Staffordshire County Council

Staffordshire Economy, Skills and Labour Market Information

September 2022

The Green Economy

Climate Change and Net Zero – Strategy & Plans

- The UK was the first major economy to pass a law requiring the greenhouse gas emissions in the **UK to be net zero by 2050.**
- The UK Government has published its Net-Zero Strategy in a bid to dramatically reduce greenhouse gas emissions and the Energy Security Strategy, both recognise the need to deliver the skilled workforce which will be needed for the future green economy.
- Most big UK businesses and financial institutions will be forced to show how they intend to hit climate change targets, under new Treasury rules. By 2023, they will have to set out detailed public plans for how they will move to a low-carbon future, in line with the UK's 2050 net-zero target.

UK Government Ten Point Plan for a Green Industrial Revolution

The UK government's 10-point action plan for the delivery of net zero:

- Point 1: Advancing offshore wind
- Point 2: Driving the growth of low carbon hydrogen
- Point 3: Delivering new and advanced nuclear power
- Point 4: Accelerating the shift to zero emission vehicles
- Point 5: Green public transport, cycling and walking
- Point 6: Jet zero and green ships
- Point 7: Greener buildings
- Point 8: Investing in carbon capture, usage and storage
- Point 9: Protecting our natural environment
- Point 10: Green finance and innovation

- At a pan-regional level the Midlands Engine - Ten Point Plan for Green Growth outlines the vision for green recovery and growth across the Midlands.

Staffordshire Focus on Climate Change

- The **County Council and partners** recognise the importance of climate change and its impact on the residents and business of Staffordshire.
- In July 2019 we declared a **climate change emergency** to achieve net zero emissions by 2050 across every aspect of our service provision and estate.
- The **County's strategic plan highlights climate change as one of its key principles -** pledging to 'think climate change in all we do to limit our impact on the environment'.
- In the first year since declaring a climate change emergency, the County has **reduced its carbon emissions by 25%.**
- COP2263 Climate Change Strategic Development Framework (staffordshire.gov.uk)
- Climate Change Action Plan (staffordshire.gov.uk)
- Most local authorities in Staffordshire provide **help for householders to repair, improve or adapt their living accommodation**. Thermal insulation is one of the measures covered.

Green Growth Opportunities

New opportunities for low carbon growth in Staffordshire

- Research performed by the West Midlands Growth Company has shown that despite the impact of Covid, that **low-carbon manufacturing is now the West Midlands' fastest-growing sector**; the sector grew by more than 7% in 2020 despite a 9% decline in the wider West Midlands economy as a result of the Covid pandemic.
- This positive news **signposts a direction and signals a nationally leading position**, which creates a **platform to build new sectors which could be pivotal for the growth of the regional economy.**
- Staffordshire plays a key part in the wider low carbon sector and there are **two obvious markets where the County is optimally placed:**
  - **low-carbon heating - greener buildings (retro-fitting)**
  - **low-carbon transport – EV vehicles (and hydrogen)**

1) Low-carbon Heating and Retrofitting Homes

- In the present mix of energy utilisation in the UK, **heating accounts for 40% of the energy consumption and about one-third of the carbon emissions.**
- To date, in contrast to electricity, **very little progress has been made in the decarbonization of how homes are heated and how heat is generated in industrial applications**.
- The **UK generates most of its heat utilising natural gas** and sits at the high end of the spectrum in terms of carbon intensity.
- The reason so little progress has been made in the UK is that **it is extremely challenging to make progress**.
- **Unlike the greening of the electricity grid, where the appliances in the home are immune to changes in the source of generation and the switch from coal to wind can be done without any need for the customer to change behaviour, heat will need a change in 25+ million homes.**

Heat Pumps Installation

- There are **three accepted ways of delivering low-carbon heating**.
- The approach that the UK government has most enthusiastically supported is **heat pumps** which use electricity to extract heat from the external environment, air, or ground and pump it into the building.
- The **UK government's 10-point action plan for the delivery of net zero sets out an ambition to install 600,000 heat pumps a year by 2028.**
- The challenge with a heat pump solution is that it is **expensive compared to a gas boiler**, by a factor of 10 to 20, and is **not a direct one-for-one replacement.**
- The **intensity of heat a heat pump can generate is less than that of a gas boiler** and hence there is a **need for hand-in-hand improvements to the thermal efficiency of the home**.
- The cost and level of disruption are therefore high. Alternatives to this approach are either the **use of hydrogen or district heating**.

National Centre for the Decarbonisation of Heat

- In the Midlands there is a proposal for a National Centre for Decarbonisation of Heat (NCDH), working between local government, academic institutions, innovation Catapults, and industry to coordinate the delivery.
- The NCDH would work on a whole series of activities including driving down the cost of delivering heat.
- As a benchmark of heating installation, the cost of heat pump installation for heat pump and thermal retrofit is £20k per house and 25million homes, so of the order of £500b.
- An innovation program that took just 10% off the installation costs would save £50b, which is staggering and could be redeployed elsewhere in the energy system, or even in healthcare.
- The Midlands has the assets to lead the decarbonization of heat being home to several major companies such as Worcester-Bosch, Baxi, E.on, Engie, and Cadent, state-of-the-art manufacturing expertise through the Manufacturing Technology Centre, the Energy Systems Catapult, and a powerful network of Midlands universities.

2) Electric Vehicles

- Following recent **government announcements on the end of the sale of new petrol and diesel cars and vans from 2030**.
- Almost half of all car buyers in the UK are now looking to purchase a fully electric vehicle, marking a **"tipping point" in the electric car revolution**, research from accountancy firm EY reveals. A total of 49 per cent of drivers looking to buy a car would now choose an electric vehicle, up by 21 per cent compared to just two years ago.
- There is an **opportunity for Staffordshire and the wider Midlands to continue to take a leading role in the introduction of electric vehicles** in the UK and internationally by continuing to innovate, supporting the industry with transitioning to manufacturing for electric vehicles and implementing infrastructure to allow both pilot activity and full-scale deployment of technologies.
- The announcement by **Jaguar Land Rover** that it will develop 6 new electric vehicles in the next 5 years and that all vehicles will be available as all-electric variants by 2030, sets the pace for the region.
- Given Staffordshire's central location with great connectivity there is also the **opportunity for electric motors and battery production through giga factory inward investment**.

Electric vehicles uptake is a central part of future sustainable transport

Super-charging the Midlands in numbers

In 2019, petrol and diesel emissions from road transport made up the vast majority of transport emissions (95%) in the Midlands region, particularly cars (59%).

(As of the end of 2020, 0.74% of registered vehicles in the Midlands Connect region were EVs)

Predicted number of registered EVs in the Midlands (mid-range scenario)

44,909 (0.7%)	418,197 (6.8%)	1,769,855 (28.4%)
2020 (Actual)	2025	2030

2020
>1 in 100 registered vehicles is electric

2030
>1 in 4 registered vehicles could be electric

Over **4x** as many EVs per person in Solihull than anywhere else in the Midlands

On average, there is currently 1 publicly-available electric vehicle charging point per 19 electric vehicles in the Midlands, reflecting the national average of 1 charge point per 20 electric vehicles

To meet the charging requirements of a growing fleet, we must install an average of:

10.8
new charging points every day

75.8
charging points every week

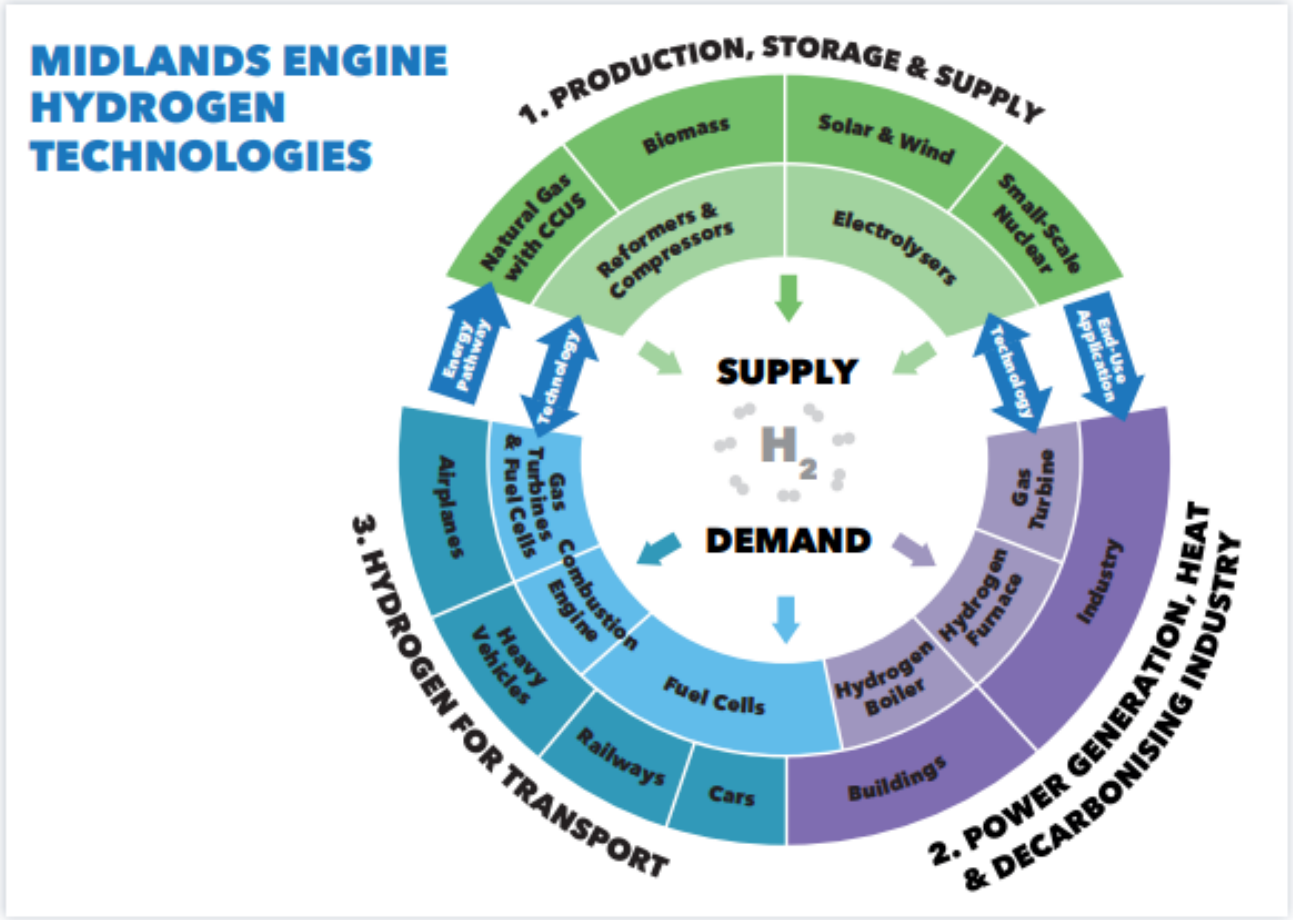
or **3,941**
charging points each year, from 2021-2030

That means installing 6x as many charging points as we do now

Households without access to on-street parking are 3x less likely to have an EV

93% of EV owners currently have access to off-street parking; however, 32% of households across the Midlands Connect region are reliant on on-street parking

3) Midlands Engine Green Growth – Hydrogen Technologies Strategy

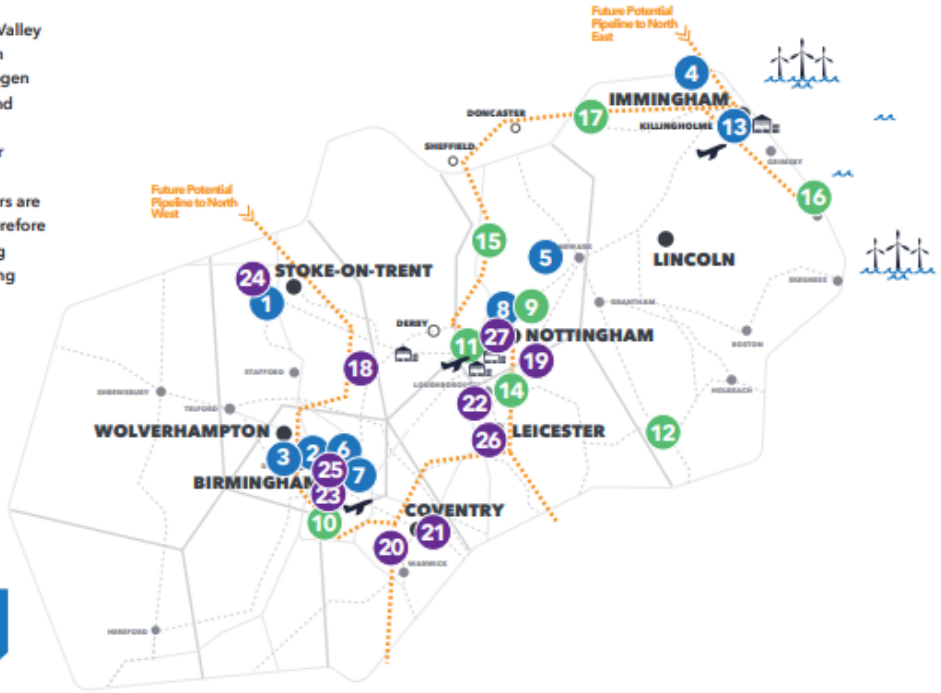


In Staffordshire:

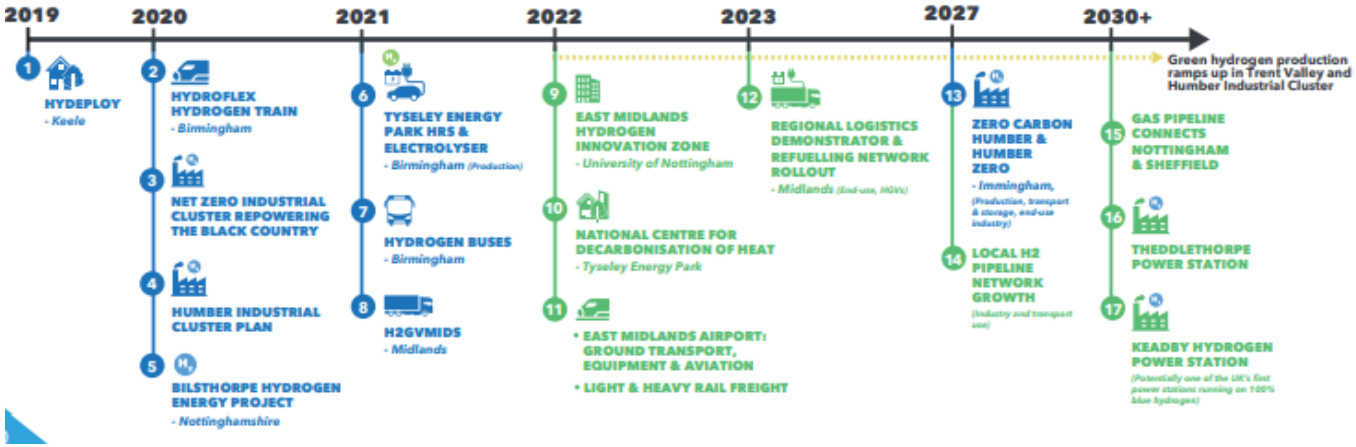
- **Keele Univeristy** is a leader in Energy Research
- **JCB** have already started to develop hydrogen heavy vehicles
- **A50-A500 corridor** is recognised as a potential key hydrogen asset with a number of leading industrial partners in transport, heating and manufacturing technologies

The Midlands Engine Hydrogen Technologies Valley

The Midlands Engine Hydrogen Technologies Valley is an ecosystem that links hydrogen production with end users - based on industrialising hydrogen technologies at scale, enabled via academic and supply chain development support. This map showcases a snapshot of our partners and their projects across our region - local clusters that combine to create a regional capability. Partners are moving rapidly to act on opportunities and therefore this map can only show some of the pioneering and high-potential work that is continually being activated in our region.



PURSUING OPPORTUNITIES IN POWER, HEAT & TRANSPORT



Our region is rightly recognised for our advanced engineering expertise and track record of manufacturing excellence. We have the capabilities and strategic intent to develop and industrialise a broad range of hydrogen technologies for power generation, heat and transport applications, as well as extending hydrogen operations across our entire region.

Our Midlands Engine Hydrogen Technologies Valley vision maps the roll out of facilities, demonstration assets and infrastructure along with a supporting innovation ecosystem.

Our partners have identified a host of opportunities to invest in projects that transition our region to a hydrogen-enabled green growth economy. These projects leverage our industrial clusters and transport corridors, as well as the green growth opportunities linked to ongoing investments in clean energy assets.

This willingness to invest is illustrated by a snapshot of example projects in the timeline shown below. The pace of development is rapid with a wide range of opportunities being pursued across power generation, heat and transport.

HYDROGEN FACILITIES & RESEARCH

18 ALREWAS GAS COMPRESSOR
19 BRITISH GEOLOGICAL SURVEY
20 WARWICK MANUFACTURING GROUP
21 MANUFACTURING TECHNOLOGY CENTRE
22 LOUGHBOROUGH UNIVERSITY
23 CENTRE FOR FUEL CELL & HYDROGEN RESEARCH - UNIVERSITY OF BIRMINGHAM
24 KEELE UNIVERSITY
25 ASTON UNIVERSITY
26 UNIVERSITY OF LEICESTER
27 UNIVERSITY OF NOTTINGHAM

TEN POINT PLAN FOR GREEN GROWTH IN THE MIDLANDS ENGINE

Point five of our Ten Point Plan for Green Growth sets out our partnership ambitions and consensus around low carbon hydrogen, with a key action to develop this Hydrogen Technologies Strategy.

LOW CARBON HYDROGEN

Pioneer, commercialise and deliver hydrogen solutions

Thanks to exceptional business, industry and academic innovation, the Midlands is already pioneering next generation, cost-effective hydrogen technologies, with powerful potential to scale up. A pan regional hydrogen task force will ensure that the Midlands Engine capitalises on the opportunities presented by hydrogen, playing a national leadership role in decarbonising transport, logistics and heating, creating jobs and accelerating net zero UK.

AIMS

- *Reduce greenhouse gas emissions*
- *Capitalise on regional, world-leading hydrogen expertise*
- *Reduce energy costs and imports*
- *Improve energy security*
- *Create high-value jobs*
- *Increase public and private investment opportunities*
- *Strengthen regional leadership in transport, logistics and heating sectors*

PIONEER, COMMERCIALISE AND DELIVER HYDROGEN TECHNOLOGIES

Together, we will identify and advance opportunities for pioneering, commercialising and delivering hydrogen technologies in three key areas, as outlined in the rest of this strategy and as identified in the UK government Hydrogen Strategy.

1. PRODUCTION, STORAGE AND SUPPLY

There is a fundamental need to develop domestic hydrogen production rather than relying on imports, based on both green hydrogen (generated from renewable electricity) and blue hydrogen (derived from steam methane reforming of natural gas in combination with carbon capture, usage and storage).

Initiatives supporting the development of low carbon hydrogen production include the launch of a £240 million Net Zero Hydrogen Fund in 2022[7] for co-investment in early hydrogen production projects. In addition, a consultation on a Hydrogen Business Model[8] will provide longer-term revenue support to hydrogen producers to overcome the cost gap between low carbon hydrogen and higher carbon alternatives.

2. POWER GENERATION, HEAT AND DECARBONISING INDUSTRY

Decarbonisation of industrial processes is anticipated to be a lead sector for hydrogen demonstration projects. Consequently, hydrogen industrial decarbonisation initiatives already underway, such as the £315 million Industrial Energy Transformation Fund[9], will be joined by a new £55 million Industrial Fuel Switching competition[10] to develop and demonstrate innovative solutions for industry to switch to low carbon fuels such as hydrogen.

The potential for hydrogen to decarbonise heat for domestic homes is also recognised and a timetable for safety testing and policy review has been proposed by government.

3. HYDROGEN FOR TRANSPORT

Hydrogen is viewed as the most viable decarbonisation option for heavy duty transport in cases where battery electric operation is not practical. Competitions to investigate and compare hydrogen and other low carbon options in buses, HGVs and shipping are underway. The government Hydrogen Strategy notes that hydrogen could play a role in rail where electrification is not cost-effective and, in the longer term, in decarbonising aviation[11].

[7] Department for Business, Energy & Industrial Strategy, 'Designing the Net Zero Hydrogen Fund – Consultation', [online]. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1011468/Designing_the_Net_Zero_Hydrogen_Fund.pdf [Accessed: September 2021]

[8] Department for Business, Energy & Industrial Strategy, 'Low Carbon Hydrogen Business Model: consultation on a business model for low carbon hydrogen', [online]. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1011469/Consultation_on_a_business_model_for_low_carbon_hydrogen.pdf [Accessed: September 2021]

[9] Department for Business, Energy & Industrial Strategy, 'Industrial Energy Transformation Fund', [online]. Available at https://www.gov.uk/government/collections/industrial-energy-transformation-fund [Accessed September 2021]

[10] Department for Business, Energy & Industrial Strategy, 'Apply for the Industrial Fuel Switching competition', [online]. Available at https://www.gov.uk/government/publications/industrial-fuel-switching-competition [Accessed: September 2021]

[11] 'UK Hydrogen Strategy', pg. 44

The new hydrogen economy - HyDEX

- **'HyDEX'** puts the Midlands at the forefront of hydrogen innovation
- It brings together seven university partners, with Keele project lead, in the **Energy Research Accelerator (ERA)**, with multinational businesses, SMEs and other partners, in order to **accelerate innovation in hydrogen, build markets and the supply chain, and support the skills needed for the new hydrogen economy.**
- The aim of HyDEX is to address the challenge of building a thriving **new business, industrial and manufacturing sector in hydrogen.**
- The programme will allow businesses to accelerate the development and viability of **new hydrogen products** and associated intellectual property while **supporting the transition from declining industrial sectors and enabling the training and re-skilling** required.
- Supported by the expertise of leading industrial partners in **transport, heating and manufacturing technologies**, who are also involved in HyDEX, these include Worcester-Bosch, Baxi and Cadent (**hydrogen boilers and gas networks**); Intelligent Energy (**fuel cells**); Porterbrook (**hydrogen trains**); Toyota (**hydrogen vehicles**); Caterpillar, Faun Zoeller and JCB (**heavy vehicles**); DVNGL, BSI, Cenex, ENGIE (**Hydrogen Networks**); Progressive Energy, ITM Power and ITM Motive (**hydrogen generation and transport**); Siemens and ENGIE (**hydrogen production and storage**).
- In Staffordshire the **A50-A500 corridor** is recognised as potential key hydrogen asset.

Growth in HGVs

- Since the mid-1990s, the **most significant growth in types of heavy goods vehicles, HGVs, has been in articulated HGVs over 41 tonnes gross vehicle weight**, which was initially allowed on British roads in the early 1990s but only when moving containers to/from rail terminals but were then permitted for all freight traffic from the early 2000s. By 2018 around 115,000 HGVs over 41 tonnes were registered in Great Britain. The Midlands has 30% of the lorry freight in the UK. HGV emissions make up 21% of road-based transport emissions in the Midlands compared with the national average of 17%.
- These HGVs have been the **supply chain backbone, supporting just about every element of how we live our lives**. They transport goods across and into the country, from food to construction materials. It is hard to appreciate the scale of the haulage sector until moments when it grinds to a halt and supplies run scarce and trucks back up at ports for tens of kilometres. They are the lifeline for the UK's economy.
- **Yet, on the other hand, they are heavy, diesel consuming, transport whose impact on CO2 emissions is significant and to achieve net-zero need to be transformed**.

Decarbonising HGVs

- There is a **clear need to decarbonise this extreme end of the HGV spectrum**. Here **fuel cell and hydrogen (FCH) technology is a very promising zero-emission powertrain solution** for the heavy-duty trucking industry.
- It is widely accepted that electric vehicle solutions cannot work at this end of the spectrum as the weight of the battery packs required to power the vehicle's electric engine becomes so heavy that the economics cease to stack up.
- Although there are no 41-tonne hydrogen trucks presently on the UK roads, we are on the verge of seeing this happen.
- There are **a number of international truck manufacturers who have prototype vehicles and there are companies such as Hyundai who have established a small-scale trial of hydrogen-powered trucks in Switzerland**. There is a need for the UK to get on board.
- The UK government has recently run a competition for catalysing regional development of schemes to transition the HGV from diesel.
- The **Midlands has the ambition to establish a hydrogen freight and logistics route which extends from the West Midlands past the East Midlands Airport and through to the South Humber. In the first instance, this could see hundreds of hydrogen trucks on the roads and a national demonstrator.**
- The aim is also to create the right economic environment for hydrogen truck manufacturers to locate in the region. A hydrogen vehicle manufacturing sector would take advantage of the rich automotive heritage of the West Midlands.

Green Jobs and Skills

‘Greenification’ of jobs and new green skills

- **The Green Economy like digital is not a sector it is about the greenification of existing and new jobs across all sectors** similar to the digitisation of roles which we have seen over a number of years now.
- It is about **businesses making the transition to being more green to help achieve climate change targets -** vast changes already happening and will accelerate.
- The Government’s skills agenda has a clear focus on the Green Economy and the vital role it can play in **supporting recovery from COVID**.
- Green innovation will lead to **new green jobs with significant growth expected:**
  - UK government launches new Green Jobs Taskforce to support the creation of 2 million skilled jobs to build back greener and reach net zero emissions by 2050.
  - The Green Jobs Delivery Group has been established to support the delivery of up to 480,000 skilled green jobs by 2030.
  - In 2018 there were 185,000 full-time workers in England’s low-carbon and renewable energy economy. In 2030 across England there could be as many as 694,000 direct jobs employed in the low-carbon and renewable energy economy, rising to over 1.18 million by 2050.
  - Creation of half a million jobs in retrofitting home insulation in existing properties.
  - Green Homes Grant to improve the energy efficiency of buildings supporting 100,000 jobs in green construction for local plumbers, builders and tradespeople across the UK.
- These jobs have the requirement for **new high level green skills** (i.e. energy skills challenges) – **retraining and upskilling existing low and mid-skilled workers alongside recruiting highly skilled workers to fill high skilled jobs.**
- The **‘Plan for Jobs’** recognises the importance of **apprenticeships, traineeships, T levels and The Kickstart Scheme** in helping people obtain the skills needed to fill the jobs required to build a more resilient and green economy.

Green Jobs Taskforce initial findings in identifying skills needs in key green sectors

In November 2020, BEIS and DfE launched the Green Jobs Taskforce - chaired by BEIS and DfE Ministers and made up of experts from industry, academia, the skills sector, and unions. Its report was published in July 2021, setting out evidence on skills gaps in green sectors, together with independent recommendations for government and industry.

Announced: November 2020
Concluded: July 2021

TASKFORCE'S CALL FOR ACTION

1. **Unlock industry investment in good quality green jobs and skills;**
2. **Promote diversity within emerging low carbon sector and ensure pathways exist for people of all ages to go into green careers; and,**
3. **To ensure a just transition for workers in high carbon sectors.**

Key sector findings:

Offshore Wind

According to industry estimates, **by 2026, the offshore wind sector could employ around 70,000 workers** (40,000 direct jobs and 30,000 jobs in the supply chain). This compares to around 26,000 presently (15,000 direct jobs and 11,000 jobs in the supply chain).

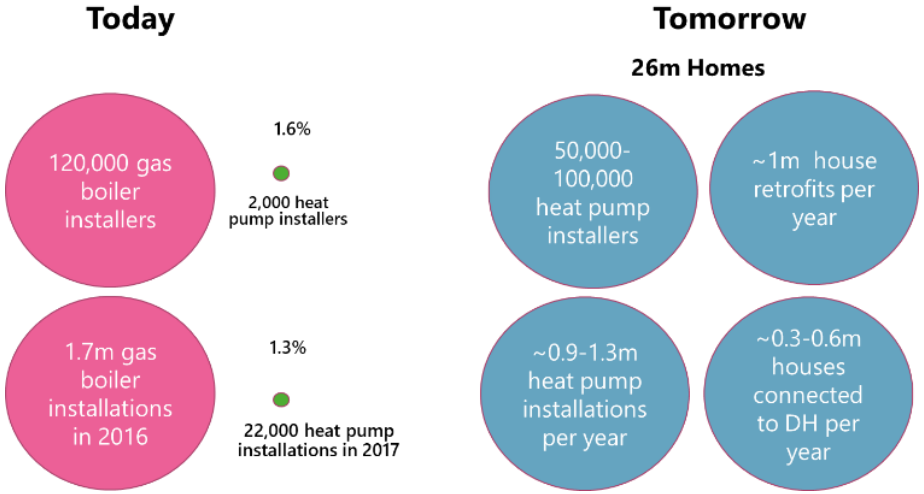
Automotive

It is estimated that the **UK could produce around 1.6 million electric vehicles (EVs) per year by 2040** and establish seven gigafactories in national territory. These gigafactories could **create up to 78,000 new jobs** (both direct and in the supply chain), with **24,500 in battery manufacturing**, **43,500** in the **battery supply chain**, and around **10,000 in EV manufacturing**.

Buildings

According to the Construction Industry Training Board (CITB), improving the building fabric energy efficiency of **every building in the country in need of retrofit will require 12,000 workers to be trained every year for about the next four years**, before the need to **ramp up annual recruitment by up to 30,000 workers between years 2025 and 2030**. This implies an **increased trained workforce of up to 230,000 by the end of the decade**.

Increasing The Quantity Of Tradespeople With Decarbonisation Skills



Above: Industry cannot attract enough candidates for current vacancies yet needs to ramp up activity considerably in future.

Need both retraining and upskilling the current workforce, as well as identifying training programmes and accreditations for a new generation of tradespeople.

- Energy White Paper: "we will use the switch to clean energy to support up to 50,000 jobs across the UK by 2030,"
- CCC 6th CB: the UK must "create over 200,000 jobs in home renovation and heating […] over the next three decades.
- Construction Industry Training Board (CITB): industry will require the equivalent of 350,000 new roles to be created by 2028
- (+ non domestic roles) in energy generation, transmission, manufacturing of equipment, industrial decarbonisation…

Based on a five-day working week of forty hours per week, we will need to decarbonise around **eight homes every minute for the next 29 years**

There remains some debate across the sector as to the exact figures required to meet the challenge of building decarbonisation, but there is industry-wide agreement that more must be done to ramp up the skills agenda

Uncertainty = stalled investment, hampers growth, levelling up etc.

Recognised that local stakeholders will be key in helping deliver a green economy, boosting support for green skills and jobs

Local area input and evidence used to inform work of the Taskforce:

- Economic Recovery Working Group (ERWG) task and finish group proposals
- Engagement with MCAs and LEPs and external stakeholders (e.g., Tees Valley LEP, Liverpool MCA, DAs, and local businesses and skill providers)

Reports used (not exhaustive):

- ***Going green - preparing UK workforce for transition to net zero (Nesta, 2020)*: A thorough examination of the scale of the challenge in the UK regarding employment and adult learning, and offers guidance about the actions needed to achieve an efficient, inclusive and fair transition to a net-zero economy. Regions in industrial transition, including Northern Ireland, the East Midlands and West Midlands – where about 50% of jobs are in high emissions sectors.
- ***Local green jobs - accelerating a sustainable economic recovery (Local Government Association, 2020):*** Articulation of key skill gaps by sector to reduce carbon output.
- ***Green Job Vacancies in the Liverpool City Region (Warwick Institute for Employment Research, 2021):*** Defines green jobs and outlines methodology for identifying green jobs using jobs vacancies. Presents findings on green jobs vacancies including their extent, wages, hiring requirements by Warwick Institute for Employment Research.
- **Humber Strategic Economic Plan 2014-2020 (Humber LEP, 2014)**: A plan for growth in the Humber to form the basis of a Growth Deal with Government. It will be a determinant of the Humber's allocation of the Local Growth Fund and the Skills Advisory Panel Report on the analysis and mapping of skills demand and supply.
- ***A just transition: Realising the opportunities of decarbonisation in the north of England* (IPPR, 2020)**: Sets out what a just transition is, potential benefits, skills gap in energy sector. This report discussed these challenges to delivering a just transition in detail and make the case for a new approach that puts economic and social justice at the heart of energy and skills policy in the North.
- ***Skills for the Low-Carbon Economy: Building low-carbon skills capacity and capability in London (Think Up, 2010)*: Findings and recommendations from a workshop commissioned facilitated by Think Up which recommended to the Low Carbon Skills forum that it supports a collaborative partnership to deliver low carbon skills capacity to London.

Initial actions announced alongside the Taskforce report

Green apprenticeships: Existing green apprenticeships already up and running e.g., Nuclear Desk Engineers, Wind Turbine Maintenance and Operations Engineering Technicians, Research Scientists and Environmental Practitioners - endorsed by the **Green Apprenticeships Advisory Panel (GAAP)**. The **GAAP** is working with employers across England to enhance the current apprenticeships on offer and create new opportunities to adapt to the growing green economy.

Green Skills Bootcamps: Expansion of Skills Bootcamps (Wave 2) to other areas of the country, which deliver free, flexible training courses of up to 16 weeks for adults so they can develop in-demand skills and fast-track to an interview with a local employer. This will include offering technical training in **green home retrofit management**, **solar energy installation**, **sustainable agriculture**, **nuclear energy deployment**, and **green transport**.

Electrification skills boost: **The Emerging Skills Electrification Project**, which aims to encourage the adoption of cutting-edge skills in **electrification technologies**, such as **battery-powered motors** and drives, electric vehicle systems and software, battery maintenance, and recycling. The project will fund the development of short courses, **teacher training** support and free to access 'up-skilling' days for adults in the latest electrification technologies.

Free Courses for Jobs (free Level 3 qualifications): Fully funded offer for any adult without an existing Level 3 qualification - equivalent to A levels. The offer includes qualifications in sectors such as **Agriculture**, **Building and Construction**, **Engineering**, **Horticulture** and **Forestry** and **Science**.

Recognised that evidence for some sectors remains patchy and skills shortages have not yet been clearly articulated at a granular level

Level	Description
Level 1 (best)	Academic report from trusted source or HMG report, with industry input, which robustly models the skills gap in this sector using the proposed CB6 pathways (where known).
Level 2	Industry report being reviewed currently by HMG which fulfils majority of priority areas of interest (skills gaps to 2030).
Level 3	Industry report not being tested by HMG or academia / which does not fulfil priority areas of interest (skills gaps to 2030).
Level 4	Ad hoc and anecdotal evidence.
Level 5	Not aware of any evidence or research in this space. Not aware of any industry or sector team planned research.

The transition to net zero will affect all regions across the UK

- 19% of jobs in London are projected to be affected, compared to 23% in the east midlands.
- Many relevant roles (e.g. in retrofit and rail) **are in sectors which are not region-specific** and will be needed across the UK.
- Although some green sectors are relevant to particular local economies – such as offshore wind in the north east and automotive in the Midlands

Sector	Assessment of evidence gaps
Power: Offshore Wind	Level 2: OWIC report - gives current and forecasted size of workforce **to 2026** including breakdown by job group and skill level, but no assessment of level of shortage. Outlines current regional job breakdown by gender, job group and skill level. Forecasts this **to 2026.**
Power: Nuclear	Level 2: Biennial NWA report (latest release in 2019) - estimates size of workforce (FTE) at 5 year intervals **2020-2035.** Split by existing operations and two new build scenarios (differing capacity assumptions). Breakdown by demand and supply (existing workforce).
Power: Electricity Networks	Level 4: Limited evidence
Power: Smart Systems	Level 4: Limited evidence
Buildings: Heat pumps	Level 2: Heat Pump Association, CITB Reports. Internal analysis available too.
Buildings: Retrofit (Building Fabric)	Level 2: CITB report - estimates additional FTE requirements per annum (2021-2050) including by job role, qualification level and skills requirement.
Buildings: Heat Networks	Level 4: Limited Evidence
Automotive	Level 3: Faraday Institution - Outlines sense of scale. Number needed to reskill in manufacturing by **2025** and number needed in battery cell manufacturing by **2030,** number of technicians that are currently EV qualified.
Public transport: Rail	Level 3: NSAR report - estimates size of current workforce (2021) and number of additional workers needed in over next 5-10 year period. Mentions current unfilled vacancies (gives sense of current supply).
Industry: Hydrogen	Level 4: Limited evidence
Industry: CCUS	Level 4: Limited evidence
Circular Economy	Level 5: No evidence.
Forestry	Evidence under assessment

Next steps

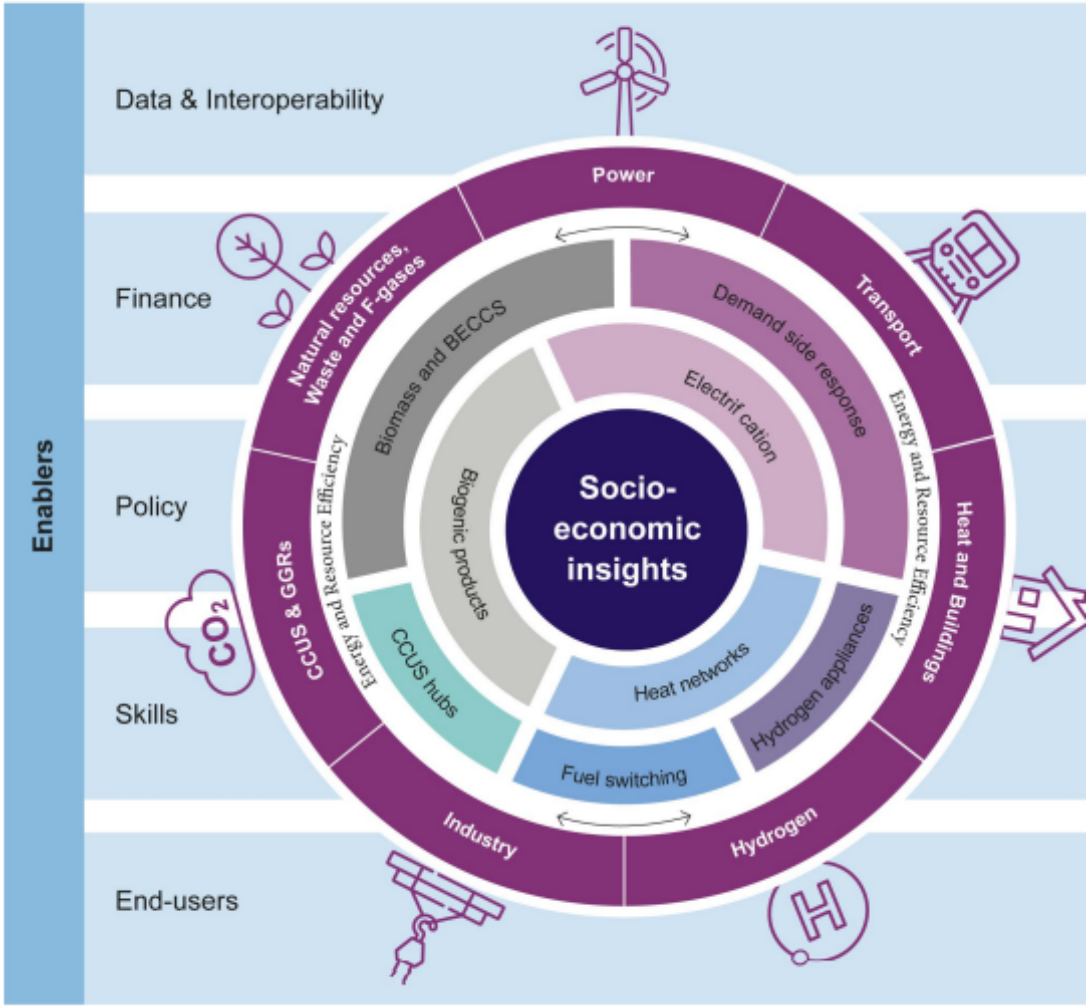
- October: The Net Zero Strategy will represent an initial response to the Taskforce recommendations
- Ongoing: Work to address sectoral evidence gaps
- From December: BEIS research project on job transition pathways and future skills needs in sectors undergoing structural change
- Skills Accelerator pilots announced

Net Zero Research and Innovation Framework

- The UK has an opportunity to be a leader in certain low carbon technologies, services and systems that will be needed globally, with the Government's plan to Build Back Better focussing on the three pillars of infrastructure, skills and innovation.
- The Government's Net Zero Research and Innovation Framework outlines the research and innovation required to support delivery of the UK's Net Zero Strategy. A wide-ranging portfolio will be needed and this Framework details research and innovation challenges across the Carbon Budget and related sectors:
    - **Power**
    - **Industry and low-carbon hydrogen supply**
    - **Carbon Capture Utilisation and Storage (CCUS) and Greenhouse Gas Removal (GGR)**
    - **Heat and buildings**
    - **Transport**
    - **Natural resources, waste and F-gases**
- It also identifies cross-cutting and systems-wide issues and linkages between sectors extending beyond technology to include research and innovation related to skills, infrastructure, technologies, knowledge generation and sharing, and stakeholder engagement.
- Necessary new skills will need to be developed and widely available in time across manufacturing, supply chain and service industries.
- Enabling an integrated, multi-modal transport system requires research into skills which support the transition in transport across the board, some of which are not visible yet.
- Need to understand local / regional needs and opportunities so that decarbonisation approaches build on existing skills to support local economic growth.
- Application of low carbon construction techniques, skills and materials for new transport infrastructure – concrete, steel, road surfaces, etc.
- The framework will look to understand how skills programmes and education strategy can support environmental goals and green growth.

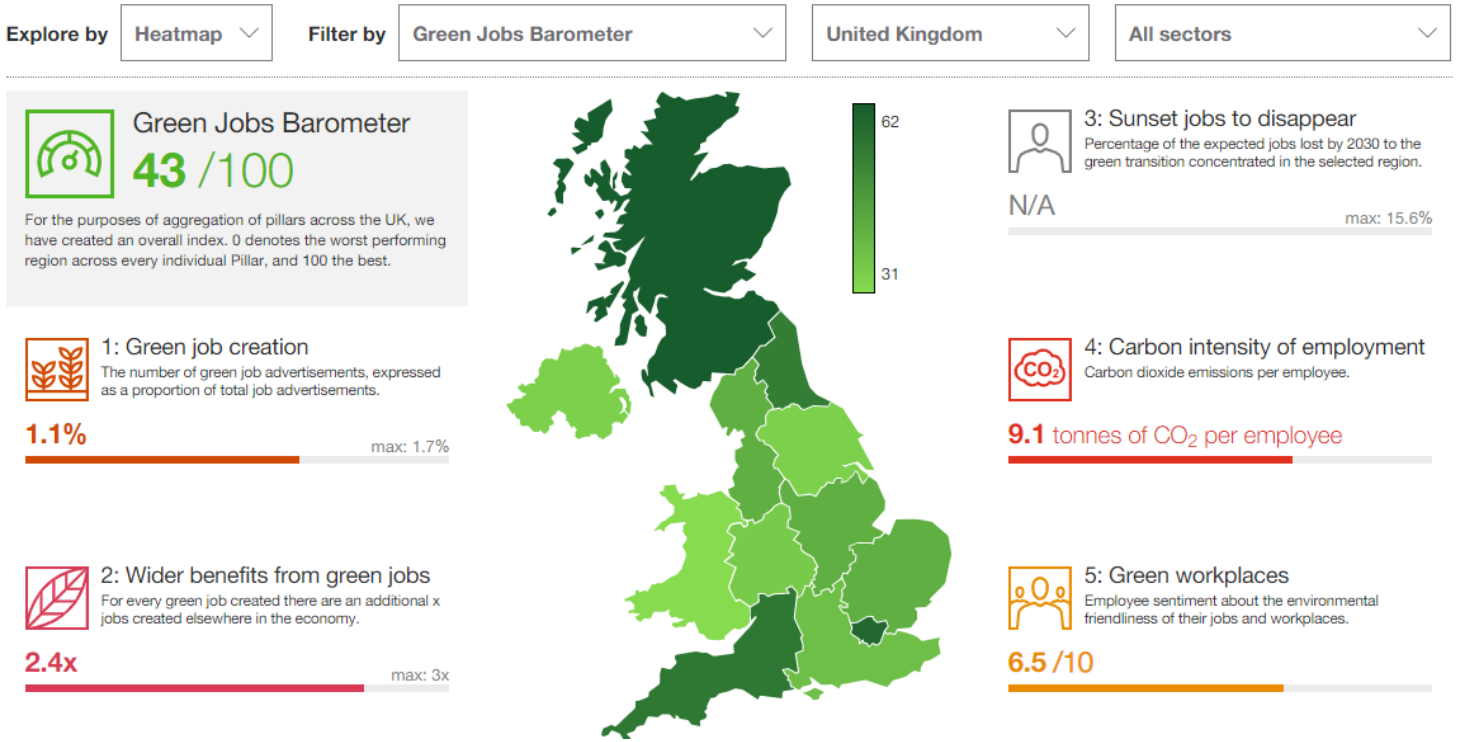
UK Net Zero Research and Innovation Framework

Figure 8: An integrated approach to net zero: Simplified illustration of key system and sector interlinkages for the net zero transition



PwC new green jobs barometer

- Designed to enable business and government to better identify trends and challenges as we adapt to the green transition, and help determine where support and investment needs to be targeted.
- Tracks movements in green job creation, job loss, carbon intensity of employment, and worker sentiment across regions and sectors.
- The first set of results show that the transformation to a net zero economy is already feeding through to the employment market, but that disparities are arising in how the transition to greener jobs is affecting different parts of the UK.
- This highlights the work that is needed from business, skills providers, and policy makers to ensure the green jobs transition doesn't exacerbate regional inequalities.
- [Green Jobs Barometer - PwC UK]



Low Carbon and Renewable Energy Economy Survey (LCRES)

Aim of the Survey

- The Low Carbon and Renewable Energy Survey (LCRES) is designed to collect information from businesses working within the Low Carbon and Renewable Energy Economy. UK government departments and devolved administrations will use this information to assess and develop policies relating to green job creation, potential growth and investment opportunities both nationally and regionally.

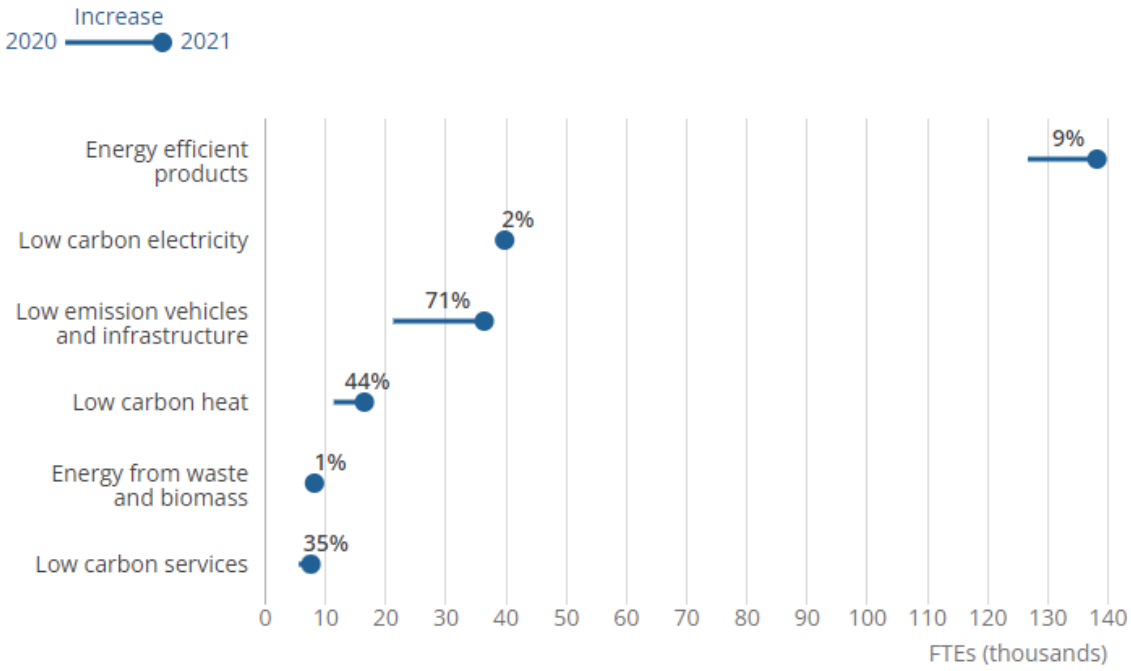
Low carbon and renewable energy economy, UK: 2021

- Low carbon and renewable energy economy (LCREE) turnover and employment estimates are both at their highest level since the first comparable figures in 2015.
- Between 2020 and 2021, LCREE turnover (all in current prices) increased by 30.8%, from £41.6 billion to £54.4 billion.
- Employment increased by 16.4% in the same period, from 212,600 full-time equivalents (FTEs) to 247,400.
- The energy efficient products group had the highest LCREE turnover in 2021 at £19.6 billion (36.0%) and the highest LCREE employment at 138,300 FTEs (55.9%).
- The manufacturing industry had the highest LCREE turnover in 2021 at £16.9 billion (31.1%), and the construction industry had the highest LCREE employment at 91,000 FTEs (36.8%).
- Although a proportion of this observed increase could be attributed to the recovery of the UK economy from the coronavirus (COVID-19) pandemic, this is not likely to be the whole picture.
- Low carbon and renewable energy economy, UK - Office for National Statistics (ons.gov.uk)

Low Carbon and Renewable Energy Economy Survey

- The energy efficient products group had the largest LCREE employment in 2021, at 138,300 FTEs (55.9%).
- The low emission vehicles and infrastructure group saw the largest employment increase, from 21,400 FTEs in 2020 to 36,500 in 2021 (70.6%).

LCREE group employment and change, UK, 2020 and 2021, full-time equivalents (FTEs) in thousands

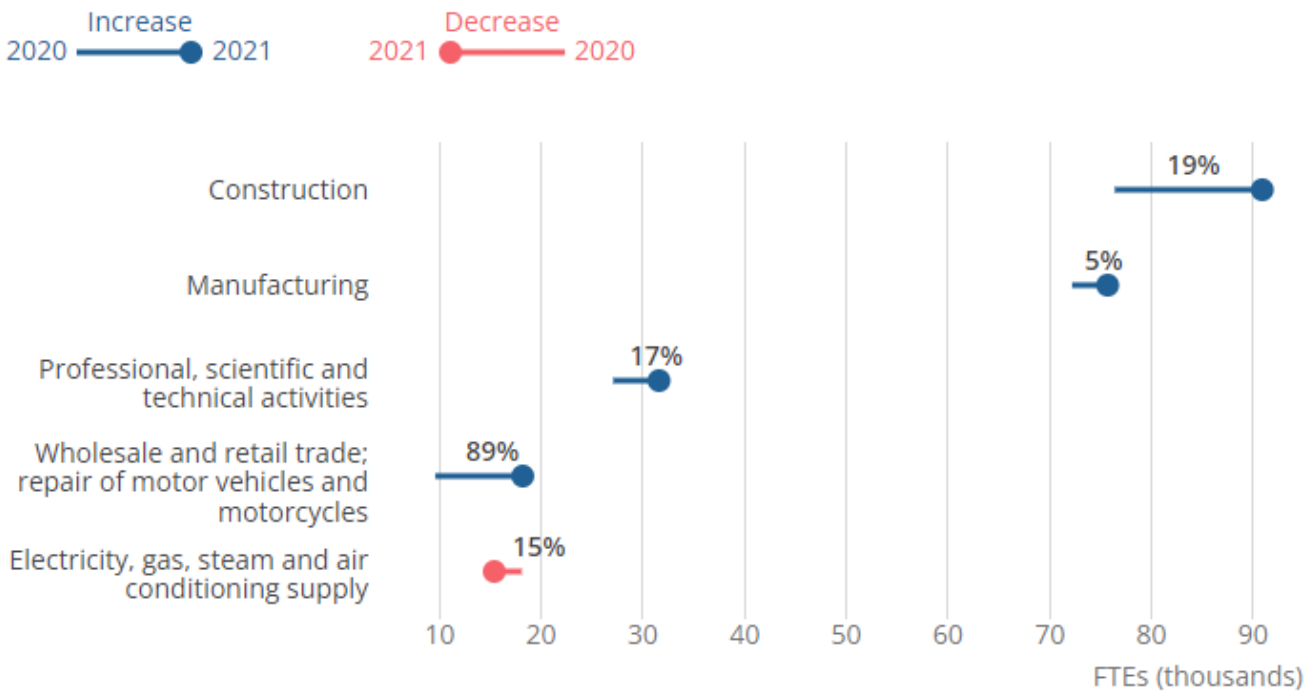


Source: Office for National Statistics – Low Carbon and Renewable Energy Economy Survey

Low Carbon and Renewable Energy Economy Survey

- The construction industry had the largest LCREE employment in 2021, at 91,000 FTEs (36.8%), and the largest increase in employment, rising by 19.0% from 76,500 FTEs in 2020.

LCREE industry employment and change, UK, 2020 and 2021, full-time equivalents (FTEs) in thousands

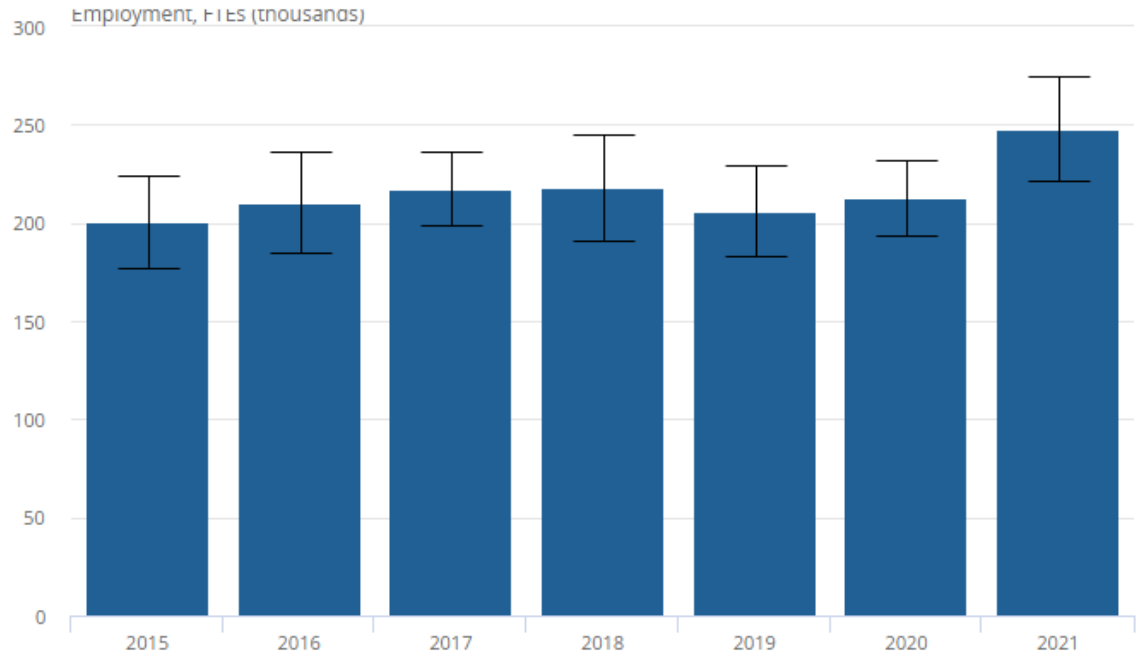


Source: Office for National Statistics – Low Carbon and Renewable Energy Economy Survey

Low Carbon and Renewable Energy Economy Survey

- UK LCREE employment increased by 23.4% between 2015 and 2021

LCREE, employment, full-time equivalents (FTEs) in thousands with confidence intervals, UK, 2015 to 2021



Source: Office for National Statistics – Low Carbon and Renewable Energy Economy (LCREE) Survey

Low carbon and environmental goods and services sector

- The Midlands Energy Hub has recently published evidence on the scale and opportunities in the Midlands' low carbon and environmental goods and services sectors - Low Carbon and Environmental Goods and Services Sector… | NCC Energy (energyservices-ncc.co.uk)
- This is the link to the Staffs and Stoke report - LCEGS_Stoke__Staffordshire_LEP_Final_Report.pdf (energyservices-ncc.co.uk)
- Baseline report which highlights our existing strengths and weaknesses (sector growth/jobs/businesses/exports) and skills gaps and training provision requirements

Green Jobs in Stoke-on-Trent and Staffordshire

- The LGA has published 'Local green jobs - accelerating a sustainable economic recovery' which provides analysis of the jobs required for a net zero economy in England, where these will be located in the coming years, and the role that local government could play working with industry to address the sector's skills demands.
- A interactive report showing the low-carbon employment projections by local authority area is available in LG Inform.
- **In Staffordshire it is estimated that 8,500 jobs will be required by 2030 and by 2050 this will rise to 13,900, with high demand in low-carbon heat, solar PV, home insultation and EV transition.**

2030

Metric type	Staffordshire
	2030
	Count
Estimated jobs in Low-carbon electricity	1,295
Estimated jobs in Low-carbon heat	2,486
Estimated jobs in Alternative fuels	687
Estimated jobs in Energy Efficiency	2,276
Estimated jobs in Low-carbon services	384
Estimated jobs in Low emission vehicles & infrastructure	1,440
Metric types total	8,568

Low carbon economy skill gaps

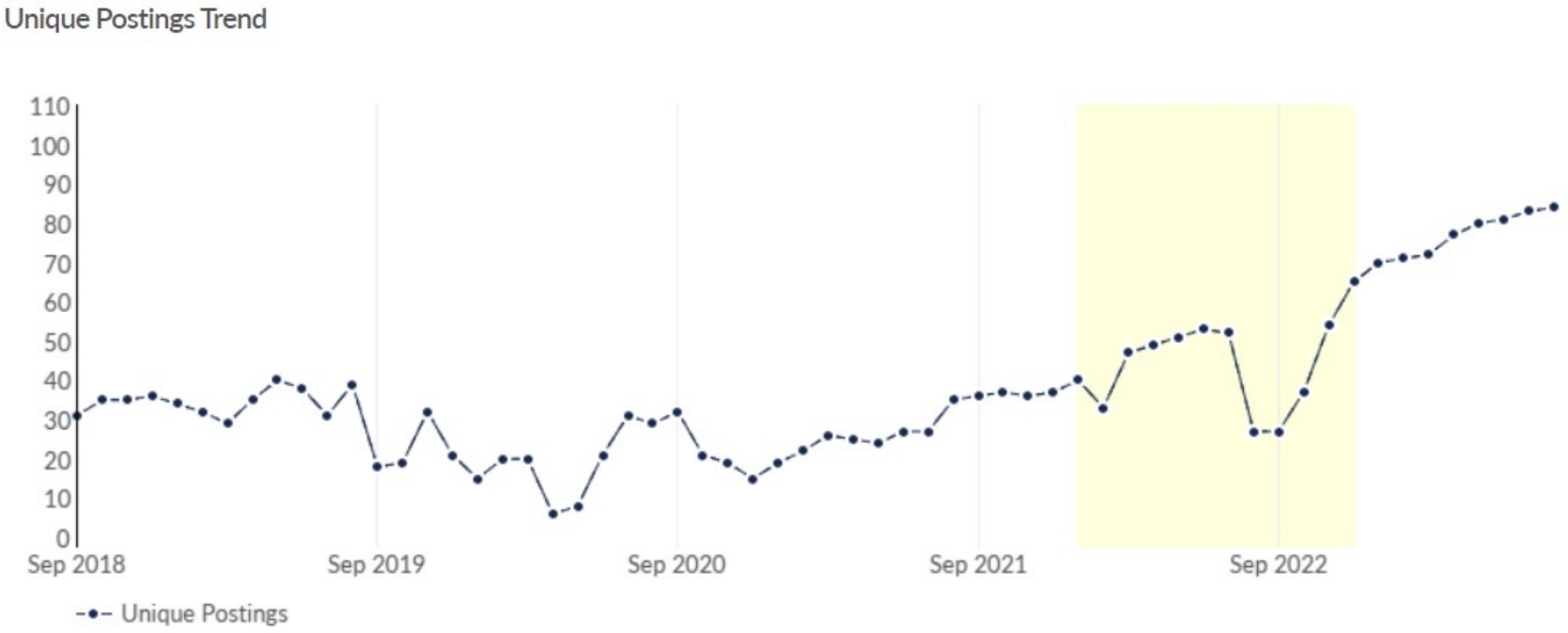
- The following table shows the qualifications required to support the growth in low carbon jobs:

Table 5: Comments on key area of skill level gap for individual sub-sector (corresponding to relevant NVQ Level)			
Sub-sector		**Comment on skill gap areas**	**Time horizon**
Low-carbon electricity	Solar	Supply chain considered relatively secure, however an uptick in demand would require technicians to be trained at **NVQ level 3** equivalent to develop a larger installer base to deliver grid connected solar for utility scale/decentralised generation.	
Low-carbon electricity	Nuclear	Entire supply chain in need of upskilling to meet emerging demand; **NVQ level 1 – 3** for construction; **NVQ level 4+** for design and planning.	
Low-carbon heat	Heat pumps	Key skills gap area to meet increasing demand is in the design, specification and installation of heat pumps; **NVQ level 2 – 3.**	
Alternative fuels	Anaerobic digestion	To meet forecasted demand, higher skill levels would be required **NVQ 4+** to design and connect AD plants to the grid and ensure biomethane is of sufficient quality for DNOs.	
Alternative fuels	Hydrogen fuel cells	Highly skilled jobs (**NVQ level 4+**) for R&I required in future; a good stock of technicians expected to be available from existing automotive sector to meet manufacturing demand (i.e. NVQ 1 – 3).	
Energy efficient products	Smart controls	Highly skilled **NVQ level 4+** in software engineering is considered as a key skill to enable future innovations within the sub-sector; good stock of manufacturing technicians expected to be available (NVQ 1 – 3) for manufacturing demands.	
Low-carbon services	Consultancies and financial services	Highly skilled **NVQ level 4+** demand is ongoing and required to ensure service sector organisations can exploit emerging opportunities.	
Low emission vehicles and infrastructure	Electric vehicles	Sector is expected to preserve jobs across all NVQ levels as existing, large automotive capacity in UK switches to ULEV technology. Ongoing R&I activities demands highly skilled researchers **NVQ Level 4+.**	

Key	
	Sub-sectors that are considered to have key near-term (2020 – 2025) skills gaps
	Sub-sectors considered to have a skills gap emerging in the longer-term (2025 – 2035)

Starting to see early signs of growth in green job vacancies to support the transition to Net Zero

- Just under 240 green job vacancies in Staffordshire between Jan 2022 and Dec 2022 which is an increase compared to 130 a year earlier and 100 two years earlier.
- The average advertised wage was £30.0K (Staffordshire median £29.2K) between Jan 2022 and Dec 2022 a slight increase compared to £29.5K a year earlier.



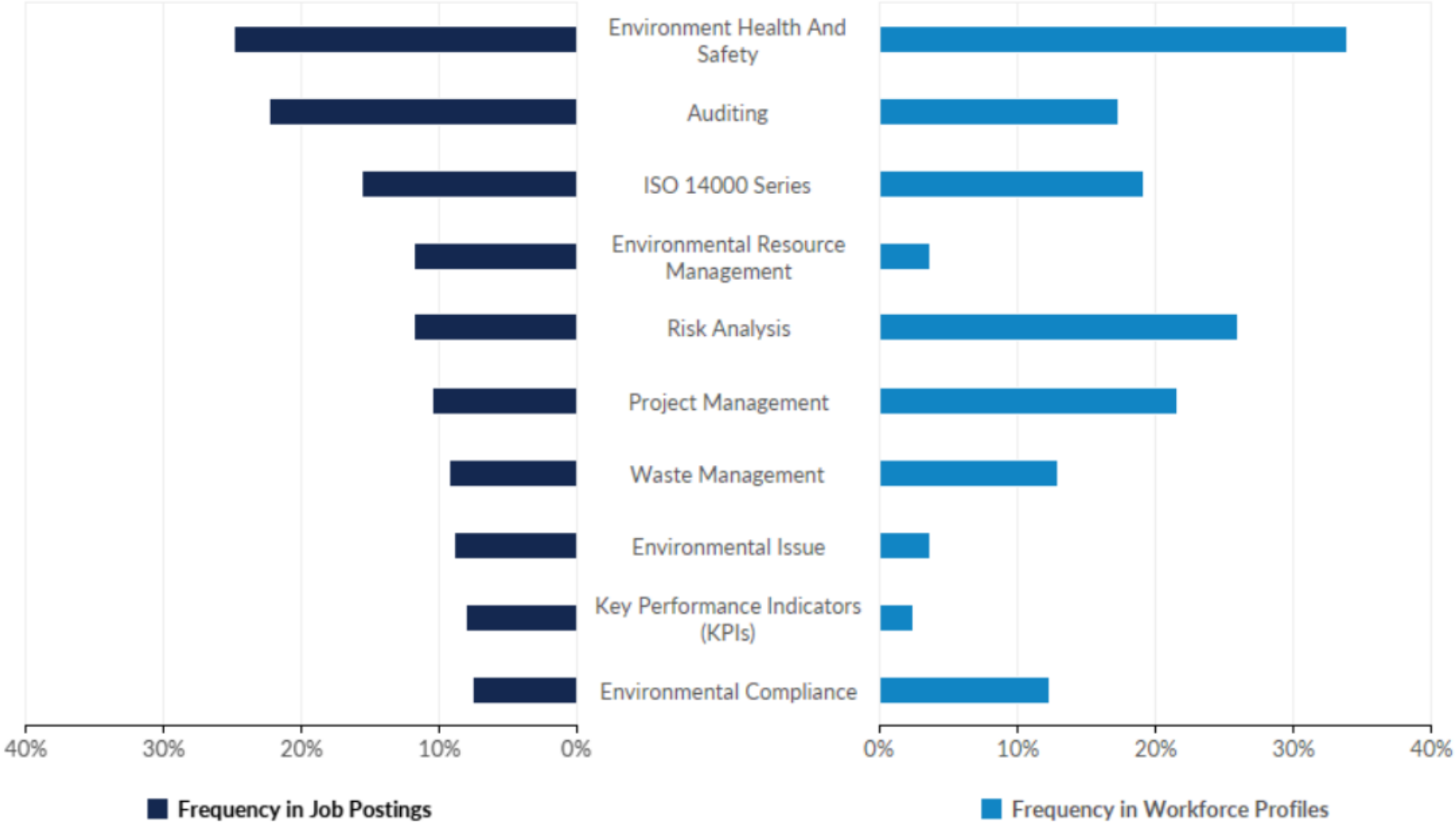
Green Economy – Occupations in Demand

- As well as seeing an overall increase in green job vacancies they are also becoming more varied in nature with new occupations emerging.
- Initially new green jobs were mainly **senior roles to manage the transition** e.g. sustainability and environmental managers but starting to see increase in **high-skilled technical support roles** e.g. solar electricians etc.

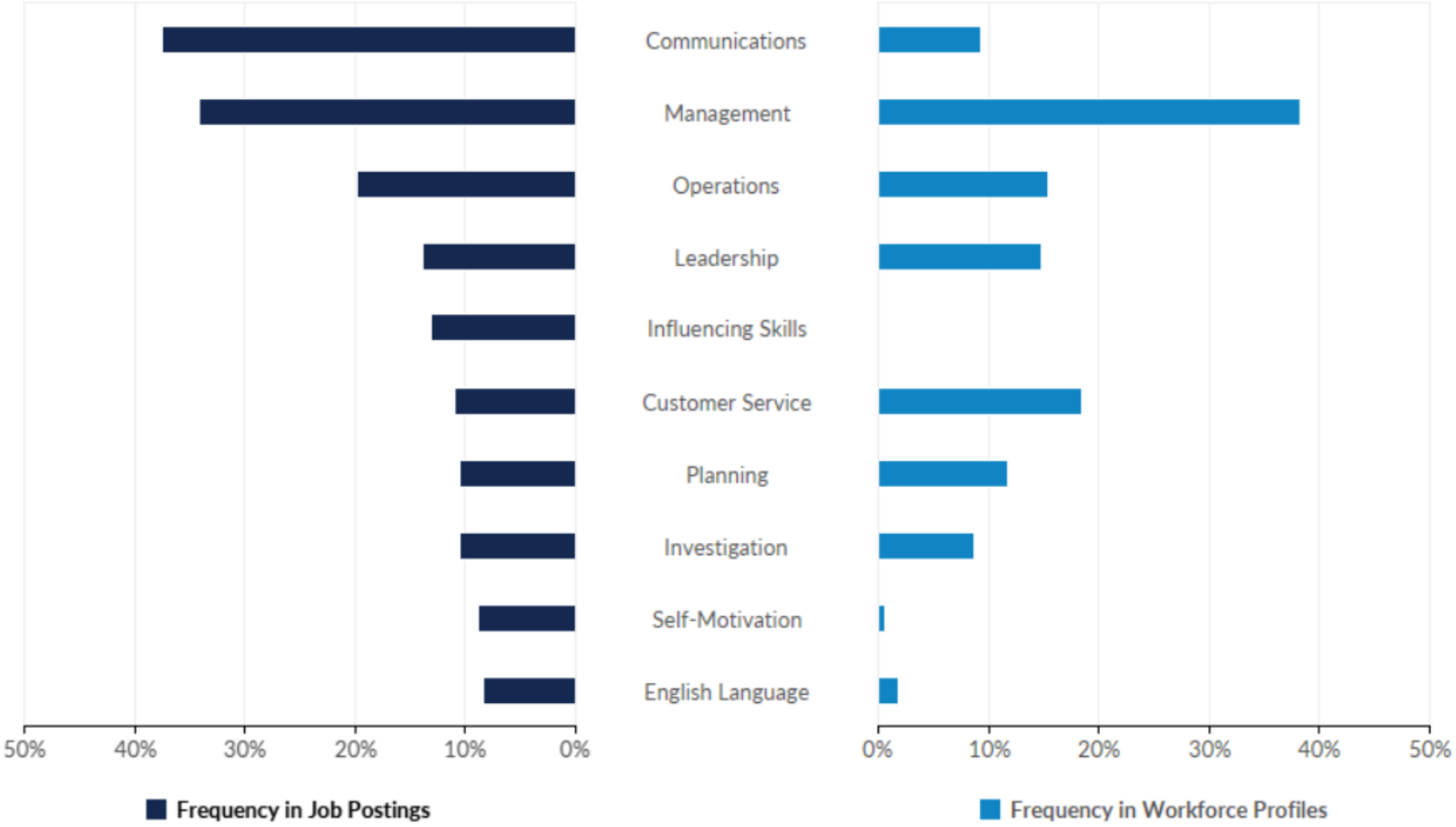
Top Posted Job Titles

Job Title	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
Environmental Health and Safety Managers	59 / 30	2 : 1	33 days
Recycling Workers	55 / 23	2 : 1	36 days
Environmental Advisors	29 / 14	2 : 1	33 days
Recycling Managers	43 / 14	3 : 1	23 days
Environmental Managers	18 / 13	1 : 1	30 days
Environmental Specialists	40 / 10	4 : 1	30 days
Sustainability Managers	19 / 10	2 : 1	30 days
Environmental Officers	20 / 9	2 : 1	29 days
Environmental Health and Safety Specialists	20 / 9	2 : 1	30 days
Environmental Health Officers	11 / 9	1 : 1	23 days
Solar Electricians	11 / 8	1 : 1	38 days
Environmental Health and Safety Advisors	30 / 8	4 : 1	49 days
Sustainability Officers	16 / 6	3 : 1	13 days
Solid Waste Operators	8 / 6	1 : 1	33 days
Environmental Health and Safety Coordinators	9 / 5	2 : 1	27 days
Environmental Planning Interns	8 / 5	2 : 1	13 days
Environmental Coordinators	8 / 4	2 : 1	27 days

Green Economy – Technical Skills in Demand



Green Economy – Transferable Skills in Demand



Green Growth Requirements

Securing Green Growth for Staffordshire

- Recent **business surveys flag that many local businesses aren't thinking about green growth opportunities and are in danger of getting left behind** (e.g. Northeast already progressing with offshore wind and now the development of a centre of excellence for hydrogen)
- **SSLEP SAP Skills for Growth Survey** – most businesses still reticent to make the transition as the demand is still to come – market forces and government subsidisation
- Require **business support to aid local businesses in making the green transition and developing new low carbon business models which require new green skills**
- Need to **make the changes early to get ahead of the curve and remain competitive**
- Need **higher level technical skills to develop businesses which in turn can increase economic growth and productivity**
- **Better local skills base can increase higher skilled, higher paid jobs in Staffordshire leading to greater prosperity**
- Need for **strong local leadership to grasp the green economic growth opportunities, with employers and providers working more effectively together to ensure that demand drives skills supply – i.e. a representative business panel**