



Mind the gap: The looming green skills shortfall

Introduction

'Mind the gap' – the green skills challenge

As green technologies progress and the world strives towards a low carbon future, these changes in processes and new business models will require new or differing skill sets, and upskilling the workforce suitably is presenting itself as a strategic challenge, akin to a green 'industrial revolution'. Both developed and developing countries must now shift their economies towards more ecologically friendly forms of production and consumption through use of these green skills. The second edition of ZCA's annual green skills research explores the key trends and challenges associated with this rapidly evolving area.

“Simply put, green skills are the knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society.”
– United Nations Industrial Development Organisation

The three main ways that the shift to a green economy affects necessary skills are as follows:

- Demand for some tasks rises due to structural changes, while demand for others declines.
- New skill profiles, credentials, and training frameworks are required because new economic activity generates new jobs.

- Many current occupations and industries will see a change in the kind of tasks performed, making changes to the existing training and qualification frameworks for these jobs necessary.

It is crucial to understand that the availability of green jobs and skills shouldn't be seen as specialised or restricted to specific industries. Every career has the potential to become 'green' and there is a wide range of skills that will aid the shift to a net zero economy as the world works to improve sustainability and protect the environment.

Industries in focus

Fourteen major industries define the boundaries of our full research, these are:

- Agriculture
- Energy & mining
- Construction
- Education
- Finance
- Healthcare
- Manufacturing
- Retail
- Real estate
- Travel
- Entertainment & recreation

- Transport and logistics
- Information & communication
- Professional scientific & technical
- Other

These areas define both the exploration of pressures driving the need for new green skills as well as the forecasting that calculates and predicts green skill need.

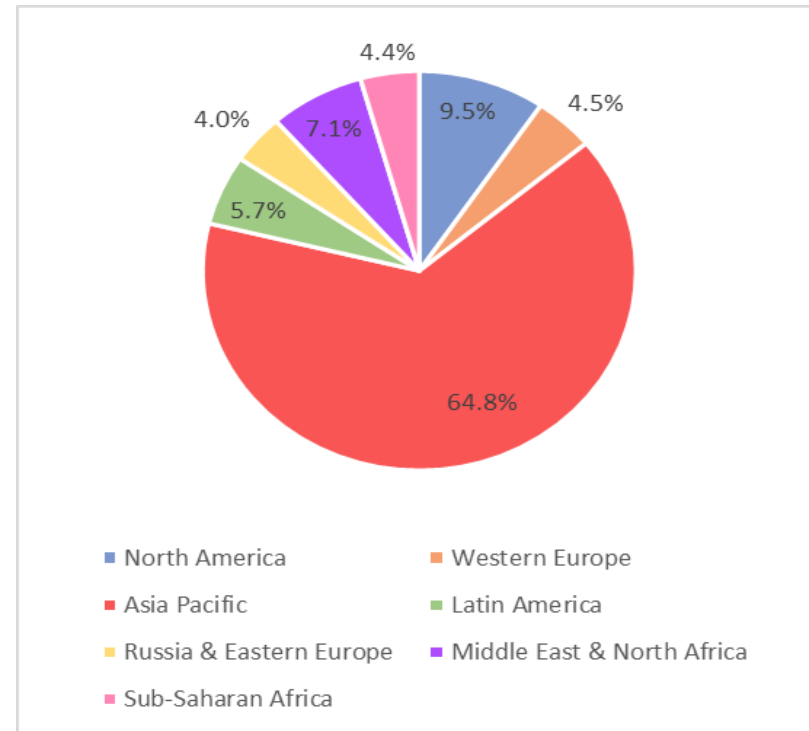
Forecast summary

ZCA finds that green skills vacancies will soar to 241 million by 2030, up from just 67 million this year. However green skills adoption will not meet demand, growing at just 60% over the next 5 years, compared with 260% growth in green jobs. This poses severe implications for key industries and future workforce recruitment.

- There is significant variation between regions. We expect North America to lead throughout the period in terms of green skills proliferation, followed by Western Europe.
- Amongst the sectors most at risk from a high skills gap are construction, transport & logistics, and manufacturing.
- ZCA notes a significant increase in professionals within the agriculture sector who say they have green skills, versus our 2023 research. However, this level of change is limited to North America, Western Europe, and Japan & South Korea.
- Throughout the period we expect North America to lead in terms of green skills proliferation with 14.06% by 2030, followed by Western Europe.

- In terms of the rate of growth, North America will see the highest CAGR for the period at 12.8%, driven by developments within the agriculture, energy & mining and the construction sectors.

Figure 1: Total green skills vacancies in 2030: 241 million, split by 7 key regions (%)



Source: Zero Carbon Academy

The ZCA green skills in the workplace survey



Source: Unsplash

In this edition of ZCA’s green skills research we have assessed the attitudes of working age people towards green skills in the workplace, to understand how critical green policies are and what employers can do to attract and retain talent. In addition, we have looked at the prevalence of green skills, how these have been acquired, and how important green issues are.

This builds on our last survey the “ZCA young green talent in the workplace” survey which was included in our previous 2023 research. In that survey Zero Carbon Academy sought to hear from young people working in climate change. We asked thirty-nine young leaders between the ages of 18 and 30 about their own green talents and those of their employer (or perspective employer).

For our 2025 edition of this research, ZCA undertook a survey of US (United States) adults aged between 18 and 65 to understand both prevalence of, and attitudes towards, green skills. In addition, we explored respondents’ opinions on employers’ green practices. The sample was balanced to represent gender and age based on census data, and 102 individual responses were collected. To better understand generational divide, and compare with data on the Gen Z cohort specifically, we categorised respondents into the following groups by age:

- Gen Z (18-27 years old)
- Millennial (28-43 years old)
- Gen X (44-59 years old)
- Baby boomer (60-78 years old)

We first gathered information on the experiences and skills of the respondents, followed by collecting data on their expectations of employers. In contrast, the previous ZCA young green talent in the workplace survey gathered the views of 39 individuals aged between 18–30 who were applying their eco aptitude either in education or in the workplace. Many of our questions were qualitative and open ended in nature to understand more deeply the opinions and values of young people when it comes to climate.

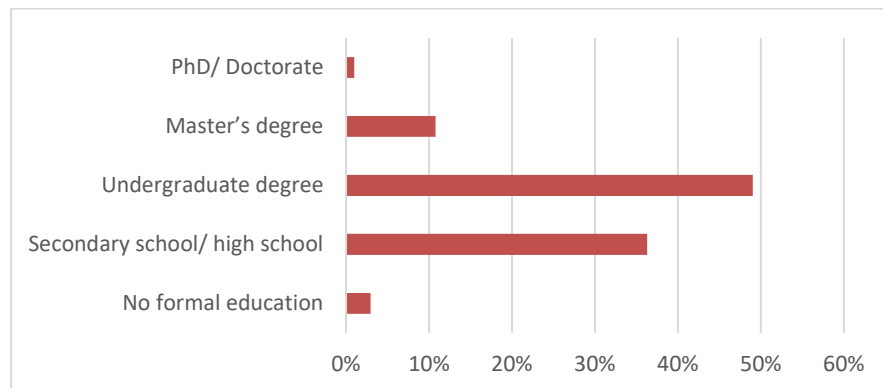
Survey results and analysis

Whilst our 2025 survey looks at a much broader segment of society, we have used many of the same questions as in our previous young green talent in the workplace study. As a result, where appropriate we have compared the two surveys.

Education

Our 2025 US survey revealed that 61% of respondents had at least one tertiary education achievement, this is notably lower than our young green talent study where 82% of the respondents had at least one tertiary education achievement. The OECD reports that the proportion of the population that holds at least one tertiary education achievement was 48% in 2021 (the most recently available data). In terms of postgraduate attainment, 11% of our US respondents had achieved at least a master's degree.

Figure 2: Educational achievements of our US survey respondents



Question: "What is your highest level of education?" Number of responses: 102.

Source: ZCA

Skill acquisition

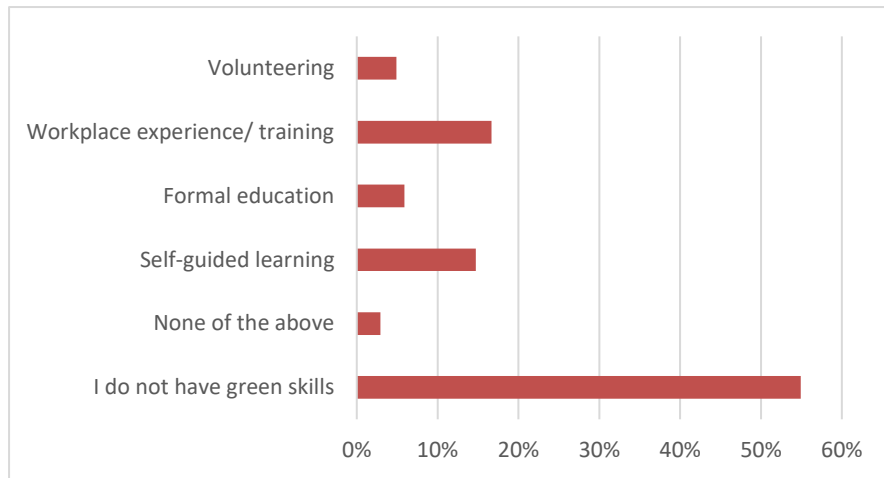
Our panel of US respondents were asked whether they possess any formally recognised green skills, or green skills gained from experience, to which 45% said they did. When asked where they had acquired their green skills, most respondents said that this was from a workplace

scheme or training (40%), or from self-guided learning (35%), just 14% said this was from formal education.

Compare this with our young green talent, where a combined two-thirds of respondents had acquired green skills through formal education and/or work experience, making these the most common. In addition, 13% of respondents said that volunteering had equipped them with green skills and a further 38% said that self-guided learning was how they honed their green talent. A combination of real-world experience alongside fundamental skills learnt in formal settings should serve to make young green professionals highly effective within their field.

However, the difference between our US survey and last year's green talent survey suggests a potential failure by formal education institutions in successfully skilling the future workforce for the looming green skills crisis. Those on a climate-specific career path appear to be obtaining skills more successfully from education or their workplace than the general public, who instead are turning to self-guided learning or requiring their employers to provide training.

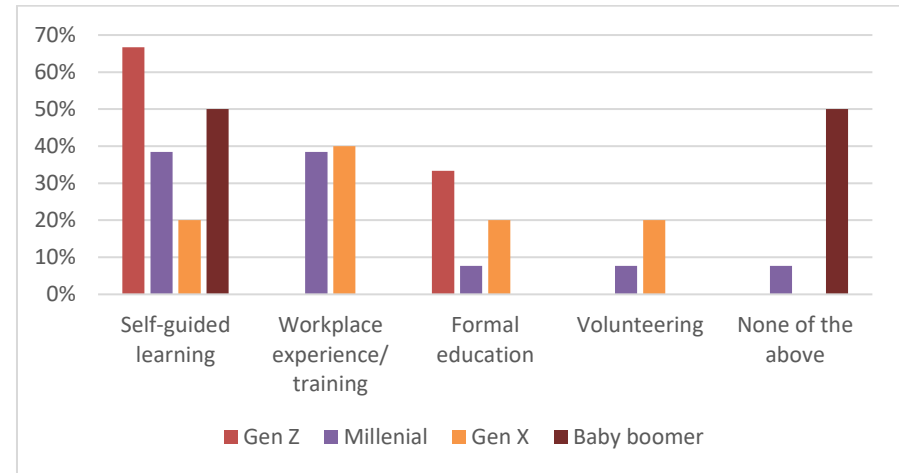
Figure 3: Where survey respondents obtained their green skills



Q: "If you answered in the affirmative to the previous question, how did you gain your green skills?" N:102. Source: ZCA

In terms of our US study, being self-taught seems to be of particular interest to the younger Gen-Z respondents, as figure 8 shows. The method is also popular with Millennials, who are equally likely to have obtained their green skills from workplace experience or training as they are from self-guided learning.

Figure 4: Where survey respondents obtained their green skills, split by age category



N:46 - those who said they have green skills. Source: ZCA

i. What green skills do young green professionals bring to the table?

Last year's study of young green talent revealed that the top 7 green skills possessed by green professionals are (in order of prevalence):

- Sustainable development
- Sustainability research
- Environmental policy
- Renewable energy generation
- Pollution prevention
- Ecosystem management
- Environmental remediation

For our 2025 US survey we asked respondents the same question to unveil the most common green skills. In addition, LinkedIn’s 2022 global green skills report recorded the share of job postings that require each of the aforementioned skills to show where skills gaps may be forming.

[Figure 5 Prevalence of selected green skills in the US population, young green talent, alongside the percentage of green job postings that require these skills](#)

Green skill	LinkedIn postings requiring green skill	Prevalence of green skill within US population	Prevalence of green skill within young green talent
Sustainable development	27.6%	15%	72%
Sustainability research	Not in top 10	16%	56%
Environmental policy	11.1%	15%	54%
Renewable energy generation	8%	11%	31%
Pollution prevention	Not in top 10	21%	26%
Ecosystem management	10.5%	15%	21%
Environmental remediation	10.9%	10%	15%

Source: ZCA

For in-depth analysis, including our full suite of market forecasts, survey data, industry-specific trends and recommendations, as well as insight into legislation & policy, ZCA’s full research can be purchased here:

[The green skills gap 2025](#)