies by industrial stakeholders in the region to address this.

Evidence gathered from:

- Economic literature review
- Stakeholder engagement with industrial stakeholders, colleges, training providers, national and local government, and others.

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Key findings - Skills analysis

A significant surge in demand for skilled labour is set to emerge in the Humber cluster and in the UK as multiple Net Zero projects are anticipated to commence construction from 2024. The projects anticipated in the Humber are estimated to support 22,800 new industrial jobs (upper end estimate based on £6bn CAPEX provided by Element Energy as part of their quantitative modelling in support of the HICP). This is a top-down estimate and stakeholders have not been able to provide 'bottom up' quantitative estimates of the skills demand for Net Zero projects which they are involved in (indicative of the early stage of many projects).

This will require a significant, rapid upscaling of current skills pipelines. The current Engineering Construction Industry (ECI) workforce in the Humber is estimated by ECITB to comprise around 5,400 current engineering construction jobs (lower end estimate from April 2021 during reduced economic activity induced by Covid-19), ahead of a significant increase in skills demand over the next 2 years for Net Zero projects to start and be delivered on time. Even before the wave of Net Zero investment has begun, cluster stakeholders have reported that they are already experiencing significant challenges staffing existing operations, retaining their current workforce, and recruiting experienced individuals.

Stakeholders cited significant opportunities and challenges around meeting the future demand for skilled labour: There was unanimous agreement from all stakeholders that without additional action there will be a critical skills shortage that will make it hard to achieve Net Zero ambitions in a timely fashion without government commitment to industrial decarbonisation infrastructure. Contractors are already finding it hard to maintain a steady workforce, with many workers employed on short-term contracts and a significant proportion reaching retirement age. There are acute shortages in some areas noted by stakeholders including electrical and mechanical engineers, welders, project managers and specialist plant operators.

Stakeholders engaged with cited that the key industrial skills required to develop a Net Zero cluster in the Humber will be largely Engineering Construction Industry (ECI) jobs, and as such, our deep dive focuses primarily on these jobs.

Key findings – Engineering construction opportunities

Informed by economic literature reviews and information gathered from stakeholder engagement, 6 key market inefficiencies pertinent to the Humber are identified and presented.

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(Continued) **Key findings – Engineering construction opportunities**

The following lists the inefficiencies, opportunities and associated drivers identified at a high level:

1. Limited training provision capacity in engineering construction (staff and facilities):

Drivers: Drivers include limited industry driven investment; cost of training tutors; lower pay for tutor roles compared to industry benchmarks; resource-intensive training and facilities (expensive specialist equipment and machinery); lack of capital funding allocated by government to drive future capital investments; and short termism (schemes available on a per-trainee basis only).

2. Imperfect information (lack of awareness)

Drivers: Drivers include project uncertainty (reliant on Government decisions and roadmaps); demand uncertainty in the supply chain (unknown scale/volume of projects); short-termism (demand-led and reactive / supply-chain driven market); short term and temporary contracting for industrial projects (although this has worked in the past it may not be adequate to meet the surge in skills demand in the UK driven by Net Zero projects).

3. Potential misalignment between existing training and evolving industry needs

Drivers: Drivers include high costs of expanding training capacity to meet the skills pipeline required; changing industry requirements to deliver Net Zero (and rapidly evolving technology); low awareness and lack of efficient / tailored routes to industry; and limited industry engagement with colleges / training providers.

4. Lack of incentives for training (self-employed / temp workforce)

Drivers: Drivers include competition for the same resources and self-employed workforce (creating a large pool of self-employed flexible workers with different companies without taking on training responsibilities within the organisation); project-based peak demands (incentivising contracting solutions rather than investment in long term resourcing); and lack of direction from employers to Engineering, Procurement, and Construction (EPC) contractors on UK content targets (EPC contractors are not given direction from project sponsors on UK content targets and the costs of this are not included in agreed provisions).

5. Workforce mobility (including geographical constraints and migration)

Drivers: Drivers include competing sectors (such as Oil and Gas) which have a greater financial pull for the same resources; temporary contracting (movement of employees and self-employed workers); and project uncertainty (due to risk of projects not going ahead there is lack of investment into permanent resourcing strategies).

6. Competition between contractors for labour

Drivers: Drivers include limited capacity and experience of larger firms to launch streamlined procurement strategies; competition between contractors (limited incentives for collaboration, smaller contractors given short lead times); and lack of engagement from project sponsors (to direct / support contractors in delivering UK content targets).

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Recommendations

We have developed a series of recommendations aimed at addressing potential skills shortages and market inefficiencies in engineering construction for Net Zero infrastructure. The common theme amongst the recommendations is the extent of collaboration needed between key stakeholders and therefore we have listed key stakeholders required. As these recommendations are implemented, it will be important to monitor for any overlaps between them and address these.

Table 1: Summary of recommendations

Recommendation	Actions for
R1: Expand utilisation of 'Learn on the job' schemes: Industrial companies and contractors can implement this where industrial workers undertake task-based activities with direct supervision whilst learning on the job. This will act as an effective means to accelerate upskilling.	Industry, training providers, colleges, and other accreditation bodies.
R2: Secondment from industry to support training provision: A scheme where industrial companies / contractors provide a secondment offer for their employees to support training providers and colleges. This will help bridge misalignment between training provision and changing industry needs, and ensure the tutors and students have access to relevant industrial experience.	Industrial companies, contractors, colleges, training providers, National Government.
R3: Increase support for SME access to skills: Support SMEs to understand the skill provision funding available (building on local LEP Growth Hubs and Workforce Development services) and manage the associated administrative burden. Where possible, flex existing policy to make support more available to SMEs in civil and engineering construction.	National and Local Government (including LEPs), LSIPs, colleges & training providers.
R4: Government to continue to recognise the importance of key sectors for Net Zero: Government initiatives, such as the establishment of the Green Jobs Delivery Group, must consider the importance of the Engineering Construction sector for Net Zero development.	DfE, Local Government, LSIPs, and Industry bodies.
R5: Capital investment into engineering construction capacity in the region: Training providers, with the support of industry and wider government support schemes, should seek opportunities to increase the capacity of training provision by e.g. developing industry-relevant training facilities to act as central hubs for developing UK content and skills in Net Zero projects to meet future increased demand.	Industrial investors, National Government, colleges and training providers.

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(Continued) **Recommendations**

Recommendation	Actions for
R6: Enhance attractiveness of industrial training roles: In parallel with improving the trainer packages available, work can be done to better sell the wider benefits of working in education and training – such as by advertising the favourable benefits and work-life balance that comes with such roles. These careers need to be advertised directly to those skilled workers in industry.	Training providers, Colleges, Local Government, LSIPs, LEP Careers Hubs, IoTs, Industry.
R7: Improve awareness of industrial and Net Zero careers in schools and universities: Build on existing approaches and develop a coordinated Net Zero awareness programme to highlight the decarbonisation agenda and other benefits associated with industrial job opportunities.	Training providers, Colleges, Schools, Universities, Local Councils, LSIPs, IoTs, Industry, LEP Careers Hubs, National Careers Service.
R8 Develop detailed occupational map to quantify the skills availability for Net Zero projects in the Humber and the UK: In addition to existing work, a further study (ideally collaborative and centrally managed) is required to understand, in more detail, the labour market in the Humber and in the UK and outline an occupational map and skills database (with a direct focus on Net Zero projects) to be shared with relevant stakeholders.	General / open action (stakeholders who have carried out studies on skills capacity include AMRC, University of Chester, IDRIC, ECITB, CCSA), LEPs, Humber Principals Group, HEY LEP Skills Network.
R9: Forward plan demand and promote certainty: Government and industry should help develop clearer roadmaps and promote certainty of end-use demand to de-risk investment into skills growth.	National Government, Industrial emitters and contractors.
R10: Review of apprenticeship levy to identify barriers: Stakeholders and government should continue to collaborate and review how the apprenticeship levy is being utilised by the industrial sector and how this can be improved.	National Government (DfE) and LEPs.
R11: Increase investment into efficient manufacturing processes, equipment and machinery: Companies should invest in efficient industrial machinery and equipment (which the Humber and UK lag behind other developed countries in) as this will significantly reduce the demand for labour.	Industrial companies, contractors.
R12: 'Smart-trainer' schemes: Colleges, training providers and universities can collaborate with industry bodies and Institutes of Technology to develop schemes where trainers are shared across providers and given more competitive salaries.	Training providers, Colleges, IoTs, Universities, Industry, DfE (policy flex).

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Appendix 1 - Literature review

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Document	Author	Summary
Green Jobs and Skills Analysis report	HEY LEP	The HEY LEP commissioned Energy & Utility Skills to produce an analysis of the "green" jobs and skills requirements likely to emerge across the HEY LEP region and the surrounding area over the coming years.
Humber Energy Board Skills Paper	CATCH, HEY LEP	The report provides an overview of local intelligence on energy relates skills issues in the Humber, with recommendations to provide the Humber Energy Board with a starting point for progress.
ECITB Workforce Census 2021	ECITB	A Workforce Census report of ECITB's in-scope companies to collect and analyse the number and location of people in the Engineering Construction Industry and supporting roles.
Capturing carbon at Drax-delivering jobs, clean growth and levelling up the Humber	Vivid Economics	This report sets out the direct and wider economic benefits of the Drax carbon capture project, along with an analysis of skills and labour required.
Green Jobs Taskforce report	BEIS	Findings and recommendations from the Green Jobs Taskforce
Enabling Skills for Industrial Decarbonisation	IDRIC	This report provides an evidence base on which local partners, training providers, businesses and investors can base decisions regarding employment and skills moving forward.
Provision of analysis of current and future skills demand and supply in North Lincolnshire	North Lincolnshire Council	The study presents an innovative proposal to reduce CO2 impact in the UK, a country rich in coal, which requires reduction of CO2 emissions from flue gases as the easiest and best performing solution.
Further education and skills inspection report	Ofsted	GC Business Growth Hub (GC BGH) in Greater Manchester commissioned Gyron LLP (Gyron) to research and prepare a report about hydrogen supply chain opportunities, with a focus on Greater Manchester businesses. The national context for hydrogen is presented first, including economic data on current UK hydrogen activities.
Supply Chains to Support a Hydrogen Economy	BEIS	This report analyses supply chain requirements for hydrogen production, transmission, distribution and storage and the manufacture of fuel cells over the period to 2050 and identifies economic development opportunities for the UK.
Further education and skills inspection report	Ofsted	A skills inspection report of further education such as apprenticeship effectiveness summarising key findings and recommendations on how to bring about improvements.
Supply Chain Excellence for CCUS	CCSA	This report describes the importance of CCUS supply chain readiness in Net Zero and sets out recommendations to maximise this impact by developing supply chain strategies to deliver long-term growth.
Supply Chains to Support a Hydrogen Economy	BEIS	This report analyses supply chain requirements for hydrogen production, transmission, distribution and storage and the manufacture of fuel cells over the period to 2050 and identifies economic development opportunities for the UK.
Optimization of CCUS supply chains in the UK: a strategic role for emissions reduction	Leonzio et al	The study presents an innovative proposal to reduce CO2 impact in the UK, a country rich in coal, which requires reduction of carbon dioxide emissions from flue gases as the easiest and best performing solution.
CCUS supply chain intervention Strategy	AMRC	This report describes the opportunity to increase UK manufactured content in the emerging carbon capture sector, creating economic growth and export potential while helping achieve the UK's commitment to Net Zero emissions.
A Green New Deal UK And Build Back Better Report	Green Jobs For All	The reports provides UK-wide estimates for potential job creation from a programme of investment across the country.

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Appendix 2– Stakeholders engaged

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The following table lists all stakeholders engaged with (referred to on page 20) via interviews on Microsoft teams throughout the different phases of the project.

Various stakeholders were engaged through multiple interviews and ongoing discussions which allowed for more comprehensive insights to be obtained. Interview responses were anonymised and the agenda for each interview was tailored based on stakeholder relevance to the different areas of analysis.

List of stakeholders engaged	
BEIS	Orion
Department for Education	Equans
Department for International Trade	British Steel
ECITB	Uniper
Carbon Capture and Storage Association	National Grid
Green Jobs Delivery group	Phillips 66
Industrial Decarbonisation Research and Innovation Centre	SSE
Hull and East Yorkshire LEP	Drax
North Lincolnshire Council	Equinor
North East Lincolnshire Council	OLG UK
East Riding of Yorkshire Council	Worley
CATCH	Wood
Humberside Engineering Training Association	Able UK
DN Colleges Group	Shell
John Leggott College	BP
Engineering UTC	VPI Immingham
University of Chester	Pensana
Hull college	Siemens
Grimsby Institute	Harbour energy
Selby college	SSE
EIC	Bilfinger