

Policy brief

# Net-Zero Skills



Jobs, skills and training  
for the Net-Zero energy  
transition



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# Editorial

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# Executive Summary

This policy brief is based on our briefing paper, which investigates the evidence for low-carbon jobs, training and skills requirements in the UK's energy system, with a deeper focus on Net-Zero skills in England. Through an extensive literature review and interviews with experts and practitioners, it analyses how the skills landscape is adapting to support the growth of low-carbon energy

sectors, including both energy supply and end-use. Three case studies in sectors with high expected jobs growth are then presented to investigate challenges and opportunities for improving the supply of skills and training and demand for low-carbon energy careers. The paper culminates with a set of policy recommendations to create clear, inclusive training pathways into low-carbon energy jobs.

## The size of the low-carbon skills gap

The Climate Change Committee (CCC) has reviewed literature on Net-Zero employment impacts and estimates that between 135,000 and 725,000 net new jobs could be created in the UK by 2030 directly in low-carbon sectors (CCC, 2023). This wide range highlights uncertainties in estimates about the number of workers required to support the transition to Net-Zero. Nevertheless, the potential for low-carbon energy job creation is significant and even accounting for jobs displaced, is generally expected to be modestly net positive overall (Hanna, Heptonstall & Gross,

2024). A key issue is therefore ensuring that this job growth is achieved in a socially just and geographically balanced way.

There is currently no national strategy in place to secure the hundreds of thousands of workers needed to transition to a Net-Zero energy system. At the same time, many sectors expected to contribute significantly to the 'greening' of the economy are already facing considerable skills gaps.

The **building energy retrofit** sector is experiencing a significant shortage of skilled workers (Reay, 2023). Research by Green Alliance highlights gaps in installers of heat pumps and energy efficiency measures, retrofit coordinators and digital professionals (Green Alliance, 2022). Although an estimated 120,000–230,000 new jobs could be added to the sector by 2030 (CCC, 2023) attracting workers poses a challenge. Inconsistent, stop-start policies and funding streams have disincentivised private investment in skills and training (Hargraves, Karpathy & Griffin, 2022), and formal training for construction jobs continues to focus on skills for new builds and fossil fuel technologies (Energy Systems Catapult, 2021).

The **offshore wind** sector is forecast to employ at least 100,000 workers in 2030 but also faces various skills gaps (Green Jobs Taskforce, 2021; OWIC, 2023). The Offshore Wind Industry Council reports a need for electrical, digital, consenting, marine and port skills (OWIC, 2023). Given that the lead time for new entrants to reach competency through apprenticeships can be up to six years, the offshore wind sector will also need to rely on recruiting



Image credit: Rampion Offshore Ltd



experienced workers, and those with transferable skills from other industries, such as oil and gas, to fill these gaps and avoid future shortages (HEY LEP, 2023).

The Green Jobs Taskforce estimates that the **electric vehicles** sector could create 78,000 new jobs by 2040, including 24,500 in battery manufacturing, 43,500 in the battery supply chain, and 10,000 in EV manufacturing (Green Jobs Taskforce, 2021). Many of these jobs will be contingent on the development of gigafactories, without which there could be job losses in vehicle manufacturing (CCC, 2023). Within the sector, the main skills gaps are in charging point installers and operators, vehicle scrappage and recycling experts, battery manufacturers and operators, and electrification engineers (Green Alliance, 2022).

Image credit: Statkraft



## How to address the low-carbon skills gap

### 1. Taking stock of potential barriers

**Skills transferability barriers.** It has been estimated that 100,000 jobs in the UK's offshore energy sector will be filled by workers transferring from oil and gas into offshore renewable roles, and by new entrants from outside the sector (Robert Gordon University, 2021). There is debate, however, about how transferable skills across high- and low-carbon sectors are, and whether a 'topping up' of skills or more rigorous retraining will be required for those transitioning (Sato et al., 2023).

**Monitoring and data barriers.** Several recent studies on green jobs have highlighted data limitations when it comes to analysing green jobs and skills in the UK (Cardenas-Rubio et al., 2022; Sato et al., 2023). For instance, the Standard Industrial Classification (SIC) and the Standard Occupational Classification (SOC) in the UK are too coarse to provide detailed information on the exact tasks, skills and knowledge of any occupation (Cardenas-Rubio et al., 2022). A lack of sensitivity in SIC codes means that it is also difficult to understand what businesses do in terms of green and non-green economic activity (ibid).

**Mobility barriers.** Whether or not workers are able to take low-carbon jobs will depend on where and when existing jobs are being lost and new jobs become available. It will also depend on the supply of and demand for relevant training, which is likely to be unevenly distributed in terms of quantity and quality (Bray, Mejía Montero & Ford, 2022). If green jobs or reskilling opportunities do not appear in areas where jobs have been phased out, workers will either have to lose out on opportunities, seek employment in other high-carbon sectors, or relocate, which risks reinforcing existing regional inequalities (Sato et al., 2023).

**Diversity barriers.** The current energy sector is predominantly represented by white male workers (CCC, 2023). Whilst there is limited data on ethnic diversity within the UK's energy sector, available statistics suggest that only 5% of the workforce comes from Black, Asian, and Minority Ethnic (BAME) backgrounds (Energy and Utility Skills, 2021). Unless active measures are taken to support underrepresented groups joining the Net-Zero energy workforce, occupational gender and ethnicity gaps are likely to persist.

**Regional barriers.** UK regions with a higher concentration of energy-intensive industries, such as the North East, Yorkshire and the Humber, and the West Midlands, stand a higher chance of being negatively affected by the transition. These regions are often also those whose economies have seen the least growth in recent decades (Aldersgate, 2020). As far as skills are concerned, they are also likely to have less capacity and resources to be able to provide adequate reskilling support for workers who will need to transition into new jobs, or to provide training opportunities encouraging new people into low-carbon sectors.

## 2. Policy recommendations

Based on the considerations above, we set out a range of recommended actions that should be prioritised between now and 2050, with relevance for different stakeholders.

For **government and policy makers**, we advise tackling the green skills gap by:

- Establishing a new, independent statutory body to monitor, research, and advise on the development of skills for Net-Zero in England. While accounting for similar or parallel initiatives in Scotland, Wales and Northern Ireland, this national ‘Net-Zero Skills Commission’ would:
  - develop a national Net-Zero skills strategy, accounting for now until 2050, with actionable, long-term plans for transforming the skills system to meet Net-Zero

requirements. This would additionally include producing sectoral national skills plans, such as a National Retrofit Skills Strategy, and should consider different regional, local and sectoral needs, and explore how the skills aspect of the transition can be made socially inclusive. A range of stakeholders would need to be included in this process, namely representatives from government, industry, local authorities, citizen groups, trade unions, education and training providers.

- review existing occupational standards for Net-Zero jobs, analyse and identify ongoing and emerging skills gaps, and provide expert advice on improving training and education pathways. This could include being mandated to release yearly progress reports against Net-Zero targets, providing recommendations for the Government to respond to.

- review and update occupational metrics to include distinct classifications for low-carbon jobs and skills. This should involve developing detailed lists of associated skills and activities for defined occupational roles, and introducing new roles specific to green industries within existing data and classifications, such as the ONS Low Carbon and Renewable Energy Economy survey (LCREE), SIC and SOC.

- Reviewing current public financing mechanisms for skills, including the Apprenticeship Levy, the National Skills Fund, and the Adult Education Budget, to see how funding can be better directed towards the development of training for green jobs. Additional public funding should also be



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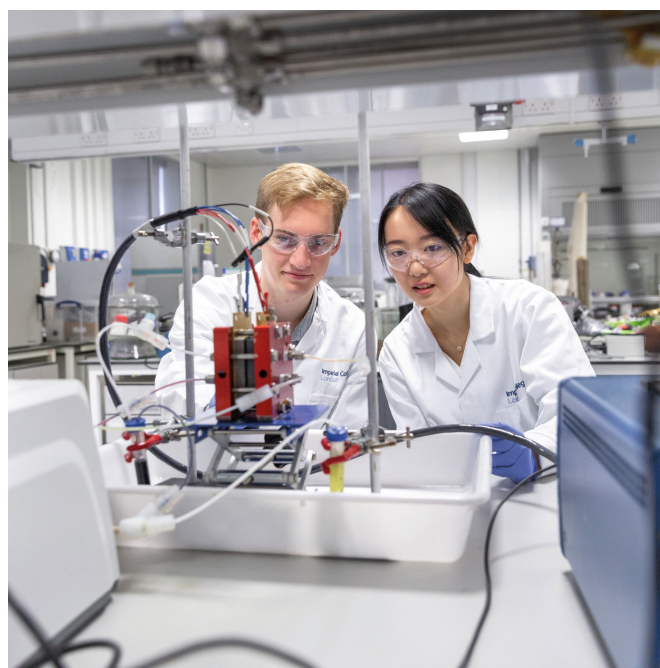


leveraged to support long-term development of skills for Net-Zero, specifically for Further Education (FE) colleges and training providers to be able to develop new, high-quality green courses and overcome low participation rates. There is also a case for targeted funding for SMEs who cannot afford to send staff to be trained or take on apprentices.

- Increasing public investment in the development of regional centres of excellence. These centres can act as focal points for training, research and development for Net-Zero jobs and skills, and help ensure that opportunities for scaling up the low-carbon workforce are more evenly geographically distributed.

- Designing and implementing clearer, more consistent and long-term policy support to create conditions where employers are incentivised to commit to longer-term training initiatives, thereby increasing the likelihood of prospective workers taking on training where they have higher confidence that sustainable employer demand in low-carbon jobs exists.

- Increasing public awareness of green job opportunities and career pathways by engaging with local and regional community groups and schools (e.g. through media campaigns, workshops and talks). This could help to demystify what is meant by 'green jobs', and stimulate more public interest in joining local, low-carbon industries.



For **training and education providers** we recommend:

- Ensuring that the skills being taught are flexible enough to respond to evolving industry needs by 'greening' the curricula across the skills system. This means increasing the number of low-carbon FE courses and repurposing traditional, non-green job training courses to include green skills relevant to current and future roles.

- Considering possible labour mobility and accessibility limitations faced by individuals aspiring to join the Net-Zero workforce. Ensuring there are locally present, flexible opportunities to learn will help to address these challenges. These could include developing more training courses which include hybrid teaching methods and are delivered at flexible times, as well as introducing more modular courses or micro-credentials for those who only need a topping up of existing skills. Other measures can include creating innovative delivery models such as shared apprenticeship schemes and utilising renewable energy community benefit funds.

For **companies in green and transitioning energy sectors**, we propose:

- Creating ready access to high-quality reskilling programmes for people working in phasing-down industries. Closer links between sectors expected to be displaced and



sectors expected to grow will help to create clear and direct routes into new jobs. Additional financial support should be made available for overcoming barriers to reskilling, e.g. paid time off for taking on training, sabbaticals, and skills vouchers. In cases where employment termination is inevitable, just termination packages, early dismissal notices, and early access to reskilling opportunities should be provided. It is also recommended that workers who stand to be affected are involved in the transition planning process.

- Taking measures to demonstrate that green energy organisations are inclusive and respectful places to work, where underrepresented groups are not liable to be discriminated against, thereby helping to attract a wider pool of talent. The Green Jobs Taskforce report presents possible avenues for improving recruitment

practices, including through diverse representation in recruitment panels, introducing anonymous application forms, creating a culture of inclusivity within organisations, and providing diversity and inclusion training for leaders and recruitment teams (Green Jobs Taskforce, 2021).

- Investing in data collection and more detailed labour market information to facilitate the creation of a more diverse workforce. Metrics related to gender, ethnicity, and social background should be included, published, and regularly updated within industry and government surveys. This would provide a clearer understanding of where targeted interventions for diversifying the workforce could be implemented across different sectors, at varying levels of governance, including local, regional and national, as well as training providers and industry.

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