north east & yorkshire
NET ZERO HUB

NORTH EAST AND YORKSHIRE NET ZERO HUB: CAREERS EDUCATION INFORMATION ADVICE AND GUIDANCE REVIEW

Final Report

Note

This work was commissioned by Hull City Council as the accountable body for the Hull and East Yorkshire Business Growth and Skills Hub and as a partner of the North East and Yorkshire Net Zero Hub.

This report was funded by the North East and Yorkshire Net Zero Hub, which is itself directed and funded by the Department for Energy Security and Net Zero.

It is one of five Local Net Zero Hubs in England, and is manged locally in a partnership of the region's six Combined Authorities – led by an independent chair.

The Hub's most recent Memorandum of Understanding gave them the mission of assisting the new publicly owned energy company GB Energy with identifying and developing the projects which will deliver the Clean Energy 2030 ambition and supporting implementation of the forthcoming Warm Homes plan.

The Hub's objectives are:

- Attracting commercial investment into energy projects.
- Increasing the number, quality, and scale of local Net Zero projects in their regions, including supporting the early-stage development and delivery of projects.
- Supporting a national knowledge transfer programme to inspire and inform local projects.

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1. INTRODUCTION

The purpose of the report

The North East and Yorkshire Net Zero Hub (the **Hub**) provides support across administrative boundaries to help the public sector to achieve its Net Zero strategies in the North East and Yorkshire.

In each of the six regions[1] that comprise the Hub, there are Net Zero investment projects that have the potential to create new jobs and careers. Attracting individuals with the right skills and qualifications is a key aspect of realising the potential of these investment projects. Raising awareness of Net Zero job opportunities amongst the current and future workforce will support the attraction and retention of talent to fill these roles. Ensuring that there is effective Careers Education, Information, Advice and Guidance (**CEIAG**) to support entry into Net Zero careers is therefore essential to meeting Net Zero targets.

In response to the growing focus on Net Zero skills within national policy, the Hub agreed to commission research to review previous, existing and planned Net Zero CEIAG activity across each region. This research would produce a set of recommendations and actions that identify:

- Exemplary activity within or outside the region that could be replicated elsewhere.
- Areas of opportunity for improvement and expansion of current activity.
- Issues and risks associated with Net Zero CEIAG and how to avoid them.
- Gaps in activity to be filled.

Little Lion Research (**LLR**), in partnership with GC Insight (**GCI**), was commissioned by the Hub to undertake the research. This final research report is an output of that commission.

Research methodology

The research activities undertaken for this report were as follows:

- Introductory meetings with the Net Zero Hub and Careers Hub Lead Officers within each of the six regions which comprise the Hub to learn more about each region's activities in relation to Net Zero careers advice.
- A desk-based literature review to understand the focus and priorities of existing national and regional Net Zero careers strategies.
- Analysis of data on the size and structure of the Net Zero business base and workforce in each of the six regions within the Hub, the training and careers advice that is being delivered within each region, and forecasts for how this will develop in the coming years. Through the analysis, the report provides a detailed, consistent picture of the size and structure of Net Zero activity across the Hub regions, its job opportunities, and its connections to other regions and other sectors.
- Consultations with stakeholders (e.g., local authority and combined authority officers, business/business network representatives) who were identified during

[1] Hull & East Yorkshire, the North East, South Yorkshire, Tees Valley, West Yorkshire, and York & North Yorkshire.

the scoping stage of the project as having knowledge relevant to the research objectives.

- An online survey of Further Education Colleges (**FECs**) and independent training providers (**ITPs**) to learn more about the ways in which they offer careers advice and guidance to students, and how this provision could be expanded and/or improved.
- Interviews with representatives of projects identified through the research as demonstrating best practice when it comes to Net Zero careers advice.

Further detail on the research methodology is provided in the **Annexes** to this report.

Progress on this project was overseen by a Core Project Team at the Hull and East Yorkshire Business Growth and Skills Hub comprising the Chief Operating Officer and Skills Hub, Careers Hub, and Net Zero Hub leads. Wider strategic oversight and advice was also provided from a Steering Group comprising Careers Hub and Net Zero Hub leads from all six Hub regions.

Structure of the report

The report is structured as follows:

- Chapter 2 describes the context and rationale for the Hub's decision to prioritise Net Zero CEIAG using the findings from the literature review.
- Chapter 3 demonstrates the demand for, and supply of, Net Zero skilled workers and the CEIAG challenges this will create through analysis of data on the size and structure of the Net Zero sector and its growth potential.
- Chapter 4 combines findings from the online survey of ITPs, the stakeholder consultations and best practice case studies to provide an assessment of the current state of Net Zero CEIAG within the Hub.
- Chapter 5 provides conclusions and recommendations arising from the research.
- Annexes list the organisations consulted for the research, the questions that were put to stakeholders through the consultation process, the questions asked of training providers in the online survey, and the approaches taken to defining Net Zero for the data analysis elements of the research.

2. THE NET ZERO OPPORTUNITY

Summary

- 'Net Zero' refers to efforts to reduce carbon in the atmosphere.
- The UK is committed to reaching Net Zero by 2050.
- Many different parts of the economy including power generation, transport, construction and farming/land management will have key roles to play in helping the UK to meet its Net Zero targets.
- Within just those sectors that will help to deliver the clean energy objectives of Net Zero, the government estimates that 400,000 new jobs will be created by 2030, with half of these jobs in the skilled construction, electrical and electronics trades.
- Within Yorkshire and the North East, roughly one in every five jobs is in some way relevant to the transition to Net Zero.
- Whilst each of the six regions in the North East and Yorkshire have their own strengths and priorities in relation to Net Zero, common strengths exist in relation to sectors such as renewable energy, advanced manufacturing and the new technologies that will support Net Zero transition, such as carbon capture and storage, and hydrogen production.

What does Net Zero mean?

Net Zero, as a concept, refers to a state in which the greenhouse gases that go into the atmosphere are balanced by removal of greenhouse gases from the atmosphere. At its core, therefore, Net Zero activity refers to any activity which involves either the reduction of carbon and other greenhouse gas emissions to minimise the total emissions into the atmosphere, or any activities which involve the removal of these emissions from the atmosphere.[2]

To protect the world from the worst possible impacts of climate change, global temperature increases will need to be limited to 1.5°C above the global average temperatures before the industrial revolution. It has been stated that the Earth is currently roughly 1.2°C warmer than the average for 1850-1900, and therefore action needs to be taken to move towards Net Zero.[3]

While it is acknowledged that Net Zero activities need to take place to prevent the most damaging impacts of climate change, there is currently no set definition of what a "Net Zero" or "green" job is. It is broadly accepted that Net Zero roles can cover a range of sectors, including energy, transport, agriculture, manufacturing, and construction. However, there are other sectors and roles that, although potentially not driven by

[2] https://www.un.org/en/climatechange/net-zero-coalition
[3] https://www.un.org/en/climatechange/science/climate-issues/degrees-matter

practical green-related skills, are likely to require at least an understanding of the transition towards a more sustainable, Net Zero future, including architecture, law and policymaking.

The research team met with Net Zero and Skills leads for each Hub member to scope potential definitions of Net Zero, to inform the data analysis that has been provided in Chapter 3. Following this exercise, a definition was agreed upon with the Hub's Hull and East Yorkshire Project Manager.

This definition of Net Zero has been developed from an understanding and interpretation of the Low Carbon Environmental Goods and Services (**LCEGS**) sector, published by kMatrix.[4] LCEGS can be summarised by the four strategic drivers within the sector.

Figure 1: Four strategic aims of the LCEGS sector

From these drivers, sector definitions can be derived, e.g. for Decarbonising the Energy System there is a specific focus on subsectors with activities that relate to decarbonisation such as electricity production, housing insulation and sustainable transport. The LCEGS definition also factors in the role that supply chains play in the push to Net Zero such as manufacturing, legal and accountancy services and sales.

The full list of sectors and occupations that have been used in this research, based on the LCEGS sectoral definition, is provided in Annex D.

Targets and timelines in relation to Net Zero

The 2015 Paris Agreement, ratified at the UN Climate Change Conference (**COP21**), sets out key targets in greenhouse gas emissions reduction that will provide a pathway to ensuring that a 1.5°C increase in global temperatures does not occur. To achieve this, the scientific consensus is that global Net Zero emissions must be reached around 2050. This will require a 45% reduction in emissions by 2030 compared to 2010 levels.

[4] https://kmatrix.co/wp-content/uploads/2025/01/kMatrix_LCEGS_MZNH_2024_Methodology_v1.pdf

The UK Government has established its own Net Zero targets to comply with the Paris Agreement principles and to enable the UK to meet its own obligations regarding emissions. These targets are called the Nationally Determined Contributions (**NDC**). The UK is committed to reaching Net Zero by 2050 as per the Paris Agreement targets.

In December 2020, the UK Government submitted its initial NDC to the United Nations Framework Convention on Climate Change (**UNFCCC**) in line with Article 4 of the Paris Agreement.[5] In this NDC, the UK committed to reducing economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels.

In January 2025, the UK Government submitted its revised NDC to the UNFCCC. [6] In this NDC, following advice from the UK Climate Change Committee (**CCC**), the Government committed to reducing economy-wide greenhouse gas emissions by at least 81% by 2035, compared to 1990 levels. This is in line with both the Climate Change Act 2008, which first established an 80% reduction target of greenhouse gas emissions by 2050, and the 2019 amendment to this Act, which changed the reduction target from 80% to 100% (or Net Zero).[7] [8]

At a country level, while there are no separate interim targets that have been developed for England, progress in England is being assessed against UK-wide targets.[9] Northern Ireland has set an interim target of a 48% reduction by 2030, and Wales has set an interim target of a 63% reduction by 2030. The Scottish Government had previously set an interim target of a 75% reduction by 2030, but this was withdrawn in 2024, while maintaining their separate target of Net Zero by 2045.

Which sectors will drive the transition to Net Zero?

In October 2021, the UK Government published *Build Back Greener*, a strategy which outlined decarbonisation pathways to Net Zero for key sectors of the UK economy.[10]

Figure 3 on the next page describes the sectors of the UK economy that will be key to achieving Net Zero. While each of these sectors are priorities for intervention for decarbonising the UK economy, it should be noted that other sectors will also have a significant part to play. The University of Oxford's Net Zero research institute[11] identifies

[5] https://www.gov.uk/government/publications/the-uks-nationally-determined-contribution-communication-to-the-unfccc
[6] https://www.gov.uk/government/publications/uks-2035-nationally-determined-contribution-ndc-emissions-reduction-target-under-the-paris-agreement
[7] https://www.legislation.gov.uk/ukpga/2008/27/contents/enacted
[8] https://www.legislation.gov.uk/ukpga/2008/27/contents
[9] https://researchbriefings.files.parliament.uk/documents/CBP-9888/CBP-9888.pdf
[10] https://assets.publishing.service.gov.uk/media/6194dfa4d3bf7f0555071b1b/net-zero-strategy-beis.pdf
[11] https://netzeroclimate.org/sectors/

adjacent sectors that will play a significant role, including education, financial services and digital technologies.

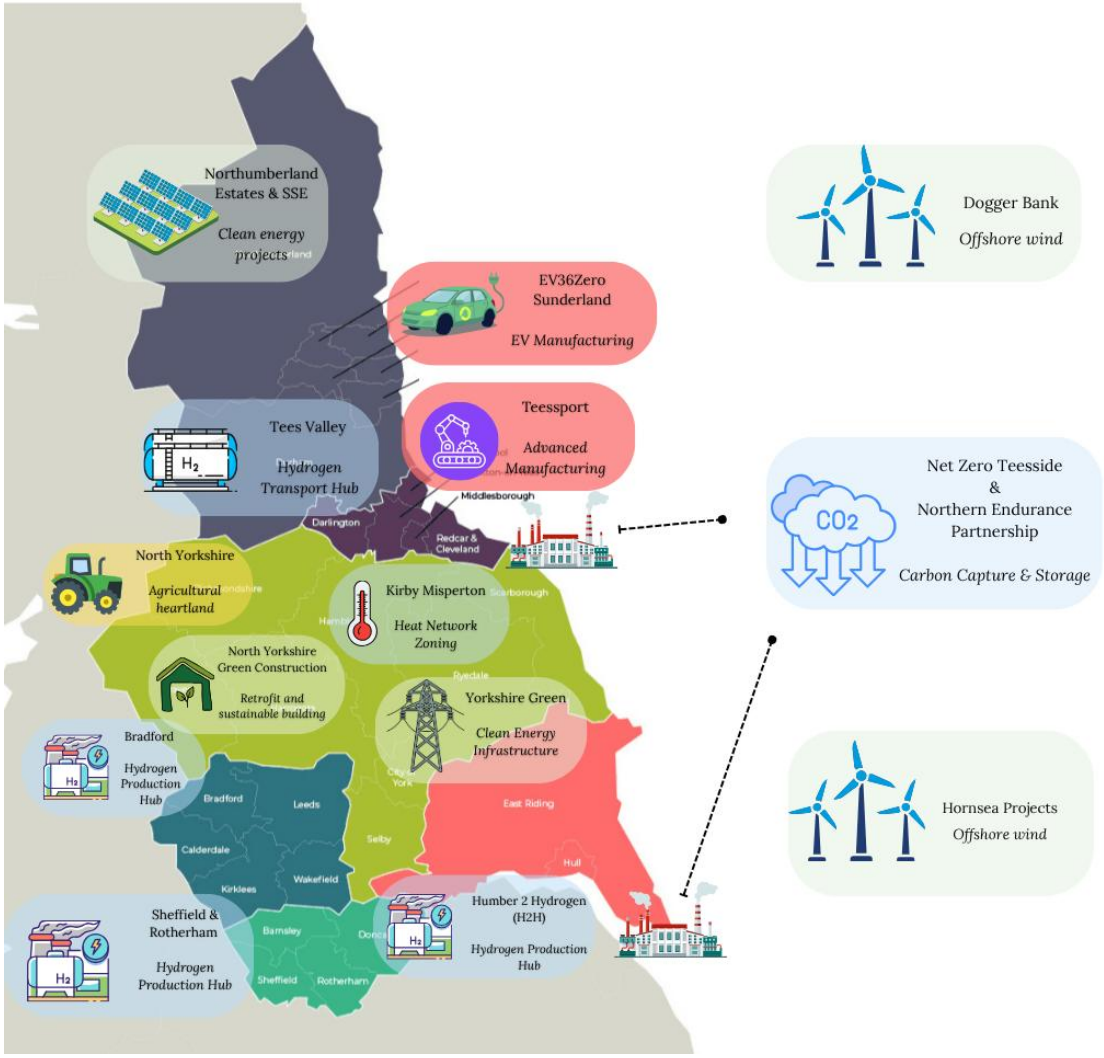
Figure 2: Sectors identified in the UK Government's Net Zero Strategy

What are the opportunities for the North East & Yorkshire?

Figure 3 illustrates some of the Net Zero projects and opportunities that exist across the Hub. These opportunities encompass new ways of generating power such as wind power projects along the North Sea coast and solar power initiatives onshore, alongside new approaches to decarbonising the Hub's economy such as hydrogen production hubs on the Humber and in South and West Yorkshire.

Across all six regions there are also Net Zero opportunities relating to the retrofitting of residential and commercial property and the electrification of transport.

Figure 3: North & Yorkshire Net Zero Hub – regions, technologies and key opportunities



How is each region aiming to grow its Net Zero economy?

Each of the six regions have produced strategy and policy papers about how they plan to support residents and employers to secure the opportunities that the transition to Net Zero will create. Some of these strategies and policies include proposals for what changes to current CEIAG provision may be required.

In some regions these strategies and policies specifically relate to the Net Zero transition, whilst in other regions Net Zero opportunities and priorities are included in wider economic strategies, energy strategies and skills improvement plans.

The relevant strategies and policies for each region are described below:

Hull and East Yorkshire (HEY)

The Humber 2030 Vision, which covers Hull, East Yorkshire and parts of Lincolnshire as well as operations in the North Sea, identifies growth potential in three core sectors and/or technologies as part of the transition to Net Zero:

i. Offshore wind power
ii. Hydrogen production
iii. Carbon capture and storage

Hull's Economic Strategy 2021-2026 highlights the city's vulnerability to flooding and climate change and the opportunities for investment in climate change resilience. Similarly, the East Riding's Economic Strategy 2023-2025 notes the need for climate change resilience due to coastal erosion.

These strategies and policies make various recommendations for CEIAG including:

- Forming partnerships between industry, councils and education providers to engage pupils with STEM subjects and related career opportunities.
- Upskilling early years and primary school teachers to make younger pupils more aware of climate change and sustainability issues.
- Providing holistic careers education and opportunities for work experience.
- Promoting green careers to all ages.

North East (NECA)

The North East Combined Authority's New Deal for North East Workers identifies Net Zero-related opportunities in high-growth sectors such as:

i. Offshore wind power (notably, more women within the workforce)
ii. Advanced manufacturing and electric vehicles

The North East Local Skills Improvement Plan also highlights Net Zero-related opportunities in the construction sector.

These strategies and policies make various recommendations for CEIAG including:

- Making CEIAG more accessible to all ages, including opening Careers Hubs in villages and towns.
- Forming partnerships between Net Zero employers and schools and colleges.
- Establishing sector-specific green skills academies.

South Yorkshire (SYMCA)

South Yorkshire Mayoral Combined Authority's Strategic Economic Plan: 2021 - 2041 lists key priorities to help the region achieve a Net Zero carbon economy by 2041. These priorities include reducing carbon emissions, generating low carbon energy, improving the energy efficiency and sustainability of buildings, and accelerating the transition to ultra-low or zero-emission transport.

Sectors and technologies identified for investment are:

i. Hydrogen production
ii. District heat networks
iii. Retrofitting residential properties
iv. Public transport

Whilst not specific to the Net Zero transition, the Plan makes a recommendation to *"design and deliver an all-age careers service that will provide our people with the information, guidance and advice they need to make informed choices, to reskill or upskill, and to access opportunities across the economy."*

The Plan also proposes collaborating with employers to shape and deliver careers guidance and broadening CEIAG provision to primary school pupils.

Tees Valley (TVCA)

The Net Zero Strategy for the Tees Valley identifies five strategic challenges where the Combined Authority has developed action plans with local stakeholders:

i. Industrial decarbonisation and energy efficiency
ii. Public sector and commercial decarbonisation and energy efficiency
iii. Retrofitting residential properties
iv. Public transport
v. Nature and resources

The Strategy highlights CEIAG actions the region is currently taking such as:

- Using Careers Hubs to ensure local young people are aware of the emerging opportunities in the Net Zero economy and the skills and training they need to take advantage of them.
- Establishing the Teesworks Academy to link jobseekers, local employment hubs and skills providers to give local people the skills and training to meet the needs of the Net Zero industries emerging on the Teesworks site.

West Yorkshire (WYCA)

The draft version of the West Yorkshire Climate and Environment Plan 2025 - 2038 identifies green jobs as a strength which the region can capitalise on. It highlights local 'Net Zero Specialisms' in sectors such as materials and construction, chemicals, waste management and recycling, clean energy and engineering and technology

Net Zero CEIAG activity within West Yorkshire includes:

- Establishing a Green Jobs Taskforce that includes young people to identify actions to deliver green skills and jobs.
- Piloting green careers programme for pupils across 30 primary schools, raising aspirations and inspiring young people about the green economy.
- Targeting information and guidance towards diverse communities that are underrepresented in green jobs.

The draft plan also calls for partnerships between employers, employees, schools and training providers to address Net Zero CEIAG needs.

York and North Yorkshire (YNY)

The Combined Authority's 2024 Economic Framework makes "Transition to carbon negative" as one of its overarching ambitions. However, the green economy is listed as a "supporting sector" rather than a core or high growth potential sector. It references the opportunity to leverage the region's natural capital, renewable energy generation potential and innovation to become carbon neutral.

York and North Yorkshire's Routemap to Carbon Negative sets the ambition "Young people are equipped to make quality decisions about education, training and careers". Three actions are identified to support this ambition:

i. Every school has high quality Careers information and resources to enable young people to understand what 'green' jobs are available in the local economy and the career and learning the pathways to get there.
ii. Young people are informed about - and can access - high quality technical skills provision that supports their 'green' career ambitions.
iii. Skills providers are supported to embed sustainability into the curriculum, equipping learners for their future learning, careers and life choices.

In summary, the opportunities identified by the six regions cover four themes:

1. **Sectors where the regions have a competitive advantage**, e.g. renewable energy, advanced manufacturing.
2. **Developing new technologies that will support Net Zero transition**, e.g. carbon capture and storage, hydrogen production.
3. **Upgrading existing infrastructure in each region**, e.g. setting-up heat networks, making homes and businesses more energy efficient and improving public transport.
4. **Changes to local land use**, e.g. reforestation, carbon sequestration.

The strategies and policies focus less on opportunities created by the current CEIAG approaches in each region. However, they do make recommendations relating to CEIAG to help capture the opportunities that Net Zero presents:

1. Establish stakeholder (e.g., employers, schools, training providers, pupils) partnerships and taskforces to consider how Net Zero and sustainability can be embedded into CEIAG.
2. Expand Net Zero CEIAG to younger pupils (e.g., primary schools).
3. Offer more holistic CEIAG, including work experience opportunities.
4. Continue to make use of existing Careers Hubs.
5. Target CEIAG at demographic groups who are underrepresented in Net Zero and green jobs.

How is each region aiming to grow its Net Zero economy?

Within each of the six regions that make up the Hub, local authorities have established their own target dates for becoming Net Zero.

- In the North East this ranges from local authority-led operations becoming Net Zero by 2030 (e.g. in Gateshead[12] and South Tyneside[13]), to 2045 for Durham.[14]
- In the Tees Valley, Council-wide operational Net Zero targets include 2029 for Middlesborough[15] to 2050 for Hartlepool[16].
- In York and North Yorkshire, the City of York has set a Net Zero target for 2030[17], while in North Yorkshire there is a stated ambition to be a carbon-negative local authority by 2040.[18]
- In West Yorkshire targets vary between city-wide ambitions for Net Zero in Leeds by 2030[19], to 2038 in Calderdale[20], Wakefield,[21] Kirklees[22] and Bradford[23].
- In Hull and East Yorkshire, Hull City Council have established a city-wide target of Net Zero by 2045[24], while in East Riding of Yorkshire Council the ambitions are aligned to the UK Government's target of 2050.[25]

[12] https://www.gateshead.gov.uk/article/14171/What-Gateshead-Council-is-doing
[13] https://www.southtyneside.gov.uk/article/28506/Next-Steps-Towards-Net-Zero
[14] https://www.durham.gov.uk/article/3896/Climate-emergency
[15] https://www.middlesbrough.gov.uk/environmental-issues/one-planet-living/
[16] https://www.hartlepool.gov.uk/climate-change
[17] https://www.york.gov.uk/climate-change-2
[18] https://edemocracy.northyorks.gov.uk/documents/s16032/Appendix%201%20-%20York%20and%20North%20Yorkshires%20Routemap%20to%20Carbon%20Negative.pdf
[19] https://www.leeds.gov.uk/planning/planning-policy/local-plan-update/proposed-policy
[20] https://new.calderdale.gov.uk/environment/sustainability/climate-emergency
[21] https://www.wakefield.gov.uk/environment-and-climate-change/climate-change/our-climate-change-action-plan
[22] https://www.kirklees.gov.uk/beta/climate-emergency/our-targets.aspx
[23] https://www.bradford.gov.uk/environment/climate-change/climate-emergency-and-green-economy/
[24] https://www.hull.gov.uk/net-zero/hull-2030-carbon-neutral-stategy
[25] https://intel-hub.eastriding.gov.uk/wp-content/uploads/2022/07/DRAFT-Executive-Summary.pdf

- In South Yorkshire Net Zero targets range from a city-wide target of 2030 in Sheffield,[26] to 2040 in Barnsley[27], Doncaster[28] and Rotherham[29].

The different timelines that regions and localities are working towards means areas may assign different levels of importance to, and investment in, activities which seek to bring about Net Zero.

In addition to working to different timelines, there is a considerable difference between the six regions in terms of which sectors (and therefore skills) that they are aiming to prioritise.

Given its proximity to various coastal opportunities such as Orsted's recent investment in Hornsea 3[30], NECA is focusing on offshore wind as a priority sector. Offshore wind is also a priority sector for HEY, given its proximity to the Dogger Bank South Offshore Wind Farms. Both regions also have large industrial and manufacturing sectors, and these are priority sectors, with NECA leading in battery manufacturing (for electric vehicles) and HEY leading in low-carbon manufacturing and automation. As they are both coastal regions, HEY and NECA also have significant infrastructure in dealing with ports and logistics, to help support offshore wind and hydrogen supply chains.

A priority identified by TVCA, YNY and WYCA is the opportunities around "green construction". This can include retrofitting older buildings to meet Net Zero standards through manufacture and installation of heat pumps, and more widely by investing in better insulation, improving ventilation and reducing drafts.

SYMCA is actively pursuing a hydrogen strategy to meet its Net Zero targets by exploring hydrogen for industrial decarbonisation, transport, and energy storage. The region is already home to a hydrogen refuelling station, where research is currently underway into the feasibility of a hydrogen-powered bus network.

[26] https://www.sheffield.gov.uk/campaigns/cop26
[27] https://www.barnsley.gov.uk/services/climate-change-and-sustainability/reducing-our-carbon-emissions/
[28] https://www.teamdoncaster.org.uk/environment-and-climate
[29] https://www.rotherham.gov.uk/energy-climate-change/tackling-climate-change
[30] Ørsted takes final investment decision on Hornsea 3 Offshore Wind Farm

3. THE DEMAND FOR AND SUPPLY OF NET ZERO SKILLS

Summary

- There are over 75,000 Net Zero-relevant businesses in the North East and Yorkshire, with 91% being micro-businesses. The region has a slightly higher concentration of Net Zero businesses than the national average, especially in agriculture and resource efficiency sectors.
- Net Zero business numbers decreased by 1% from 2019–2024, but some sectors saw significant growth.
- 640,0000 people are employed in Net Zero sectors across the North East and Yorkshire (13% of England's Net Zero workforce). Employment is especially concentrated in energy system decarbonisation, supply chain, and resource efficiency activities.
- Net Zero employment grew by 8% (45,810 jobs) from 2018–2023, outpacing the national average.
- The most common Net Zero occupations within the region include production managers, construction trades, plumbers, and vehicle technicians.
- Net Zero workers are more likely to have vocational or apprenticeship qualifications than the all-sector average.
- Net Zero sector jobs offer higher median advertised salaries than the all-sector average in both the North East and Yorkshire.
- It is estimated that 25,000 clean energy jobs could be created in the North East and Yorkshire by 2030.
- The North East and Yorkshire records strong engagement with Net Zero-related subjects at KS4, A-level, FE, apprenticeships, and higher education, especially in engineering, construction, and digital technology.
- Workplace training and employer skill surveys indicate ongoing upskilling needs, particularly in manufacturing and construction.
- There is high demand for technical and engineering roles, with flexibility in qualification requirements and a focus on practical skills such as machinery operation, project management, and mechanical engineering.

A key aim of CEIAG activity is to give young people and adults awareness of the skills and qualifications that are needed to secure a job and the scope of roles that exist. Providers of CEIAG need to have a clear understanding of the number and types of jobs that are available within sectors of the economy so that the advice and support they give to learners is relevant to local labour market conditions.

This chapter seeks to understand more about the current and potential future demand for Net Zero skills across the North East and Yorkshire. It does this by analysing data on the size and structure of the Net Zero business base and workforce in each of the six regions within the Hub region, forecasts for how this picture will develop in the coming years, and the current supply of skilled labour that Net Zero employers can recruit from.

Not every business or employee recorded in the following statistics will current be working directly on Net Zero projects, but these businesses and employees have the skills and experience that will be required in the coming years as the North East and Yorkshire seek to achieve their Net Zero policy aims. By including these businesses and employees in the analysis, we can get a sense of the region's Net Zero potential both now and in the future.

Sources of data and the definitions used

The following analysis is based on the data collated in the Net Zero Hub CEIAG Dashboard (Microsoft Power BI). Readers are advised to access the dashboard if they wish to explore specific data in more detail.

This dashboard used two key definitions to identify Net Zero industries and occupations. These definitions align with the 2007 Standard Industrial Codes (**SICs**) and 2020 Standard Occupational Codes (**SOCs**) that best capture activity in the following areas of the economy: Agriculture, Manufacturing (specifically the manufacture of goods required for the Net Zero transitions such as electrical wiring and distribution equipment), Construction, Primary Utilities (such as water supply, waste management and plumbing heating and electrical installation), Engineering, Technical Testing and Research and Development. See Annex D for further detail.

These sectors have been grouped into four Net Zero activity areas:

1. Decarbonising the Energy System
2. Net Zero Supply Chain
3. Preserving and Enhancing
4. Multi-disciplinary (including businesses in the consulting, architectural and research services sector)

Activities in certain sectors sit across multiple Net Zero activity areas.

Where analysis of educational data has been undertaken, enrolment and attainment against those subjects and courses which best align with the identified Net Zero sectors have been reviewed.

Net Zero business base

Numbers of Net Zero businesses across the Hub region

As of 2024, there were approximately 250,000 businesses within the six regional economies that comprise the Hub region. Of these, over 75,000 (30% of all businesses in the Hub region) were operating in Net Zero relevant sectors.

We estimate that approximately 12% of England's total Net Zero business base is located within the North East and Yorkshire.

Nine out of ten Net Zero businesses within the Hub region employ fewer than 10 people; this equates to over 68,000 Net Zero micro businesses across the North East and Yorkshire.

The Location Quotient (**LQs**) - a measure of business concentration in a sector relative to England – for the region's Net Zero sector is 1.1. This indicates that business activity in these sectors is slightly more concentrated locally than nationally, reflecting demand for Net Zero talent and resources.

The region's Net Zero business base is particularly specialized in relation to 'preserving and enhancing' (agriculture and fishing) and improving resource efficiency (water, waste and recycling) Net Zero activities.

Table 1: Regional Net Zero business base by business count, LQ and business size

Net Zero Activity	Businesses	Location Quotient	% Micro Businesses
Decarbonising the Energy System	28,390	0.99	92%
Net Zero Supply Chain	27,615	1.11	87%
Preserving and Enhancing	16725	1.41	95%
Multi-disciplinary	9,675	1.04	90%
Improving Resource Efficiency	695	1.20	77%
Total Net Zero Sector	75,685	**1.10**	**91%**

Source: UK Business Count, 2024

Tables in Annex D show that the Net Zero sectors which account for the highest percentage of regional Net Zero businesses are:

- Agriculture (15,735).
- Plumbing, heating, electrical installation and insulation (10,890).
- Development and Construction of Buildings and Civil Engineering Projects (9,525).
- Sales, Maintenance and Repair linked to Sustainable Transport (9,315).

Change in number of Net Zero businesses within the region

Over the last five years there has been a 1% decrease in the number of Net Zero businesses across the North East and Yorkshire; this compared to a national growth rate of 0%. This is equivalent to a decrease of 465 businesses.

Large Net Zero sectors within the region which have seen decreases in the total number of businesses over this period include:

- Sustainable Transport – Operation – 10% reduction in businesses
- Engineering & Technical Testing – 20% reduction
- Manufacturing - Metals and Metal Products – 15% reduction

Not all Net Zero sectors within the North East and Yorkshire have experienced a decrease in business numbers, and some sectors have seen an increase. The sectors which experienced the highest rates of growth during this period include:

- Manufacture of Agricultural Equipment (+52% or 25 businesses),
- Manufacture of Energy Equipment specifically Boilers, Ovens, Furnaces and Burners (+50% or 5 businesses)
- Development and Construction of Buildings and Civil Engineering Projects (+17% or 1,395 businesses).

The Net Zero Sector business base across the six regions within the Hub

West Yorkshire has the largest Net Zero Sector business base of the six regions that comprise the Hub; Tees Valley has the smallest.

Micro businesses account for 90%+ of Net Zero businesses in all six regions of the Hub.

Despite having the most Net Zero businesses, West Yorkshire is the only region where the relative concentration of Net Zero businesses is lower than would be expected given the size of the sector nationally. Conversely, Hull and East Yorkshire, and York and North Yorkshire have relatively high concentrations of Net Zero businesses.

Table 2: Net Zero business base by business count, LQ and business size (Combined Authority Areas)

Region	Net Zero Businesses (2024)	Location Quotient	% Micro Businesses
Hull and East Yorkshire (HEY)	7,110	1.28	90%
North East (NECA)	16,125	1.08	90%
South Yorkshire (SYCA)	11,790	1.06	90%
Tees Valley (TVCA)	5,205	1.09	92%
West Yorkshire (WYCA)	21,030	0.97	90%
York and North Yorkshire (YNYCA)	14,425	1.33	93%

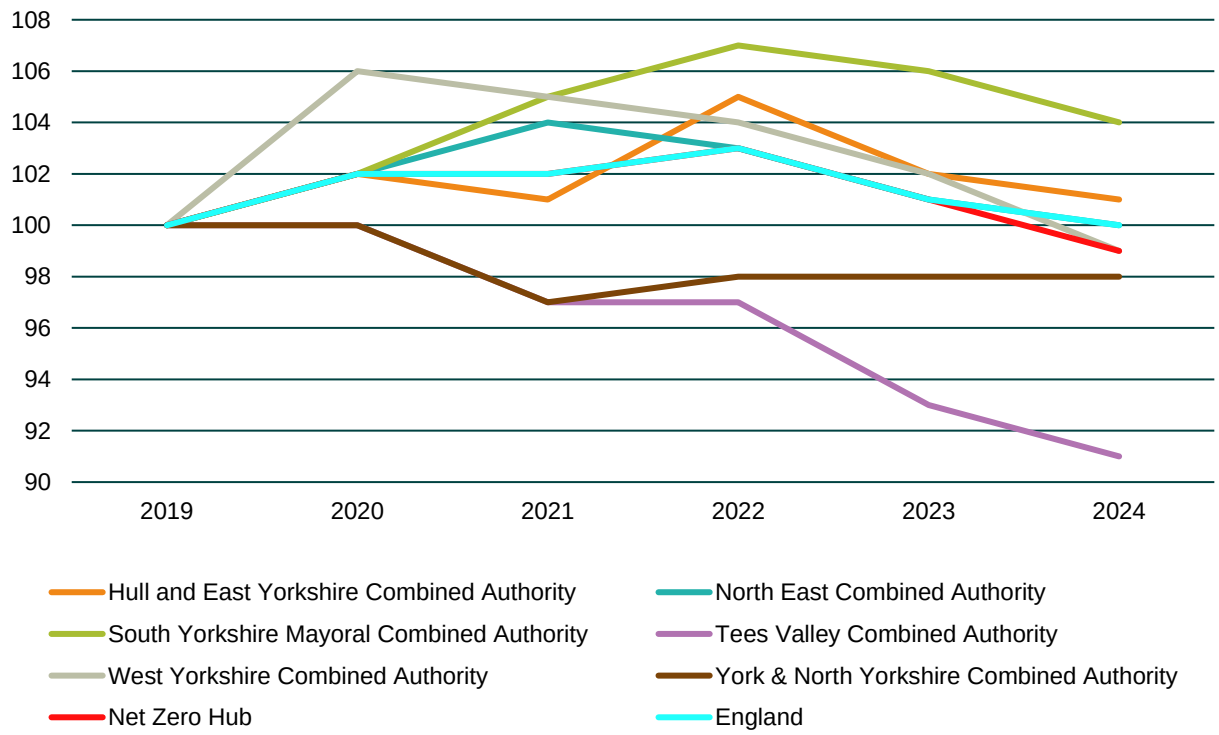
Source: UK Business Count, 2024

Analysis of the Net Zero business base across the six regions highlights variations in key sector trends and regional specialisations:

- Both **YNY** and **HEY's** Net Zero business base is dominated by Agriculture, with LQs suggesting regional specialisation in Fishing and Aquaculture and the Manufacture of Agricultural Equipment.
- **NECA** also has a large agricultural business base, and all three areas share a significant proportion – although second to Agriculture - of businesses in the Plumbing, Heating, Electrical Installation and Insulation and Development & Construction of Buildings and Civil Engineering sectors.
- Both **SYCA** and **WYCA** have a large proportion of businesses operating in the Plumbing, Heating, Electrical Installation, Insulation and Sustainable Transport (both operation and sale, maintenance and repair) sectors.
- **TVCA** shows a larger number of businesses operating in the Engineering and Technical Testing sector, with a corresponding LQ to suggest relative specialisation in the sector when compared to the national picture.

Net Zero business growth rates since 2019 vary across the six regions, with three regions recording growth rates above the Hub average (-1%) and three recording growth rates below this figure. In the Tees Valley there has been a 9% reduction (-495 businesses) in the Net Zero business base since 2019.

Figure 4: Net Zero Businesses Growth, (2019 = 100)



Source: UK Business Count, 2024

Net Zero employment

Number of North East and Yorkshire residents working in Net Zero sectors

As of 2023, there were approximately 3.55m people in employment across the North East and Yorkshire. Of this figure, over 640,000 people (18%) were in employment in Net Zero sectors.

We estimate that approximately 13% of England's total Net Zero workforce is located within the region, which is in line with the earlier estimate of 12% of England's Net Zero business being based in the Hub region.

Net Zero supply chain activities (such as manufacturing of products used for energy generation) account for the most Net Zero related jobs across the region, while improving resource efficiency activities account for the fewest.

The only area of Net Zero activity where the region does not have a relatively high concentration of employment is 'Multi-disciplinary activity' such as technical testing, research and development, and consulting.

Table 3: Regional Net Zero employment by count and LQ

Net Zero Activity	Employment (2023)	Location Quotient
Decarbonising the Energy System	249,725	1.14
Net Zero Supply Chain	350,235	1.09
Preserving and Enhancing	53,710	1.38
Multi-disciplinary	77,820	0.76
Improving Resource Efficiency	25,415	1.23
Total Net Zero Sector*	**640,900**	**1.04**

Source: Business Register and Employment Survey, 2024

Key sectors for regional Net Zero employment

Employment data for specific Net Zero sectors highlights a significant proportion of regional Net Zero employment in the following sectors:

- Operation of Sustainable Transport (77,950).
- Legal and Accountancy Services (68,200).
- Sale, Maintenance and Repair of Sustainable Transport (66,025).
- Manufacture of Metals and Metal Products (60,965).

In addition to these large employment sectors, the region has significant employment specialisations in:

- Manufacture of Energy Equipment specifically Pumps and Compressors (LQ = 2.34)
- Boilers Ovens Furnaces and Burners (LQ = 1.63)
- Manufacture of Glass (LQ = 2.16)
- Fishing and Aquaculture (LQ = 1.91)
- Manufacture of Sustainable Transport (LQ = 1.72)

Changes in regional Net Zero employment

Analysis of Net Zero employment figures between 2018 and 2023 shows an increase in regional Net Zero jobs of 8% (+45,810), higher than the national increase of 4%. Since 2018, the North East and Yorkshire has accounted for nearly one in every four Net Zero jobs created in England.

Nearly all the growth in regional Net Zero employment is due to growth in two sectors:

- Plumbing, Heating, Electrical Installation and Insulation (+66%; +23,400 jobs)
- Development and Construction of Buildings and Civil Engineering Projects (+55%, +20,325 jobs)

The region has also seen 10%+ employment growth in smaller employment sectors such as the Sale, maintenance and repair of vehicles, Waste Management - recycling, and Research & Development.

Net Zero Employment across the North East and Yorkshire

West Yorkshire (>200,000 Net Zero jobs) and the North East (>150,000) account for over 50% of Net Zero employment in the region. The Tees Valley, Hull & East Yorkshire, and York & North Yorkshire are far smaller in terms of Net Zero employment.

Table 4: Net Zero employment in the six Hub regions

Hub region	Employment	Location Quotient	Share of Workforce (%)
Hull and East Yorkshire (HEYCA)	54,155	1.17	20%
North East (NECA)	153,110	1.03	18%
South Yorkshire (SYCA)	105,715	1.03	18%
Tees Valley (TVCA)	50,850	1.07	19%
West Yorkshire (WYCA)	201,645	1.03	18%
York and North Yorkshire (YNYCA)	75,425	1.02	18%
Total	640,900	1.04	18%

Source: Business Register and Employment Survey, 2024

In all six regions, there is a relatively high concentration of Net Zero sector employment, with Hull & East Yorkshire having the highest concentration of Net Zero employment.

At the sector level, employment in both the operation of and sale, maintenance and repair services for the transport sector features heavily across all six regions. Specialisation - demonstrated through high LQs - in Transport Manufacturing is seen in HEY, NECA and TVCA.

The six regions showcase strong specialisation in manufacturing sectors critical to Net Zero. Analysis of LQs shows that:

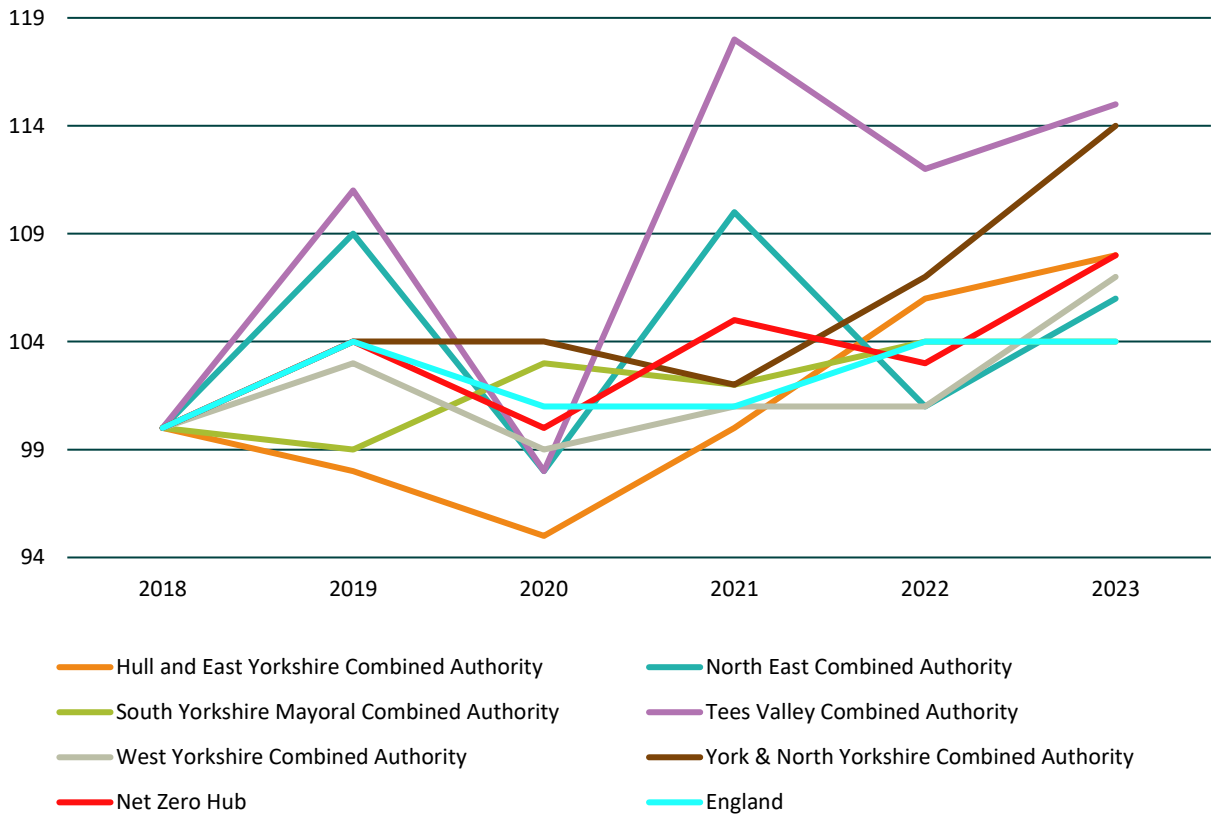
- West Yorkshire has significant employment concentration in the Manufacturing of Specialised Energy Equipment, including pumps, compressors, boilers, ovens, and burners.
- South Yorkshire's economy is distinct for its specialisation in the Manufacturing of Metals and Metal Products and the Manufacturing of Other Components and Parts.
- In York and North Yorkshire, the Manufacturing of Electrical Generation and Distribution Equipment, such as distribution cables and wires, lighting, and household appliances, is a key area of expertise.

Changes in regional Net Zero employment figures

All six regions saw an increase in Net Zero employment between 2018 and 2023.

Tees Valley experienced the highest employment growth rate at 15% (6,655 jobs), South Yorkshire the lowest at 4% (3,805 jobs).

Figure 5: Net Zero Employment Growth, (2019=100)



Source: BRES, 2023

Profile of the Net Zero workforce

In the previous section we identified that 640,000 North East and Yorkshire residents work in sectors of the economy that will make a vital contribution to the Net Zero transition. Not all these employees will have Net Zero relevant technical skills; for example, there will be residents employed within these sectors who are cleaners, cooks, and administrators.

In recognition of the fact that not all Net Zero sector employees work in Net Zero relevant occupations, our analysis has also looked at the numbers of North East and Yorkshire residents who work in a Net Zero relevant occupation.

As of 2021, data showed that 315,000 North East and Yorkshire residents were employed in Net Zero occupations.

Those most common Net Zero occupations were:

- Production Managers and Directors in Manufacturing (34,830 roles)
- Production Managers and Directors in Construction (30,495)
- Construction and Building Trades (20,700)
- Plumbers and Heating and Ventilating Installers and Repairers (20,150)
- Vehicle Technicians, Mechanics and Electricians (19,600)

Educational attainment data for the Net Zero workforce (see Figure 6 on the following page) suggests that around 32% held a Level 4 qualification or above and 11% held other (including apprenticeship, vocational or work-related) qualifications. This compares to all-sectors figures of 42% and 7% respectively. Whilst this suggests the Net Zero workforce have lower levels of level 4 attainment than workers in other parts of the region's economy, they are also more likely to hold alternative qualification types.

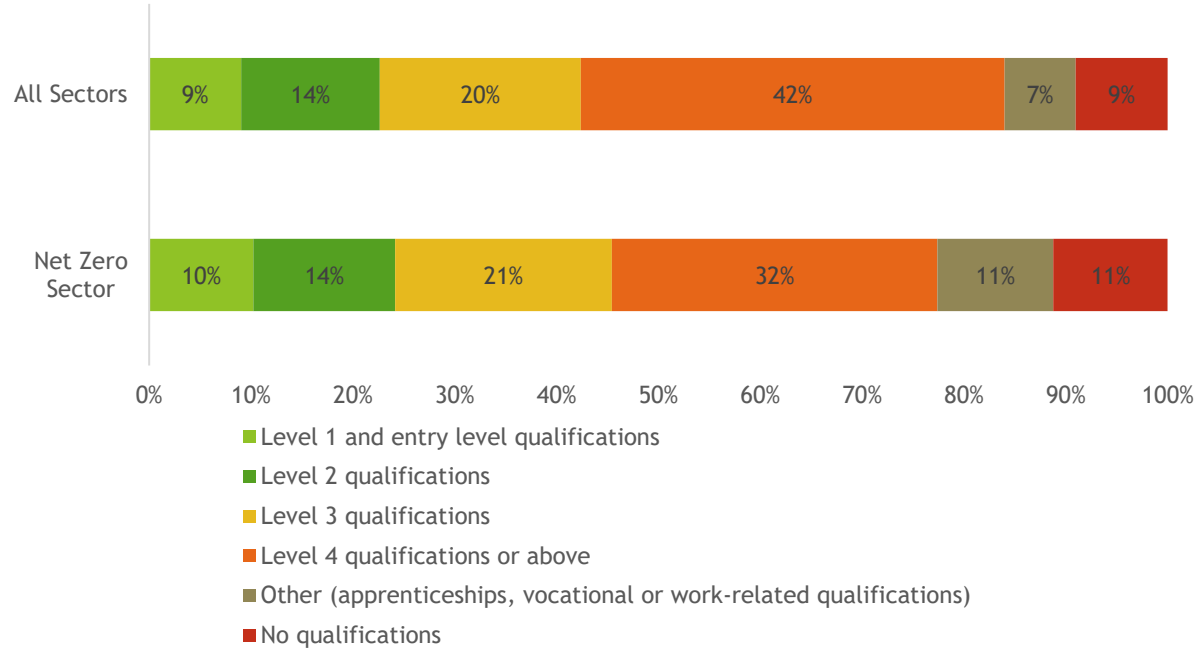
Those Net Zero sectors for which North East and Yorkshire workers were more likely to hold Level 4 qualifications or above were Scientific Research and Development and Architectural and Engineering Activities/Technical Testing.

Those Net Zero sectors where a larger proportion of the regional workforce held other (including apprenticeship, vocational or work-related) qualifications were Construction of Buildings/Civil Engineering/Specialised construction activities and the trade and repair of motor vehicles.

Net Zero worker earnings

For job postings made between July 2024 and July 2025, average advertised earnings were comparatively high, outperforming the all-sector average. Figures 7 and 8 on the following page show how these pay differentials for Net Zero sector roles are seen in both the North East and Yorkshire & Humber. The data suggests a strong market for high-quality, well-compensated Net Zero roles.

Figure 6: Highest level of qualification by Net Zero Sectors, 2021



Source: ONS Census, 2021

Figure 7: Median advertised hourly salary for Net Zero roles, July 2024 - 2025

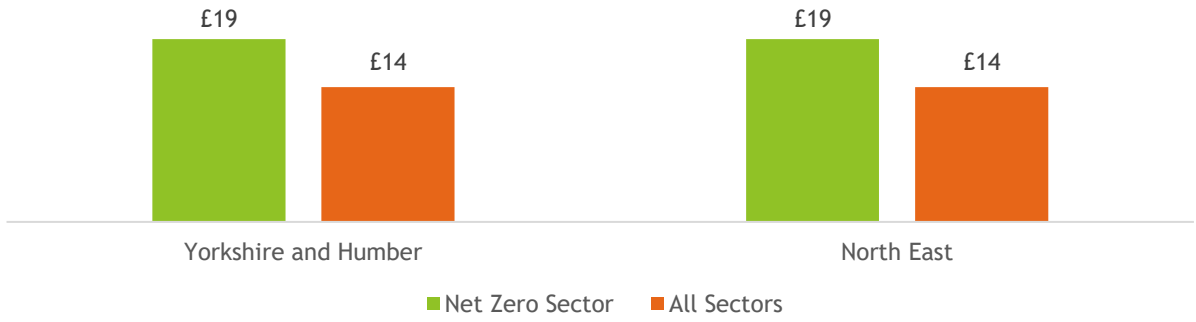
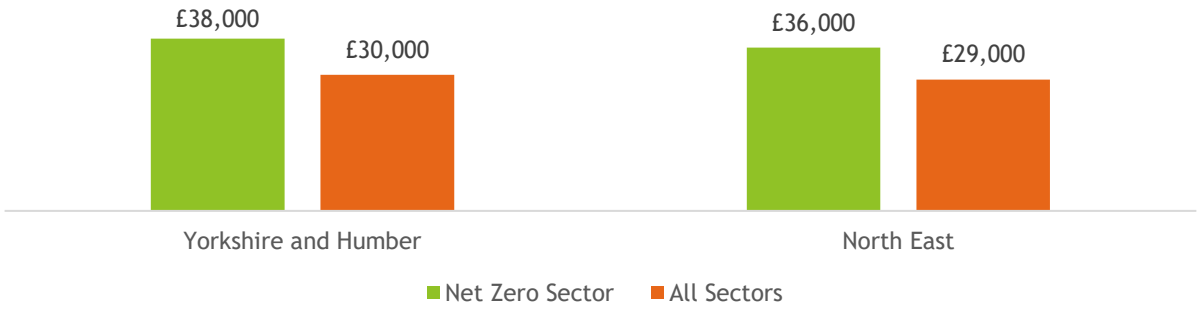


Figure 8: Median advertised annual salary for Net Zero roles, July 2024 - 2025



Source: Lightcast Job Postings, July 2024 – July 2025

Current demand for Net Zero employees

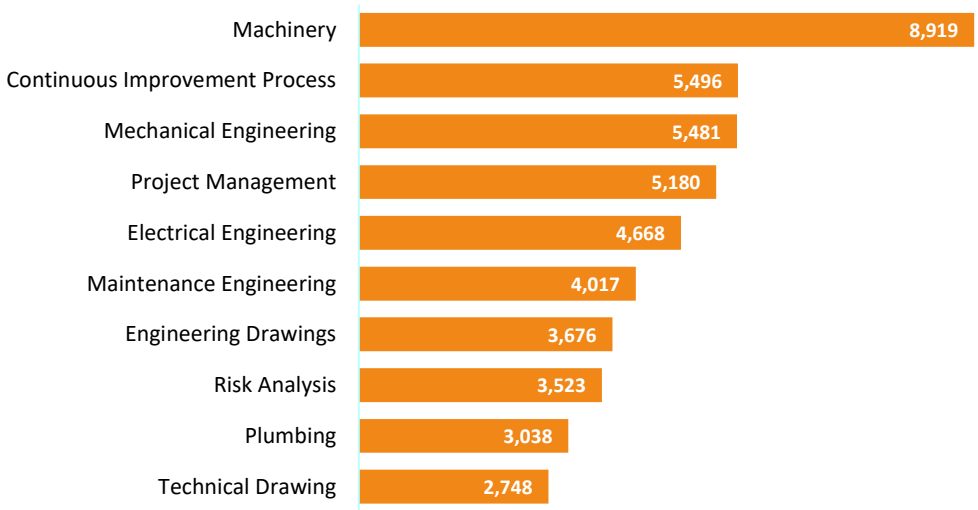
Analysis of Net Zero job postings between July 2024 and July 2025[31] reveals significant demand, with approximately 83,072 roles identified. The distribution of roles highlights strong demand for skilled technical and engineering positions, particularly:

- Engineering Technicians (7,918 roles)
- Plant and Machine Operatives (7,777)
- Vehicle Technicians, Mechanics and Electricians (6,834)
- Mechanical Engineers (6,755)
- Production and Process Engineers (5,591)

The educational requirements for these roles showed a significant degree of flexibility. The majority (63%) of postings did not list a formal educational requirement. Among those that did, there was a balanced need for different qualification levels: 28% for A-level or equivalent, and 23% each for GCSE and bachelor's degree holders.

Regarding specialised skills, the most referenced requirements were for the use of machinery, followed by continuous improvement processes, mechanical engineering and project management. This highlights that proficiency in technical and procedural skills is in high demand in Net Zero related sectors.

Figure 9: Top 10 specialised skill requirements for Net Zero job postings, July 2024 – July 2025



Source: Lightcast data on all Net Zero job postings made in the North East and Yorkshire between July 2024 and July 2025

[31] Lightcast Job Postings, July 2024 – July 2025

Net Zero future workforce requirements

DfE's Labour Market and Skills Projections data for 2025 to 2035 for the North East and Yorkshire suggests a net increase in over 170,000 jobs by 2035.

These projections show a decline in traditional industrial sectors like manufacturing and construction in terms of net change, though replacement demand remains high.

These forecasts do not fully capture the impact the Net Zero transition may have on the types of roles and skills required across sectors.

Although a net decline in employment is projected for Manufacturing and Construction, both sectors are set to undergo fundamental transformations. For example, construction will likely shift from traditional building to extensive retrofitting of existing properties for energy efficiency.

Furthermore, since demand for employment in those sectors is predicted to be driven by replacement over the next 10 years, this highlights a need for proper training for new entrants in those sectors.

Table 5: Forecasted employment change for the North East and Yorkshire, 2025 - 2035

Sector	Net Change	Replacement Demand	Total Requirement
Primary sector and utilities	1,811	33,538	35,349
Manufacturing	-60,841	154,913	94,072
Construction	-682	108,889	108,207
Trade, accomod. and transport	59,005	501,974	560,979
Business and other services	62,033	525,811	587,844
Non-marketed services	108,748	622,156	730,904
All industries	**170,074**	**1,947,282**	**2,117,356**

Source: DfE Labour market and skills projections, 2020 to 2035

In October 2025, the Department of Energy Security and Net Zero published the Clean Energy Jobs Plan[32], which defines the clean energy jobs that are expected to be of highest demand. While the Plan includes roles that directly support the low-carbon energy transition, it is not limited to those working in clean energy sectors and can include roles identified through supply chains. It is, however, highlighted in this plan that clean energy jobs are distinct from the wider "green jobs" term, which includes nature-based roles such as peatland restoration, agriculture and wider roles such as those in manufacturing and development of electric vehicles.

[32] https://assets.publishing.service.gov.uk/media/68f2726728f6872f1663f067/clean-energy-jobs-plan.pdf

In its headline finding, the Clean Energy Jobs Plan forecasts that **between 2023 and 2030 there will be 400,000 new jobs created within clean energy industries.** It forecasts that clean energy employment will double in almost every English region. The Plan identifies priority clean energy occupations that will drive much of this growth.

Table 6: Priority Clean Energy Occupations

Occupational Groups (SOC2020 - 2 Digit)	Occupation (SOC 2020 - 4 digit)	Required increase in jobs supported from 2023 to 2030	Most common highest-level qualification required
SOC 53 (Skilled construction and building trades)	Plumbers, heating and ventilating installers and repairers	8,500 – 10,000	A-level (or equivalent)
	Carpenters and joiners	7,000 – 8,499	A-level (or equivalent)
	Glaziers, window fabricators and fitters	2,500 – 3,999	Qualifications below A-level (or equivalent)
	Floorers and wall tilers	1,000 – 2,499	Qualifications below A-level (or equivalent)
	Roofers, roof tilers and slaters	1,000 – 2,499	Qualifications below A-level (or equivalent)
	Plasterers	1,000 – 2,499	A-level (or equivalent)
	Bricklayers	1,000 – 2,499	A-level (or equivalent)
SOC 53 Sub Total		**22,000 - 32,494**	
SOC 52 (Skilled electrical and electronic trades	Electricians and electrical fitters	7,000 - 8,499	A-level (or equivalent)
	Metal working production and maintenance fitters	4,000 - 5,499	A-level (or equivalent)
	Telecoms and related network installers and repairers	2,500 - 3,999	A-level (or equivalent)

Occupational Groups (SOC2020 - 2 Digit)	Occupation (SOC 2020 - 4 digit)	Required increase in jobs supported from 2023 to 2030	Most common highest-level qualification required
	Electrical and electronic trades n.e.c.	1,000 - 2,499	A-level (or equivalent)
	Welding trades	1,000 - 2,499	A-level (or equivalent)
	Metal machining setters and setter-operators	1,000 - 2,499	A-level (or equivalent)
SOC 52 Sub Total		**16,500 - 25,494**	
SOC 11 (Corporate managers and directors)	Production managers and directors in manufacturing	5,500 – 6,999	Higher education
	Production managers and directors in construction	2,500 – 3,999	Higher education
SOC 11 Sub Total		**8,000 - 10,998**	
SOC 21 (Science, research, engineering and technology professionals)	Engineering professionals n.ec	4,000 – 5,499	Higher education
	Mechanical engineers	2,500 – 3,999	Higher education
	Civil engineers	1,000 – 2,499	Higher education
	Engineering project managers and project engineers	1,000 – 2,499	Higher education
	Production and process engineers	1,000 – 2,499	Higher education
	Electronics engineers	<1,000	Higher education
SOC 21 Sub Total		**10,500 - 17,995**	
SOC 81 (Process, plant	Plastics process operatives	1,000 – 2,499	Qualifications below A-level (or equivalent)

Occupational Groups (SOC2020 - 2 Digit)	Occupation (SOC 2020 - 4 digit)	Required increase in jobs supported from 2023 to 2030	Most common highest-level qualification required
and machine operatives)	Construction operatives n.e.c.	1,000 - 2,499	Qualifications below A-level (or equivalent)
	Routine inspectors and testers	1,000 - 2,499	A-level (or equivalent)
	Metal working machine operatives	1,000 - 2,499	A-level (or equivalent)
	Scaffolders, stagers and riggers	1,000 - 2,499	A-level (or equivalent)
SOC 81 Sub Total		**5,000 - 12,495**	
SOC 24 (Business, media and public service professionals)	Construction project managers and related professionals	1,000 - 2,499	Higher education
	Quantity surveyors	<1,000	Higher education
SOC 24 Sub Total		**2,000 - 3,499**	
SOC 31 (Science, engineering and technology associate professionals)	Engineering technicians	1,000 - 2,499	Higher education
	CAD, drawing and architectural technicians	1,000 - 2,499	Higher education
SOC 31 Subtotal		**2,000 - 4,998**	
Total		**66,000 - 107,973**	

Source: DESNZ Clean Energy Jobs Plan: Creating a new generation of good jobs to deliver energy security (2025)

In summary, the Clean Energy Jobs Plan forecasts that the transition to Net Zero could create up to 100,000 jobs across a few priority occupations, with perhaps half of this demand focused on skilled construction, electrical and electronics trades, and not all these jobs being taken by those with the highest qualifications.

Given the North East and Yorkshire has accounted for 1 in every 4 Net Zero jobs created in England over the last five years, we could assume that 25,000 clean energy jobs could be created in the region by 2030. This reinforces the picture of the transition to Net Zero creating many jobs within the region over the next 5-10 years.

This assumption of 25,000 new clean energy jobs by 2030 is an initial part of the medium-term jobs growth that is expected due to planned projects planned in the region, such as the 70,000 new green jobs in carbon and renewable energy sectors in West Yorkshire by 2050, the 22,800 Net Zero jobs anticipated to arise from the Humber Industrial Cluster Plan by 2040, and the 28,800 jobs expected to be created through the Tees Valley Net Zero Cluster Plan by 2040.

Supply of Net Zero skilled workers

Secondary school students

In 2023/24 there were over 260,000 Key Stage 4 (i.e., GCSE) entries in Net Zero related subjects[33] by students at schools and colleges in the North East and Yorkshire. At A-Level, there were 43,231 entries in Net Zero related subjects[34] for the same year, of which 31% resulted in an achievement of an A or A*.

DfE Destination Measures data showed that 154,568 pupils completed 16 – 18 study across the region in 2022/23. Of these pupils, 54,882 progressed to Higher Education, 13,212 into Apprenticeships and 10,132 on to Further Education.

Further Education students

[33] This includes enrolments in Mathematics, Combined Science, Geography, Biology, Physics, Chemistry, Computer Science, Design & Technology, Engineering and Other Sciences. Where a student has entered more than 1 'Net Zero' related subject, each subject counts as 1 entry.

[34] This include entries and achievements in Maths, Biology, Geography, Chemistry, Physics, Further Maths, Science (other) and Accounting and Finance

Table 7 summarises 2024/25 Apprenticeship and Further Education achievements across the six regions that comprise the Hub. It and highlights strong regional engagement with Engineering and Technology and Construction and Planning courses.

Table 7: North East and Yorkshire Further Education and Apprenticeship Achievements in Net Zero Subjects, 2024/25

Qualification Level	Subject	Subject (Detailed)	Achievements
Further Education and Training	Agriculture, Horticulture and Animal Care	Environmental Conservation	559
		Horticulture and Forestry	200
		Agriculture	50
	Construction, Planning and the Built Environment	Building and Construction	8,364
		Urban, Rural and Regional Planning	3
		Architecture	-
	Digital Technology	Digital technology (users)	1,798
		Digital technology (practitioners)	1,535
		Not Applicable/ Not Known	13
		Digital Technology	-
	Engineering and Manufacturing Technologies	Engineering	5,830
		Transportation Operations and Maintenance	3,563
		Manufacturing Technologies	2,474
		Not Applicable/ Not Known	73
	Science and Mathematics	Mathematics and Statistics	169
		Science	13

Apprenticeships	Agriculture, Horticulture and Animal Care	Agriculture	127
		Horticulture and Forestry	75
		Environmental Conservation	19
	Construction, Planning and the Built Environment	Building and Construction	1,877
		Architecture	21
		Urban, Rural and Regional Planning	7
	Digital Technology	Digital technology (practitioners)	1,280
		Digital technology (users)	67
	Engineering and Manufacturing Technologies	Engineering	1,199
		Transportation Operations and Maintenance	1,095
		Manufacturing Technologies	460
	Science and Mathematics	Science	47
Total Net Zero FE Achievements			**24,644**
Total Net Zero Apprenticeship Achievements			**6,274**

Source: DfE Further Education and Skills, 2025; DfE Apprenticeships Data, 2025

Higher Education

The region's Higher Education (**HE**) sector plays a pivotal role in the local Net Zero talent pipeline.

Data from 20 HE Institutions in the region was analysed to learn more about the numbers of students at HE Institutions within the region who are studying Net Zero relevant subjects. The data show the University of Sheffield noted as a leading provider for

graduations in Net Zero related subjects (9,480 enrolments and 3,400 achievements in Net Zero related subjects in 2024[35]).

Overall higher education enrolments and achievements for the region in 2024 are summarised in Table 8 and highlight regional strengths in Engineering and Technology and Architecture, Building and Planning subjects.

Table 8: Higher Education Enrolments and Achievements in Net Zero Subjects, 2024

Subject	Undergraduate	Postgraduate	Total
Engineering and technology	4,575	5,625	10,200
Physical sciences	2,105	1,000	3,105
Architecture, building and planning	1,545	1,985	3,530
Mathematical sciences	1,110	700	1,810
Geography, earth and environmental studies (natural sciences)	865	680	1,545
Agriculture, food and related studies	205	445	650
Total	**10,405**	**10,435**	**20,840**

Source: HESA, 2024

Net Zero workforce training activity

Data from the Annual Population Survey supports our understanding of the amount of workplace training taking place across the North East and Yorkshire.

Across all sectors, 16% of employees reported having received workplace training in the past 4 weeks (in March 2025), for the production sector this drops to 8% but jumps to 17% for managerial and professional occupations.

The 2022 Employer Skills Survey suggested that there were around 267,700 employees (around 42% of total employees captured in the survey) who received training in the 12 months before the survey was conducted in the following sectors across the North East and Yorkshire: Construction, Transport and Storage, Manufacturing, Financial Services and the Primary & Utilities Sector.

Notably, there were a significant number of trainees in the Manufacturing (135,400 trainees; 39% of employees) and Construction (53,900 trainees; 46% of employees) sectors.

[35] This captures HE enrolments and achievements in Engineering and Technology, Physical Sciences, Architecture, Building and Planning, Mathematical Sciences, Geography, Earth and Environmental Studies (natural sciences) and Agriculture, Food and Related Studies

4. THE PROVISION OF NET ZERO CAREERS ADVICE

Summary

- Most schools, colleges and independent training providers across the region are confident in their ability to give students the information, advice and guidance they need to secure a job within a Net Zero sector; this confidence is reflected in school and college Gatsby Benchmark scores which are above national averages, and colleges and training providers giving positive responses when asked about the effectiveness of the Net Zero CEIAG.
- Most colleges and training providers offer careers advice to learners on Net Zero-related courses, but in most cases, this is embedded within their mainstream CEIAG offer rather than tailored specifically to Net Zero pathways.
- Providers most frequently use labour market information and employer talks to deliver Net Zero careers advice.
- A large minority of secondary schools/sixth forms and most colleges and ITPs appear to struggle to offer Net Zero-focused work placements or sustained employer experiences to students.
- Consultees question the quality and consistency of Net Zero CEIAG provision across the region, describing it as fragmented, short-term and often reliant on individual champions rather than systematic regional coordination.
- Staff capability to advise young people on Net Zero career opportunities remains a key constraint: while most providers express some confidence in advising on Net Zero careers, only a small minority feel very confident, particularly where newer technologies and sectors are concerned.
- Funding limitations, shortages of qualified tutors and careers advisers, and difficulties accessing up-to-date Net Zero labour market intelligence are the most common barriers to delivering high-quality CEIAG.
- Employer engagement in course design and delivery is strongest in construction and retrofit disciplines and weakest in emerging or cross-sector areas such as the circular economy and land-based industries.

The previous chapter identified the size and nature of the Net Zero employment opportunities that could be created across the North East and Yorkshire. This chapter considers the likelihood of Net Zero Hub residents and communities being able to take advantage of these opportunities by accessing Net Zero careers advice.

What is best practice in terms of sector focused careers advice?

Careers and Enterprise Company guidance

In England, there is a statutory requirement, set by the DfE, for schools and colleges to provide impartial careers guidance to their students from Year 7 onwards. Schools and colleges must design their careers programmes and activities in line with the Gatsby Benchmarks, an eight-point framework for providing high-quality careers guidance.

The latest version of the Benchmarks (adopted in May 2025) emphasises the importance of including sector-specific employer engagement and labour-market learning within careers programmes (Benchmarks 5 and 6).

The Careers and Enterprise Company **(CEC)** is the national body for careers education in England. The CEC supports schools and colleges to achieve the Gatsby Benchmarks. This support is delivered by Careers Hubs, which bring together schools, colleges, training providers and employers to share and learn best practice in relation to CEIAG.

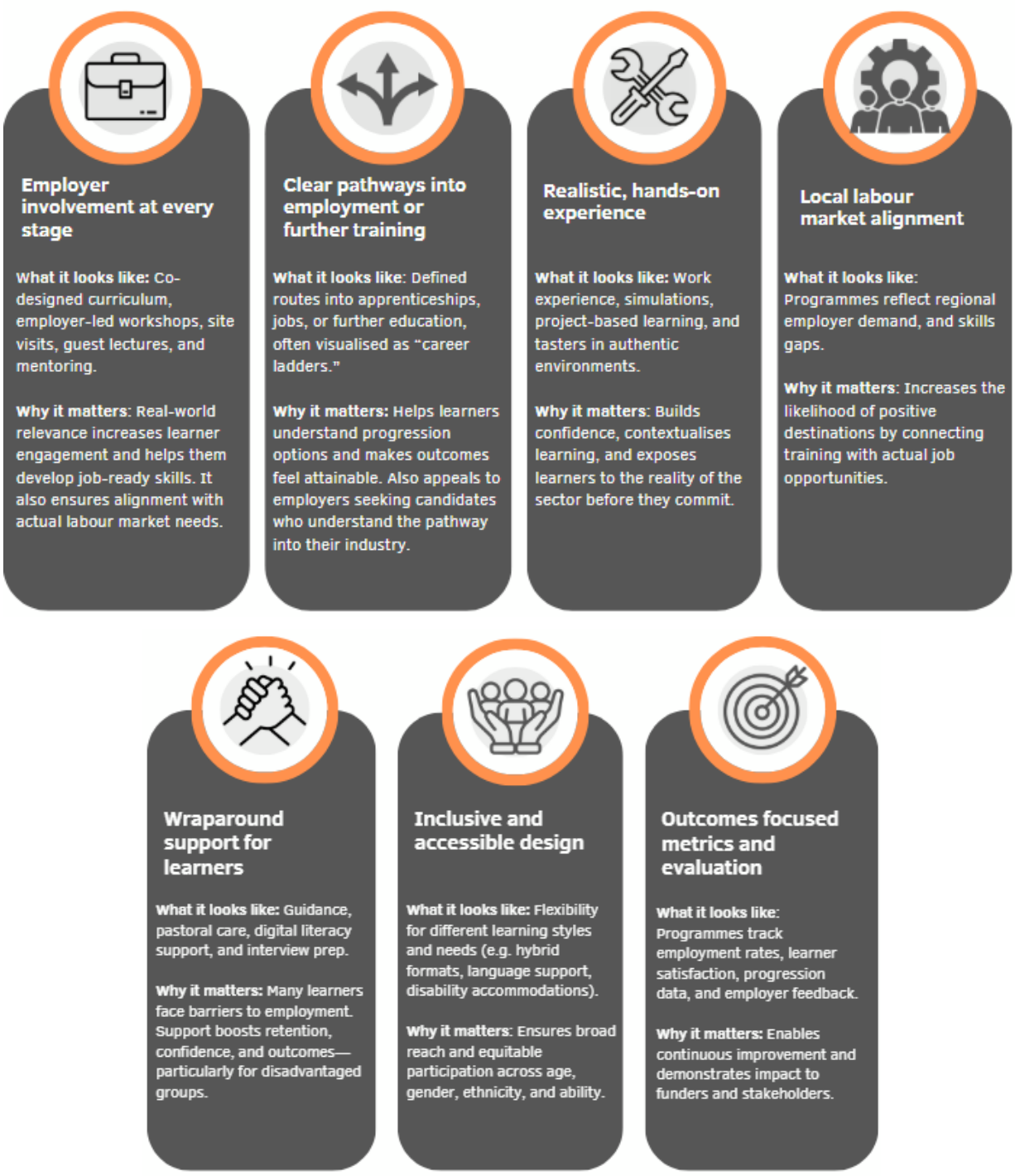
The CEC identifies sector-focused careers programmes as being central to building effective talent pipelines. Sector-specific careers provision should *"connect careers provision in schools and colleges to the needs of local economies"*.[36] This ensures education aligns directly with regional workforce demands.

CEC's Equalex framework[37] and broader careers strategy embed meaningful employer encounters and work experience linked to sectors — including tailored virtual experiences, job shadows, projects, and placements. This sector-focused exposure helps students build practical skills and clarity about pathways in specific fields.

A good sector-focused careers programme shares a set of core characteristics that consistently drive engagement, relevance, and long-term impact for learners and employers alike. Figure 10 summarises these core components:

[36] CEC on sector-focused careers activity
[37] Equalex | CEC Resource Directory

Figure 10: Key elements of sector-focused careers activity



The importance of employer involvement

The case for sector-focused careers activity is further supported by the DfE's *Local Skills Improvement Plans* (**LSIPs**). These are intended to be employer-led, evidenced-based plans for post-16 technical education and training provision informed by the current and future skills needs of employers and the local economy. LSIPs are usually focused on a region's key sectors in terms of employment.

LSIPs strengthen the case for sector-focused careers activity by:

- Giving training providers and advisers data with which to identify sector strengths and opportunities within the local economy and labour market.
- Helping to ensure that curriculum content and learning pathways align to the skills employers need, making it more likely there will be alignment between the aims of careers activities and the skills needs of employers.
- Creating stronger, place-based links between local employers and education and training providers which sector-focused careers activity can exploit.

The need to cater for all ages

The DfE's 2017 National Careers Strategy, aims for *"everyone, whatever their age, ability or background, [to] be able to build a rewarding career."* The Strategy says that all adults should be able to access free face-to-face careers advice, with more bespoke support for those who need it most. It notes that good careers provision should help people understand the full range of opportunities, the skills they have, and how those link to jobs. Whilst the document does not single out specific sectors as priorities for all-ages careers advice and guidance, it does state that careers activities should be informed by labour market intelligence drawn from local strategic documents (e.g., LSIPs).

Things to avoid when delivering sector-focused careers activities

If sector-focused careers activities are to be effective in giving people a good understanding of the opportunities within a sector and the skills and qualifications needed to access those opportunities, projects needs to avoid:

- **Running one-off sector events without follow-up** in lessons or time for participants to reflect on what they learnt — sector focused activity is most effective when integrated into the curriculum and repeated regularly.[38]
- **Using out-of-date or generic LMI** that ignores local priorities as this can give participants an incorrect understanding of how attractive or not working in the sector is, and how easy it would be for them to secure a job/career within the sector.
- **Focusing on few routes into the sector,** i.e., good provision will consider both academic and vocational study routes, and challenge preconceptions around who works in the sector, e.g., gender biases.
- **Failing to engage parents/carers and others who can influence a person's** study or career choice.

[38] The Impact Of Employer Engagement With Schools - Education and Employers

Best practice case study: National Grid – Grid for Good

Region: National

The National Grid is committed to helping people from low income communities to develop their skills to help them to secure employment. Their Grid for Good project is central to this commitment.

The programme includes twelve weeks of career mentoring, two weeks' paid work experience, access to apprenticeships and internships at National Grid, work-readiness training, networking, and industry taster sessions. This range of delivery activities and styles means that the programme avoids the common mistake of treating careers activity as a one off event with no opportunity for students to reflect on and apply what they have heard and learnt.

In its first year of activity (2020/21) the programme engaged over 3,000 young people, connecting them with 1,000 volunteers from National Grid's workforce. 120 of these young people undertook work-experience with National Grid, nearly 100 applied for early-career/graduate/apprentice roles and seven secured jobs with the company.

Grid for Good projects and opportunities are linked with major infrastructure projects (for example, the "Great Grid Upgrade") where Grid for Good participation includes supply-chain skills, training, volunteering, and community engagement.

The work experience element of Grid for Good sits alongside work by National Grid to tackle fuel poverty via an Energy Affordability Fund. The project demonstrates how large employers' work to deliver social impacts can dovetail with their efforts to train and reskill local workforces with the skills that Net Zero employers will need in the future.

The involvement of a very large employer in the scheme means that multi-year funding of Grid for Good is possible. The certainty offered by multiyear funding means that the skills and knowledge gained from delivering the careers activity is retained rather than being lost once a discrete project ends, and can be leveraged by future activity.

What does the provision of Net Zero careers advice within the six Hub regions look like?

This section combines data, survey results and feedback from consultees to assess the current provision of Net Zero CEIAG across the Net Zero Hub.

Secondary school and FE College careers advice

As noted earlier, all schools and colleges are required to assess the careers provision against the Gatsby Benchmarks. Assessments are done termly, with schools and colleges, with input from Careers Hubs, assessing the extent to which their careers activities demonstrate various 'characteristics' spread across the eight Benchmarks. If a school or college demonstrates all the characteristics under a Benchmark, they are said to be 'fully achieving' that Benchmark.

The assessment is of the institution's entire careers provision, not just sector-specific parts of the provision; thus, Benchmark results for the six regions within the Net Zero Hub provide us with a starting point from which to assess the profile of Net Zero CEIAG but do not, on their own, provide the whole picture.

The eight Gatsby Benchmarks are:

- **Benchmark 1:** A stable, well-defined careers programme
- **Benchmark 2**: Informed by labour market information
- **Benchmark 3:** Address the needs of each pupil
- **Benchmark 4:** Link curriculum learning to careers, helping students understand the real-world application of their subjects and skills
- **Benchmark 5:** Include encounters with employers and employees
- **Benchmark 6:** Offer experiences of workplaces
- **Benchmark 7:** Provide encounters with further and higher education
- **Benchmark 8:** Include personal, face-to-face guidance for every student

Comparing the latest Benchmark data for the North East and Yorkshire regions to national data, we see that for nearly all Benchmarks, careers provision within each region is equal to or above the standards evidenced nationally.

For Benchmarks 4, 5 and 6 – the three Benchmarks which are mostly closed linked to the idea of sector-based careers activity and employer engagement in careers activities – the conclusion that North East and Yorkshire careers provision is equal to or above national standards remains; however, there remains scope for improvement with, for instance, roughly one third of North East and Yorkshire schools and colleges not fully achieving Benchmark 6 in relation to offering students experiences of workplaces.

College and training provider Net Zero CEIAG activities

An online survey was sent to Further Education Colleges and independent training providers in the North East and Yorkshire. The survey asked whether the college or ITP offered Net Zero related training; if they do, the survey then asked them about the CEIAG they offer to students on these Net Zero related courses. 23 colleges and ITPs completed a survey.

80% of colleges and providers surveyed say they offer CEIAG to students on Net Zero courses but only two said this CEIAG was specific/tailored to Net Zero students. Most colleges and training providers deliver Net Zero CEIAG advice via their 'mainstream' careers offer.

CEIAG can be delivered in a variety of ways, such as: one-to-one guidance from a careers expert who can help a student to identify how they can secure employment within a sector; using labour market information to inform students about the types of jobs available within a sector, the skills needed to perform those jobs and typical salaries; inviting employers into school/college to talk about what their company does and the roles they offer; and work experience or longer placements that give students first-hand experience of working in a sector.

Survey respondents said the most common methods for providing Net Zero students with CEIAG are the use of labour market information (75% of training providers do this) and the holding of employer talks (70%). Only 1 in 4 providers said they offer Net Zero work experience/placements.

Table 9: Which types of Net Zero careers support do you offer to your learners?

Net Zero CEIAG delivery method	Providers
Use of Labour Market Information (LMI)	15
Employer talks	14
Group sessions	10
One-to-one guidance	8
Work experience or placements	5

Source: Training provider online survey, n=20.
Note: providers could tick more than one delivery method.

FE Colleges are much more likely than ITPs to offer one-to-one guidance to their Net Zero students, possibly reflecting greater staffing capacity or careers infrastructure. Both provider types actively engage in employer talks, group sessions, and use of LMI.

Feedback on the breadth and quality of Net Zero CEIAG

Consultees agreed with the picture Table 9 paints of Net Zero CEIAG being varied in its breadth of delivery methods. But consultees felt this showed the weakness in the quality of some Net Zero CEIAG within the region.

Careers provision was described as disconnected, short-term, and reliant on individual champions within schools, colleges or local organisations. Consultees felt that one-off events (e.g., careers fairs) dominate provision instead of sustained, sequenced careers experiences for students.

Teachers' and tutors' ability to offer Net Zero careers advice

70% of survey respondents said they are confident in their staff's ability to advise learners about Net Zero career pathways but only 15% said they were very confident. Most FECs and ITPs surveyed said they were fairly confident but accepted there was scope for improvement, and 30% said they were not confident in their staff's ability to advise learners about Net Zero career pathways.

By provider type, respondents from ITPs were more likely than FEC respondents to say they are not confident in this regard (38% vs. 25%) but also more likely to say they are very confident (25% vs. 8%)

By region, providers who deliver in West Yorkshire most likely to lack confidence in staff skills to advise students on Net Zero pathways; providers in YNY and HEY are most confident.

By learner profile, providers who work with unemployed adults are least confident about their staff's ability to advise learners on Net Zero career pathways, whilst providers who work with Net Zero career changers and apprentices are most confident.

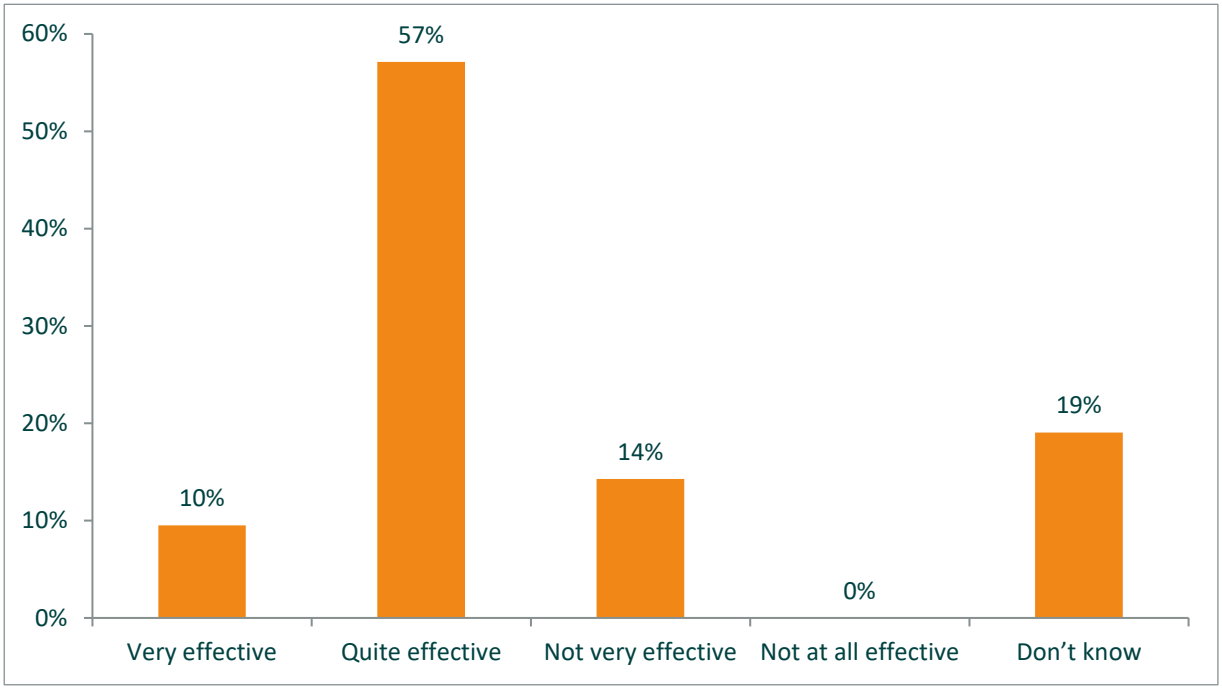
The effectiveness of Net Zero CEIAG

Most FE Colleges and ITPs surveyed for this research rate their Net Zero CEIAG offer as effective in preparing students for working in Net Zero jobs. Figure 11 on the following page shows this, and how no FE Colleges or ITPs consider their CEIAG offer to be 'not effective at all' and only three providers choose 'not very effective'.

When asked why they feel their institution's Net Zero CEIAG provision is effective, respondents highlight:

- The practical nature of the training they deliver.
- The interview support they offer to students.
- The skills of the careers team.
- High levels of employer engagement.
- Exit/post-study support for learners.
- The broad range of teaching styles used

Figure 11: Providers' views on the effectiveness of their Net Zero CEIAG in preparing students for work



Source: Training provider online survey, n=20.

Consultees agree that where schools, colleges and ITPs can offer practical learning and advice in relation to working in the Net Zero sector, this is a strength. Consultees feel that hands-on learning and problem-solving activities that link to local Net Zero industries (e.g., offshore wind, retrofit, or clean energy hubs) are more effective in terms of engaging students and preparing them for working in the sector than classroom-only approaches.

Providers' confidence in the effectiveness of their Net Zero CEIAG is not always backed by data on student outcomes collected by the provider. Just over 40% of providers collect feedback from employers on learner preparedness for work, and most do this informally rather than in a set way, at a set point in the term or a student's work experience/placement.

In contrast to the providers' optimism, consultees feel that Net Zero curriculum content often lags or is misaligned to the skills that the Net Zero sector needs now. An example was given of a Yorkshire FE College offering plumbing qualifications and targeting these at people who wished to become heat-pump engineers, when the companies who install heat-pumps require electrical installation qualifications.

Best practice case study: Energy Central Campus

Region: North East

The Energy Central Campus (**ECC**) is a partnership between the Port of Blyth, Northumberland County Council, and ORE Catapult, designed to support the North East's clean energy future. As a key part of the £90 million "Energising Blyth" regeneration programme, ECC supports the region's low-carbon transition by developing a talent pipeline ready for work in sectors like offshore wind, renewables, and advanced manufacturing. With industry voices such as Equinor, RWE, and JDR Cable Systems on its board, ECC ensures training and education stay aligned with the rapidly evolving needs of Net Zero employers.

ECC delivers vocational education, technical training, and STEM engagement for both young people and adults. Learners benefit from facilities including a clean energy education centre, lecture theatres, and hands-on training infrastructure. Courses like the Level 2 Diploma in Advanced Manufacturing Engineering are co-designed with employers to make learning relevant and job-focused. Alongside technical skills, ECC emphasises work-ready behaviours such as punctuality, professionalism, and adaptability to ensure graduates are not just qualified but employable from day one.

"We work very heavily on behaviours and those kind of work-ready skills … so people aren't fresh out of school and don't know what the world of work is going to entail."

The impact of ECC's work is visible in positive learner outcomes and strong employer feedback. Apprentices from ECC have been praised for outperforming other candidates, not only on technical ability but on maturity and mindset. Through school STEM programmes and direct employer engagement, ECC also sparks early interest in Net Zero careers. ECC supports teachers too, offering teacher encounters that expose staff to vocational routes. This joined-up approach helps ensure more young people are informed, inspired, and equipped to step into the clean energy jobs of the future.

Engagement of Net Zero employers in the design and delivery of training

Most of the surveyed FE Colleges and ITPs say that Net Zero employers have some level of input into the design and delivery of their training, but only two survey respondents describe this employer engagement as very high with direct involvement in course co-design or work placements.

By provider type, FE Colleges are slightly more likely to report higher levels of employer engagement than ITPs.

By Net Zero subject, employer engagement is higher in subject areas like construction and retrofit and lower in areas like the circular economy, and land based studies.

Providers who report higher levels of employer involvement are more likely to believe that their training effectively prepares learners for Net Zero jobs.

- Providers who rated their provision as "Quite effective" mostly reported moderate to high employer involvement.
- All providers with "Very high" employer involvement rated their effectiveness as "Quite effective" — suggesting a positive relationship.
- Those who rated their provision as "Not very effective" mostly reported low or moderate employer involvement.

Consultees noted that employer engagement in Net Zero CEIAG is often linked to the size of the company, with larger Net Zero sector companies having the capacity to engage with schools, colleges and ITPs whilst SMEs struggle to participate due to financial and administrative pressures.

Several consultees noted that employers (of all sizes) are keen to support Net Zero CEIAG activities but many need help structuring their engagement with educational institutions. Some regions are felt to have stronger employer engagement in Net Zero CEIAG — Nordic and Energy Central Campus were cited by consultees as demonstrating that employer-led design produces better students work readiness and outcomes — but such approaches are not widespread.

Best practice case study: Nordic

Region: Tees Valley

Nordic is a specialist provider of welding, fabrication, and testing services based in Stockton-upon-Tees. The company has a strong background in training and certification. Since launching its engineering and training arm in 2014, Nordic has issued over 5,000 welding certificates and placed more than 450 people into employment. While their focus isn't exclusively on Net Zero jobs, the skills they teach—particularly in welding and fabrication—are essential across Net Zero industries, including offshore wind, hydrogen, nuclear, and carbon capture. As these sectors expand, Nordic's training pipeline helps fill skills gaps with job-ready individuals prepared for the technical demands of the low-carbon economy.

Nordic recruits people onto its training courses from local Jobcentres. A rigorous filtering process is needed to ensure those who start have the highest chance of completing the training and progressing into employment. For one recent cohort, out of 203 interviews, 48 people were accepted onto the course. Learners often come from varied backgrounds bringing transferable skills that, with targeted support, turn them into valuable contributors in industrial settings. Nordic feel it is easier for adults with transferable skills from other industries to move into Net Zero than it is for young people entering the world of work for the first time.

Nordic's training programmes are designed with employer needs at the core. Learners undergo up to 24 weeks of hands-on instruction in cutting, welding, grinding, fabrication, and maintenance. Before enrolling, candidates attend an awareness session to assess their readiness for the physical and environmental demands of the job. Once selected, trainees receive practical, high-impact instruction that is shaped through direct feedback from employers. Nordic also runs Skills Bootcamps and Level 3 courses in TIG welding, fabrication, and facilitate "Train the Trainer" programs. While technical skills are critical, Nordic places equal importance on reliability, attitude, and maturity—traits that underpin long-term career success.

The results of Nordic's approach are encouraging. In one recent cohort, 37 out of 48 participants secured employment within Net Zero relevant roles within 16 weeks—many of them entering the workforce with starting wages between £13 and £15 per hour. With time, this can rise to £20+ for advanced roles. Beyond job placements, Nordic equips individuals with confidence, and discipline, and believe in their ability to train individuals for sustained employment in the sector.

Best practice case study: Oh Yes! Net Zero

Region: Hull & East Yorkshire

Oh Yes! Net Zero is a business-led partnership working to accelerate decarbonisation and skills development across the Humber. Founded in 2021 by Reckitt, in collaboration with Hull City Council, the University of Hull, and Future Humber, the initiative brings together more than 170 organisations – the majority small and medium-sized enterprises (SMEs). The partnership was established to help local businesses translate the city's 2030 carbon-neutral strategy into practical action. Oh Yes! Net Zero is deliberately collaborative and rooted in peer learning: businesses, public bodies and educators share their experiences, tools and challenges to help start – or strengthen – their journey to Net Zero.

At the heart of the programme are the Carbon Clinics, free half-day workshops designed to demystify carbon measurement for SMEs. Jointly funded by Hull City Council and Reckitt, the clinics take participants step by step through assessing their energy use, calculating emissions, and drafting a simple Carbon Action Plan.

Oh Yes! Net Zero's work extends into schools through the Climate Changemakers initiative. This programme supports pupils to form environmental action groups, develop sustainability projects — from the creation of school gardens to waste-reduction campaigns — and even take their ideas to Parliament. Delivered in collaboration with the Yorkshire Children's University and supported by local employers, the scheme gives young people early exposure to the green economy, builds soft skills such as teamwork and problem-solving, and connects education with the region's Net Zero agenda.

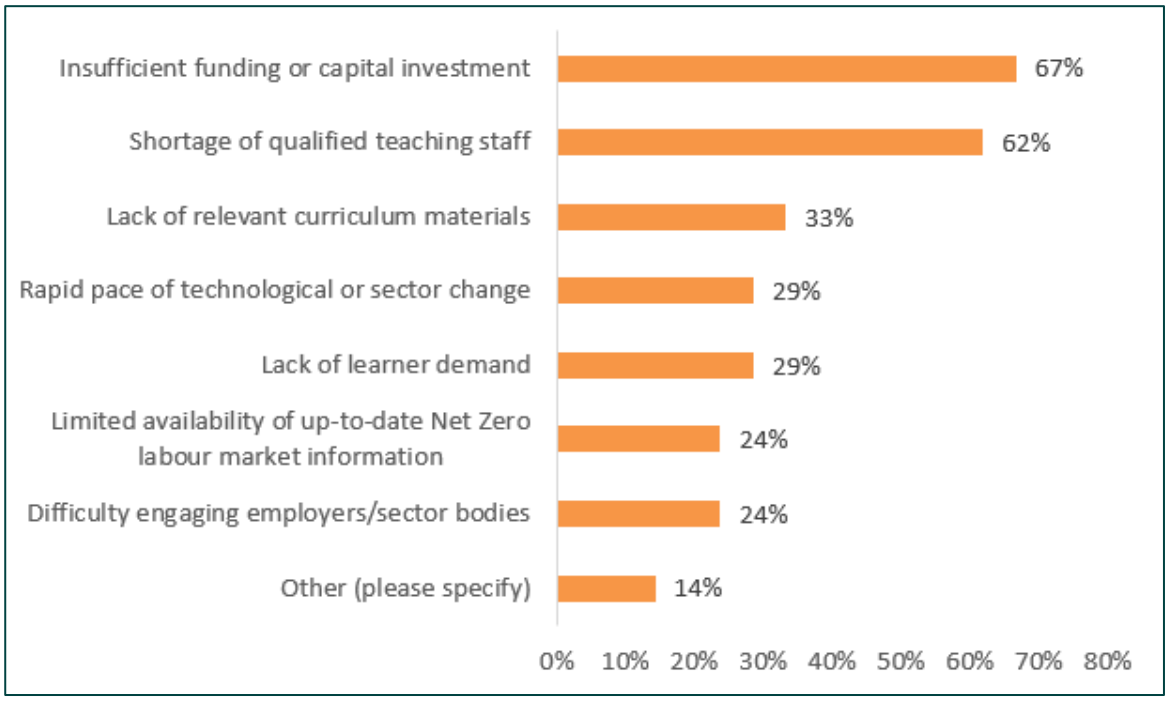
These combined activities have had a tangible impact on both business practice and workforce capability. Participating firms report lower energy costs, improved awareness of resource use, and greater confidence among staff in managing sustainability issues. The project has also forged links between employers, educators and training providers – creating pathways from school engagement to workplace action.

Challenges faced by providers in delivering Net Zero careers advice

Most survey respondents highlight a lack of funding/capital investment and a shortage of qualified staff as challenges to them delivering Net Zero CEIAG for students. Colleges and independent training providers need funding to pay for expert staff, and to purchase the machinery/equipment necessary to offer students hands on experiences and up to date knowledge of working in a sector that is central to good quality CEIAG.

Funding and staffing CEIAG challenges are highlighted by a significantly higher percentage of FECs and ITPs than issues such as a lack of relevant curriculum materials, low learner demand for Net Zero courses, or difficulties in engaging Net Zero employers.

Figure 12: Challenges faced by providers in delivering Net Zero careers advice



Source: Training provider online survey, n=23

By provider type, shortages of suitably qualified staff to deliver Net Zero CEIAG is a shared concern for FECs and ITPs. This challenge was also identified by consultees, who feel that knowledge gaps persist among advisors and teachers in relation to what the Net Zero sector is and the opportunities it will create. Consultees highlighted the shortage of qualified tutors and assessors for newer green technologies. Consultees said that many teachers and tutors lack awareness of technical and vocational routes linked to Net Zero sectors.

Insufficient funding to deliver Net Zero training and advice is even more of a challenge for ITPs than for FECs, as the following quote from a survey respondent illustrates:

Whilst some funding has been made available by [combined authority] over the last couple of years this has been very short term. Larger, established Colleges have the resources to access this but small organisations like ours struggle due to the lack of ongoing infrastructure/staffing - gaps between funding mean we have to lose experienced staff. Our [Net Zero] programmes have been highly praised as innovative and exciting but without some ongoing core funding it is very difficult stay in existence from one funding opportunity to the next."

3rd sector training provider

By provider type, responses from FECs were more likely to report curriculum-related challenges such as:

- A lack of curriculum materials.
- Rapid changes within the Net Zero sector making it hard for them to ensure their careers advice was relevant.
- A lack of Net Zero labour market information.

By region:

- Funding and employer engagement are the most widespread challenges, and are particularly acute in Hull & East Yorkshire, the North East, and York & North Yorkshire.
- A lack of curriculum materials is a concern for North East training providers.
- Limited learner demand for Net Zero training was identified as a challenge by most training providers who deliver training in South Yorkshire.

By subject area, technical or infrastructure-heavy Net Zero subject areas (e.g., construction, renewables, logistics) are felt to face the broadest and most frequent challenges – such as a lack of funding, a lack of curriculum materials, and difficulties engaging employers.

Linked to these findings on the challenges of delivering Net Zero CEIAG, gaps in current CEIAG provision are most reported by providers who deliver training in subjects like:

- Construction
- Wind and solar energy
- Transport/logistics

Fewer than one in five FECs and ITPs feel there are gaps in Net Zero CEIAG provision for specific learner age groups (e.g., 16-19, adult learners etc.). Consultees, however, do feel that certain groups of learners – they cited females, disabled learners, and SEND students - are often underrepresented or overlooked in green skills initiatives. Consultees also noted how the rurality of parts of the North East and Yorkshire, limited transport to/from training and employment, and cost of training can limit participation.

Feedback on learner interest in working within the Net Zero sector

The survey did not generate much insight from education providers on the level of learner interest in working within the Net Zero sector, beyond the minority of providers who identified the lack of learner demand as a challenge to them delivering Net Zero careers advice and training. However, this topic was discussed in more depth with consultees. Consultees feedback on this topic can be summarised as:

- There is widespread confusion amongst all groups about what “Net Zero” means in practical terms. Many stakeholders, including employers, educators, and young people, don’t connect the term to specific jobs. Terminology matters — “green jobs”, “clean energy” or “sustainability” resonate more than “Net Zero.”
- Awareness of what is meant by a Net Zero job is higher among adults already in work (often those who are retraining), while young people’s awareness remains surface-level or highly variable depending on the enthusiasm of individual teachers or careers leads.
- Local political debates around the desirability or achievability of Net Zero targets have introduced scepticism, particularly among SMEs, about the need for Net Zero advice and training activity.

Best practice case study: Harrogate College Green Skills Week

Region: York & North Yorkshire

Harrogate College’s annual “Green Month” help students and their families to understand the opportunities offered by a career in Net Zero. Activities featured in the Green Month include employer-led sustainability talks, demonstrations of sustainable construction methods, plus other demonstrations of sustainability from industries such as fashion and hospitality. By targeting activities at parents/carers, the college tries to ensure that the key influencers of a young person’s skills and career progression decisions are informed about what it means to work in the Net Zero sector.

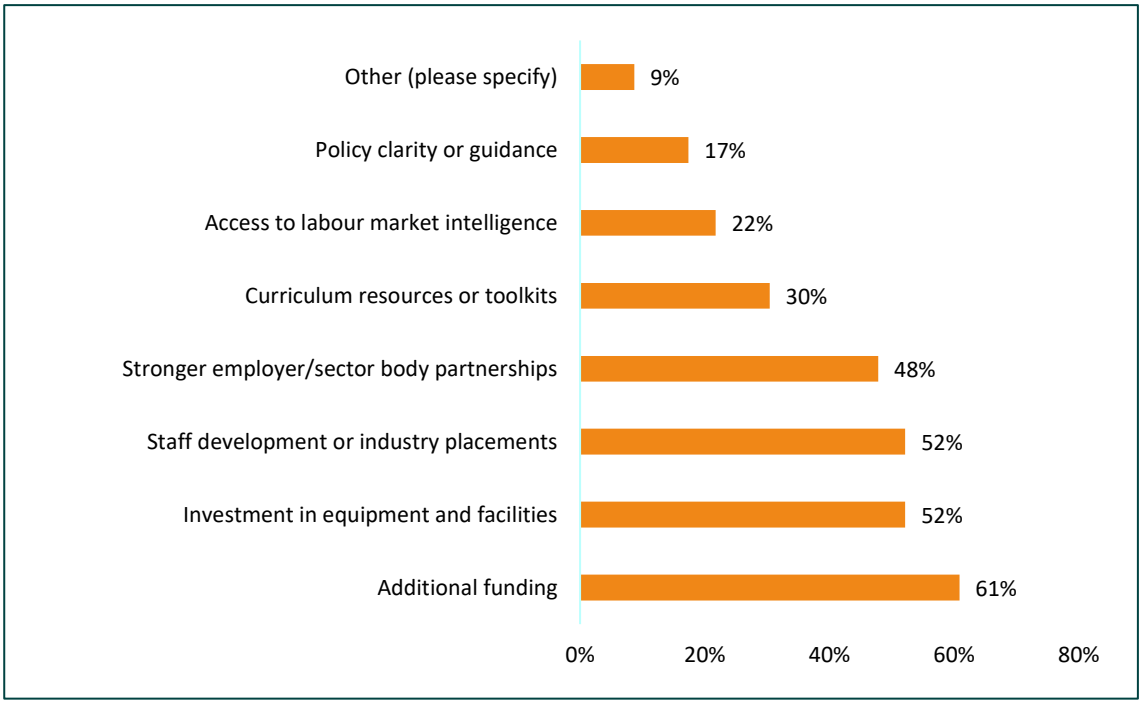
Suggestions for improving Net Zero CEIAG

The survey asked FECs and ITPs to select up to three types of support which would enable them to expand or improve their Net Zero careers advice and training offer. In response, most providers selected additional funding and/or investment in equipment, alongside more training opportunities for teaching staff.

By provider type:

- FECs most frequently requested additional funding, followed by Net Zero curriculum resources and access to LMI.
- ITPs placed greater emphasis on the equipment and facilities needed to offer Net Zero training and advice.

Figure 13: Support that training providers feel would help them to expand or improve their Net Zero offer



Source:

Training provider online survey, n=23

By region:

- Additional funding and investment in equipment/facilities were the most requested types of support across all six regions in the Hub.
- Providers who deliver training and support in the North East and Tees Valley were more likely to request support to access Net Zero LMI and curriculum materials.
- Providers in the North East and Tees Valley appear to face a wider set of support needs, although this could reflect greater ambitions around their Net Zero 'offer' rather than any region-specific deficiencies in the current infrastructure for delivering Net Zero careers advice.

Best practice case study: Redcar and Cleveland Voluntary Development Agency

Region: Tees Valley

Redcar and Cleveland Voluntary Development Agency (**RCVDA**) delivers a careers and skills programme that embeds Net Zero themes into learning from an early age. Reaching over 10,000 children — from nursery-age up to 19, including SEND learners — RCVDA blends career aspiration-building with labour market insight and sustainability education. Their six-module framework introduces young people to future opportunities in clean energy sectors like offshore wind and green steel, showing how the Tees Valley's industrial heritage is evolving into a Net Zero future.

RCVDA's approach involves collaboration with over 100 local employers, including major Net Zero developments like Dogger Bank wind farm and the Teesworks clean energy hub. Through problem-solving challenges — such as designing deterrents to stop birds nesting on wind turbines — employers provide hands-on activities that turn abstract Net Zero concepts into practical experience. Storytelling by people who work in Net Zero jobs is used to bring career paths to life, helping pupils connect classroom knowledge with the world of work. The programme adapts its delivery to meet the needs of SEND students and actively involves parents through tools like "job of the week" take-home packs.

The programme aims to do more than just make young people aware of Net Zero jobs; it also wants to equip young people with transferrable skills such as creativity, teamwork, and adaptability.

By engaging children and their families early in their school journey, the programme aims to foster a culture of aspiration amongst pupils to take advantage of the local job opportunities presented by the transition to Net Zero.

5. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The scale of the Net Zero opportunity

The Net Zero transition presents a major opportunity for job creation and economic growth in the North East and Yorkshire. The area's industrial heritage, assets, and research capabilities give it a distinctive and nationally important role in delivering the UK's transition to a low-carbon economy.

Across the six North East and Yorkshire regions, around one in every five jobs already contributes in some way to the Net Zero economy. More than 75,000 businesses operate in Net Zero-relevant sectors — around 30% of the regional business base — employing over 640,000 people and accounting for roughly 13% of England's Net Zero workforce.

Each region brings complementary strengths. The coastal regions of Hull & East Yorkshire, the North East and Tees Valley are home to major investments in offshore wind, hydrogen production and carbon capture and storage. South Yorkshire and West Yorkshire have advanced manufacturing facilities, are contributing to clean energy innovation and offer opportunities in relation to retrofit and decarbonising transport systems, while York and North Yorkshire lead in natural capital, land management and carbon-negative ambitions. Together, these regional specialisms form an interconnected Net Zero ecosystem — from clean energy generation to green manufacturing supply chains and the restoration of natural environments.

The analysis shows that the North East and Yorkshire's Net Zero sector is growing faster than the national average, with an 8% increase in employment since 2018 and an expected net gain of more than 170,000 jobs by 2035. Many of these roles will emerge through the transformation of existing industries rather than entirely new sectors — for example, retrofitting in construction, electrification in transport, and digitalisation in energy management. This underlines both the scale of opportunity and the urgency of preparing the current and future workforce for transition.

The opportunity is therefore twofold: to cement the area's position as a UK leader in clean energy, and to ensure that residents have the awareness, skills and support needed to access the high-wage, high-skilled jobs that will be created by the Net Zero transition.

The need for Net Zero CEIAG

Without effective CEIAG, there is a risk that North East and Yorkshire Net Zero employers will not be able to fill roles, slowing progress towards climate targets and missing out on economic opportunities.

The research highlights a growing mismatch between the scale of the Net Zero opportunity and the readiness of the current and future workforce to meet its demands.

While employment in Net Zero sectors is expanding rapidly, employers continue to report shortages of skilled workers in technical, engineering and digital roles. This suggests that local education and training systems, although doing a lot of good things in relation to Net Zero careers advice, are not yet fully aligned with the pace and direction of industrial change.

Many of the roles that will drive the transition require vocational and applied learning pathways, such as apprenticeships, technical diplomas, and modular reskilling routes for adults. Yet provision and awareness of these pathways vary significantly across the six North East and Yorkshire regions. Stakeholders consistently noted that learners and advisors often have an incomplete understanding of what “Net Zero careers” entail or how to access them. This limits participation and risks excluding groups who could benefit most from new employment opportunities.

Existing industries are also undergoing rapid transformation. Sectors such as construction, manufacturing, and transport are shifting their focus from traditional practices to low-carbon technologies and circular processes. Retrofitting buildings, developing hydrogen infrastructure, and electrifying vehicle fleets all demand new skillsets — combining technical competence with adaptability, systems thinking, and sustainability awareness.

The scale and pace of change in the Net Zero sector means that individuals — both young people and adults — need up-to-date, accurate, and accessible careers advice to understand:

- What Net Zero jobs are available and what they involve
- The skills and qualifications required
- The pathways into these roles (including vocational, academic, and work-based routes)
- The opportunities for progression and good earnings

Educational engagement across the North East and Yorkshire in Net Zero-related subjects is strong — particularly in engineering, digital technology, and construction — but the profile of this provision is uneven. Higher-level qualifications are concentrated in a small number of universities and large colleges, while smaller institutions and ITPs face funding and resource constraints that restrict their capacity to expand provision. Moreover, while the North East and Yorkshire performs well in terms of participation, there are gaps in terms of students’ exposure to the workplace and employer-led training, which are crucial for developing practical skills and real-world understanding.

While there is strong engagement with Net Zero-related subjects at school, college, and university levels, the pipeline of talent is not yet sufficient to meet projected demand. There is significant and growing demand for Net Zero roles, with over 83,000 job postings identified in the North East and Yorkshire between July 2024 and July 2025.

Nevertheless, the evidence suggests that the Net Zero workforce challenge is not primarily about scale but about alignment. The North East and Yorkshire already has a substantial skills base, but it must evolve to reflect the changing nature of work in Net Zero industries. Achieving this will require:

- **Better coordination between employers and education providers** to align curricula with current and future labour market needs.
- **Investment in continuous professional development** for educators and advisors to strengthen understanding of emerging technologies.
- **Expanded access to flexible, modular training pathways** that enable both young people and adults to transition into Net Zero roles – see recommendation D5.

Current effectiveness of Net Zero CEIAG

There is a strong foundation of Net Zero CEIAG in the North East and Yorkshire. Most schools, colleges, and training providers are confident in their ability to provide students with information, advice and guidance about Net Zero careers and this confidence is reflected in above-average Gatsby Benchmark scores and positive feedback from providers about the effectiveness of their Net Zero CEIAG.

While most colleges and training providers offer careers advice to learners on Net Zero-related courses, this is usually embedded within mainstream careers provision rather than being tailored specifically to Net Zero pathways.

CEIAG provision often depends on the enthusiasm of individual teachers, careers leads, or local champions, which leads to inconsistency across areas and institutions. As a result, young people's exposure to Net Zero themes — and their understanding of the associated career pathways — is felt to be uneven across the six regions within the Hub.

The research also shows how Net Zero CEIAG usually revolves around LMI and employer talks. Providers struggle to offer Net Zero-focused work placements or sustained employer experiences to students. Employer engagement in course design and delivery is strongest in construction and retrofit disciplines, but weaker in emerging or cross-sector areas such as the circular economy and land-based industries. Providers report a lack of relevant curriculum materials and difficulties keeping up with rapid changes in the Net Zero sector, making it hard to ensure that careers advice remains current and relevant.

Staff capability to advise young people on Net Zero career opportunities remains a key constraint: while most providers express some confidence, only a small minority feel very confident, especially regarding newer technologies and sectors.

The lack of funding/capital investment is consistently identified as the biggest barrier to developing more ambitious and effective Net Zero CEIAG activities (see recommendation D4). Much of the current CEIAG activity within the North East and Yorkshire relating to Net Zero is project-based and short-term, funded through time-limited pilots, competitive programmes or employer-led initiatives. While these projects often deliver excellent results locally, we heard little evidence of such impacts being sustained or scaled. The absence of a long-term, region-wide coordination mechanism means that good practice is not consistently shared or embedded across the six regions (see recommendation E1).

This fragmentation is particularly evident in employer engagement. Large employers in sectors such as offshore wind, energy, and construction have developed effective school and college partnerships, often linked to social value commitments. Yet smaller and

emerging businesses — which make up most of the North East and Yorkshire's Net Zero economy — face barriers to participation. They often lack the capacity, resources or confidence to engage meaningfully with education providers, despite being vital to local supply chains and job creation (see recommendations D1 and D2).

There is a widespread shortage of suitably qualified tutors and assessors, particularly for newer green technologies (see recommendation D3). Many teachers and tutors lack up-to-date knowledge of technical and vocational routes linked to Net Zero industries, and there are persistent knowledge gaps among advisors and educators about what the Net Zero sector entails and the opportunities it creates.

The research also heard that there are inequalities in access to green skills and careers. Women, learners with special educational needs and disabilities (**SEND**), and those in rural or coastal areas may struggle to access Net Zero-related education and employment. The best practice case studies in this report show that inclusive approaches — such as family-focused events, SEND-adapted experiences, and locally contextualised examples of green jobs — can significantly increase engagement. Embedding these practices more widely will be key to achieving a just transition.

The findings point to a strategic role for the Hub in shaping a coherent Net Zero careers ecosystem. While many elements of effective practice exist across the region, they remain disconnected. **The Hub is well positioned to act as a convening and coordinating body. It could enable collaboration between local authorities, education providers, Careers Hubs, employers and the voluntary sector. By doing so the Hub will help to create a system-wide approach that supports learners of all ages to participate in the Net Zero economy based on intelligence from Net Zero employers**.

Recommendations

A series of recommendations arising from this study are set out below. We have split the recommendations into two categories:

- **Enabling** - focused on creating the conditions — the governance, coordination, data, and resources - that underpin effective Net Zero careers activity.
- **Delivery** - how Net Zero CEIAG could implemented and experienced — the activities, partnerships, and interventions that reach learners, educators, and employers – building on existing best practices and new ideas.

For each recommendation, an indicative timeframe and cost estimate is identified.

The recommendations relate to employing staff, investing in systems or running projects. The Hub may not have the capacity, funding or governance required to do these things. Therefore, we propose that the six Combined Authorities which comprise the Hub act as delivery vehicles for the recommendations by hosting staff and systems and running projects and drawing on their multiple funding streams to do this; with the Hub having a convening and coordinating role. This approach will mean that the Hub is dependent upon the Combined Authorities for the delivery of Net Zero CEIAG.

The commitment of all six Combined Authorities to the transition to Net Zero (see chapter 2) and the economic growth opportunities the transition will create in all six regions (see chapter 3) mean the Combined Authorities and the Hub have a common interest in ensuring Net Zero CEIAG is sufficient and impactful. Thus, we do not feel that depending on the Combined Authorities to deliver recommendations creates a delivery risk.

Enabling recommendations

Recommendation E1: Establish a Hub-wide Net Zero Careers Coordination Resource

Each of the six Combined Authority areas within the Hub already benefits from a Careers Lead and a Net Zero lead, both of whom are closely attuned to local priorities and contexts. However, the research shows that current careers activity related to Net Zero — while active and often high-quality — is fragmented, short-term, and unevenly distributed across the region.

A central coordination resource would not duplicate local leadership, but would instead strengthen it through shared infrastructure, intelligence and strategic alignment. It would bring together the six regional approaches into a coherent, evidence-led system capable of operating at scale.

The core activities of the central Net Zero careers resource should be:

- Provide a single point of coordination between Careers Leads, Net Zero leads, combined authorities, education providers and employers.
- Ensure that Net Zero careers education is consistently aligned with regional industrial, skills and investment strategies.
- Facilitate joint planning, pooled funding bids, and shared evaluation frameworks for Net Zero CEIAG activity across the Hub.
- Developing and maintaining a central evidence base on Net Zero skills demand, career pathways, and labour market trends [see recommendation below for more detail on this].
- Translating this evidence into accessible, actionable guidance materials for careers advisors, educators, and employers.
- Provide a cross-regional network for careers professionals to share Net Zero CEIAG best practice, curriculum resources, and case studies.
- Coordinate training and CPD opportunities on emerging Net Zero sectors, ensuring that teacher and tutors stay up to date with industry changes.
- Act as the public-facing focal point for Net Zero careers across the Hub — providing clear, consistent messaging to learners, parents, employers, and educators.
- Lead collaborative communications campaigns that promote the breadth of Net Zero careers and challenge misconceptions about green jobs.
- Enable smaller or resource-constrained regions to access shared tools and intelligence.

We estimate that the resources needed to establish the central resource would be 2-3 FTEs – assuming 1 FTE working on strategic and stakeholder management topics, 1 FTE working on data and intelligence, and 1 FTE working on training and CPD issues.

This recommendation would have a medium cost associated with it – e.g. £200,000 per year given the skills and knowledge required for the three posts.

The central Net Zero CEIAG coordination function could be established over a 12-24 month period, with the first year focused on staff recruitment and communicating the role of the central function, and the second year focused on launching data, capacity building and communications campaigns.

Recommendation E2: prioritise the development of a shared labour market and data intelligence system

The report identifies issues with the **quality, accessibility, and consistency** of Net Zero LMI used by careers practitioners, teacher and tutors. Many rely on generic or outdated sources that fail to capture local Net Zero growth areas, leading to guidance that does not fully reflect the range of opportunities open to residents.

A shared, Hub-wide LMI and Data Intelligence Platform would create a single, trusted evidence base on Net Zero skills demand and career pathways, enabling consistent, accurate, and locally relevant information for CEIAG delivery across all six regions.

We recommend that this platform includes:

- An interactive Data Dashboard that allows students, parents/carers, job seekers, teacher etc. to understand sectoral employment trends, job postings, and skills demand forecasts, filtering by geography, sector, occupation, qualification level etc.
- A Net Zero Career Pathways Explorer which helps the user to visualise how they could progress from education to Net Zero jobs, linked to qualifications, apprenticeships, and Skills Bootcamps.
- Provider and Employer Intelligence Layer – with data on local training provision, specialist facilities, and employer partnerships.

The platform should consolidate and visualise data from both national and regional sources, including national datasets (BRES, APS/LFS, HESA, DfE skills data), job vacancy data (e.g. Lightcast, Adzuna), apprenticeship vacancies, LSIPs and Combined Authority skills strategies.

Much of this data is already held by the Combined Authorities via activities such as LSIPs and Skills Advisory Panels. And many of the Combined Authorities already possess data and intelligence functions that could be leveraged by the recommendation, leading to the integration of this existing knowledge around the Net Zero sector.

If technically feasible, elements of the platform should be embedded into other careers online resources e.g. NCS website and/or be free to access by CEIAG professionals to reduce the risk of this investment being duplicated elsewhere.

The recommendation to create a shared Net Zero LMI platform and a Hub-wide coordination resource is consistent with DfE's emphasis on employer led and evidence-based LSIPs acting as the basis for planning education and skills provision within a region.

We estimate that this is a medium cost recommendation, requiring some upfront investment (>£100k) to build the platform. Many of the ongoing maintenance costs for the platform are covered by the staffing costs linked to setting up the central coordination function but they would also be ongoing data licensing and hosting costs.

We estimate it would take 9–12 months to rollout the platform, aligned with the setup of the central coordination function.

Recommendation E3: include CEIAG within Net Zero project Community Funds

The practice of an employer establishing a Community Fund when they begin work on a major Net Zero investment project such as offshore/onshore wind farms and solar farms is well established. Often, these Funds receive a set amount of money per year or per Megawatt of power generated by the Net Zero project; in many cases this totals tens or even hundreds of thousands of pounds per year. Funds are usually overseen by local committees/parish councils.

Some of these Community Funds (e.g., Walney Extension Community Fund in Cumbria, and the Dogger Bank Community Fund in North Yorkshire) have a remit to invest in developing the skills of residents so they can access the job opportunities created by the investment. Many of the Funds provide grants to youth and community clubs, local sports teams, and environmental projects.

We recommend that when new North East and Yorkshire Community Funds are established, the Hub makes the case for Net Zero CEIAG provision to be eligible for monies from the Fund. When making this case, the Hub should highlight how CEIAG helps to deliver the medium to long-term pipeline of skilled workers that large Net Zero projects require and point to how CEIAG can benefit all members of a community and not just school children. The Hub should leverage its data and intelligence (recommendation 2) to make evidence based funding bids to Community Funds. The Hub should highlight its ability to spend Community Fund monies promptly (i.e. via the Delivery recommendations below) and efficiently.

This recommendation would have zero additional cost as it could be undertaken by central resource described under Recommendation E1. The recommendation could be delivered as soon as the central resource is in place.

Delivery recommendations

The following delivery-focused recommendations are designed to ensure that the Hub's Net Zero opportunities are matched by practical opportunities for students and adults to gain skills, experience, and the desire to work in Net Zero sectors.

Recommendation D1: Expand Net Zero Work Experience and Employer Engagement for Years 8-11 Pupils

The research highlights a strong appetite among employers to engage with schools but a lack of structured, accessible routes for doing so. To build early awareness and aspiration to work in Net Zero sectors, the Hub should coordinate an expanded programme of Net Zero-themed work experience and employer encounters for pupils in Years 8-11.

Working with local Careers Hubs and Combined Authorities, this programme should:

- Prioritise placements and experiences in core Net Zero sectors such as clean energy, retrofit, low-carbon manufacturing, and digital.
- Offer extended and project or challenge based approaches to work experience which have proven effective in other parts of the country.
- Offer in-person experience, with a backstop of virtual options for students who would struggle to participate in face to face activity, e.g., students who live in very rural areas or SEND learners.
- Illustrate the variety of routes into Net Zero jobs such as Higher Education studies, vocational training, and self-employment.
- Provide teacher resources and pre/post-placement materials to embed learning into the curriculum.

This would give young people early, hands-on exposure to Net Zero workplaces and build clearer progression pathways into technical and vocational training.

This recommendation aligns with the updated Gatsby Benchmarks adopted into DfE statutory guidance from September 2025 — especially Benchmarks 5 and 6 on meaningful employer encounters and experiences of workplaces that take place over an extended period and involve different delivery methods and activities. It will also help North East and Yorkshire schools to achieve the new Work Experience Guarantee, the government's commitment to provide every young person in England with two weeks (10 days or 50 hours) of meaningful, high-quality work experience during their secondary education.

We estimate it could cost £300,000 (based on £50,000 per region) to expand Net Zero work experience and employer engagement in the North East and Yorkshire assuming circa 50 secondary schools per region participate each year and each school incurs set up/travel costs etc. that would need to be covered from a central fund. The time and cost implications of the employer engagement aspect of this recommendation could be covered via the central coordination resource (Recommendation E1).

The new Net Zero work experience model should be piloted with a small number of schools in year 1 ahead of a full roll out in year 2.

Recommendation D2: Expand Net Zero Work Placements for Year 12–13 Vocational and Technical Students

There is strong demand from further education providers and students for high-quality industry placements aligned with T Levels, apprenticeships, and technical routes. The Hub and its partners should facilitate a network of Net Zero work placements for Year 12–13 vocational learners, focusing on skills shortages identified in engineering, construction, manufacturing, and energy.

These placements should:

- Be co-designed with employers to reflect live Net Zero projects (e.g. retrofit, hydrogen, offshore wind).
- Include structured feedback and progression tracking, linking to qualifications and apprenticeships.
- Prioritise micro-businesses and SMEs, highlighting the low cost and low risk nature of placements as a way of boosting workforce capacity, exposing existing staff to new ideas and developing recruitment channels. Brokerage support should be offered to reduce the administrative barriers to firms offering placements.

This approach would strengthen the pipeline into priority sectors and help young people translate their technical training into real employment opportunities.

We estimate it could cost £400,000 to expand the number of Net Zero work placements available to older students in the North East and Yorkshire. Implementing this recommendation will be more costly than work experience activities for younger students as it will involve longer periods off school/college premises. Some of these costs could be covered by T level placement budgets and by employers who host students.

The new Net Zero work placement model should be piloted with a small number of employers in year 1 ahead of a full roll out in year 2.

Recommendation D3: Deliver a "Train the Trainer" Programme for Teachers, Tutors, and Careers Professionals

Many educators and advisors lack up-to-date understanding of Net Zero technologies and related career pathways. The Hub should establish a **Train the Trainer initiative** to ensure that teachers, tutors, and careers professionals have the knowledge and confidence to embed Net Zero across subjects and guidance activity.

The programme should:

- Be developed with industry and sector skills bodies to ensure relevance and accuracy.
- Combine CPD workshops, online learning, and site visits to Net Zero employers.
- Create a network of "Net Zero Education Champions" who cascade knowledge across schools and colleges.

This would enhance the credibility and reach of careers advice, ensuring learners receive consistent, informed guidance about emerging green opportunities.

We estimate it could cost £25,000 - £50,000 per year to run a train the trainer programme. This assumes coordination costs would be covered under the central function team costs, with additional training costs of £500 - £1,000 per teacher.

Curriculum development for the train the trainer programme could take place in year 1, the programme then being piloted in year 2, and rolled out in year 3.

Recommendation D4: Create a Central Fund for Training Providers to Invest in Net Zero Equipment and Facilities

FE colleges and independent providers often face significant barriers in keeping pace with new technologies due to the high cost of specialist training equipment. The Hub should support its partners to establish a central investment fund – for instance, by drawing on Mayoral Investment Funds across the six Combined Authorities – to support providers in acquiring and upgrading Net Zero-relevant facilities and resources.

Funding should prioritise:

- Equipment linked to priority skills areas such as renewable energy, heat pump installation, hydrogen technologies, and retrofit.
- Projects that include training provider, employer and community partnerships to maximise the reach and impact of the equipment.
- Demonstrable outcomes in learner participation and progression into Net Zero jobs.

This would enable training providers across the Hub to deliver high-quality, up-to-date provision aligned with industry standards.

This is likely to be the costly recommendation. We estimate a fund of up to £2m will be needed to make competitive grants of £50k–150k per training provider, matched by institutional or employer contributions. Such grant funding levels are in line with the capital funding amounts offered to Combined Authorities under the DfE's Strategic Development Fund (which was for all technical subjects, not just Net Zero). The maximum amount of funding available per provider should be capped to ensure as many providers as possible can benefit from the fund and to encourage smaller/innovative investment bids.

We assume it will take 12 months to set up the fund and to create an application process. Grants could then be paid out over 2–3 years.

Recommendation D5: Expand Skills Bootcamps in Green Skills for Adults and Career Changers

The Hub should work with DfE, the six Combined Authorities' bootcamp leads, and employers (leveraging recommendations D2 and D3) to expand the reach and scope of Skills Bootcamps focused on Net Zero and green technologies. These short, flexible programmes are commissioned in response to employer demand and have proven highly effective for unemployed adults and those seeking to change career.

Providers and stakeholders suggest priority areas for commissioning bootcamp activity could include:

- Construction retrofit, low-carbon heating, and EV maintenance.

- Hydrogen and energy infrastructure.
- Environmental management, circular economy, and sustainable logistics.

These suggestions should be validated via discussions with employers in these Net Zero sectors.

Bootcamps include guaranteed interviews for sector vacancies and wraparound careers support, ensuring that learners move directly into good-quality employment. Launching and scaling this model within Net Zero sectors would provide a mechanism for reskilling existing regional workforces and supporting inclusive access to Net Zero careers.

This recommendation is fully aligned with DfE's 2025–26 Skills Bootcamp funding approach and allocations, which retain employer co-design, flexible provision up to 16 weeks and outcome-based funding.

We estimate it would cost £1.2m - £1.5m per year to deliver 20–25 Bootcamps of 8–12 weeks each, serving 500–1,000 learners per year at £1,500 - £3,000 per learner. This per learner cost range is in line with previous rounds of DfE Skills Bootcamps.

It could take six months to commission Bootcamp providers to develop training content. Bootcamps could then be delivered on a rolling basis.

Summary

Implementing this report's recommendations will require commitment from a wide range of partners, including the six Combined Authorities, Careers Hubs, training providers, employers and the Hub itself. The proposed model for implementing the recommendations, with the Hub acting as a strategic convenor and the Combined Authorities leading delivery, offers a practical way of embedding Net Zero CEIAG within mainstream skills and careers policy and delivery. Doing so will strengthen local labour markets, support economic growth, and ensure that young people and adults can take advantage of the high-quality, well-paid jobs emerging across the North East and Yorkshire.

By investing in coordinated, evidence-led CEIAG, the North East and Yorkshire can ensure that its workforce is prepared, its schools, colleges and independent training providers are equipped, and its employers are supported to engage the next generation of Net Zero talent.

ANNEX A: ORGANISATIONS CONSULTED

- Energy Central Campus (Offshore Renewable Energy Catapult)
- Equinor
- Harrogate College
- Hull and East Yorkshire Combined Authority
- Humber Energy Board
- Nordic
- North East Combined Authority
- North Yorkshire County Council
- Oh Yes! Net Zero (Hull City Council)
- Orsted
- Redcar and Cleveland Voluntary Development Agency (RCVDA)
- South Yorkshire Apprenticeship Hub
- South Yorkshire Mayoral Combined Authority
- Tees Valley Combined Authority
- Teesport
- West Yorkshire Combined Authority
- York & North Yorkshire Combined Authority
- York & North Yorkshire Growth Hub

ANNEX B: CONSULTATION DISCUSSION TOPICS

Regional stakeholder consultations

Session duration and format: 60 mins, online discussion.

Session agenda:

Overview of regional policies, strategies and major investments in relation to Net Zero, identifying key documents for us to review.

- How would they summarise the evolution of [regional] policy and activity around Net Zero – key docs, focus sectors, focus issues (investment, skills, supply chains etc.)?
- Is the spatial focus consistently [regional], or a mix of local, regional, national?
- How prominent is careers advice and skills within these documents? Is the analysis about low skills in general, or low skills specific to Net Zero?
- What are key barriers to progress?
- What differences do they see between [region]'s Net Zero priorities and those of other regions in the NE and Y Hub?

Discuss how [region] defines the Net Zero sector in regional reports and data analysis

- Wide or narrow definition of Net Zero sector? Discuss pros/cons of each approach. Is supply chain included?
- Who does the defining, the data analysis etc.?
- Does [region] have a set definition of Net Zero?

Net Zero careers advice, guidance, and training activities that are running/have run in [region]

- What are the key CEIAG Net Zero activities that have taken place in the region?
- Is this a region-wide, strategic approach available to all schools? Or random projects emerging in this field?
- Are certain age groups, types of learners, types of study routes being prioritised?
- What is the 'so what' for students – how are they encouraged to take a genuine interest?
- What about provision for adults – Skills Bootcamps run by FECs, or any other training to help people to upskill or retrain?
- How easy to get industry to engage/help to deliver Net Zero CEIAG?
- Evidence on effectiveness/impact of CEIAG activities to date? Discuss our ability to access any data on effectiveness.
- Gather recommendations for other individuals from region that we should consult.

Regional employer and training provider consultations

Session duration and format: 60 mins, online discussion.

Introductions and context: Introducing purpose of research, understanding the role of consultee.

Demand for and awareness of Net Zero skills and job opportunities:

- How would you describe the level of awareness and interest in Net Zero or green skills among:
    - Young people (16–24)?
    - Adults (25+)?
- In your experience, are certain sectors (e.g., retrofit, renewables, transport, agriculture, nature-based) attracting more interest than others? Why do you think this is the case?
- What motivates people to pursue Net Zero skills or training (e.g., job/salary prospects, environmental concerns, limited opportunities in other sectors)?
- Are there any barriers to engaging local people in Net Zero skills training (e.g., lack of awareness, access, perceived complexity, limited local opportunities)?

Provision of Net Zero advice and guidance

- What is your assessment of the Net Zero careers advice and guidance available in your region? Is it good quality? Is there enough of it given the Net Zero job opportunities locally?
- Is this Net Zero CEIAG targeted at specific age groups or cohorts? Or specific parts of the Net Zero sector (e.g. retrofit, offshore wind)?
- Which organisations are involved in delivering this Net Zero CEIAG (e.g., secondary schools, FE colleges, private training providers, online resources)?
- What, if any, role do local Net Zero sector employers play in the design and delivery of these CEIAG activities?
- Is this CEIAG helping to inform and prepare people for working in the Net Zero sector? Does the CEIAG activity focus on the technical skills needed to work in the Net Zero sector? Does it also cover the transferrable skills needed to work in the sector?

Gaps and challenges in provision

- Where are the biggest gaps or shortfalls in Net Zero CEIAG provision in your locality or region?
    - Are certain groups or communities being left out?
    - Are there geographic gaps in access to training?

- What challenges are there to delivering Net Zero CEIAG?
- Is the content of Net Zero CEIAG keeping pace with the evolving demands of Net Zero jobs and technologies?

Opportunities and recommendations

- What do you think could help improve Net Zero careers advice and guidance in your area?
    - *For example, more/better labour market intelligence? More careers/pastoral support staff? Staff training? Greater employer/sector body input? More practical/work experience activity?*
- Are there local Net Zero CEIAG projects or models that could be scaled up?
- What support would help you or your organisation promote Net Zero careers more effectively?

Final comments

- Is there anything else you'd like to add?
- Is there anybody else within your organisation/locality/region we should consult?

Best practice case study consultations

Session duration and format: 30 mins, online discussion.

Agenda topics:

Section 1: About provider/programme/support offered

- What does [training provider] think best practice looks like in this area?
- Description of support offered by [training provider]
- What is good about it?
- How many individuals are supported? How many are directly supported on Net Zero related courses?
- How do they access support?
- What relevant regional or national strategies does this work feed into?
- How are they supported - what businesses are involved? How are courses accessed? What kind of employers support training and development?
- What is the structure of the training? How are learners supported further?

Section 2: Impact

- What are the results for the individual? How do they take their qualifications and knowledge forwards?
- What opportunities are available for those that achieve qualifications?
- What kind of outcomes have they seen from those that have completed courses? What destinations?

- Anything else to share?
- Request links to further reading

ANNEX C: TRAINING PROVIDER SURVEY QUESTIONNAIRE

Net Zero Training Provider survey.pdf

ANNEX D: NET ZERO DEFINITIONS AND DETAILED DATA TABLES

Table D.1 Net Zero Standard Industrial Classification (2007) Code Definition

Net Zero Activity	SIC (2007) Code	Net Zero Industry
Decarbonising the Energy System	28.21	Energy Equipment - Boilers, Ovens, Furnaces & Burners
Decarbonising the Energy System	28.11	Energy Equipment - Engines Turbines, Electric Motors & Generators
Decarbonising the Energy System	27	Electricity and Energy Equipment - distribution equipment, cables & wires/Lighting & domestic appliances
Decarbonising the Energy System	28.13	Energy Equipment - pumps & compressors
Decarbonising the Energy System	29	Sustainable Transport - Manufacture
Decarbonising the Energy System	30	Sustainable Transport - Manufacture
Decarbonising the Energy System	35.1	Electricity - Production, transmission & distribution
Decarbonising the Energy System	41	Development & Construction of buildings and civil engineering projects
Decarbonising the Energy System	43.2	Plumbing, heating, electrical installation and insulation
Decarbonising the Energy System	49	Sustainable Transport - Operation
Improving Resource Efficiency	36	Water Supply & Treatment
Improving Resource Efficiency	38	Waste management - reuse & recycling
Preserving & Enhancing	01.1	Agriculture - Crop and Animal Production

Preserving & Enhancing	01.2	Agriculture - Crop and Animal Production
Preserving & Enhancing	01.3	Agriculture - Crop and Animal Production
Preserving & Enhancing	01.4	Agriculture - Crop and Animal Production
Preserving & Enhancing	01.5	Agriculture - Crop and Animal Production
Preserving & Enhancing	01.6	Agriculture - Crop and Animal Production
Preserving & Enhancing	02.1	Agriculture - Forestry
Preserving & Enhancing	02.4	Agriculture - Forestry
Preserving & Enhancing	03	Fishing - Fishing and Aquaculture
Preserving & Enhancing	28.3	Agriculture - Manufacture of Agricultural Equipment
Multi-disciplinary*	71.11	Architects, Surveyors & Consulting
Multi-disciplinary*	71.12	Engineering & Technical Testing
Multi-disciplinary*	72	Research Development
Multi-disciplinary*	94	Activities of membership organisations
Net Zero Supply Chain	22	Manufacturing - Plastics
Net Zero Supply Chain	23.1	Manufacturing - Glass
Net Zero Supply Chain	23.32	Manufacturing - Bricks, Cement, Mortar, Concrete
Net Zero Supply Chain	23.51	Manufacturing - Bricks, Cement, Mortar, Concrete
Net Zero Supply Chain	23.64	Manufacturing - Bricks, Cement, Mortar, Concrete
Net Zero Supply Chain	23.63	Manufacturing - Bricks, Cement, Mortar, Concrete
Net Zero Supply Chain	32.1	Manufacturing of other components and parts

Net Zero Supply Chain	24	Manufacturing - Metals and Metal Products
Net Zero Supply Chain	25	Manufacturing - Metals and Metal Products
Net Zero Supply Chain	29	Sustainable Transport - Manufacture
Net Zero Supply Chain	45	Sustainable Transport - Sale, maintenance and repair
Net Zero Supply Chain	49	Sustainable Transport - Operation
Net Zero Supply Chain	64.11	Banking and Insurance
Net Zero Supply Chain	65.1	Banking and Insurance
Net Zero Supply Chain	69	Legal and Accountancy Services
Net Zero Supply Chain	77.3	Renting and liasing of machinery and equipment

Table D.2 Net Zero Standard Occupational Classification (2007) Code Definition

SOC 2020 Code	Net Zero Occupation
1121	Production Managers and Directors in Manufacturing
1122	Production Managers and Directors in Construction
1123	Production Managers and Directors in Mining and Energy
1140	Directors in logistics, warehousing and transport
1211	Managers and proprietors in agriculture and horticulture
1212	Managers and proprietors in forestry, fishing and related services
2121	Civil Engineers
2122	Mechanical Engineers
2123	Electrical Engineers
2124	Electronics Engineers
2125	Production and Process Engineers
2126	Aerospace Engineers
2127	Engineering Project Managers and Project Engineers

2129	Engineering Professionals n.e.c.
2151	Conservation professionals
2152	Environment professionals
2161	Research and Development (R&D) Managers
2455	Construction Project Managers and Related Professionals
2481	Quality Control and Planning Engineers
3112	Electrical and Electronics Technicians
3113	Engineering Technicians
3116	Planning, Process and Production Technicians
3119	Science, Engineering and Production Technicians n.e.c.
5111	Farmers
5119	Agricultural and fishing trades n.e.c.
5211	Sheet Metal Workers
5212	Metal Plate Workers, Smiths, Moulders and Related Occupations
5213	Welding Trades
5214	Pipe Fitters
5231	Vehicle technicians, mechanics and electricians
5232	Vehicle body builders and repairers
5234	Aircraft maintenance and related trades
5235	Boat and ship builders and repairers
5236	Rail and rolling stock builders and repairers
5314	Roofers, Roof Tilers and Slaters
5315	Plumbers and Heating and Ventilating Installers and Repairers
5319	Construction and Building Trades n.e.c.
5330	Construction and Building Trades Supervisors
8112	Textile Process Operatives
8115	Metal Making and Treating Process Operatives
8120	Metal Working Machine Operatives
8133	Energy Plant Operatives
8139	Plant and Machine Operatives n.e.c.
8149	Assemblers and Routine Operatives n.e.c.

8160	Production, Factory and Assembly Supervisors
8232	Marine and Waterways Transport Operatives
9139	Elementary Process Plant Occupations n.e.c.

Table D.3 Business Count, LQ and 5-year Growth by Detailed Net Zero Sector for the Net Zero Hub Area, 2024

Net Zero Subsector	Business Count	LQ for Business Base	Business Base Growth
Agriculture - Crop and Animal Production	15735	1.42	-5%
Plumbing, heating, electrical installation and insulation	10890	1.11	15%
Development & Construction of buildings and civil engineering projects	9525	0.82	17%
Sustainable Transport - Sale, maintenance and repair	9315	1.26	7%
Sustainable Transport - Operation	6595	1.11	-10%
Engineering & Technical Testing	6050	1.16	-20%
Legal and Accountancy Services	5630	0.81	-1%
Manufacturing - Metals and Metal Products	3395	1.45	-15%
Activities of membership organisations	2005	1.02	1%
Architects, Surveyors & Consulting	1260	0.81	-6%
Renting and liasing of machinery and equipment	1180	1.29	6%
Manufacturing - Plastics	745	1.37	-10%
Waste management - reuse & recycling	695	1.22	8%
Agriculture - Forestry	625	1.19	3%
Sustainable Transport - Manufacture	535	1.04	6%
Electricity - Production, transmission & distribution	420	0.92	11%
Sustainable Transport - Manufacture	410	1.23	12%
Electricity and Energy Equipment - distribution equipment, cables & wires/Lighting & domestic appliances	365	1.29	4%
Research Development	360	0.66	-9%
Fishing - Fishing and Aquaculture	280	1.61	-11%

Manufacturing of other components and parts	125	0.72	14%
Manufacturing - Glass	105	1.6	5%
Agriculture - Manufacture of Agricultural Equipment	85	1.76	42%
Banking and Insurance	70	0.73	-26%
Manufacturing - Bricks, Cement, Mortar, Concrete	45	0.97	-18%
Energy Equipment - Engines Turbines, Electric Motors & Generators	30	1.26	50%
Energy Equipment - pumps & compressors	15	0.59	-25%
Energy Equipment - Boilers, Ovens, Furnaces & Burners	15	1.05	50%
Water Supply & Treatment	0	0	-100%

Source: UK Business Counts, 2023

Table D.4 Employment Count, LQ and 5-year Growth by Detailed Net Zero Sector, 2023

Net Zero Subsector	Employment Count	LQ for Employment	Employment Growth
Sustainable Transport - Operation	77950	1.25	4%
Legal and Accountancy Services	68200	0.7	16%
Sustainable Transport - Sale, maintenance and repair	66025	1.07	14%
Manufacturing - Metals and Metal Products	60965	1.55	-15%
Plumbing, heating, electrical installation and insulation	58600	1.24	66%
Development & Construction of buildings and civil engineering projects	57250	0.98	55%
Engineering & Technical Testing	40675	0.92	2%
Agriculture - Crop and Animal Production	32585	1.38	3%
Sustainable Transport - Manufacture	30140	1.03	-12%
Sustainable Transport - Manufacture	26940	1.72	-9%
Manufacturing - Plastics	21960	1.26	-13%
Activities of membership organisations	20525	0.74	-20%
Agriculture - Forestry	19420	1.4	-7%
Waste management - reuse & recycling	18825	1.2	20%

Electricity and Energy Equipment - distribution equipment, cables & wires/Lighting & domestic appliances	11775	1.42	-4%
Renting and liasing of machinery and equipment	11445	1.05	2%
Research Development	9810	0.51	36%
Banking and Insurance	9470	0.82	-4%
Electricity - Production, transmission & distribution	8885	1	-24%
Architects, Surveyors & Consulting	6810	0.64	0%
Water Supply & Treatment	6590	1.31	1%
Manufacturing - Glass	4880	2.16	-4%
Energy Equipment - pumps & compressors	2940	2.34	5%
Manufacturing - Bricks, Cement, Mortar, Concrete	1840	1.11	10%
Energy Equipment - Engines Turbines, Electric Motors & Generators	1775	1.18	-28%
Agriculture - Manufacture of Agricultural Equipment	985	1.12	30%
Fishing - Fishing and Aquaculture	720	1.91	10%
Manufacturing of other components and parts	560	0.9	30%
Energy Equipment - Boilers, Ovens, Furnaces & Burners	410	1.63	100%

Source: Business and Register Employment Survey, 2024