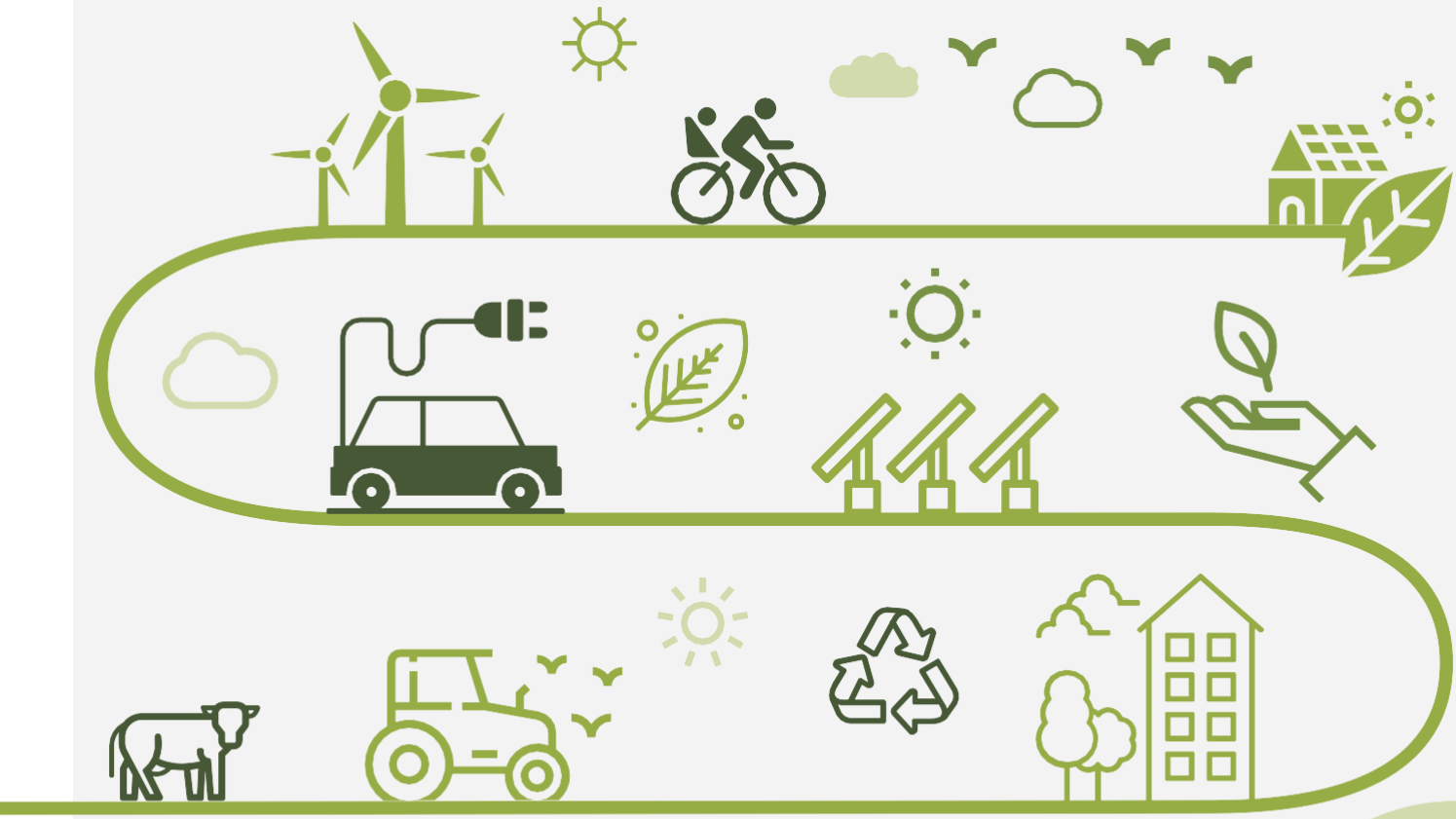
Mapping Provision to Support Heat Decarbonisation

CESAP Pathfinder Work package 2: Action 4

December 2023



Introduction

This research set out to provide an understanding of existing and planned skills provision across higher education, further education, apprenticeship pathways and upskilling and reskilling in support of the decarbonisation of domestic and commercial heating.

The research is exploratory in attempting to map provision to decarbonisation of heat skills, using the data available to examine the pipeline of skills in the most robust way possible. This forms part of the CESAP Pathfinder Work Package 2. The research was undertaken in Autumn 2022.

The key findings in this paper focus on mapping skills provision to the **industries that have been identified as relevant to heat decarbonisation.**[1] **These industries will be involved in decarbonising heating in Scottish buildings and include manufacturing and construction, as well as engineering and architecture activities.**

All data used in this research was the most recently available at the time of analysis. Data was not readily available on a consistent basis across all provision types and the timeframes considered differ slightly across provision types due to data availability. For this reason, **direct comparisons should not be made across the provision types**. Please note that much of the data used in this research is from a time period during the COVID-19 pandemic.

Findings

The key findings from the research provide information on:

- The scale of provision across the skills system to support heat decarbonisation.
- The data and methodology available to map post school provision to heat decarbonisation at a national and regional level.
- Limitations of the available data, key gaps and opportunities for improvement.

As part of the analysis conducted in this research the key findings include:

The Scale of Provision in Scotland

- Skills provision for heat decarbonisation in Scotland varies across provision types, with a high proportion of **college enrolments as well as Modern and Foundation Apprentices** being linked to heat decarbonisation industries.

- In 2018/19, 3% of university graduates with a known destination from Scottish institutions were working in heat decarbonisation industries (2,300 graduates) 15 months after graduating.[2,3,4] Over half of these graduates worked in the Engineering activities and related technical consultancy sector.

- A total of 68% of university graduates working in heat decarbonisation industries had studied either Engineering (42%) or Architecture, Building and Planning (26%).

- Table 1 shows the most common routes for university graduates working in heat decarbonisation industries, as found in this research.

Table 1: Top three university subjects and levels for graduates entering Heat Decarbonisation Industries

Qualification Level	Subject	Industry
First Degree	Engineering	Engineering activities and related technical consultancy
Postgraduate Taught[5]	Architecture, building and planning	Architectural activities
First Degree	Engineering	Construction of buildings

Source: Scottish Funding Council (2022).

- In 2021/22, 10% of all Modern Apprentice (MA) new starts were working in heat decarbonisation industries (2,400 MAs).[6,7]

[1] The industries and occupations used in this research can be found at these links: Heat Decarbonisation Industries, Heat Decarbonisation Occupations.

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

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

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

[5] Postgraduate taught degrees have a majority teaching in the course, rather than majority research.

[6] Skills Development Scotland (2022). Modern Apprenticeship Statistics. Bespoke data was used which identified MAs training in heat decarbonisation sectors and occupations.

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

- Results from the 2022 Real Time Apprenticeship Insights (RTAI) survey conducted by Skills Development Scotland show strong retention of MAs on heat decarbonisation-related frameworks. For instance, 84% of those in employment from the survey who studied Construction Building were employed in the same sector 3 months after finishing their MA, and 96% of those on the Domestic Plumbing and Heating framework were working in the same sector.[8] The figures rose to 89% and 100% respectively for those who had left their apprenticeship 15 months prior to completing the survey. Over 99% of MAs remain working in Scotland after completing their apprenticeship, suggesting a strong retention of people within Scotland and, largely, within sectors.

- In 2020 10% of Foundation Apprentice (FA) new starts had their employer placement in a heat decarbonisation industry (400 FAs).[9,10]

- In 2020 4% of Graduate Apprentice (GA) new starts were working in heat decarbonisation industries (50 GAs).[11,12]

- In 2020/21, 19% of college enrolments at institutions in Scotland were aligned to a heat decarbonisation-related industry (23,300 enrolments).[13,14,15] The vast majority of these were in subjects aligned to Architectural and engineering activities, technical testing and analysis or Construction of buildings.

- In 2020/21, the Scottish Funding Council's Upskilling Fund supported 290 students on training courses at Scottish universities that are linked to heat decarbonisation, representing 5% of all enrolments in courses supported by this fund.[16]

- In 2020/21 there were 470 college enrolments in upskilling courses linked to heat decarbonisation, representing 9% of all college upskilling courses.[17] These were supported by the Young Person's Guarantee (YPG) or the National Transition Training Fund (NTTF).

The Scale of Provision in the Glasgow City Region

- The Glasgow City Region is an important provider of education and training in the heat decarbonisation space. As a proportion of Scotland-wide provision, the region accounts for around 22% of university graduates working in heat decarbonisation industries, 43% of MA starts in relevant industries, and 40% of GA starts. Almost all FA starts with work placements in relevant industries are based in Glasgow City Region (93%). Additionally, 32% of all college enrolments in relevant courses are in the Glasgow City Region.

- In 2018/19, 4% of university graduates with a known destination who worked in the Glasgow City Region were working in heat decarbonisation industries (500 graduates). This is slightly higher than the proportion in Scotland overall. 79% of these graduates had also studied in the Glasgow City Region.

- At colleges in the Glasgow City Region, 16% of enrolments in 2020/21 were in subjects aligned to heat decarbonisation industries (7,500 enrolments), compared to the average across Scotland of 19%. This suggests a smaller concentration of relevant college enrolments in Glasgow compared to other regions in Scotland.

- In 2021/22, 11% of all MA starts in the Glasgow City Region worked in heat decarbonisation industries (1,000 MAs). This is slightly higher than the proportion of all MA starts across Scotland working in these industries.

- In 2020, 32% of FA starts in the Glasgow City Region undertook work placements in heat decarbonisation industries (380 FAs), compared to 10% on average across

[8] Skills Development Scotland (2023). Real Time Apprenticeship Insights.
[9] Skills Development Scotland (2022). Foundation Apprenticeship Statistics. Bespoke data was used which identified FAs training in heat decarbonisation sectors.
[10] Please note FA data is from 2020, so may have been impacted by the COVID-19 pandemic.
[11] Skills Development Scotland (2022). Graduate Apprenticeship Statistics. Bespoke data was used which identified GAs training in heat decarbonisation sectors and occupations.
[12] Please note GA data is from 2020, so may have been impacted by the COVID-19 pandemic.
[13] Scottish Funding Council (2022). College Statistics 2020/21. Bespoke data on college students studying heat decarbonisation related courses was provided by the Scottish Funding Council.
[14] Of courses SCQF levels 4+ and 160+ hours in duration.
[15] Please note college data was collected in 2020/21 so may be impacted by the COVID-19 pandemic.
[16] HESA (2022). Bespoke data provided by the Scottish Funding Council.
[17] Scottish Funding Council (2022).

Scotland. This suggests a much higher proportion of FAs in Glasgow work in these industries compared to other areas in Scotland.

- In 2020, 4% of all GA starts in the Glasgow City Region were working in heat decarbonisation industries (20 GAs).

- At quarter 2 of 2021-22, 72% of enrolments in Energy Efficiency and Microgeneration Training courses at colleges in Scotland were in the Glasgow City Region.[18] These courses are explicitly linked to heat decarbonisation, including courses such as Heat Pumps and Insulation and Building Treatments. This highlights that Glasgow is an important region for providing training and upskilling courses in this space.

- Of all enrolments in heat decarbonisation-related university courses supported by the SFC Upskilling Fund in 2020/21, 62% were in the Glasgow City Region (180 enrolments).

- In 2020/21, 67% of enrolments in college upskilling courses supported by the YPG or NTTF that are related to heat decarbonisation were in Glasgow (310 enrolments).

The Scale of Provision in the Shetland Islands

- It was difficult to access data at the same level of detail for the Shetland Islands as for Glasgow City Region due to small sample sizes. The data on university graduates working in the Shetland Islands was too small to report on, as was data on Foundation and Graduate Apprentices in Shetland.

- At colleges in the Shetland Islands, 23% of enrolments in 2020/21 were in subjects aligned with heat decarbonisation industries (100 enrolments). Compared to Glasgow City Region and Scotland overall, a higher proportion of all college enrolments in Shetland were aligned to heat decarbonisation industries, suggesting a **higher concentration of relevant** college provision in Shetland.[19]

- In 2021/22, 6% of all MA starts working in Shetland worked in heat decarbonisation industries (<50 starts). This is a smaller proportion than in Glasgow and in Scotland overall.

Evidence gaps and lessons learned

The data used in this research allowed for exploration of new analysis on the provision of education and training in areas that will support the decarbonisation of heating. The key lessons learned from this research are summarised below.

1. From the extensive analysis of data across HE, FE, Apprenticeships and upskilling /reskilling, it has been possible to establish a sufficient picture of provision relevant to heat decarbonisation for Scotland and two regions.

2. Where provision, in broad terms, may align well to the industries that will support with heat decarbonisation and have a high demand for workers, (specifically in the Glasgow Region) this in itself does not ensure that demand is met in a specific locality.

3. Understanding the relative provision in the two regions and how this aligns with current and future demand, provides a useful focus for engagement with partners in the co-design of a skills response. It will be important to also consider wider skills issues and challenges as part of that engagement.

4. Importantly, this research has allowed the identification of data strengths, limitations and gaps to be addressed in order to support a systematic gap analysis which can be used to inform a future regional skills response.

The specific data lessons learned and suggestions to address these are set out below:

A significant gap is on the upskilling and reskilling data. The required provision and outcome data by sector and region on upskilling and reskilling is not readily available or currently reported on. It will be critical to further validate the estimates contained here with regional partners and explore short to medium term options to address this vital gap as part of a pilot skills response.

A significant 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

[18] These courses were defined by the Energy Skills Partnership as Energy Efficiency and Microgeneration Training courses. A course title trawl was undertaken on college provision data to identify enrolments in these courses.

[19] Based on small figures.

clear picture of the cumulative skills pipeline across post school provision to support heat decarbonisation.

The college provision data is based on a manual mapping of courses to jobs and industries. Therefore, it is **not currently possible to establish figures for the numbers of college students who enter heat decarbonisation-related industries**. It will be important to address this critical gap going forward given the significant role college provision plays in supporting the heat decarbonisation industry.

About the study

This study was undertaken by Skills Development Scotland in Autumn 2022 with support from the Scottish Funding Council (SFC) to support the CESAP Pathfinder Work Package 2: Decarbonisation of Domestic and Commercial Heating Pilot. This research supports Action 4 which looks to map provision which supports the decarbonisation of domestic and commercial heating (clean heat and improved energy efficiency) in Glasgow City Region and the Shetland Islands. The HE and FE data was provided by SFC whilst the apprenticeship data was provided by SDS. The analysis was undertaken internally by SDS, with support from SFC. All data used was the most recently available at the time of analysis.

The study used a combination of data sources to understand the volume and extent of heat decarbonisation provision across Scotland and the two regions. It uses university graduate data from the HESA Graduate Outcomes survey, alongside SFC's Further Education Statistics data on college enrolments, and apprenticeship data from SDS's Funding Information and Processing System.

Analysis was conducted to understand how many students/graduates worked and studied in industries relevant to heat decarbonisation. These industries were defined in earlier stages of the work package 2 research, through consultation with industry experts.

Linked research

This precis forms part of a suite of research undertaken as part of the CESAP Pathfinder across Work Package 1 and 2, to share the insights, intelligence and lessons learned. These can be found here.

This precis is supplemented by:

- *Preces Reports* for *Work Package 2* - covering Investment and Demand.
- *Pathfinder Report Work Package 1* - a comprehensive overview of the full range of activity that constituted the Pathfinder and the opportunities identified for further action.
- *Preces Reports for Work Package 1* (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.