LEARNING AND WORK INSTITUTE

The road to net zero: How far have we come?

Analysing employer demand, training supply, and worker appetite for green jobs and skills

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About Learning and Work Institute

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NOCN foreword

The transition to net zero represents a significant opportunity for the UK. It can create new careers, strengthen industries and support economic growth across communities. Realising that opportunity will depend on ensuring people have the right skills, knowledge and confidence to take part.

That is why NOCN Group commissioned this research from Learning and Work Institute. We wanted to understand how demand for green skills is developing across construction, clean energy and transport, how well current training is responding and what will help more people access the opportunities ahead.

The findings show encouraging progress. Training has grown in areas including heat pumps, solar power and electric vehicle servicing, and younger people are showing a real interest in working in the sectors that will be central to the transition. Many of those interested in these careers also feel confident that they could develop the skills required.

There is now an opportunity to build on this momentum. Demand is growing quickly, and employers, providers and policymakers need to work together to ensure that training remains relevant, accessible and closely connected to the needs of industry.

The research also shows that people would prefer to develop green skills through training at work. This places employers at the heart of the transition, while reinforcing the value of strong partnerships with colleges, training providers and awarding organisations.

We need to make green careers easier to understand and create clear routes that help people move from initial interest into learning, employment and continued development. This includes supporting young people entering the workforce, as well as helping existing workers gain new skills as industries and technologies evolve.

As an education and skills charity, NOCN Group is committed to supporting this progress. We work with employers, providers and partners to develop qualifications and training that respond to industry need, widen opportunity and help people build skills that remain valuable throughout their careers.

This report provides a strong evidence base for the next stage of that work. I hope it encourages a positive and practical conversation about how we can turn the UK's net zero ambitions into lasting opportunities for individuals, employers and communities.

Graham Hasting-Evans, Chief Executive, NOCN Group

Learning and Work Institute foreword

The transition to net zero can bring environmental benefits and support energy security. The UK has made big progress in reducing carbon emissions in recent decades but still has much further to go to reach net zero by 2050.

The good news is that training in the roles needed to make this transition is growing and, in some cases, match the pace of change needed. Around 10,000 people train as heat pump fitters each year, in line with what the industry estimates is needed to meet the Government's ambitions for 350,000 installations per year by 2030. The number of people gaining certificates in clean energy has risen 13-fold since 2019-20 to almost 5,000 per year, with most of this growth in solar as the costs have fallen and its use risen. Roughly one third of the vehicle repair workforce is trained to work on EVs.

However, in many cases we need to go further and faster. The number of electric vehicle repair operatives broadly matches need now. However, technician numbers will need to accelerate in the early 2030s, otherwise we risk a shortfall of 43,000 by 2035. The number of EV charge points installed each year would have to rise fivefold to reach the Government's target of 300,000 by 2030, but the number of people training to fit these has fallen 61% in the last two years.

People and firms will only train in these skills if there is jobs demand. But the training routes need to be available and to adapt to changes in technology. Previous Learning and Work Institute research has highlighted that other countries, like the Netherlands, can be better at updating training in a more planned and quicker way.

People and employers also need to be aware of these opportunities and what is the best training to open these careers. Our research shows the term 'green skills' is relatively little known and not a great motivator for choosing a potential career. However, lots of people say they *are* interested in working in the sectors that will be vital to the net zero transition. This provides an opportunity.

Our economy is changing, partly through the choices of people and employers, partly through Government targets and incentives. We can be proud of the progress we have made toward net zero and the growth in green skills training. But we also need to be clear eyed about the areas where we need to go further and faster.

Stephen Evans, Chief Executive, Learning and Work Institute

Executive summary

The good news is that, across the board, the number of people being trained in green skills and jobs is rising. Increased demand for these skills is accelerating, in part due to Government plans, incentives and strategies. But current training uptake, qualification pathways and workforce readiness fall short of what's required to reach net zero in sectors critical to the green transition.

In construction, the workforce for energy efficiency and clean heating is modelled as needing to grow from 60,000 roles in 2023 to around 240,000 by 2030. While numbers of people enrolling in related training have increased significantly over recent years, progress has stalled. Apprenticeship routes into low carbon construction are limited, and some technical education pathways are shrinking.

Demand for jobs in clean energy is projected to grow faster than in any other priority sector. However, formal training routes are either not in place or not keeping pace. It is unclear what percentage of those training via general apprenticeship and qualification pathways are entering the clean energy sector, while a lack of insight into industry schemes not captured in public datasets is contributing to the lack of clarity.

Transport presents different challenges. Good progress has been made in retraining existing technicians to work safely on electric vehicle maintenance and repair, but shortages are at risk of biting as EV sales increase and the ban on new petrol and diesel vehicles approaches. Charge-point installation qualifications have fallen by 61% since their peak, mirroring a slowdown in infrastructure rollout. Meanwhile, battery manufacturing pathways are nascent, with fewer than five starts on the dedicated apprenticeship standard in 2024/25.

Public appetite for jobs and skills that can support the net zero transition is mixed. Most people have not heard of green skills, and most people do not want to work in construction, energy, or transport. Those who already work in these sectors are more likely to say they lack green skills than possess them, and a sizeable minority of these existing workers do not want to gain them. Those who do have an appetite to work in these sectors would favour training routes that do not match industry need. While demand in priority occupations is growing sharply in Level 2 and 3 apprenticeships, these pathways are among the least popular options for how people want to gain green skills.

Taken together, the evidence shows that the UK needs to accelerate its journey along the road to net zero. This will involve boosting technical and vocational education, scaling enrolments in training pathways, and more effective data gathering on how job volumes are matching up to demand. It will also require industries critical to the green transition to attract career starters and career changers and invest more in the skills of their existing workers.

Key findings

Construction

- Government estimates the need for 240,000 energy efficiency and clean heating workers by 2030, up from 60,000 in 2023.
- The report estimates 46,500 annual publicly funded training completions for construction roles that can (either currently or in the future) support the net zero transition.
- Grant-funded heat pump training is operating at close to the current estimates of demand, with roughly 10,000 annual completions. But estimates need revising further upwards to deliver upon the Government's Warm Homes Plan.

Clean energy

- ONS figures show jobs growth of roughly 52% between 2015 and 2024. Estimates vary on the number of current workers and future demand. Skills England estimate that jobs numbers could be required to grow faster than other sectors the body has assessed.
- Ofqual-recorded clean energy certificates have risen roughly twelvefold since before the pandemic, with almost all of this growth in solar PV and battery storage.
- The Government estimates the need for an additional 50,000 onshore and offshore wind workers by 2030 to meet deployment and generation targets. However, we only have record of 180 qualification achievements in 2024/25, and there are no explicit wind-related apprenticeship standards in place.

Transport

- ONS estimate that low carbon transport has added around 24,900 full-time-equivalent jobs since 2015, taking the total to 39,700 in 2024. However, green jobs estimates currently underestimate those needed for a decarbonised transport system.
- EV technician supply appears sufficient to 2030, but without increasing training there could be a shortfall of over 43,000 by 2035.
- Charge-point training has fallen by 61% since 2021/22, as installations have slowed.

Survey of 5,000 UK adults

- Over one half of survey respondents have not heard of green skills (52%), with awareness being higher among younger age groups

- More than one half of respondents say they do not want to work in sectors key to the net zero transition (Construction – 57%, Transport – 54%, Energy – 53%), but younger age groups are more likely to express an interest
- More people who already work in these sectors report not possessing green skills, compared with those who report possessing them, and roughly one third say they do not want to gain green skills at all.
- Just one in five people (20%) reported an apprenticeship as a preferred option for gaining green skills, despite this training route being a key one to satisfy future job demand in priority occupations.

Introduction

Recent research from CBI Economics and ECIU estimate the UK's current net zero economy represents 3.8% of the total output (£105bn in Gross Value Added), with jobs 48% above the UK productivity rate and paying around 11% more than the national average.[1]

However, the UK's commitment to reach net zero by 2050 still requires substantial change. This includes insulating millions of homes, manufacturing and deploying clean energy infrastructure, and building and servicing electric vehicles. All of this will require people to possess the right skills, hold the right jobs, and live in the right regions, all at the right time.

With a greater focus on the English context, this report aims to assess where the UK is on the road to net zero by focusing on three sectors mission-critical to the decarbonisation journey: construction; clean energy; and low-carbon transport. Some of the statistics quoted in the report are for the UK and others, for England. This is marked within the report and on each chart. For each sector, the report compares: employer demand; uptake of relevant qualifications, apprenticeships, and courses; and awareness of and appetite for green jobs. It reveals that the supply of workers in key sectors lags behind what would be needed for the UK to reach net zero by 2050. Further action will be needed to meet the Government's objectives.

Methodology

The research undertook a mixed methods approach comprising of a review of existing evidence, quantitative analysis of data sources (predominantly in England), and a survey of 5,000 UK adults.

Review of existing evidence

To help scope the need for green jobs and skills and understand future projections, a review of existing evidence was undertaken. This encompassed reports from policy and research organisations, as well as statistics from ONS, Skills England, and UK Government departments

Quantitative analysis of data sources

The quantitative analysis had two parts: mapping current supply of green skills, and sizing demand for green jobs and skills. Estimates of employer demand were built from UK-wide data using the Employer Skills Survey and DfE/IER Skills Imperative 2035 data, filtered to a common inclusion list of occupations classified as green (see below). Estimates of supply, that is, the uptake of relevant training, were built from England-specific administrative training data: certificates awarded for relevant qualifications (Ofqual VQ Quarterly dataset) and apprenticeship starts and

[1] CBI (2026) Net Gains: The UK's Net Zero Economy in 2025

achievements for relevant standards (DfE/DWP apprenticeship statistics), each filtered to the same inclusion list via a qualifications mapping (see below). T Levels and higher technical qualifications were counted separately as a smaller supply route. MCS data on certified installers and installations across the UK was used as a supplementary cross-check for two sectors, not as a primary count. An adult gaining a relevant qualification is only one way into particular jobs and sectors. To account for this, we have looked at industry estimates where they exist of the number of qualifications gained that will be needed to meet Government ambitions. We also looked at the scale of growth in qualifications gained against the scale of growth required in occupations: if one doesn't match the other then either we will fall short of the number of trained people needed or there will need to be growth in other routes into roles.

Identifying relevant occupations, qualifications and apprenticeships

The demand and supply analysis was anchored to Skills England's definition of green roles. Skills England's occupational maps assign green theme tags to occupations coded to SOC2020; occupations tagged dark green or mid green across the three sectors were compiled into an inclusion list of 144.[2] The same list was used to select occupations from the demand-side sources.

Applying this occupational definition to the supply side required an additional step, as training data is not keyed to SOC2020: Ofqual records qualifications by title and DfE/DWP records apprenticeships by standard. Each in-scope occupation was crossmatched to the qualifications and standards that lead into it, using the occupational standard as the shared link. Two routes were used to build the qualification list: where a funding scheme already defined an eligible-qualifications list; and where none existed, the Ofqual Register of Regulated Qualifications was searched by keyword and title against an agreed set of qualification families per sector.

Apprenticeship standards were identified the same way, with a title check as cross-reference. A small number of scope calls were made, notably excluding general electrical installation qualifications as too broad to attribute to a single green route, and allocating MCS-certified technologies to sectors.

Survey

Three questions relating to people's awareness of, and appetite for, green jobs were included in the annual UK omnibus survey produced by research agency Kantar. This has roughly 5,000 respondents aged 17 or over across the UK, with the sample weighted to make it representative of UK society. Fieldwork was conducted online in June 2026. Analysis of the survey results predominantly involved a mixture of

[2] Skills England classifies green occupations as either dark green or mid green. A dark green occupation is embedded within the green occupational landscape and delivers sustainable outcomes directly). A mid green occupation stays the same in overall scope, but may need new knowledge, skills and behaviours to enable new technologies and approaches.

descriptive statistics and significance testing of demographic and key variable breakdowns.

Chapter 1 Construction

The construction sector needs to ramp up recruitment and boost training numbers play its full role in the net zero transition

Key findings

- Government estimates the need for 240,000 energy efficiency and clean heating workers by 2030, up from 60,000 in 2023.
- The report estimates 46,500 annual public funded training completions for construction roles that can (either currently or in the future) support the net zero transition.
- Grant funded heat pump training is operating at close to the current estimates of demand, with roughly 10,000 annual completions. But estimates need revising further upwards to deliver upon the government's Warm Homes Plan.

Forecasts vary, but growing green jobs demand in construction is certain

There are a wide range of jobs and roles within the construction sector which can play a major role in supporting the path to net zero. These include, but are not limited to, the building of new homes to low-carbon standards and upgrading existing ones, including the insulation, glazing, heat pumps, solar panels, and assessment roles that make a retrofit project work. The UK's net zero ambitions are also set alongside a range of other UK Government policies in this area, such as the Warm Homes Plan.[3] This plan involves a £15bn upgrade to five million existing homes, the requirement for all rented homes in England to reach a decent energy standard, and the aim for heat pump installations to reach 450,000 per year by 2030.[4][5]

It is likely that most of this work will not be done by people in new types of occupations. Rather, tasks related to the energy efficiency and decarbonisation of the UK building stock will be done by plumbers, electricians, heating engineers and builders, recognisable trades employing around two million people, some 745,000 (39%) of whom are self-employed.[6]

While calculating future jobs demand is tricky and existing estimates are variable, the scale of workforce demand in construction to support the transition to net zero will undoubtedly be large. Government modelling reported alongside the Warm Homes Plan puts the energy efficiency and clean heating workforce across the UK as needing

[3] Ministry of Housing, Communities and Local Government (2024) Planning overhaul to reach 1.5 million new homes

[4] Skills England (2026) Sector Skills Needs Assessment: Construction; Department for Energy Security and Net Zero (2026) Warm Homes Plan

[6] Skills England (2026) Sector Skills Needs Assessment: Construction

to rise from 60,000 roles in 2023 to roughly 240,000 by 2030 to meet their goals.[7] The Construction Industry Training Board estimates the sector needs 41,200 new workers annually to sustain the current rate of growth and meet replacement demand, with Government housebuilding targets increasing this to 110,000 new workers per year.[8][9] Modelling by Skills England projects total recruitment by 2035 may need to top one million, with 595,000 to meet replacement demand and 493,000 to meet additional jobs demand.[10]

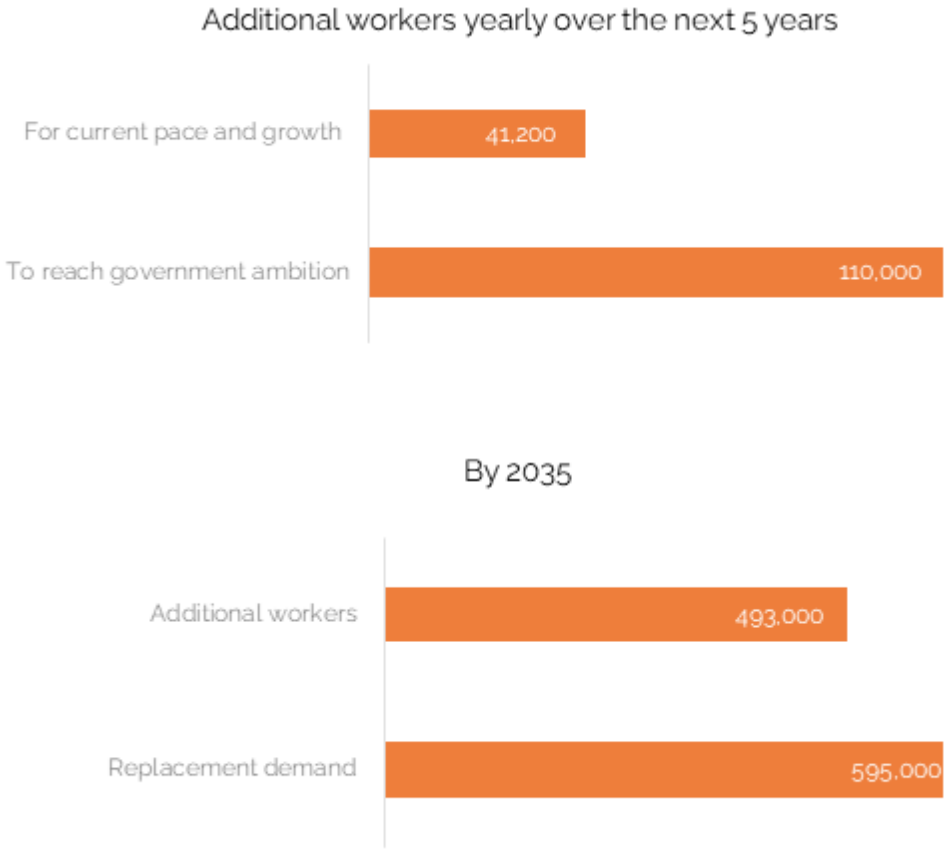
Government modelling of the planned infrastructure pipeline (totalling 734 planned projects and £718 billion of investment over the next ten years) also identifies a need for an average annual construction and infrastructure workforce of between 629,000 and 706,000, with two-thirds being construction jobs.[11] This includes infrastructure of strategic importance for the UK's ability to reach net zero, including public transport and energy projects, with the latter making up over half of the planned investment over the next ten years (£365 billion).

According to Skills England's Sector Skills Need Assessment on Construction, three fifths (59%) of projected additional employment in priority occupations will require workers with Level 2 or Level 3 qualifications. This is a much higher proportion than across all priority occupations in all priority sectors explored by Skills England, where it is 38% at Level 2 or 3.[12]

[7] Department for Energy Security and Net Zero (2026) Warm Homes Plan
[8] Construction Industry Training Board (2026) Construction Workforce Outlook 2026 to 2030; Construction Industry Training Board (2026) The Industry Picture 2026. Housing component covers England only while the retrofit component covers Great Britain

[10] Skills England (2026) Sector Skills Needs Assessment: Construction
[11] National Infrastructure and Service Transformation Authority (2026) Infrastructure Pipeline update signals future workforce needs
[12] Skills England (2026) Sector Skills Needs Assessment: Construction

Figure 1: Demand in the construction sector



Source: CITB/Skills England 2026

Construction training figures are growing, but there's still a way to go to meet net zero ambitions

The UK Government has ambitions to train 60,000 more skilled construction workers by 2029, underpinned by a £600 million package of investment.[13] Backing for Technical Excellence Colleges, expanded Skills Bootcamps, ambitions for more apprenticeships, and industry placements on Level 2 and 3 qualifications are all part of the policy and funding mix.

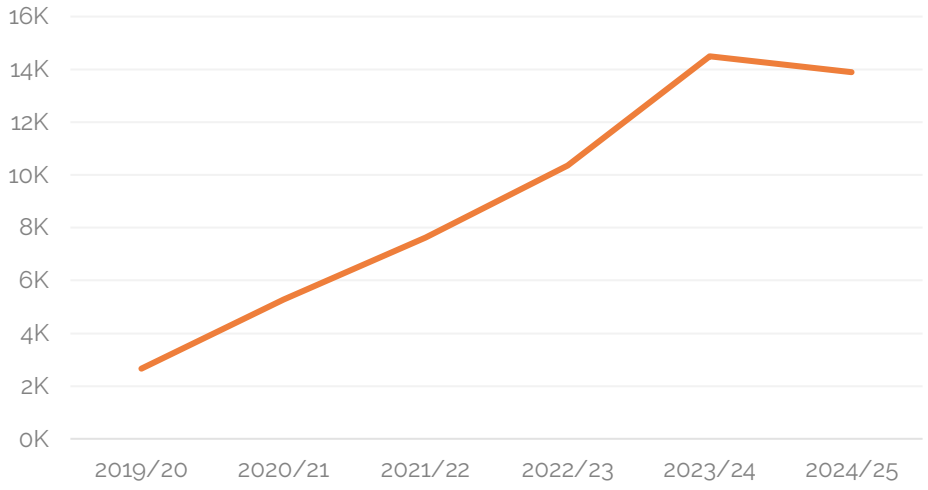
Set against this, the ONS shows the sector has 35,000 vacancies, and one half of these are reported being skills shortage vacancies.[14] However, analysis of participation in training that can support building to low carbon standards and upgrading of existing buildings, shows that progress is needed to meet the Government's objectives.

Across England, around 13,900 certificates were awarded in 2024/25 for qualifications relevant to green construction and retrofit (Figure 2). This is around five times the pre-

[13] HM Treasury and The Rt Hon Rachel Reeves MP (2025) Government unleashes next generation of construction workers to build 1.5m homes
[14] Department for Education and The Rt Hon Baroness Smith of Malvern (2026) Regional funding to train next generation of construction workers

pandemic level of about 2,800 a year.[15] Within that total, heat pump and low carbon heating qualifications accounted for about 4,250, retrofit qualifications for 3,390 (a route that barely existed before 2019/20), domestic energy assessment for 4,860, and insulation for around 1,395. [16][17] The new Low Carbon Heating Technician apprenticeship also recorded its first starts in 2024/25, with 80 people.[18]

Figure 2: "Green" certificates issued for the construction and retrofit sector, England



Source: Ofqual, 2019 to 2025 (academic year)

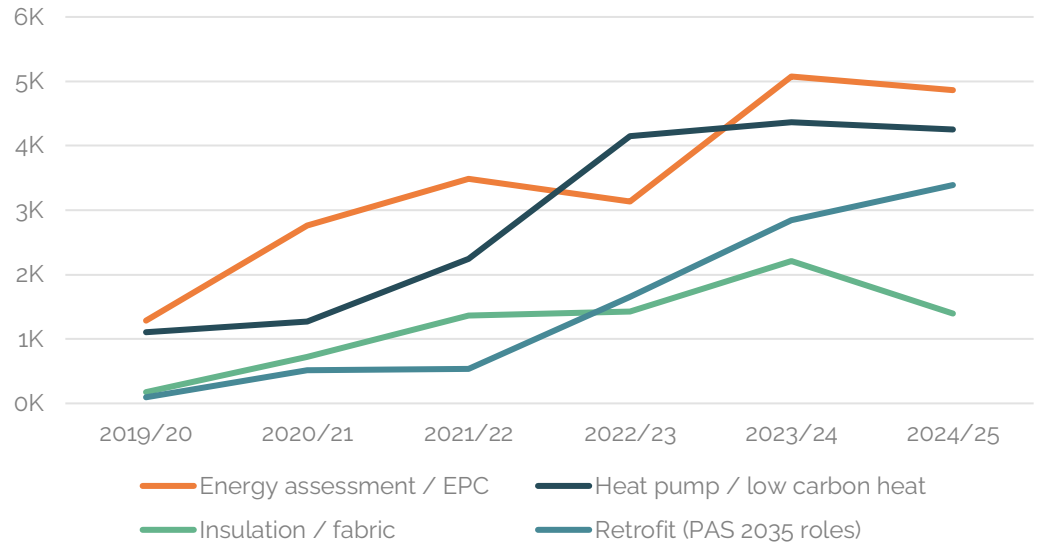
However, the number of people gaining these qualifications appears to have flattened in 2024/25. Heat pump and energy assessment certificates fell slightly, while insulation certificates fell by more than a third (from 2,210 to 1,395) (Figure 3). Retrofit was the only category still growing in this year. It remains to be seen whether this is an outlier or the beginning of a longer slowdown. The specialist coordination roles that the retrofit standards depend on also remain small, with around 460 retrofit coordination certificates and 595 retrofit assessments in 2024/25.[19] Meanwhile, qualifications in the general trades that support the installation and use of these

[15] Pre-pandemic level is the average for 2016/17 to 2018/19 (2,780 certificates a year). COVID-19 lockdowns suppressed certification in 2019/20 and 2020/21. Green construction certificates had returned to above their 2019 level by late 2020, so the rise is not a pandemic catch-up. However, around three-quarters of 2024/25 certificates are for qualifications first awarded in 2019/20 or later. Part of the increase may therefore reflect training previously delivered outside the regulated system.
[16] Ofqual (2026) Vocational qualifications dataset. Figures are certificates awarded in the academic year August to July, aggregated from quarterly data; counts are rounded at source. The two figures are not directly comparable. This analysis counts certificates awarded for regulated heat pump qualifications (Ofqual, academic year 2024/25). The Heat Pump Association's 9,062 covers completions of all grant-eligible courses in calendar year 2024, including manufacturer training and non-regulated provision.

[18] Department for Education and Department for Work and Pensions (2026) Apprenticeships, academic year 2025/26. Low Carbon Heating Technician standard was introduced in the early 2020s; 2024/25 is its first year with recorded starts.
[19] Totals of certificates that include "retrofit coordinate" and "retrofit assess retrofit advice" in the qualification titles

products are declining. Plumbing and domestic heating certificates totalled around 13,400 in 2024/25, about 15% below the pre-pandemic average.

Figure 3: Sub-category certification trends in the construction and retrofit sector, England



Source: Ofqual, 2019 to 2025 (academic year)

More positively, the expanded Department for Energy Security and Net Zero (DESNEZ) Heat Training Grant and Warm Homes Skills Programme (funding short course retrofit training places across insulation, solar and other related areas) appears to be playing a positive role in boosting training numbers. In 2024, 9,062 people completed grant-supported heat pump courses in the UK.[20] The Heat Pump Association has estimated the need for roughly 10,267 completions per year to deliver upon government targets.[21] However, this estimate was published prior to the release of the Warm Homes Plan, so will likely need to be revised upwards. Nonetheless, based on existing estimates, it is the only training pathway within this report that is delivering at roughly the scale required to keep pace with demand.

Alongside ensuring there are enough people being trained to install heat pumps, the Heat Pump Association have highlighted the need to ensure consumer demand materialises and grows at the rate required for decarbonisation.[22] This highlights why *estimates* of industry demand should always be treated as such, and contingent on

[20] Heat Pump Association training data

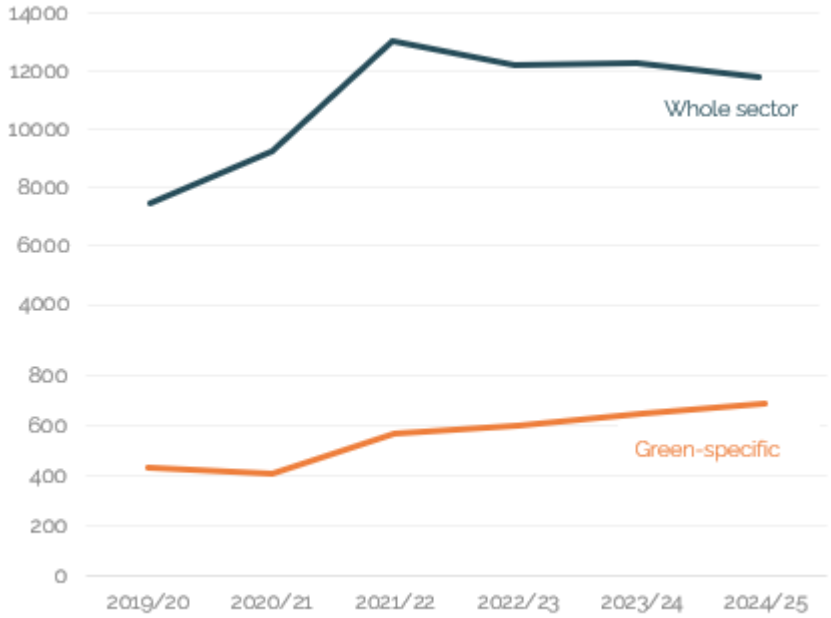
[21] Heat Pump Association (2025) Record year for UK heat pump sales and training. 9,062 completions of grant-eligible heat pump courses in 2024; 2,209 in the first quarter of 2025. The Association's estimate of roughly 10,267 completions a year needed was calculated against the previous government's target and needs recalculating against the Warm Homes Plan before further use.

[22] Heat Pump Association (2024) Projecting the Future Domestic Heat Pump Workforce

wider factors like government incentives and grants, as well as economic factors that affect consumer choices.

Beyond these options, in England, the general electrician apprenticeship had over 7,000 starts in 2024/25, and the general plumbing and heating apprenticeship around 2,500. While this training is not explicitly focused on decarbonisation and net zero, it does support entry into jobs with an increasing focus on low carbon products and standards, providing a foundation for further on-the-job or off-the-job training in areas like retrofit. NVQs, BTECs and T-Levels are all available to help learners get site-ready, alongside the apprenticeship routes covered above. Of these, T-Levels, which were introduced as the government's flagship new technical qualification, have struggled to gain traction: the onsite construction T-Level was scrapped after just three years due to low demand, and the Building Services Engineering course saw its intake fall 45% to just 870 in 2025/26.[23,24]

Figure 4: Apprenticeship starts in the Construction & retrofit sector, England



Source: DfE, 2019 to 2025 (academic year)

Figures on Skills Bootcamps show 6,820 starts on short and accelerated courses in construction, planning and the built environment in 2023/24 in England.[25] Encouragingly, the completion rate for construction bootcamp courses is considerably higher than those offered for most other sectors, standing at 83%, and construction

[23] FE Week (2024) Onsite construction T Level scrapped after 3 years of delivery
[24] Department for Education (2026) T Level and T Level foundation year entrant data 2025 to 2026. Building Services Engineering for Construction starts fell 45% to 870 in 2025/26; the Onsite Construction T Level was withdrawn in December 2024.
[25] Department for Education and Department for Work and Pensions (2025) Skills Bootcamps starts, completions and outcomes, financial year 2023-24

also records the highest outcome rate of any sector at 69% of starts, well above the 47% average across all bootcamps.[26] Enrolments on bootcamps focused on net zero within this overall total, such as Green Construction Operative, are not yet available as figures are published two years in arrears.[27]

Beyond these government-funded routes, there are also options offered by industry bodies and employers. The Microgeneration Certification Scheme (MCS), which oversees product standards in solar, heat pumps, biomass and battery storage, also offers installation certification in these areas, registering 1,443 new certified contractors in 2024-28. The Construction Industry Training Board oversees and spends a statutory levy funding skills, apprenticeships and workforce development. Within their latest impact report, they highlight supporting over 53,000 learners across the whole industry, although this is not limited to training specific to decarbonisation.[29] Retail energy suppliers are also building their own academies to deliver on demand for green skills. However, it should be noted that this training largely runs through the same standards and levy-funded apprenticeship routes already reported above and reflects capacity-building rather than additional workforce supply beyond the figures already cited.

Taken together, based on our analysis of these figures, this report estimates that a figure of roughly 46,500 publicly funded training completions per year is needed for roles that can (either currently or in the future) allow the construction sector to help drive the UK's transition to net zero.[30] Benchmarking this against government estimates of the need for 240,000 energy efficiency and clean heating workers by 2030, the sector appears to be in a strong position to deliver upon the Clean Homes Plan. However, replacement demand alters this picture slightly, as does the fact that, of this 46,500, some will be existing construction workers undertaking training to gain green skills, but some will be those entering the construction sector who will still lack green skills when they finish their training. In short, a good position, but further and faster progress is needed.

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[26] DfE/DWP define positive Skills Bootcamp outcomes as any of the following:
- Participant becoming self-employed or continuing in self-employment with new opportunities
- Participant continuing in current employment with new or increased responsibilities
- New employment (including full-time, part time, temporary or apprenticeship)
- Participant gaining new role with current employer

[27] Results | Find a Course | National Careers Service

[28] MCS (2025) MCS hits record number of certified contractors. 1,443 contractor firms newly certified across technologies; totals above 5,250 firms overall, including over 2,000 in heat pumps and over 4,000 in solar.

[29] CITB (2026) CITB supports over 30,000 learners with apprenticeship grants in the 2025-26 financial year 30,837 apprentices and a further 22,690 learners supported, £120m in grants across 10,410 employers, Great Britain.

[30] Two additional caveats would be that supply and demand are measured on different bases (qualifications vs SOC occupations). Furthermore, demand figures are contingent on government commitments and consumer demand.

Chapter 2 Clean Energy

Dedicated training pathways into clean energy are lacking and data on skills demand and training supply is uneven

Key findings

- ONS figures show jobs growth of roughly 52% between 2015 and 2024. Estimates vary on the number of current workers and future demand. Skills England estimate that jobs numbers could be required to grow faster than other sector the body has assessed.
- Ofqual recorded clean energy certificates have risen roughly twelvefold since before the pandemic, with almost all of this growth in solar PV and battery storage.
- The Government estimates the need for an additional 50,000 onshore and offshore wind workers by 2030 to meet deployment and generation targets. However, we only have record of 180 qualification achievements in 2024/25, and there are no explicit wind related apprenticeship standards in place.

There are inconsistencies across government departments and agencies in reporting and forecasting clean energy jobs

The UK's clean energy transition requires diverse sources such as onshore and offshore wind, solar, hydrogen, and nuclear, and potentially methods such as carbon capture and storage. The creation of this net zero energy mix will also have significant ramifications for the National Grid, with the need for greater electricity transfer and storage solutions help support reliability in supply.

The transition to a net zero energy mix is resulting in increased demand for existing occupations, such as engineering and welding roles, while also creating newer occupations, specifically focused on the creation, deployment, and maintenance of clean energy infrastructure, such as wind turbine technicians.

There are variations across estimates of existing jobs in clean energy, creating an unclear picture of where we are on the road to net zero and the additional jobs needed to power the transition. Estimates of current jobs vary from 232,000, 272,400, and 304,000 across DESNEZ, Skills England, and ONS, with the lack of a single encompassing definition.[31,32] ONS figures show jobs growth of 52% between 2015 and 2024, notwithstanding a 4.1% decline in the last year of this period. The only sub-sector

[31] Department for Energy Security and Net Zero (2025) Clean energy jobs plan. Around 440,000 jobs in 2023 including supply chains; over 860,000 targeted by 2030), and Skills England's June 2026 assessment (an estimated 232,000 people in direct clean energy jobs in 2025);
[32] Skills England (2026) Sector Skills Needs Assessment: Clean Energy

with significant growth in the final year of this dataset was low carbon electricity, with employment rising to roughly 89,500 from 77,800 in 2024.[33]

The Skills England Sector Skills Needs Assessment for clean energy forecasts that demand for the sector's priority occupations will grow by anywhere between 24,700 (35%) and 63,100 (71%) from 2025 to 2030, largely driven by increased demand for jobs in low carbon sectors. Growth at 71% over this period would be the highest of any sector assessed by Skills England. Demand is projected to be flat between 2030 and 2035, owing to the uncertainty around the development of the clean energy sector. Replacement demand (workers required to replace existing workers within the labour market) is estimated at 3,600 annually over ten years (36,000), putting total demand for priority occupations in clean energy as high as 99,000 workers by 2035. Skills England's analysis also suggests that demand is concentrated at lower qualification levels, with 59% of projected additional employment by 2030 in priority occupations requiring courses at Level 2 or 3.

As covered, forecasted growth at Level 2 and 3 is similar in the construction sector. This may in part result from a range of roles sitting across both sectors in Skills England's job projections, notably in areas like heat pumps and energy efficiency. Indeed, 28 of the 31 priority occupations for clean energy are also present in Skills England's assessments of other sectors, and the single largest identified need for workers by 2035 is in roles like plumbers and heat installers treated in the previous chapter.

The Government anticipates the need for another 50,000 workers in wind. The wind energy industry currently employs around 55,000 people, roughly 40,000 offshore, plus 15,000 onshore across the UK. To meet UK Government targets on deployment and energy generated, the sector expects to need at least 94,000 (75,000 offshore and 19,000 onshore) workers by 2030, compared with around 55,000 today. More ambitious targets could push demand to 94,000 workers in offshore wind alone, with the potential for adding up to 10,000 supply-chain jobs on top.[34]

Meanwhile, the nuclear sector has the ambitious target of reaching 120,000 workers by 2030 across the UK.[35] This projection assumes 16 GW of nuclear generating capacity alongside continued defence activity under AUKUS. The Government's ambition is higher, at up to 24 GW by 2050, enough to meet up to a quarter of the UK's projected electricity demand, compared with around 6 GW today.[36] Defence accounts for around one half of projected demand, rising to 55% by 2030, so the figure reflects defence commitments as well as energy goals. Progress has been positive, with the sector

[33] Office for National Statistics (2026) Low carbon and renewable energy economy
[34] RenewableUK and Offshore Wind Industry Council (2025) Wind Industry Skills Intelligence Report 2025
[35] Cogent Skills (2025) Nuclear Workforce Assessment 2024
[36] Nuclear Skills Taskforce (2024) National Nuclear Strategic Plan for Skills

increasing from 83,000 to 96,000 between 2023 and 2024.[37] Within this, demand for workers in nuclear engineering construction (those who build and maintain plants) is anticipated to reach 46,000 by 2030, up from 35,900 in 2025.[38] However, employers in this area are experiencing major challenges in recruitment, with 71% reporting difficulty hiring, up from 53% three years earlier.

Clean energy and manufacturing sectors are also deeply interrelated. More energy projects mean a bigger UK supply chain market for manufacturers to operate in, and potentially an increasing need for workers. On the other hand, shortages of priority skills in manufacturing could see supply chains for UK clean energy projects go overseas, or the deployment of clean energy projects being held up. BEAMA, the trade body for energy-infrastructure manufacturers, also reports that its average member expects to double employment in network-equipment manufacturing by 2035 as the grid is built out.[39]

While the advanced manufacturing sector is expected to achieve growth via productivity increases and capital investment rather than increasing total headcount, Skills England estimate a 13% (47,000) increase in demand for workers in priority manufacturing occupations by 2035. A remarkable 84% of this increased demand is expected to be at Level 4 and above, with replacement demand in these occupations standing at 101,000 over the same period.[40]

There is a lack of dedicated training pathways for clean energy sub-sectors and uptake appears to be low

As well as inconsistencies in estimating the current and future clean energy workforce across different government departments and agencies, there also appear to be challenges in assessing the levels of training currently being undertaken, with overall numbers (with limited exceptions) appearing very low.

According to Ofqual data covering England, clean energy certificates rose thirteenfold over six years, from under 400 in 2019/20 to around 4,890 in 2024/25.[41] Solar PV and battery storage account for around 90% of this growth, and almost all of it has

[37] Cogent Skills (2025) Nuclear Workforce Assessment 2024. Nuclear Skills Taskforce (2024) National Nuclear Strategic Plan for Skills; Cogent Skills (2025) Nuclear Week in Parliament: skills, apprenticeships and early careers in the spotlight (for the 4,000 starters).

[38] Engineering Construction Industry Training Board (2025) Labour Forecasting Tool. 71% of engineering construction employers report hiring difficulty; the nuclear engineering construction workforce is projected to grow from 35,900 in 2025 to over 46,000 by 2030; Engineering Construction Industry Training Board (2025) ECITB to help deliver skills needed for UK's first ever nuclear small modular reactors.

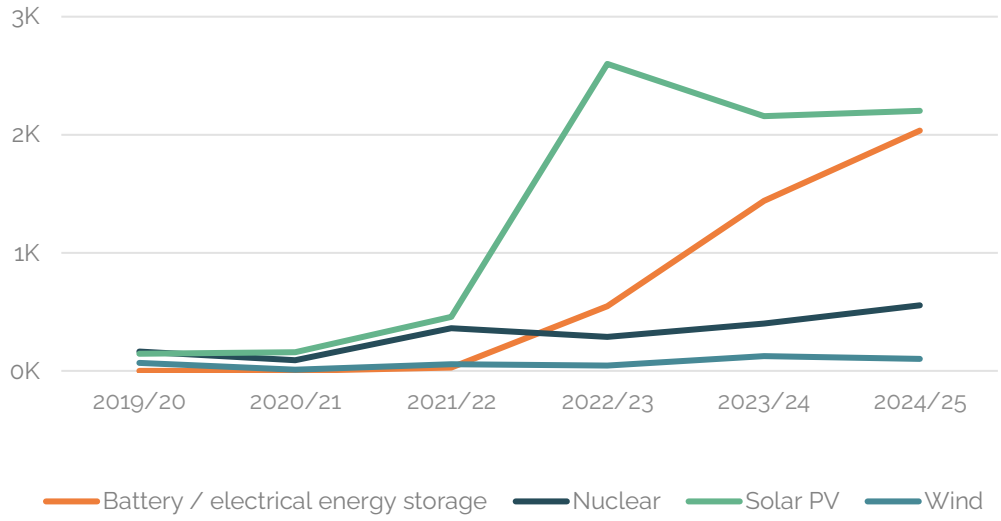
[39] BEAMA (2025) Ambition, support and data from Government can give supply chain confidence that skills needs can be met.

[40] Skills England (2026) Sector Skills Needs Assessment: Advanced Manufacturing.

[41] Pre-pandemic level is the 2016/17 to 2018/19 average, used because COVID-19 lockdowns suppressed certification in 2019/20 and 2020/21. Figures exclude two defence qualifications in nuclear submarine engineering.

occurred since 2021/22. Solar PV certificates rose from around 180 a year before the pandemic to 2,200 in 2024/25. Battery storage qualifications, which were first awarded in 2021/22, reached 2,035 in 2024/25.

Figure 5: Sub-category certification trends in the clean energy sector, England



Source: Ofqual, 2019 to 2025 (academic year)

However, numbers in wind and nuclear remain low, with just 180 and 555 certificates respectively in 2024/25. Furthermore, there are no finalised apprenticeship standards that explicitly support entry into jobs related to wind, solar, or hydrogen, or carbon capture and storage across England.[42] There is a Level 3 Wind Turbine Technician standard in development, but this is not yet available for employers. There are also no Skills England regulated technical or vocational qualifications explicitly related to the nuclear sector, and while the nuclear industry has five dedicated apprenticeship standards, completions were just 550 in 2024/25.[43]

Looking at nuclear as an example then, we have a total of 1105 apprenticeship and certificate completions combined in 2024/25. However, the nuclear industry reports around 2,500 apprentices entering the sector each year.[44] Much of this training may run through broader engineering, electrical, and welding courses rather than nuclear-badged courses. As long as clean energy sectors are able to purpose existing training to meet their needs and draw on existing occupational standards to satisfy jobs and skills demand, then there is little need for creating new apprenticeships and

[42] Skills England (2026) Apprenticeship finder
[43] DfE apprenticeships data. nuclear-titled standards, 2024/25: Nuclear Scientist and Engineer 270 starts, Nuclear Technician 140, Nuclear Health Physics Monitor 70, Nuclear Operative 60, Nuclear Welding Inspection Technician 10.
[44] Cogent Skills (2025) Nuclear Week in Parliament: skills, apprenticeships and early careers in the spotlight

qualifications. (Although it is likely that those at higher levels, and those containing nuclear specific safety or regulatory content, require nuclear-specific qualifications).

Skills England's sector skills needs assessment provides some insights on the extent to which this is happening in clean energy, and how effectively. Across five routes related to priority occupations for the clean energy sector, the story appears more positive for lower-level (Level 2/3) apprenticeships than higher education courses.[45] Nearly 72% of engineering apprentices and 59% of building and construction apprentices enter priority occupations identified by Skills England (including but not limited to the clean energy sector). However, the story is less clear-cut for those completing engineering courses at Level 6+, with just 38% being employed in priority occupations according to Skills England. Engineering UK's analysis of HESA Graduate Outcomes data found 59.7% of engineering and technology graduates were in paid work and in engineering and technology occupations broadly defined.[46]

As well as high levels of entry into priority occupations, there are also positive signs that numbers of achievements in related Level 2 and 3 apprenticeships are growing. Level 2/3 building and construction apprenticeships rose 60% between 2021/22 and 2023/24, while Level 2/3 engineering apprenticeships rose 29% over the same period. However, the prospects for UK manufacturers to maximise their market share in supply chains for expanded clean energy prospects appear less positive, with achievements in Level 2/3 manufacturing technologies falling by 53% over the same period.

In summary, inconsistencies in reporting and forecasting clean energy jobs, and a lack of data captured for government and industry training routes are creating an unclear picture. Those jobs where demand is forecast to grow fastest have very low uptake through formal and explicitly green-badged training programmes. It is likely that wider technical and apprenticeship programmes are doing some of the heavy lifting alongside employer and industry schemes. Indeed, there are encouraging signs that broader apprenticeships at lower and intermediate skill levels are expanding and supporting entry into priority occupations assessed by Skills England (although these are not limited to clean energy).

[45] Skills England (2026) Sector Skills Needs Assessment: Clean Energy. The five main routes are engineering apprenticeships (5,640 leavers entering the sector's priority occupations; 72% of those employed), building and construction apprenticeships (3,040; 59%), manufacturing technologies apprenticeships (2,520; 45%), engineering degrees (5,100; 38%) and built environment degrees (2,410; 35%). These routes serve several sectors at once, so the counts are not exclusive to clean energy.
[46] EngineeringUK (2026) Engineering and tech in higher education

Chapter 3 Transport

Transport is the UK's biggest polluter, but public data does little to inform the jobs-based journey to reaching net zero

Key findings

- ONS estimate that low carbon transport has added around 24,900 full-time-equivalent jobs since 2015 taking the total to 39,700 in 2024. However, green jobs estimates currently underestimate those needed for a decarbonised transport system.
- EV technician supply appears sufficient to 2030, but without increasing training there could be a shortfall of over 43,000 by 2035.
- Charge-point training has fallen by 61% since 2021/22, as installations have slowed.

Domestic transport is the biggest source of domestic emissions, but no assessment of the jobs required to decarbonise has been undertaken

Domestic transport accounts for 29% of total emissions in the UK. This is higher than any other sector, including buildings and product uses (20%) and electricity supply (14%), two areas where this report has explored the jobs and skills needed to support decarbonisation. Road transport (cars, taxis, HGVs, light vans) accounts for 89% of domestic transport emissions.[47]

In response, and in support of the UK's 2050 Net Zero target, the Government has confirmed that from 2030 all new cars will need to be hybrid or zero emission, with all new cars and vans being zero emission by 2035.[48] To support this, a basket of funding and regulatory measures have been introduced. The Zero Emission Mandate provides a framework and credit-based reward system for UK manufacturers to invest in electric vehicle production, while the end-date for new petrol and diesel cars aims to give confidence to industry to invest in the manufacture and roll out of charge point infrastructure. Local areas are also able to bid into the Local Electric Vehicle (EV) Infrastructure Fund to boost the availability of charge points for drivers without off-street parking. Grants are also available to consumers to incentivise the purchase of EVs. Taken together, the Government quote the figure of £2.3bn of support for UK manufacturers and consumers to transition to zero emission vehicles.[49]

The decarbonisation of domestic road transport and the maximisation of opportunities for UK manufacturers within the domestic EV market will require three main types of roles. Firstly, roles focused on vehicle servicing and repair. While the sale of new petrol

[47] Department for Transport (2026) Zero Emission Vehicle Mandate review: consultation
[48] Department for Transport (2025) Greenhouse gas emissions from transport in 2023
[49] Department for Transport (2025) Backing British business: Prime Minister unveils plan to support carmakers

and diesel cars will soon cease, millions of internal combustion vehicles will likely remain on the roads well into the 2030s and 2040s. This means that mechanics will need to be qualified to work safely on both EVs and petrol and diesel vehicles.[50] Secondly, roles that support EV and battery manufacturing. There will likely be high transferability of existing skills and jobs around vehicle assembly, welding, and robotics, but less transferability related to engines, fuel and exhaust systems or battery manufacture. Thirdly, roles that enable the roll out and repair of charging infrastructure, like civil engineers, construction managers, electricians and fitters, and software engineers.

ONS estimate that low carbon transport has added around 24,900 full-time-equivalent jobs since 2015, taking the total to 39,700 in 2024, and low emission vehicles were the fastest-growing part of the low carbon economy by turnover in 2024, up by one third in a single year to £11.6bn.[51] However, ONS green jobs estimates currently underestimate the jobs needed for a decarbonised transport system for several reasons. Firstly, the firm-based approach classifies firms as green only if their industry falls among the lowest emitters of UK greenhouse gases. Transport is consistently one of the UK's highest-emitting sectors, so it is structurally excluded regardless of the decarbonisation activity that occurs within it. Secondly, the industry approach (via the LCREE) captures EV and infrastructure manufacture but not the vehicle maintenance, repair and servicing industry.[52] Meanwhile, the occupation (SIC/SOC) approach is one that could potentially capture cross-industry green work but is experimental and survey-based and does not necessarily distinguish "green" technicians from others.[53]

The Institute for Motor Industry (IMI) offer and monitor certification of EV technicians. Demand for EV-qualified technicians is set to rise steeply as the EV share of the fleet grows. The IMI projects demand reaching roughly 105,000 by 2030 and 193,000 by 2035, the year all new cars and vans sold in the UK must be zero-emission.[54] IMI have also estimated that 144,000 workers (19% of the workforce) will need replacing due to retirement by 2032.[55]

For EV and battery manufacturing, The Faraday Institution estimates the EV and battery industry could support approximately 270,000 UK jobs by 2040, the equivalent

[50] Social Market Foundation (2022) A vehicle for change: upskilling the UK's technicians to service and repair electric vehicles
[51] Office for National Statistics (2026) Estimates of green jobs. ONS estimates that low carbon transport added about 24,900 FTE jobs between 2015 and 2024 in its industry-based green jobs measure (provisional for 2024), and that turnover in the low emission vehicles and infrastructure group rose 33.8% to £11.6 billion in 2024.
[52] Office for National Statistics (2025) Developing estimates of green jobs in the UK
[53] Office for National Statistics (2026) Estimates of green jobs
[54] Institute of the Motor Industry (2026) EV TechSafe Technician Forecast
[55] Institute of the Motor Industry (2025) IMI unveils its commitment to the UK automotive sector

of six gigafactories by 2030, rising to ten by 2040.[56] The Gigafactory Commission indicates that 80 to 85% of the roles in a gigafactory require qualifications at Level 2 to 3: production operatives, maintenance technicians, process engineers.[57]

The demand for roles that build and maintain charging infrastructure is the least well quantified of the three job types outlined, but we can make inferences on current job levels based on the scale of the infrastructure roll out. The Government expects around 300,000 public charge points by 2030, against roughly 121,000 installed by mid-2026.Charge point operators installed 5,119 public charge points in the first half of 2026, fewer than in the same period of 2025. This continues a sharp slowdown last year: 13,281 charge points were added in 2025, down from 24,557 in 2024.[58]

Vehicle servicing and repair routes are performing well, but more progress is needed on the workforce for charge point infrastructure in particular

Vehicle servicing and repair

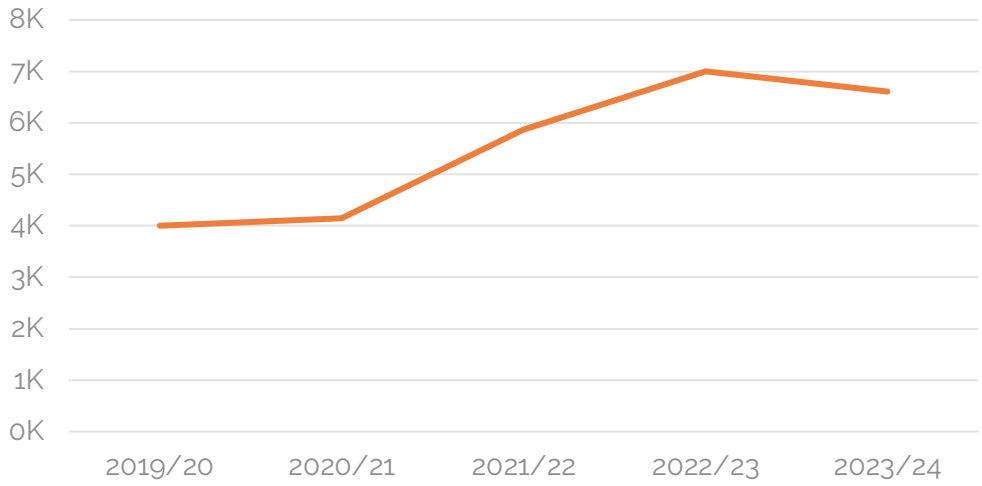
As of mid-2026, roughly 35% of the vehicle service and repair workforce were EV qualified. This is according to IMI who operate the relevant TechSafe Certification. The total number of TechSafe qualified technicians currently stands at roughly 75,000,[59] far less than the 193,000 IMI estimate will be needed by 2035. This certification can be obtained by new entrants to these roles as well as experienced staff working on combustion engine vehicles. The rate of growth in qualified EV technicians has slowed significantly, with 2,792 gaining a TechSafe certification in the final quarter of 2025, down 17% on the same quarter in 2024. However, on the current trajectory of training, IMI don't foresee a shortage of qualified technicians emerging until 2033, as EVs make up only 16% of all newly private licenced vehicles in the UK market.[60] Nevertheless, the shortage of EV technicians is estimated to reach 43,000 by 2035 as EV sales increase and the ban on the sale of new petrol, diesel, and hybrid vehicles approaches.

This differs from previous IMI estimates, with 2021 projections stating that roughly 90,000 technicians would be required in 2030, rather than 105,000 according to their latest 2026 release.[61] This highlights how job demand is subject to the success of (or lack of) of government regulation and funding intended to support the decarbonisation of road transport and the expansion of EV purchases.

[56] Faraday Institution (2024) Faraday Institution publishes 2024 update to its study "UK Electric Vehicle and Battery Production Potential to 2040"
[57] UK Gigafactory Commission (2026) Britain's Battery Future Department
[58] Department for Transport (2022) Taking charge: the electric vehicle infrastructure strategy; Department for Transport (2026) Public electric vehicle charging infrastructure statistics: 1 July 2026; Zapmap (2026) Zapmap statistics: end of year 2025
[59] Institute of the Motor Industry (2026) EV TechSafe Technician Forecast
[60] Central Statistics Office (2025) Vehicles licensed for the first time May 2025
[61] Institute of the Motor Industry (2026) EV TechSafe Technician Forecast: Q4 2025

Apprenticeship and qualification data provide a helpful snapshot of new entrants to vehicle service and maintenance routes. IMI's Level 3 Award in Electric/Hybrid Vehicle System Repair and Replacement had 5,350 awards in 2024/25, up from around 1,000 a year before the pandemic but down from a peak of 7,590 in 2021/22.[62] These are part of 16,630 awards in EV and hybrid vehicle qualifications in 2024/25, although not all of these are in servicing and repair: around 2,500 are charge-point installation awards for electricians, and around 1,950 are introductory awareness awards. For general servicing apprenticeship standards, not explicitly related to EVs, starts rose from 4,000 in 2019/20 to a peak of 7,000 in 2022/23, before settling at around 6,620 in 2024/25, approximately 65% above the 2019/20 level.[63]

Figure 6: Apprenticeship starts in vehicle servicing and repair standards, England



Source: DfE, 2019 to 2025 (academic year)

Taken together, the supply and demand evidence points to a manageable position to 2030, and a more challenging one thereafter. Roughly 75,000 technicians are currently EV qualified. Reaching IMI's estimate of roughly 105,000 by 2030 requires around 7,500 additional certifications a year, below the recent rate of roughly 11,000.

However, IMI's figure is a cumulative count of certifications and does not account for technicians leaving the workforce. IMI estimate that 19% of the workforce will need replacing due to retirement by 2032. If we apply this rate to EV qualified technicians evenly with other technicians, this translates to 2,000 – 2,500 a year, pushing the number of additional certifications needed annually to 9,500–10,000. This remains below the recent rate of 11,000, though with a much smaller buffer. Holding the present rate flat would leave the workforce roughly 19,000 short by 2035. IMI estimate of 43,000 assumes the recent slowdown in certifications continues. Either figure

[62] Pre-pandemic figure is the 2016/17 to 2018/19 average, including the predecessor IMI Level 3 Award in Hybrid Electric Vehicle Repair and Replacement; the current award was first awarded in 2017/18.
[63] As standard-level data are only available from 2019/20, a year partly affected by the pandemic, this increase may overstate the underlying trend. Not all of these apprentices will finish as EV qualified technicians; that will depend on their employer and training provider.

supports the same conclusion: the constraint is not the supply of new entrants, since servicing apprenticeship volumes are robust and broadly stable, but in ensuring existing technicians convert to EV competence in the years ahead.

EV and battery manufacturing

For battery and EV manufacturing, the latest apprenticeship data for England records fewer than five starts on the Battery Manufacturing Technician standard, which was approved for delivery in November 2023. This is despite models for Nissan that are already being powered by UK-made cells. It will be interesting to see whether this continues, with the UK now having two confirmed gigafactories in Sunderland and Somerset, and construction beginning on another. The Government has also unveiled a new Level 2 Battery Manufacturing Apprenticeship Unit as a short course with fewer training hours that can be delivered over a maximum of 16 weeks.[64] This may be in response to industry feedback on the unsuitability of the full-length apprenticeship, with no starts indicating that no employers have invested in this route to source and develop skills.

As touched upon, the vast majority of gigafactory roles are in Level 2 and 3 production operatives, maintenance technicians and process engineers. Since no battery-specific route is operating at scale, the realistic recruitment pool is the wider manufacturing apprenticeship system, where we see a mixed picture. On the one hand, starts across production operative, maintenance technician, manufacturing and process technician, process engineering and quality routes rose from 2,830 in 2019/20 to 8,870 in 2024/25. Maintenance technician routes grew 148%, and manufacturing and process technician routes increased sevenfold over that period. However, the Level 2/3 Manufacturing Technologies apprenticeship fell 53% between 2021/22 and 2023/24.

These are whole-economy figures and cannot be attributed to the battery sector alone, as the data does not identify employer. However, the Gigafactory Commission's own assessment is that recruitment at gigafactory scale cannot be met through existing workforce pipelines alone, and whether these volumes can scale fast enough to meet production timelines at new gigafactory sites remains a question.

Charge-point infrastructure

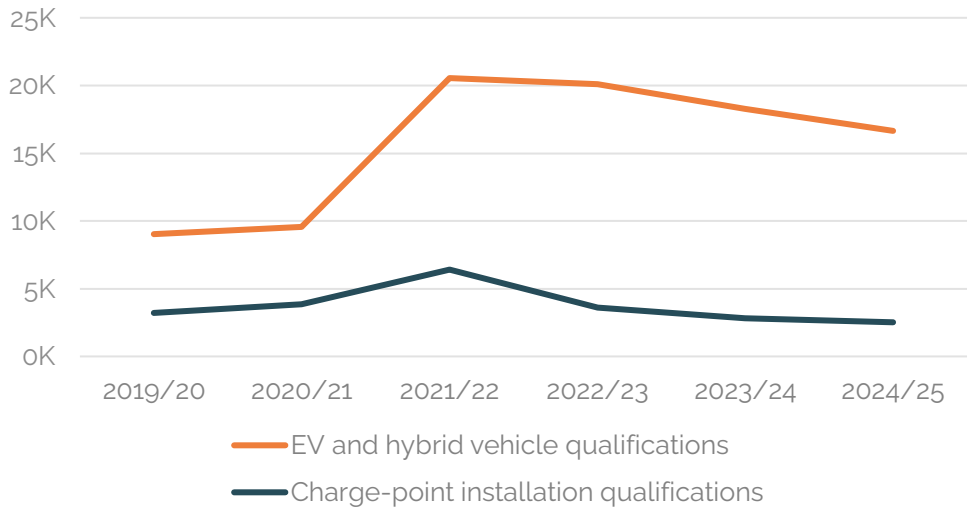
Qualification awards related to charge point infrastructure have been in rapid decline after a period of rapid growth. They almost doubled to 6,410 between 2019/20 and 2021/22, then nearly halved in a single year to 3,610 in 2022/23. Certificates awarded have continued to drift downwards to 2,520 in 2024/25, a 61% fall from the peak (Figure 7).

The collapse in 2022 then appears to feed through to the slowdown in charge point installation. In 2024 there were 24,557 charge points added. This fell to 13,281 in 2025.

[64] Skills England (2026) New apprenticeship unit to supercharge battery manufacturing

Qualification uptake and infrastructure deployment can influence each other in both directions. On the one hand, skills and labour shortages will mean fewer charge points get installed. On the other, slowing labour demand as a result of fewer installations will feed through to training providers and qualification uptake. In both cases, without strategic intervention and market direction from government, both qualification uptake and number of rollouts are indifferent to 2035 installation targets and the 2050 net zero ambition.

Figure 7: "Green" certificates issued for the low carbon transport sector, England



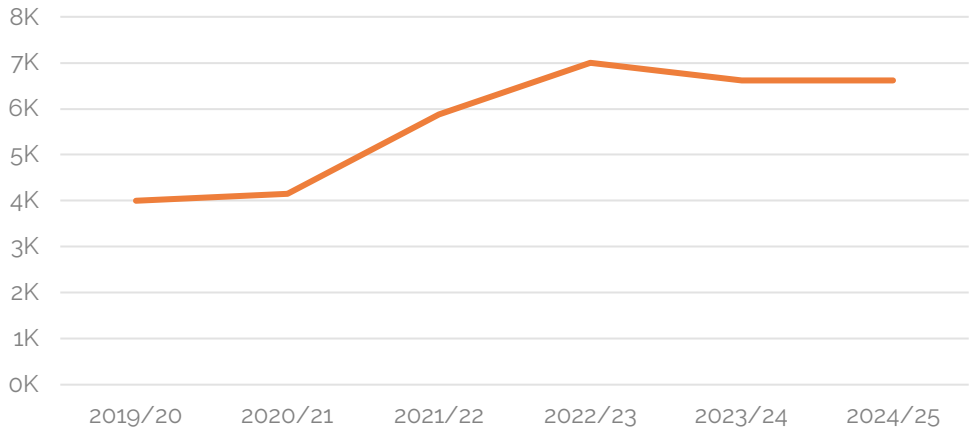
Source: Ofqual 2019 to 2025 (academic year)

The same electricians are the supply pool for heat pump installation, solar, battery storage and grid reinforcement work, all of which are expanding simultaneously. DESNZ estimate that clean energy sectors alone, excluding electric vehicles, will require an additional 7,000 to 8,500 electricians and electrical fitters by 2030, more than doubling the number currently employed in these sectors.[65,66] Across the wider economy, Skills England estimate an additional 12,000 electricians will be needed by 2030, yet electrical apprenticeship starts fell by 5.5% in the past year.[67]

[65] Department for Energy Security and Net Zero (2025) Clean Energy Jobs Plan; Electrical Contractors' Association (2026) Electrical skills gap deepens as apprenticeship starts fall despite surging demand

[67] Skills England estimate (UK), as cited in Electrical Contractors' Association (2026) Electrical skills gap deepens as apprenticeship starts fall despite surging demand.

Figure 8: Sector-wide apprenticeship starts in low carbon transport clean sector, England



Source: DfE, 2019 to 2025 (academic year)

In summary, as the biggest source of greenhouse gas emissions, more work can be done to evaluate the jobs in place and required to decarbonise road transport. Training numbers for vehicle servicing and repair appear to be performing well currently, but need to scale up significantly to be ready for the 2035 horizon for petrol and diesel vehicles. However, the charging infrastructure required for the EV fleet, and the skills for installations to happen, appear to be lacking. It is also unclear how much of the EV market will be captured by UK manufacturing, despite the construction of new gigafactories offering big opportunities in the years ahead.

Chapter 4 Increasing worker appetite for in-demand green skills is a key challenge

Key findings

- Over one half of survey respondents have not heard of green skills (52%), with awareness being higher among younger age groups.
- More than one half of respondents say they don't want to work in sectors key to the net zero transition (Construction – 57%, Transport – 54%, Energy – 53%), but younger age groups are more likely to express an interest.
- More people who already work in these sectors report not possessing green skills, compared with possessing them, and roughly a third don't want to gain green skills at all.
- Just one in five people (20%) reported an apprenticeship as a preferred option for gaining green skills, despite this training route being the most important to satisfy future job demand in priority occupations.

Set against the backdrop of decades-long targets like 'Net Zero by 2050', and 'job demand by 2035', it can be easy to lose sight of the work and career ambitions of real people, and whether these align with government and industry targets. The UK will only reduce carbon emissions and deliver growth in Industrial Strategy sectors if people have the appetite and desire for training, jobs, and careers in related occupations in sufficient number, as well as if there is sufficient demand in the economy for employers to create the jobs for people to fill. This section seeks to identify whether this appetite is in place for sectors explored in the previous chapter.

Furthermore, while governments, industry and policy circles may have developed a nomenclature around 'green jobs' and 'green skills', this section seeks to explore whether these terms have entered public understanding and help or hinder awareness of job opportunities around the transition to net zero.

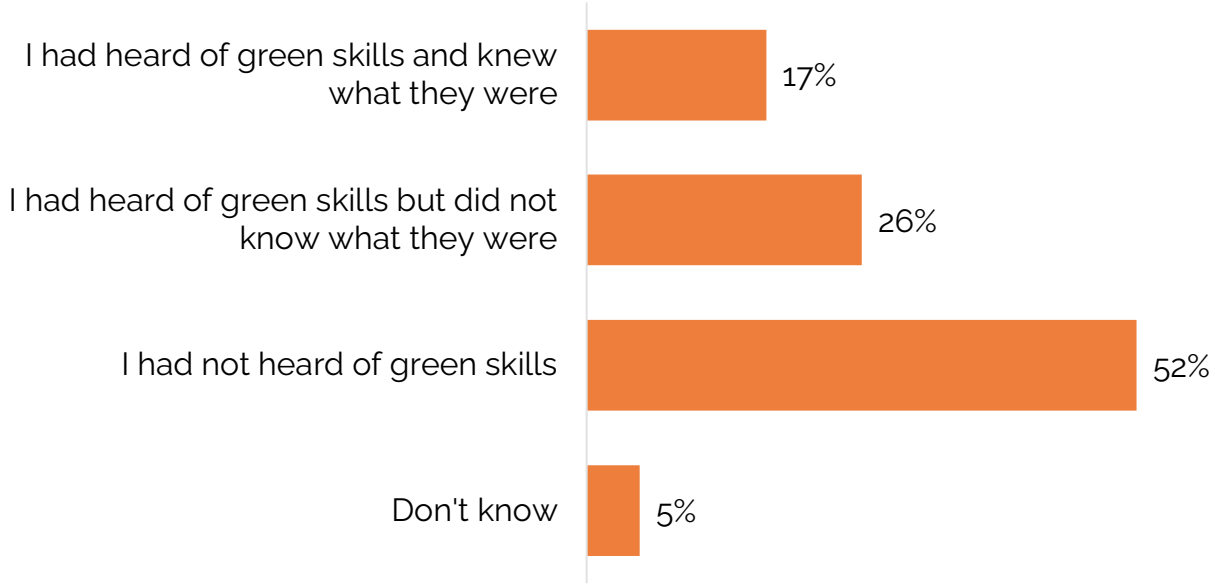
Survey respondents were provided with the following definition of 'green skills', used by the previous Green Jobs Taskforce to set job direction for a high-skill, low carbon economy: "*The knowledge, abilities, values and attitudes needed to live in, develop and support a society which reduces the impact of human activity on the environment*".

This evidence was obtained by surveying 5,091 adults aged 17+, weighted to represent the UK adult population.

Public understanding of green skills remains low

Over one half of respondents (52%) reported that they had not heard of green skills before taking part in the survey, with fewer than one fifth (17%) reporting having heard of green skills and understanding its meaning. (See Figure 9)

Figure 9: Awareness of green skills remains limited, UK



Base: All survey respondents aged 17 and over. Weighted base = 5092, unweighted base = 5091.

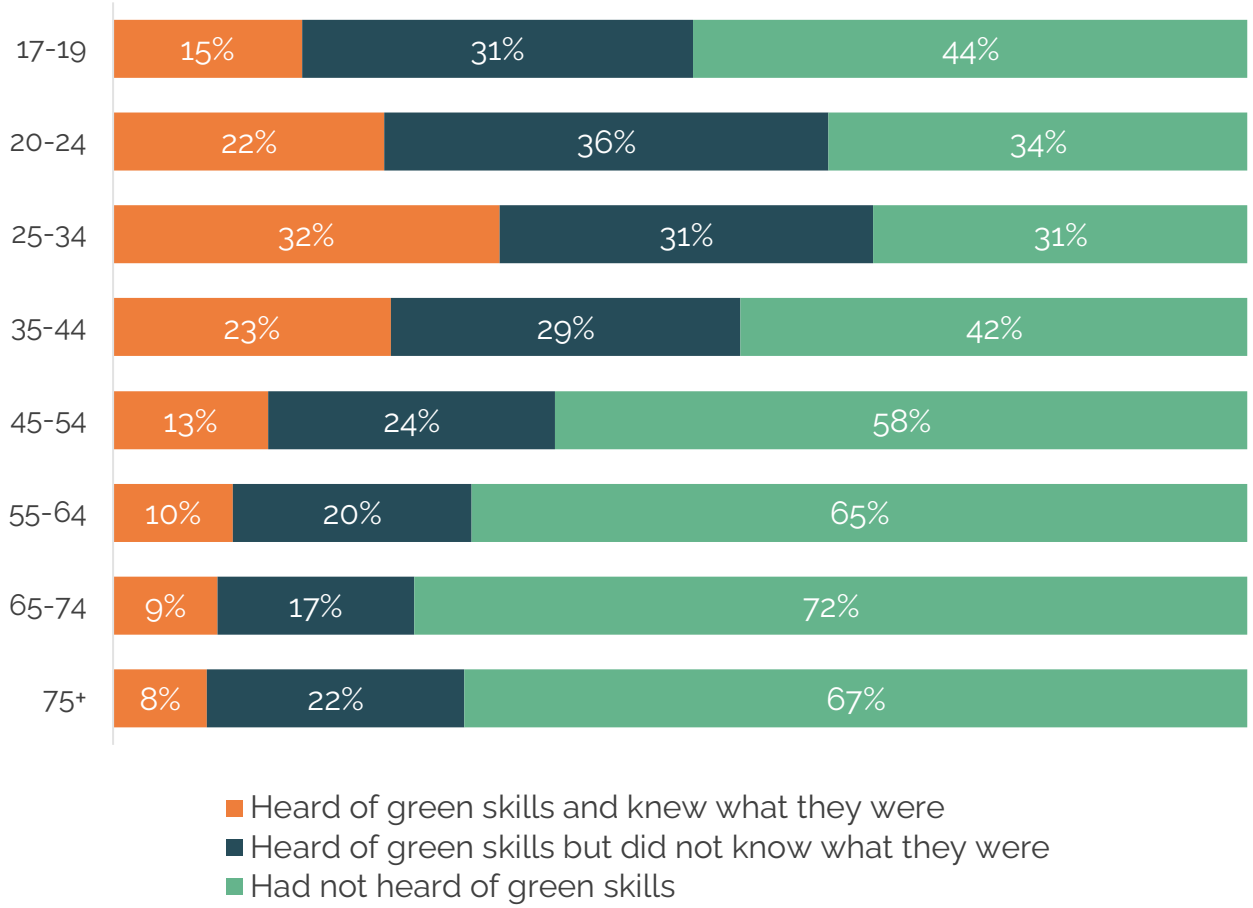
Awareness and understanding of green skills are not spread evenly across society. Women are significantly less likely to say they have heard of green skills (38% vs 48%). The gender profile of jobs and sectors where green skills are required may be a contributing factor. For the sectors explored in this report, women make up just 15% of the construction workforce, 27% of the transport industry and 32% of the energy sector.[68][69][70] This indicates that promotion of opportunities to gain green skills may not immediately help these sectors to redress the gender imbalance, with women much less likely to say they know what green skills are.

Age is a key predictor of reported awareness of green skills. Just over one third (34%) of people aged 20 to 24 reported that they had not heard of green skills. (See Figure 10). This contrasts with two thirds (65%) of those aged 55 to 64, and higher percentages among those of state pension age. This indicates that engaging people around the opportunity to gain green skills might require a different approach for those at mid-to-late-career stages, compared to newer labour market entrants. Nonetheless, and in

[68] Statista (2026) Number of people employed in construction UK 2000-2026, by gender; M R Ratcliffes Consultants Ltd (2025) Why the gender gap in UK transport still matters, and what we can do about it; FDM Group (2023) Women in the energy sector: closing the gender gap and driving change

the context of high levels of unemployment among those aged under 25, it is noteworthy that actual understanding of what green skills are is strongly linked to employment status.[71] Indeed, those in employment are twice as likely to report that they had heard of green skills and knew what they were compared to those out of employment and seeking work (22% vs 11%).

Figure 10: Younger age groups are more likely to have awareness of green skills, UK



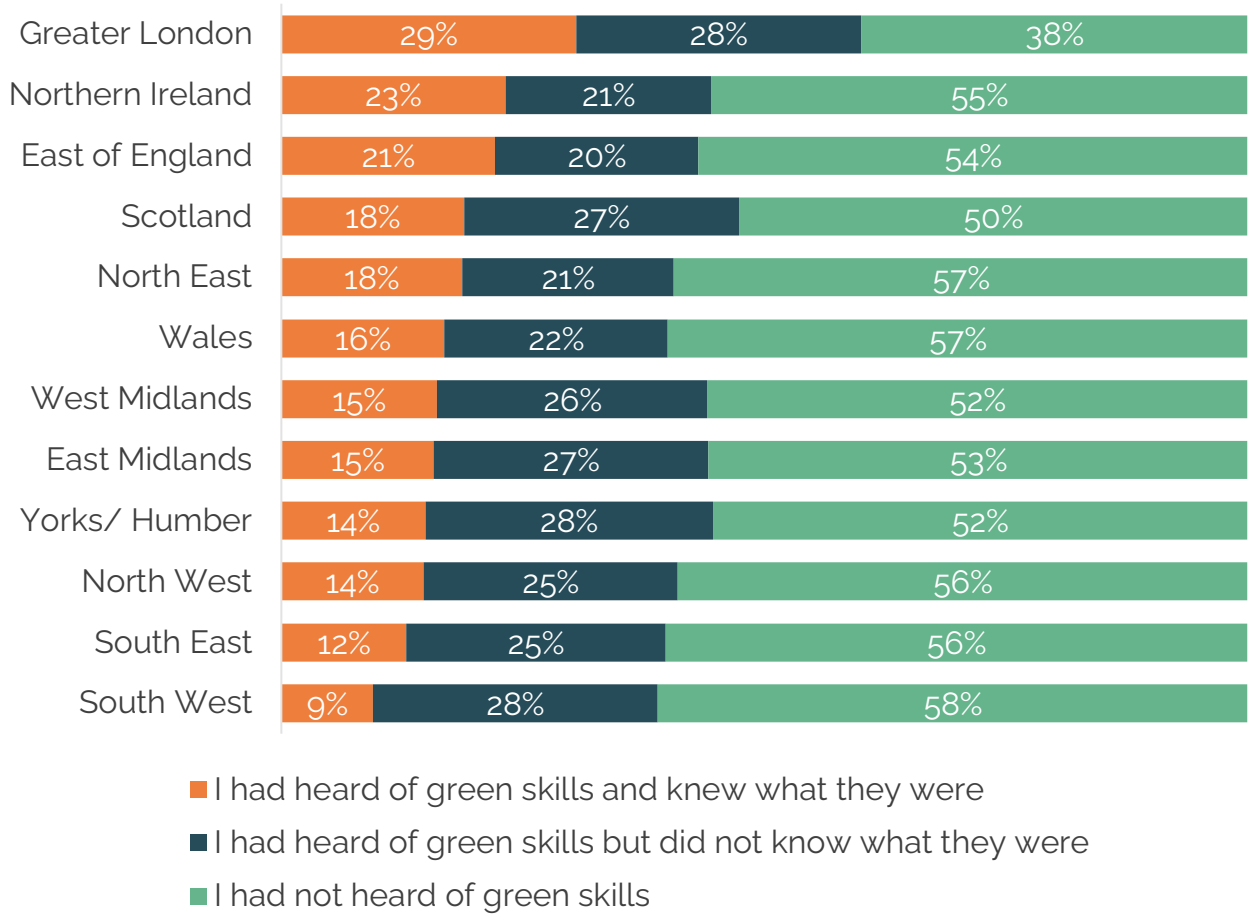
Base: All survey respondents aged 17 and over. Weighted base = 5092, unweighted base = 5091. 17-19 weighted = 199, unweighted = 210; 20-24 weighted = 444, unweighted = 463; 25-34 weighted = 843, unweighted = 901; 35-44 weighted = 802, unweighted = 856; 45-54 weighted = 822, unweighted = 866; 55-64 weighted = 793, unweighted = 838; 65-74 weighted = 838, unweighted = 677; 75+ weighted = 351, unweighted = 280.

There are also regional disparities in awareness of green skills. People who live in the East of England and London are significantly more likely than average to say they had heard of green skills and knew what they are, with 21% and 29% respectively reporting

[71] Office for National Statistics (2026) UNEM01 SA: Unemployment by age and duration (seasonally adjusted). The ONS figure for unemployment of people aged 18 to 24 in May to July 2026 is 14.4%, compared to an overall rate of 4.9%.

this. This compares to only 14% of people in the North West, 12% of people in the South East, and 9% of people in the South West.

Figure 11: Awareness of green skills is highest in Greater London, UK



Base: All survey respondents aged 17 and over. Weighted base = 5092, unweighted base = 5091. Greater London weighted = 671, unweighted = 713; Northern Ireland weighted = 142, unweighted = 120; East of England weighted = 472, unweighted = 481; Scotland weighted = 426, unweighted = 383; North East weighted = 206, unweighted = 247; Wales weighted = 242, unweighted = 248; West Midlands weighted = 449, unweighted = 523; East Midlands weighted = 373; unweighted = 365; Yorks/Humber weighted = 418, unweighted =412; North West weighted = 560, unweighted = 613; South East weighted = 692, unweighted = 640; South West weighted = 440, unweighted = 346.

These differences may reflect wider demographic differences across regions. For example, London has the highest levels of awareness of green skills, but also the youngest average population, and younger age groups report greater awareness of green skills (see Figure 9).[72] Nonetheless, the regional differences highlighted indicate that the location of large high-profile projects linked to the UK's net zero transition does not seem to be playing a major role in fostering awareness of green skills. For example, the mammoth nuclear power site Hinkley Point C is currently under

[72] Office for National Statistics (2025) Census 2021 - Median age. Median age in London is 35, compared to the England-wide average of 40.

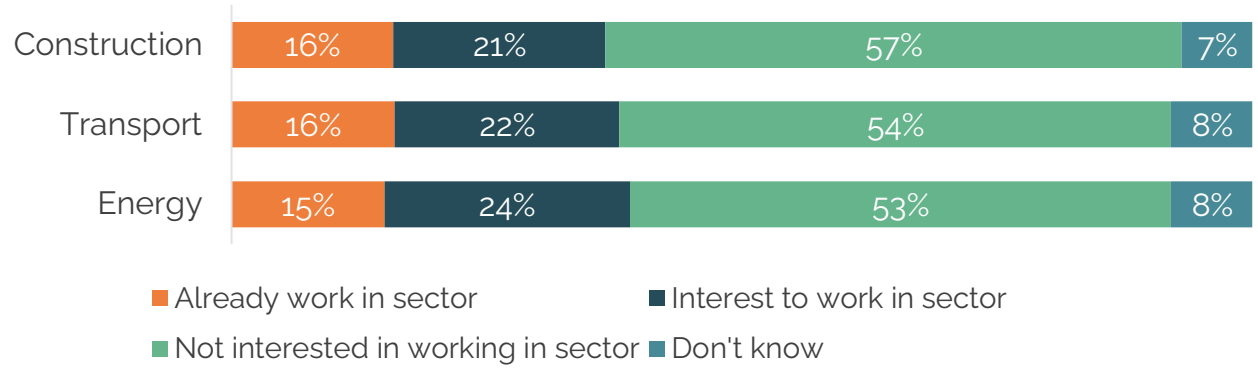
construction in Somerset, as is the £4bn Agratas Gigafactory. Yet the South West has the lowest levels of self-reported understanding of green skills in the UK. New projects may wish to consider this in the way they promote jobs and training opportunities to people in the region.

People have mixed opinions on whether they want to obtain green skills

The majority of people say they are not interested in working in each sector key to the net zero transition

The survey sought to identify people's attitudes towards working in sectors shown by this report to be essential to the net zero transition. For construction (57%), energy (53%), and transport (54%) over one half of respondents reported 'I am not interested in working in this sector'. Others reported that they 'don't know': 7% for construction, 8% for energy, and 8% for transport.

Figure 12: Across construction, transport and energy, around two-fifths of respondents report either already working in the sector or interest in working in the sector, UK



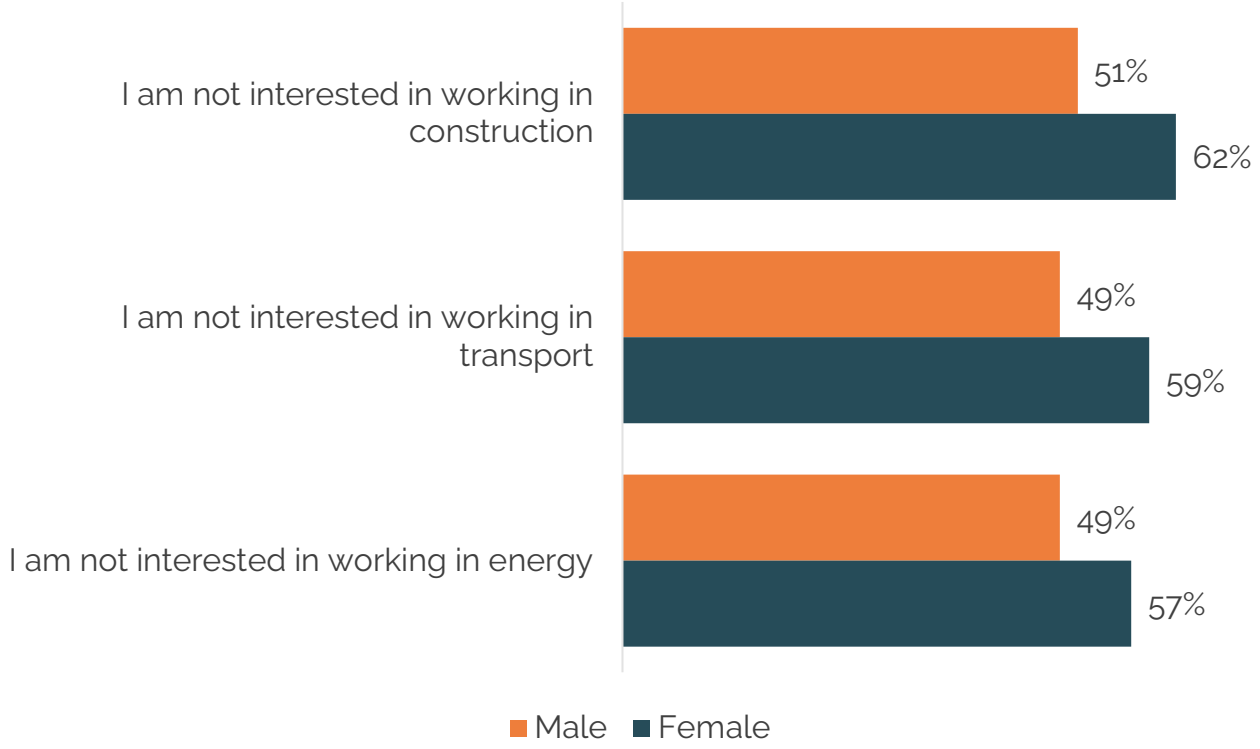
Base: All survey respondents aged 17 and over. Weighted base = 5092, unweighted base = 5091.

On the one hand, it suggests that the clear majority of people say they do not have an appetite to work in each sector where demand for workers around the net zero transition is growing. On the other hand, it shows that these sectors are, or could be, attractive to a large percentage of the population. Indeed, 21% say they have an interest in working in construction, 24% in energy, and 22% in transport. For each sector, this is larger than the proportion of respondents that said they currently work in these sectors.

Both age and gender are strong predictors of appetite to work in each of these sectors. In all three sectors, women are significantly more likely than men to say they are *not* interested in working in the sector. In construction, 51% of men report this, compared to 62% of women; 49% of men say the same for transport, compared to 59% of women.

The proportions are similar for the energy sector, where 49% of men say they are not interested, compared to 59% of women.

Figure 13: Women are more likely to say they do not want to work in a green sector, UK

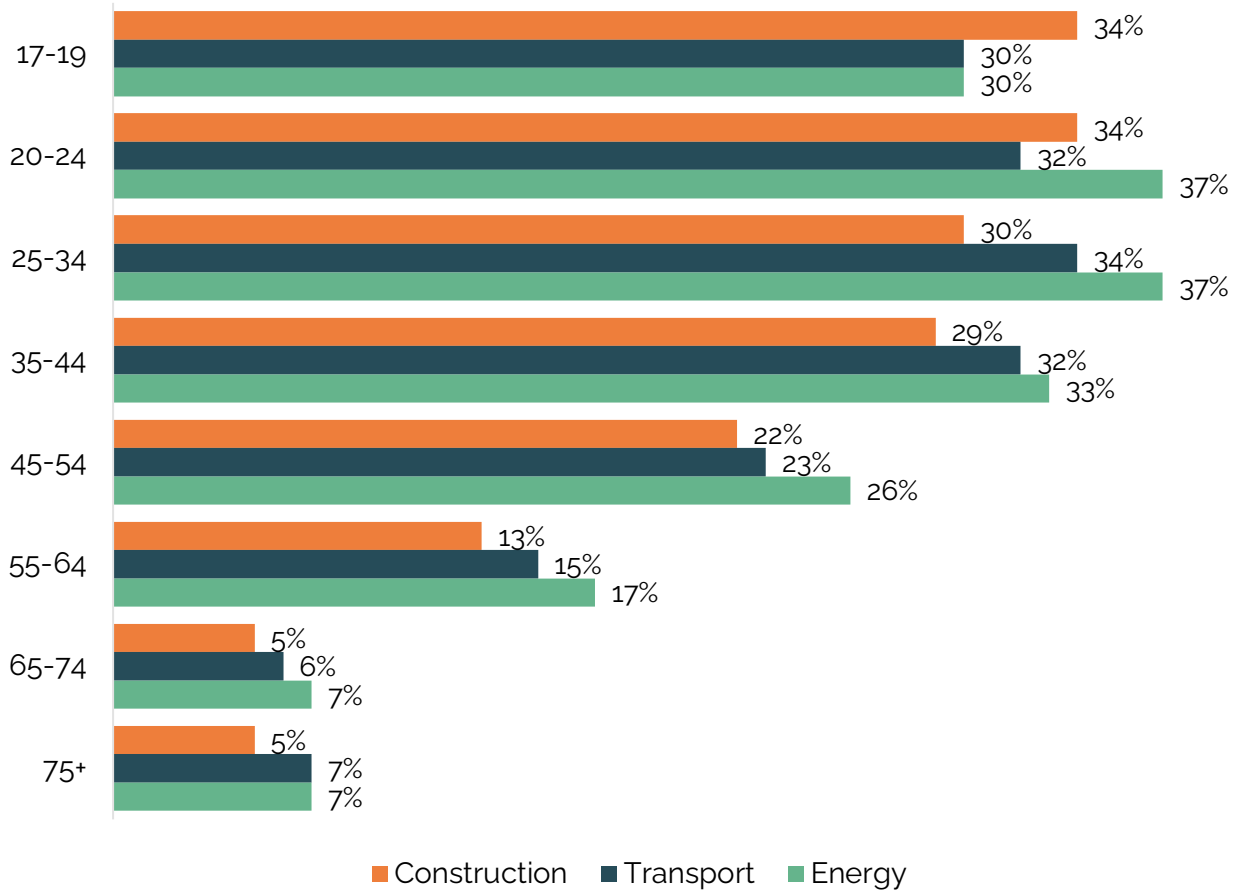


Base: All survey respondents aged 17 and over. Weighted base = 5092, unweighted base = 5091. Male weighted = 2484, unweighted = 2486; female weighted = 2590, unweighted = 2586.

Younger age groups express greater levels of interest in working in a green sector. In all three sectors, the age groups 17-19, 20-24, 25-34, and 35-44 are significantly more likely than average to express interest (See Figure 14). Given high levels of replacement demand in each of these industries, this is positive. Previous research from L&W has also shown that promoting opportunities to gain green skills could be a good method for engaging young people in technical and vocational education in greater numbers.[73] This should be considered alongside the growing demand for technical and vocational qualifications to expand employment in high-priority occupations within these sectors.

[73] Learning and Work Institute (2022) Skills for a net-zero economy: Insights from employers and young people

Figure 14: Younger age groups are more likely to express interest in working in a green sector, UK

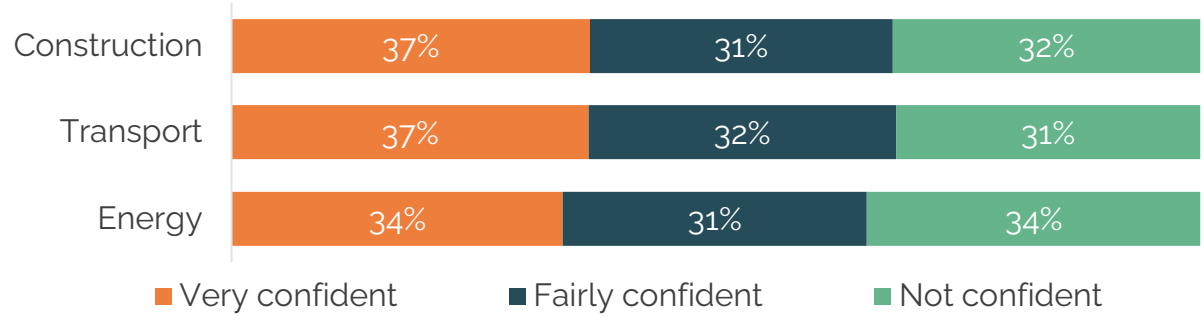


Base: All survey respondents aged 17 and over. Chart shows proportion of each age group expressing interest in working in the sectors. Weighted base = 5092, unweighted base = 5091. Age 17-19 weighted = 199, unweighted = 210; 20-24 weighted = 444, unweighted = 463; 25-34 weighted = 843, unweighted = 901; 35-44 weighted = 802, unweighted = 856; 45-54 weighted = 822, unweighted = 866; 55-64 weighted = 793 unweighted = 838; 65-74 weighted = 838 unweighted = 677; 75+ weighted = 351, unweighted = 280.

Those who say they are interested in working in these sectors generally express confidence they could gain the green skills needed

Those who are not currently employed in construction, transport, or energy sectors, but have an appetite to work in them, were surveyed on their confidence in gaining the green skills needed. Positively, around two thirds of those with an interest in working in these sectors say they are either very or fairly confident that they could obtain the green skills needed, with 68% reporting this for construction, 69% for transport, and 65% for energy (see Figure 15).

Figure 15: Confidence in being able to obtain green skills among people interested in working in the sectors, UK



Base: People who self-report an interest in working in one or more of the sectors. Construction weighted base = 1052; transport weighted base = 1121; energy weighted base = 1234.

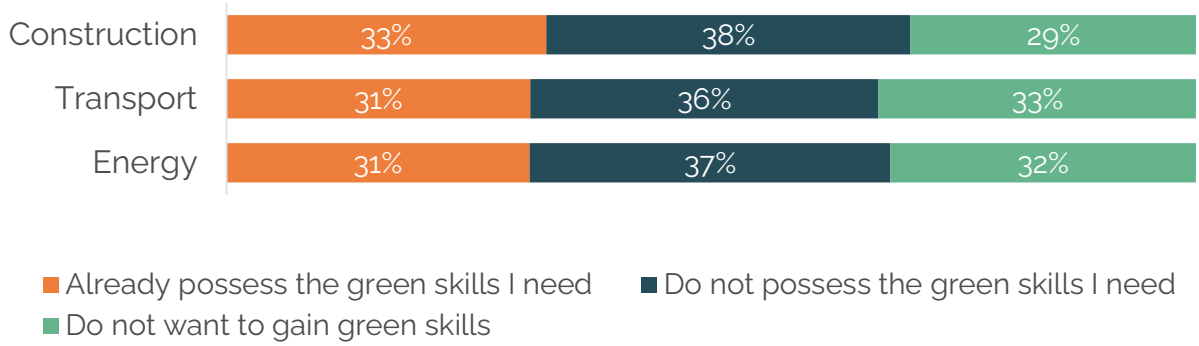
But too many working in these sectors lack the green skills they need, or don't want to obtain them

However, the picture appears less positive among those who report already working in construction, energy and transport sectors. People who said they were working in each of these three sectors were more likely to report 'I do not possess the green skills I need' than 'I do possess the green skills I need'. (See Figure 16) Just as concerningly, a similar proportion of existing workers in these sectors say that they do not want to gain green skills. While employers have greater control over training for their existing workforce, meaning workers may in some cases gain green skills whether they like it or not, this finding does highlight potential challenges sectors key to the net zero transition may face in getting buy-in from their employees.

The construction example is particularly striking, given that 37-39% of its workforce is self-employed.[74] It remains to be seen whether resistance to gaining green skills among those self-employed in this sector will give way to changing market conditions that support the expansion of retrofitting and low-carbon heat sources for example.

[74] Building Cost Information Service (2026) Latest construction workforce figures

Figure 16 Views on gaining green skills among people who work in construction, transport, or energy, UK

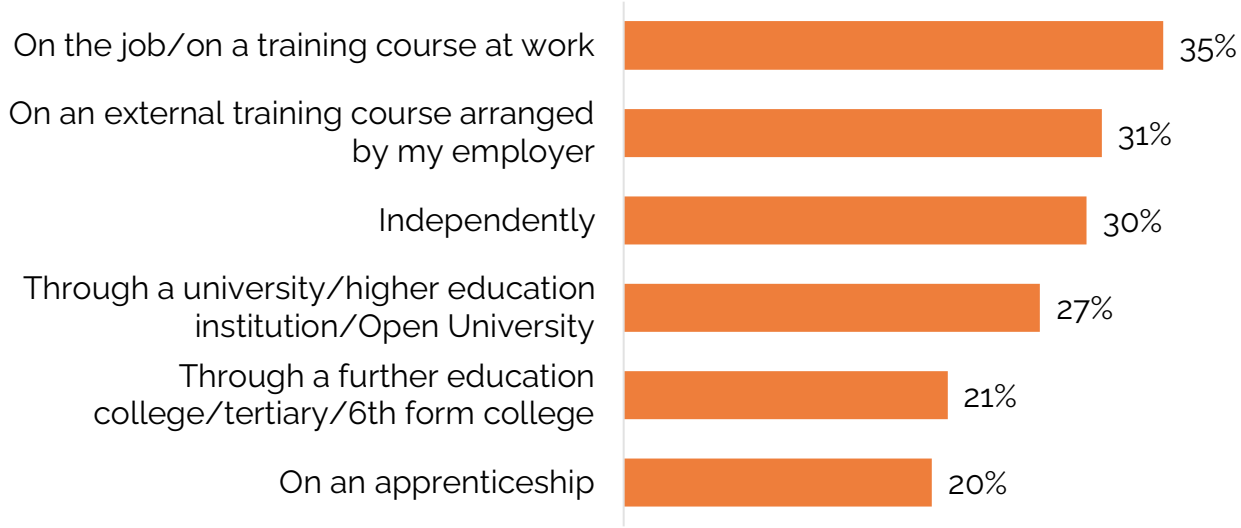


Base: People who self-report working in one or more of the three sectors. Construction weighted base = 801; transport weighted base = 791; energy weighted base = 745.

People's preferred green skills training routes don't match with what employers are looking for

All respondents were asked how, if at all, they would like to develop their green skills, with the option again to select 'None – I don't want to'. Respondents could select up to three options for how they would like to gain green skills. The most popular option was learning on the job or through a training course at work, which was chosen among the top three preferences by 35% of respondents. This was followed by an external training course arranged by their employer (31%), and learning independently (30%) (see Figure 17). The routes least likely to be chosen are through further education college/tertiary education (21%) and through an apprenticeship (20%).

Figure 17 Preferences for gaining green skills, UK



Percentages do not total 100% as respondents could select up to three options. Base: all respondents aged 17 or over. Weighted base = 5092, unweighted base = 5091. Percentages do not total 100 because respondents were asked to select up to three.

People who are working (either in full-time or part-time employment or self-employed) are significantly more likely than average to express a preference for on the job or on a training course at work (47%) or on an external training course at work (43%) as one of their top three preferences for routes to obtain green skills. Although obtaining green skills through an apprenticeship was the least popular option overall, younger age groups were significantly more likely to express a stronger preference for it, with 43% of respondents aged 17 to 19 choosing it among their top three preferences. This was true for 36% of respondents aged 20 to 24, and 33% of those aged 25 to 34.

We can observe some limited differences when we control for the sectors people previously reported having an appetite to work in. Higher education becomes the third most popular option in each sector, while an FE college falls to being the least popular option in energy. (See Figure 18)

Figure 18 Top three preferences among people who express interest in working in construction, transport, or energy, UK

Base: Respondents who expressed an interest in working in one or more of the three industries. Construction weighted base = 1052, construction unweighted base = 1102; transport weighted base = 1121, transport unweighted base = 1172; energy weighted base = 1234, energy unweighted base = 1284. Percentages do not total 100 as respondents were asked to select up to three.

A comparison of people's green skills training preferences with employer demand makes for interesting reading. For example, 59% of additional employment needed in priority occupations for clean energy will be at Level 2 and 3, where the most important pathways have historically been apprenticeships. Meanwhile, existing higher education pathways for this sector are supporting transitions into priority occupations at a much lower rate than lower-level apprenticeships. Nonetheless, apprenticeships are the least popular route for gaining green skills amongst those who want to work in clean energy, with higher education a significantly more popular option.

We see the same story for construction, where 59% of growth in priority occupations is also set to come at Levels 2 and 3, and where lower-level apprenticeships are much more likely to result in people entering priority occupations than higher education courses. However, for construction, we see Level 2/3 Further Education courses supporting entry into priority occupations at the lowest rate compared to other key routes (28%), and also low appetite for FE courses amongst those with an appetite to work in construction and gain green skills.

Conclusion

Across the construction, clean energy, and transport sectors, the UK risks a mismatch between rising employer demand for green skills and the current supply of trained workers.

Numbers of enrolments on relevant training have grown in some areas, particularly heat pumps, solar PV and EV servicing. However, they fall far short of current and projected demand in others, and some pathways are still nascent or undeveloped, especially in clean energy.

We also have an absence of consistent, comparable data on green jobs and skills across government departments and agencies. This fragmentation makes it difficult for policymakers to assess progress, compare sectors, or plan interventions at the scale required, and highlights the need for a unified, cross-government framework for defining, counting and forecasting green jobs and skills.

The public's understanding of and appetite for green skills is limited, with significant differences between different groups of people. While younger people show interest, most adults do not, and many existing workers lack the green skills required for the transition. Preferences for training routes do not align with the pathways most likely to lead into priority occupations, particularly at Levels 2 and 3.

The UK's progress toward a net zero workforce therefore remains uneven. Meeting the Government's objectives will require coordinated action to expand training capacity, strengthen formal pathways, improve data quality, and build public awareness and motivation. Without such interventions, the workforce gap risks becoming a binding constraint on the UK's ability to deliver its net zero commitments.

Recommendations

1. The ONS has worked to further develop its framework to define green jobs. The Government should ensure its collection of skills data mirrors this framework and it is shared by Mayoral Strategic Authorities and executive agencies focused on jobs and skills for net zero. This should encourage industry bodies to share data and complement the work of devolved administrations.

2. The Government should work with industry bodies to develop voluntary models for collective action on skills for decarbonisation. This could encompass skills levies, such as the one in place in Construction.

3. A Skills Tax Credit can help and incentivise employers to invest more in skills and training and create a net zero ready workforce. This should go hand in hand with the Growth and Skills Levy in boosting enrolments in apprenticeships and courses in the areas of greatest need.

4. Steps to increase the attractiveness and uptake of apprenticeships and technical education among younger people should emphasise the importance of these pathways to the net zero transition and their strong track record in supporting in-demand job entry.

5. The Government should help set the tone of the national conversation on net zero by defining this in terms in which people can understand – a warm home, cheaper energy, a good job - and following through on existing plans with clear action.