GREEN JOBS TOWARDS NET ZERO

United Kingdom Case

Juliana Lopez

ACTUA Consulting | www.actuaconsulting.nl

Rotterdam, The Netherlands

Foreword

The United Kingdom has committed to achieving net zero emissions by 2050, which means balancing the total greenhouse gas emissions produced with those removed from the atmosphere. This goal aims to curb global warming and mitigate climate change. To support this effort, the United Kingdom Government has implemented a range of policies outlined in two key strategy documents: the Net Zero Strategy (2021) and Powering Up Britain: The Net Zero Growth Plan (2023). (UK Parliament, 2024)

The green transition depends heavily on the availability of "green talent"—workers equipped with the skills required for a sustainable economy. As this transition accelerates, it will prompt a significant and rapid shift in the demand for skills, jobs, and specific goods, outpacing the market's ability to adjust naturally.

This report highlights the importance of bridging the green talent gap as part of the policy measures in mitigating climate change. This gap is identified by a classification of green jobs using the GreenSOC (Green Standard Occupational Classification), where three categories are used: i. occupations in new green industries; ii. roles requiring updated skills for sustainability; and iii. existing occupations that are critical in supporting eco-friendly initiatives. To do so, the report aims to show, over a series of 5 years (2019–2023), the behavior of the green jobs under this classification for the case of the labour market in the United Kingdom.

In addition, this report offers practical recommendations for adapting local skills systems to support the green transition while ensuring it is implemented in a socially equitable manner. It outlines strategies for fostering effective green skills categorization by enhancing collaboration across government, educational institutions, and industry stakeholders.

TABLE OF CONTENT

FIGURES

1. Importance of the Twin Transition in Green Jobs and Skills Development

The twin transition refers to the simultaneous movement towards a green (environmental) transition and a digital transition. This dual transformation plays a critical role in reshaping the economy, focusing on sustainability while leveraging technological advancements. Together, these transitions drive profound changes in job markets, industries, and skill requirements. In this sense, the twin transition significantly impacts the development of green jobs and necessary skills by integrating technological innovation into environmentally sustainable practices, such as:

Sustainability: refers to meeting the needs of the present without compromising the ability of future generations to meet their own needs. It encompasses economic, social, and environmental dimensions, promoting a balanced approach that supports long-term ecological health, economic viability, and social equity (OECD, 2023) (Dickinson et al., 2022).

- Integration of Digital Solutions: Digital tools such as artificial intelligence (AI), data analytics, and IoT are essential in enhancing the efficiency and sustainability of industries. This technological layer helps identify energy-saving opportunities, optimize processes, and enable more efficient monitoring of environmental impacts (OECD, 2023) (Dickinson et al., 2022).
- Emergence of Digital-Enhanced Green Jobs: The need for tech-driven green jobs is rising. For example, roles in smart grid management, eco-efficient manufacturing, and renewable energy technology development combine knowledge of sustainability with digital proficiency (Cardenas et al., 2022).

In consequence, the need for upskilling and reskilling of the workforce, combining digital literacy with green competencies requires a comprehensive skill development and addressing the talent shortage. Workers need an adaptable skill set that includes both environmental and digital skills to keep up with evolving industry standards. For instance, engineers working on renewable energy projects must also be proficient in using advanced software tools for design and simulation. In addition, the green transition alone already highlights a skills gap, but this is compounded by the digital aspect of the twin transition. The integration of these two fields calls for an expanded

curriculum in training programs, focusing on digital capabilities alongside traditional green skills (OECD, 2023) (Dickinson et al., 2022) (Cedefop, 2023).

The transition to a greener economy highlights a significant mismatch between the current skills available in the workforce and those required for green jobs. Addressing this gap is essential to avoid hindrances in adopting sustainable practices and ensuring inclusive growth through methodologies and policies such as:

- Skills mapping: identifying existing and required green skills helps align educational and training programs with labour market demands. By integrating real-time data from job postings and comprehensive labour market analyses, policymakers can create targeted upskilling programs (Cedefop, 2023).
- Upskilling & reskilling: The emphasis on adult education and continuous professional development is critical, ensuring that workers in traditional sectors can transition smoothly into green roles (Cardenas et al., 2022).

2. GreenSOC: What is it and how do we measure green jobs?

Green jobs span across sectors and are involved in areas such as renewable energy, energy efficiency, pollution reduction, waste management, and sustainable agriculture. The inclusive definition of green jobs considers both jobs directly producing environmental goods and services and those evolving in existing industries to align with sustainability goals (Cardenas et al., 2022) (OECD, 2023).

Green jobs: positions that contribute to preserving or restoring environmental quality. (Dickinson et al., 2022).

Types of Green Jobs:

- New and Emerging: These roles are newly created because of green technologies and methods (e.g., solar panel technicians).
- Enhanced Skills and Knowledge: Traditional occupations that require updated skills to include sustainable practices (e.g., architects focusing on energy-efficient building design).

- Increased Demand: Existing jobs that see a surge in demand due to the green transition without significant changes in tasks (e.g., electricians specializing in energy upgrades) (Cardenas et al., 2022) (Dickinson et al., 2022).

> **Green Skills**: These are the specific abilities and knowledge that allow workers to engage in sustainable practices within their roles. Green skills include understanding environmental regulations, energy efficiency measures, renewable energy systems, and sustainable resource management (Cedefop, 2023) (Dickinson et al., 2022).

In this sense, the GreenSOC (Green Standard Occupational Classification) is a framework developed to assess and classify green jobs using an inclusive approach (Office for National Statistics). This method builds on traditional SOC (Standard Occupational Classification) systems but adapts them to include (Office for National Statistics, 2024):

- Occupations in new green industries
- Roles requiring updated skills for sustainability
- Existing occupations that are critical in supporting eco-friendly initiatives

The GreenSOC framework aims to map out these roles more comprehensively, addressing challenges posed by traditional classification systems, which often overlook jobs evolving within non-green sectors (Cardenas et al., 2022) (Dickinson et al., 2022).

3. Vacancies and occupations analysis in the United Kingdom (2019 -2023)

An analysis of over 6 million vacancies in the United Kingdom across a five-year period (2019–2023) reveals notable trends in annual demand, as detailed in Table 1. Starting with 894,683 vacancies in 2019, the number slightly declined by approximately 3.4% 2020, likely due to economic disruptions such as the COVID-19 pandemic. However, demand increased sharply in 2021, with vacancies increasing by 43.4% to 1,239,023 and the growth continued into 2022, peaking at 1,667,235 vacancies—a 34.6% increase compared to the previous year. By 2023, vacancies decreased slightly by 5.4%, suggesting a stabilization in the labor market. Overall, this trend reflects a 76.2% increase in vacancies from 2019 to 2023, aligning with broader economic changes, including the growing prominence of green and sustainability-focused roles (ACTUA Consulting, 2024). For more detail visit the dashboard: https://www.actuaconsulting.nl/green-job-vacancies

Table 1. Annual vacancies in the United Kingdom from (2019 to 2023)

Annual Vacancies (2019-2023)	
2019	894,683
2020	864,065
2021	1,239,023
2022	1,667,235
2023	1,576,925

*ATUA Consulting (2024) Vacancies in the United Kingdom and Green Jobs. www.actuaconsulting.nl/green-job-vacancies

Regarding the types of green jobs outlined earlier, the distribution of demand per year by category shows notable trends. Up until 2022, non-green job types dominated the market. However, by 2023, this trend shifted, with demand for non-green roles decreasing. The following categories illustrate the evolving landscape (Cardenas et al., 2022; Dickinson et al., 2022):

New and Emerging: Roles newly created due to advancements in green technologies and methods (e.g., solar panel technicians).

Enhanced Skills and Knowledge: Traditional occupations that require updated skills to integrate sustainable practices (e.g., architects specializing in energy-efficient building design).

Increased Demand: Existing jobs experiencing a surge in demand due to the green transition without substantial changes in tasks (e.g., electricians specializing in energy upgrades).

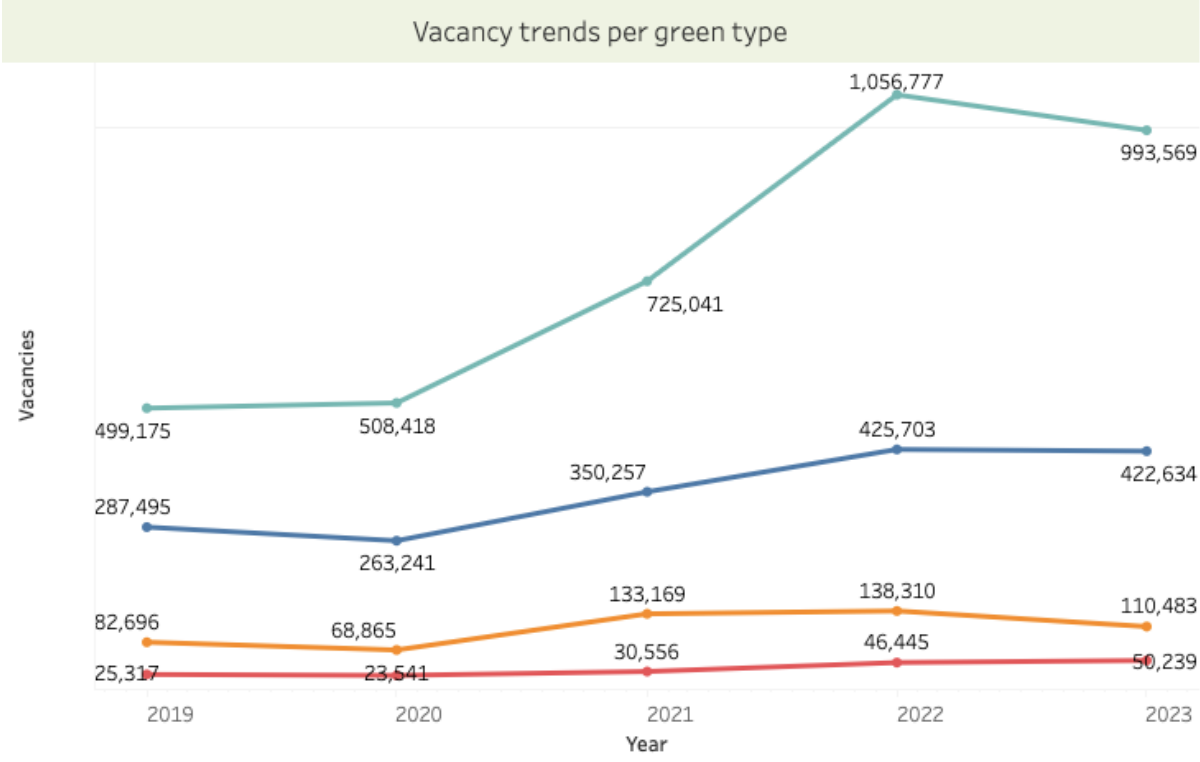
For more detail visit the dashboard: https://www.actuaconsulting.nl/green-job-vacancies

The evolution of job vacancies across various green and non-green categories in the United Kingdom from 2019 to 2023 , as detailed in Graph 1, shows that non-green jobs dominated vacancies throughout the period, but their share of total vacancies started to decline in 2023, however, the data highlights the increasing importance of green jobs in the transition to a sustainable economy, though their growth remains modest compared to non-green roles. In addition, green job categories (particularly "Increased Demand" and "New and Emerging") showed notable growth, indicating a shift towards sustainability-focused roles in the labor market.

In detail, “non-green jobs” consistently accounted for the highest number of vacancies, rising from 499,175 in 2019 to a peak of 1,056,777 in 2022, before slightly declining to 993,569 in 2023. Vacancies in the "Increased Demand" green job category demonstrated steady growth over the period, increasing from 287,495 in 2019 to 422,634 in 2023. Similarly, "New and Emerging" green jobs experienced an upward trend despite some fluctuations, growing from 82,686 in 2019 to 110,482 in 2023, with a peak of 138,310 in 2022. The "Enhanced Skills and Knowledge" category showed consistent but slower growth, increasing from 25,314 in 2019 to 56,233 in 2023.

The trends indicate that while non-green roles still dominate the labor market, the demand for green jobs—particularly in the "Increased Demand" and "New and Emerging" categories—is steadily rising, reflecting the growing focus on sustainability and the green transition in the United Kingdom economy.

Graph 1. Vacancy trends per green type in the United Kingdom from 2019 to 2023



*ATUA Consulting (2024) Vacancies in the United Kingdom and Green Jobs. www.actuaconsulting.nl/green-job-vacancies

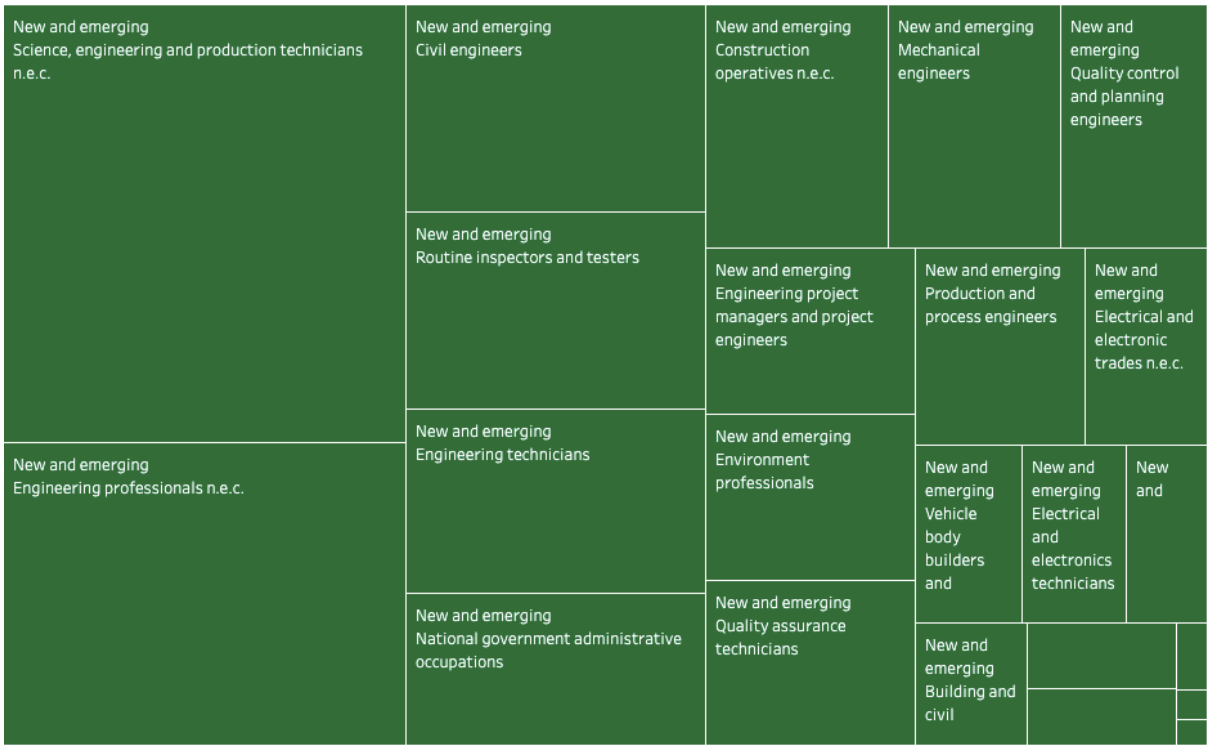
Regarding the vacancies per occupation each year grouped, shows the distribution per green type. The treemap displayed in Figure 1 shows an example of the distribution of occupations in the 2019 – 2023 period of the “New and Emerging” type of green job in the United Kingdom. In this green job type the top 3 occupations according to the SOC is:

- Science, engineering, and production technicians
- Engineering professionals
- Civil engineers

For more detail visit the dashboard: https://www.actuaconsulting.nl/green-job-vacancies

Increased Demand	**Enhanced Skills and Knowledge**
Top 3 Occupations: • Warehouse operatives • Customer Service Operations • IT User Support Technicians	Top 3 Occupations: • Programmers and Software Developers Professionals • Secondary Education Teaching Professionals • Primary Education Teaching Professionals

Figure 1. Vacancies per occupation according to Green Type in the United Kingdom from 2019 to 2023. Example "New and Emerging" type of green job



*ATUA Consulting (2024) Vacancies in the United Kingdom and Green Jobs. www.actuaconsulting.nl/green-job-vacancies

4. Strategic Recommendations for Policymakers

Effective local and national policy measures, such as those seen in Scotland's Climate Emergency Skills Action Plan, demonstrate how strategic planning in skills development can support the green transition. These initiatives should involve collaboration between governments, educational institutions, and industry partners to foster relevant skill-building programs (OECD, 2023) (Cardenas et al., 2022).

A comprehensive understanding of green jobs, skills, and the methodologies like GreenSOC (Green Standard Occupational Classification) is vital for driving the green transition. By focusing on inclusive definitions, skills mapping, and targeted education, regions can better prepare their workforce for a sustainable future. Bridging the talent gap through proactive policies and collaboration ensures that economic growth aligns with environmental and social sustainability. This alignment supports not just environmental goals but also contributes to fair work and the long-term resilience of labour markets (Dickinson et al., 2022) (Cardenas et al., 2022). Policies aimed at supporting the twin transition must:

- Promote Cross-Sector Collaboration: Governments, educational institutions, and industry leaders must work together to create training programs that merge sustainability education with digital skills.
- Support Lifelong Learning: The dynamic nature of the twin transition requires continuous education and flexible learning paths to ensure that workers remain equipped to handle both green and digital advancements.
- Foster Innovation: Investment in research and technology development can drive more sustainable practices supported by digital solutions (OECD, 2023) (Cardenas et al., 2022).

The twin transition represents a unique opportunity to address environmental challenges while fostering economic growth through technological innovation. By preparing the workforce with a comprehensive set of green and digital skills, we can support a sustainable and competitive economy. Bridging the skills gap in this context ensures that industries can thrive and adapt, creating equitable opportunities across various sectors (Dickinson et al., 2022) (Cardenas et al., 2022).

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