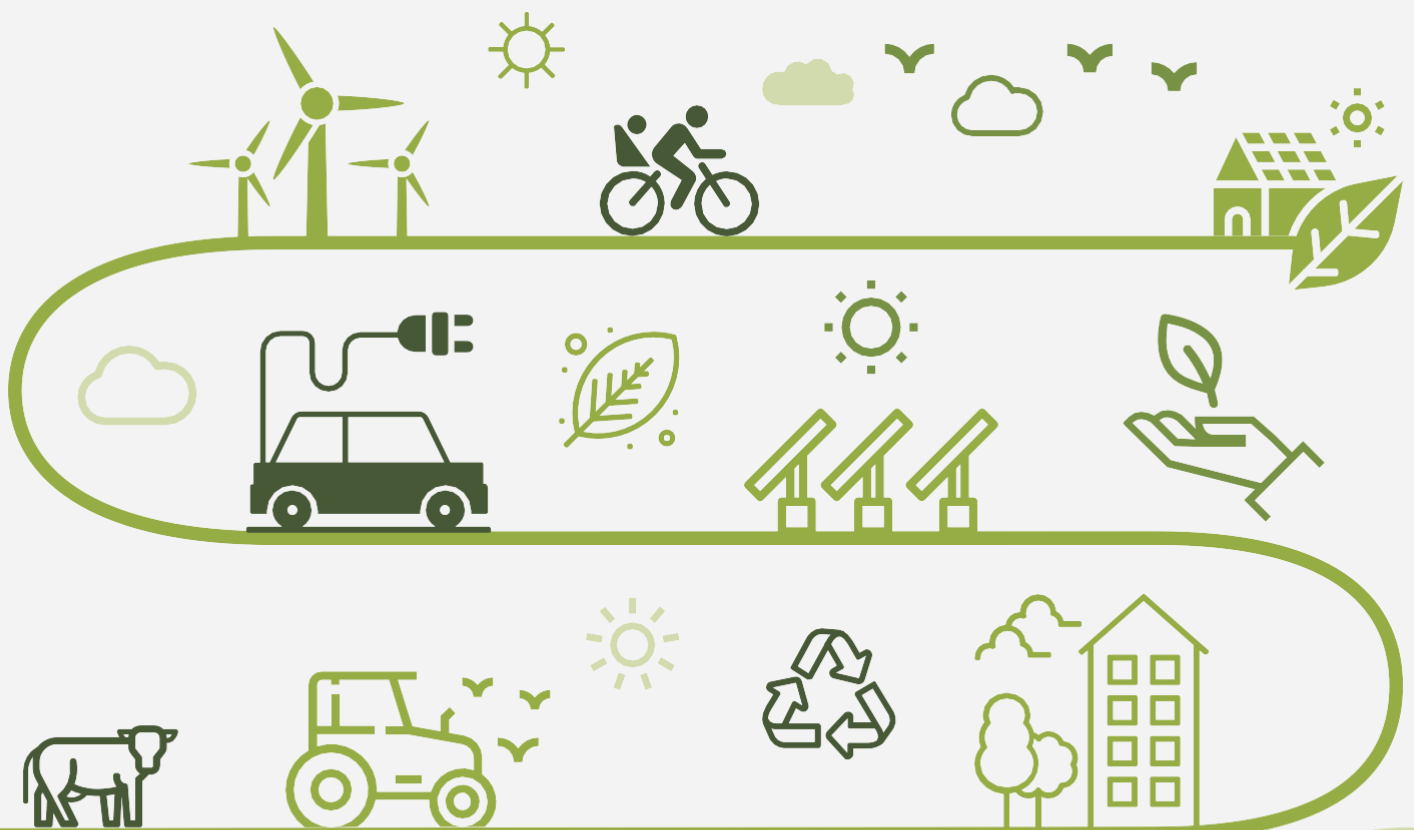


Mapping Provision to support CESAP sectors

CESAP Pathfinder Work
package 1: Action 2

November 2023



Introduction

Providing a clear and comprehensive understanding of the extent to which current skills provision is supporting the transition to net zero, is a critical element in the development of a dynamic skills response. This research contributes to the Climate Emergency Skills Action Plan (CESAP) Pathfinder project.

The Pathfinder project is split into two work packages, each with several key actions. This research responds to action two of work package one, which is to undertake a comprehensive mapping of skills provision across higher education, further education, apprenticeship pathways and upskilling and reskilling in support of net zero.

The analysis is exploratory in attempting to **map provision to net zero skills**, using the data available to examine the pipeline of skills in the most robust way possible.

The key findings in this paper focus on mapping provision to the industries¹ and occupations identified as part of the Green Jobs in Scotland Research.² The occupations defined in this work can be found [here](#). Direct mapping was not possible for upskilling/reskilling provision due to a lack of available information in this area.

The provision data has been analysed for college enrolments, university graduates 15 months after leaving their course and MA, GA and FA starts. All data used was the most recent available data at the time of analysis, in Autumn 2022. Data was not readily available on a consistent basis across all provision types. For this reason, direct comparisons should not be made across the provision types. Further information on the methodology used can be found in the Pathfinder report and Supplementary Provision Evidence report.

Findings

The key findings from the research provided an understanding of:

- The **scale** of provision across the skills system to support the net zero transition.

¹ Please note the terms 'industries' and 'sectors' are used interchangeably throughout this paper.

² Cardenas Rubio, J., et al. (2022). [Green Jobs in Scotland: An inclusive approach to definition, measurement and analysis](#).

³ HESA (2021). [Higher Education Graduate Outcomes Statistics, 2018/19](#). Bespoke data looking at graduates working in CESAP sectors and green occupations was provided by the Scottish Funding

- The **available data and approaches** to map post-school provision to net zero skills in Scotland.
- **Limitations** to the current data, **key gaps and ways to address these**.

To illustrate the provision in scope, Figure 1 outlines examples of provision which would be classed as within a CESAP sector but not a green occupation, within a green occupation but not a CESAP sector and within a CESAP sector and a green occupation.

Figure 1. Example of provision categories

CESAP sector (not green occupation)	Green occupation (not CESAP sector)	CESAP sector (green occupation)
<ul style="list-style-type: none"> • Graduate who goes on to work in HR for a Biotechnology company • Chemistry college course • MA working in an Administrative role for a Freight company • GA working as an Office manager for a Transport company 	<ul style="list-style-type: none"> • Graduate who goes on to work in a Biochemist role at a hospital • Computer technology college course • MA working in an Engineering role for a Food production company • GA working in a Civil engineering role for a local authority 	<ul style="list-style-type: none"> • Graduate who goes on to work as a Civil engineer for a Construction company • Agricultural engineering/Farm machinery college course • MA working in an IT operations role for a Transport company • GA working in an Engineering role for a Pharmaceuticals manufacturing company

University Provision³

- Approximately **15.8%** of 2018/19 university graduates from Scottish institutions **were working in CESAP sectors** 15 months after graduation. This proportion is equivalent to approximately 11,300 graduates.^{4,5}
- An estimated **33.9%** of 2018/19 university graduates from Scottish institutions **were working in green occupations** 15 months after graduation.
- Just over one in ten (10.4% of all graduates) were working in **green occupations** within CESAP sectors.
- The **proportion of graduates working in CESAP sectors and/or green occupations**

Council. Data used was the most recent available at the time of analysis.

⁴ The number of graduates has been estimated by applying proportions from the graduate outcomes survey to the entire graduate cohort.

⁵ Please note university graduates were surveyed in Autumn 2020 so results may be impacted by the COVID-19 pandemic.

increased between the 2017/18 and 2018/19 graduate cohorts. The estimated number of graduates working in CESAP sectors increased by 14.3%, whilst the number of graduates in green occupations increased by 11.9%.

- Around **60% of graduates working in CESAP sectors were working in Scotland**. This suggests **around 40% of graduates from Scottish institutions working in green jobs and CESAP sectors leave Scotland to do so**.⁶
- The most common subject areas studied by graduates working in CESAP sectors were **Engineering and Technology** (2,900 graduates), **Business and Administrative Studies** (2,000 graduates) and **Social Studies** (1,100 graduates).

College Provision⁷

- In 2020/21, **26.6%** of college enrolments across Scotland were in subjects aligned to CESAP sectors (32,300 enrolments).^{8,9}
- The numbers and overall proportions of enrolments in college courses aligned to CESAP sectors and green occupations have **decreased** since 2017/18. This may be in part due to the COVID-19 pandemic which affected the delivery of many college courses in 2020/21.
- Across the CESAP sectors, most enrolments were aligned to the **Engineering (44.7%)** and **Construction (36.4%)** sectors, highlighting the strong contribution of colleges to these sectors overall.
- Of the subjects aligned to CESAP industries, the subject groups with the greatest number of enrolments in 2020/21 were **Construction (general) (5,800 enrolments)** and **Electrical Engineering (3,500 enrolments)**.

Modern Apprenticeship (MA) Provision¹⁰

- In 2021/22, **29.3%** of all MA starts worked in CESAP sectors (7,400 MAs).¹¹

- **The number of MAs in CESAP sectors increased significantly from 2020/21 to 2021/22 (+1,400, 22.7%)** as the economy re-opened following the pandemic.
- MA starts working in CESAP sectors in 2021/22 were most likely to work in **Construction (66.2%** of MAs in CESAP sectors), followed by **Engineering (10.1%)** and **Manufacturing (9.1%)**.
- The frameworks with the largest number of starts aligned to CESAP industries in 2021/22 were **Construction: Building (1,200 starts)** and **Construction: Technical (900 starts)**.
- Of MAs who trained in green occupations, **90% of leavers worked in the same sector as they trained in 15 months after completion**.¹² And 79% of leavers also worked with the same employer that they completed their apprenticeship with.
- **Over 99% of MAs work in Scotland 15 months after completing their apprenticeship**, suggesting these apprentices will likely all be working within Scotland and contributing to the green labour market.

Graduate Apprenticeship (GA) Provision¹³

- In 2020, **37.6%** of all GA starts worked in CESAP sectors (440 starts).¹⁴
- **There was a steady rise in the number of GAs aligned to CESAP sectors** between 2018 and 2020 (+100, 29.1%).
- 2020 GA starts working in CESAP sectors were most likely to be employed in the **Construction (34.6%)** and **Engineering (28.0%)** sectors.
- The frameworks with the largest number of starts working in CESAP industries in 2020 were **Engineering: Design and Manufacture (130 starts)** and **Business Management (120 starts)**.
- Of GAs who trained in green occupations, **91% of leavers worked in the same sector as they trained in** and 80% of leavers also worked with the same employer they

⁶ This chimes with the proportion of all Scottish graduates who leave Scotland to work and is not specific to CESAP sectors.

⁷ Scottish Funding Council (2022). [College Statistics 2020/21](#). Bespoke data on college students studying CESAP related courses was provided by the Scottish Funding Council. Data used was the most recent available at the time of analysis.

⁸ Data includes only college enrolments on courses 160+ hours in duration and SCQF levels 4+.

⁹ Please note college data was collected in 2020/21 so may be impacted by the COVID-19 pandemic.

¹⁰ Skills Development Scotland (2022). Modern Apprenticeship Statistics. Bespoke data was used which identified MAs training in CESAP sectors and green occupations.

¹¹ Please note MA data is from 2021/22, so may have been impacted by the COVID-19 pandemic.

¹² Skills Development Scotland (2023). Real Time Apprenticeship Insights Survey.

¹³ Skills Development Scotland (2022). Graduate Apprenticeship Statistics. Bespoke data was used which identified GAs training in CESAP sectors and green occupations. Data used was the most recent available at the time of analysis.

¹⁴ Please note GA data is from 2020, so may have been impacted by the COVID-19 pandemic.

completed their apprenticeship with 15 months later.¹⁵

- **Data shows that 100% of GAs work in Scotland 15 months after completing their apprenticeship**, suggesting that these apprentices will all be working within Scotland and contributing to the transition to net zero.

Foundation Apprenticeship (FA) Provision¹⁶

- In 2020 **790 FA starts undertook their employer placement in CESAP sectors**.
- Reflecting the development of the programme, the total number of FA starts increased by 175.9% over the period 2018 to 2020. **The increase in starts in CESAP sectors has outstripped this, at 237.0%**. Growth was largely driven by FAs in the **Construction** sector.¹⁷
- **Construction** is a particularly important element of FA provision, accounting for over four in five (81.3%) of all starts in CESAP sectors in 2020.
- Reflecting this, the frameworks with the largest number of starts in CESAP sectors in 2020 were **Construction Crafts (480 starts)** and **Civil Engineering (80 starts)**.

Upskilling and Reskilling

Upskilling and reskilling will be a vital part of the skills response to the transition to net zero. Much of the university and college data used for this analysis will include some element of upskilling and reskilling. However, extracting this detail from the data has proved difficult, and insights from institutions are not readily available. This study has however identified some publicly funded upskilling courses as detailed below:¹⁸

- In 2020/21, there were **350 enrolments** on green skills university courses supported by the SFC Upskilling Fund, 6% of all enrolments supported by this fund. This includes courses such as **PgDip Built**

Environment and **Non-graduating Upskilling at Strathclyde**.¹⁹

- In 2020/21, there were **290** enrolments on 'Energy and sustainability' upskilling university courses, for example 'An introduction to Climate Change and Carbon Literacy' and 'Solar Energy'.²⁰
- In 2020/21, there were **560** enrolments in college upskilling courses aligned to green occupations and **550** in courses aligned to CESAP sectors. These courses were funded through the Young Person's Guarantee or the National Transition Training Fund.²¹
- Between November 2020 and August 2022, **2,020 learners took part in training related to green skills** funded by the Flexible Workforce Development Fund, equating to 23.0% of all learners supported by this fund.²²

Evidence Gaps and Lessons Learned

This research has provided significant information and learning on the scale of learners in education and training in courses aligned to green occupations and CESAP industries across Scotland. Particularly in the case of graduates and apprentices, provision mapping was correlated to the CESAP sectors and green occupations individuals worked in, for the first time moving beyond a subjective view on 'green courses' aligning to 'green roles'.

Looking across the data on provision, there is evidence that existing provision is already aligned behind the needs of the transition to net zero, but with evidence of leakage from this pipeline of potential skills supply.

Importantly, this research has allowed the **identification of data strengths, limitations and gaps** to be addressed:

- Given the critical role that **upskilling** will play in supporting existing workers to contribute to the transition to net zero, the gap in evidence on discrete **upskilling activity** – and the extent to which existing provision is

¹⁵ Skills Development Scotland (2023). Real Time Apprenticeship Insights Survey.

¹⁶ Skills Development Scotland (2022). Foundation Apprenticeship Statistics. Bespoke data was used which identified FAs training in CESAP sectors. Data used was the most recent available at the time of analysis.

¹⁷ Please note FA data is from 2020, so may have been impacted by the COVID-19 pandemic.

¹⁸ It has not been within the scope of this study to analyse the upskilling and reskilling activity going on within industry and funded by private companies, which will be providing green skills training.

¹⁹ HESA (2022). Bespoke data provided by the Scottish Funding Council.

²⁰ Scottish Funding Council (2022).

²¹ Scottish Funding Council (2022).

²² Skills Development Scotland (2022). Flexible Workforce Development Fund Learners – Bespoke Data.

supporting upskilling is a key weakness – which should be addressed.

- **A key challenge with the data is that each provision type is measured in different ways and in some cases at different points of study/ completion of study.** It is not possible therefore to achieve a clear picture of the cumulative skills pipeline across post school provision in support of the transition to net zero.
- The college provision data is based on a manual mapping of courses to jobs and industries. **It is not currently possible to establish figures for the numbers of college leavers who enter CESAP sectors and green occupations.** It will be important to consider this critical gap going forward given the significant contribution college provision plays in supporting the CESAP sectors.

In order to address some of these data gaps and challenges, the Pathfinder identifies the following opportunities in relation to provision:

- *Establish a mechanism to better disaggregate the extent to which existing provision is supporting reskilling and upskilling to support the transition to net zero.*
- *For colleges, gather data on destination following completion. This approach should be in line with the Graduate Outcomes survey measures and the Real Time Apprentice Insights (RTAI) survey. A crucial part of this would be capturing where completers are working (by sector) and whether they are within Scotland.*
- *Create a consistent evidence base on provision which takes account of starts, withdrawals, completers and final outcomes on a common basis across colleges, universities and apprenticeships. Work towards implementing a robust and annualised monitoring framework to ensure post-school provision is moving in the right direction to meet net zero needs.*
- *To support this, it may be helpful to start with a pilot of a small number of green occupations critical to net zero with a standard set of measurements across the*

apprenticeship family, colleges and universities. The CESAP Pathfinder Work Package 2 (decarbonisation of domestic and commercial heating) could explore how best to achieve this.

- *Identify any international best practice efforts to identify the evidence on investment, demand and provision of skills to support the transition to net zero and embed any lessons in Scottish practice.*

About the study

This study was undertaken in Autumn 2022 by Skills Development Scotland (SDS) with support from the Scottish Funding Council (SFC) to support the CESAP Pathfinder Work Package One: An Evidence Based Approach to Supporting the Transition to Net Zero. This research supports Action Two which looks to map skills provision across colleges, universities and apprenticeships to understand current skills investment in support of net zero. The university and college data was provided by SFC whilst the apprenticeship data was provided by SDS. The analysis was undertaken internally by SDS, with support from SFC.

The study used a combination of data sources to understand the volume and extent of green provision across Scotland using the most recent data available for each of the provision types. It uses university graduate data from the HESA Graduate Outcomes survey, alongside Further Education Statistics data on college enrolments, and apprenticeship data from SDS's Funding Information and Processing System and the Real Time Apprenticeship Insights Survey.

Analysis was conducted to understand how many apprentices, students and graduates worked and studied in industries and occupations relevant to net zero. These industries were defined in action one of the work package one research, by the Universities of Warwick and Strathclyde as part of the Green Jobs in Scotland research.

Linked research

The CESAP Work Package 1 Pathfinder has a suite of reports to share the insights, intelligence and lessons learned. These can be found [here](#).

This precis is supplemented by:

- *Pathfinder Report* - a comprehensive overview of the full range of activity that constituted the

Pathfinder and the opportunities identified for further action.

- *Executive Summary* – a short summation of the CESAP Pathfinder report and the opportunities identified for further action.
- *Preces Reports* (Investment, Demand and Provision) – succinct, accessible documents which provide the background to the work, summarise the main findings and identify key lessons learnt.
- *Mapping of Green Investments* – further detail on identified investments in Scotland to support the transition to net zero.
- *Supplementary Demand Evidence* – additional technical data from activity to estimate demand.
- *Supplementary Provision Evidence* – additional technical data from activity to quantify provision.