Analysis of Job Demand for decarbonisation of domestic and commercial heating at a national and regional level

CESAP Pathfinder Work package 2: Actions 3.1 and 3.2

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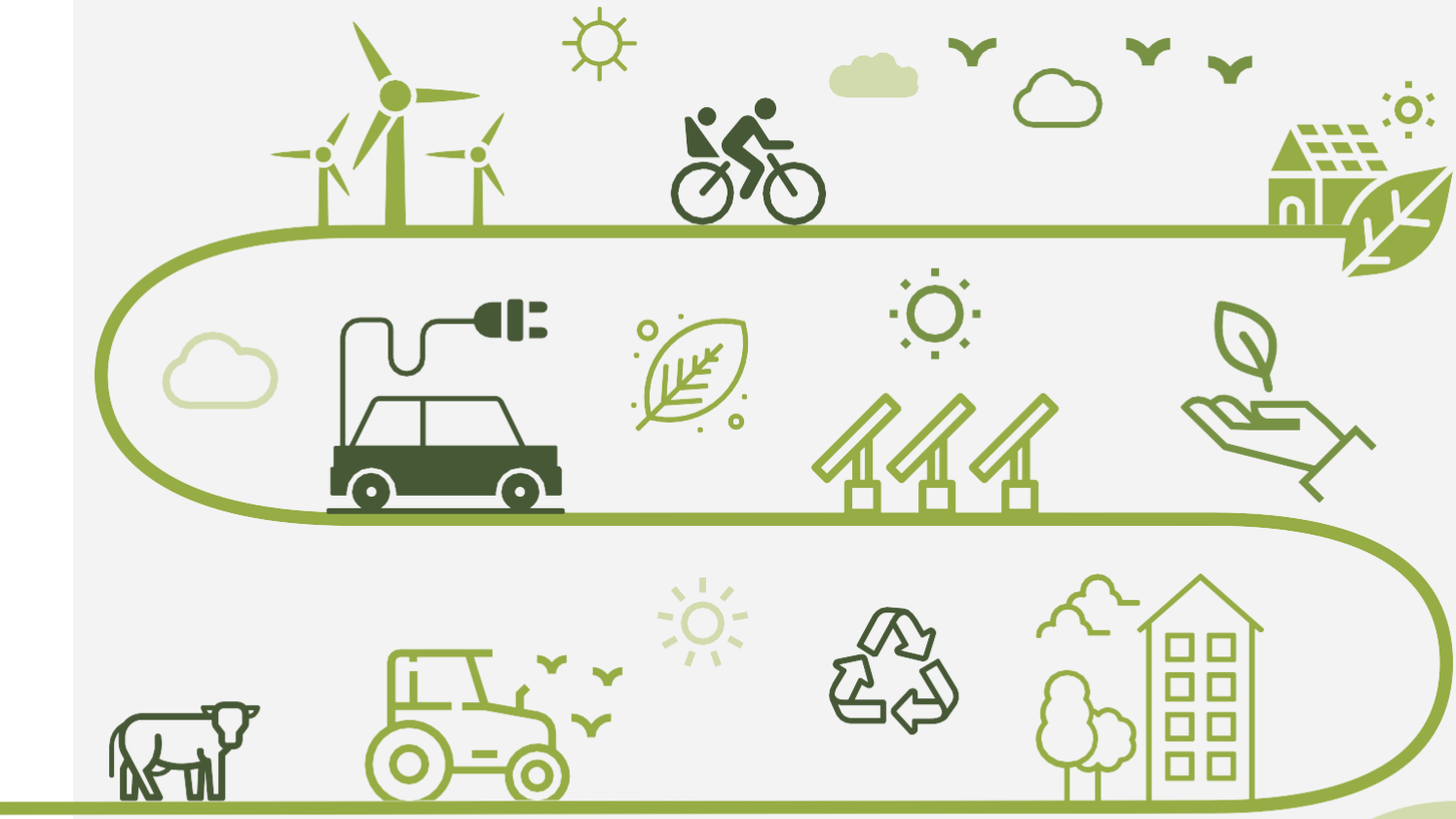

Introduction

This research set out to improve understanding of the likely jobs and skills demand in the sectors related to Decarbonisation of Domestic and Commercial Heating. The research was undertaken in Autumn 2022. The report analysed:

- Industry data from the Business Register and Employment Survey (BRES);
- Occupation data from the Annual Population Survey (APS);
- Employment forecast data from Oxford Economics;
- Vacancy data from Burning Glass Technologies; and
- Employer insight through industry consultations.

This research is exploratory and looks at the demand for labour in the industries and occupations relevant to heat decarbonisation.[1] These industries and occupations were defined through consultation with industry and cross-checked with the Green Jobs in Scotland report.[2] The scope was not only to understand demand for entry level roles but also demand across all required roles (including upskilling and reskilling). This research uses the most up to date data sets at the time of analysis.

This research considers demand in Scotland as well as Glasgow City Region and Shetland Islands which have been identified as the two pilot areas for the Pathfinder. However, demand data is difficult to obtain for the relevant sectors in the Shetland Islands due to small sample sizes, therefore qualitative interviews were conducted to help fill any data gaps.

Findings

The key findings of the research provided evidence on:

- The scale of demand across the sectors most aligned to heat decarbonisation in Scotland, Glasgow City region and Shetland Islands
- Employer and industry insight into the challenges and opportunities in the sector
- Limitations to the current data, key gaps and recommendations for improvement

Demand in Scotland

- There were 187,900 people in employment in heat decarbonisation industries in Scotland in 2021.[3] **Employment in these industries grew at a faster rate** than employment in all industries across Scotland between 2020 and 2021 (12.7% in heat decarbonisation compared to 2.8% across all industries).

- The largest employing heat decarbonisation sector in 2021 was Construction of domestic buildings and Other engineering activities.

- Despite growth, concerns remain in industry about the capacity of the current workforce to meet the demand for heat decarbonisation work, and there is general agreement that there is a real need to continue to grow the size of the workforce.

- The same workforce pool is used for non-heat decarbonisation work and demand in other work areas is a major factor as the growth to date in the workforce is due largely to non-heat decarbonisation factors.

- Furthermore, around **39,100 job openings are expected** in the broad industries relating to decarbonisation of heat in the mid-term (2022-2025), 11.8 per cent of Scotland's total number of job openings over the same period.[4] In the long term (2025-2032), **82,200 job openings are forecast**, 11.1 per cent of Scotland's total number of job openings over this period. There is a particular concern that there are not enough skilled workers who can **install, maintain and promote low carbon heating products** than will be needed to meet future demand.[5]

- In 2021, there were **388,400 people employed** in the **occupations[6]** relevant to

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

[2] Cardenas Rubio, J., et al. (2022). Green Jobs in Scotland: An inclusive approach to definition, measurement and analysis. This report provides an inclusive definition of the number of green jobs in Scotland. This definition was developed by the University of Warwick and University of Strathclyde and validated by industry experts. Therefore, this was an important step in identifying the sectors most aligned with the decarbonisation of heat.

[3] Office for National Statistics (2022). Business Register and Employment Survey. [Accessed via Nomis October 2022].

[4] Oxford Economics Forecasts (2022).

[5] Skills Development Scotland (2022). Employer Interviews.

[6] An inclusive approach was taken to defining occupations, including those that will need enhanced skills and knowledge to contribute to heat decarbonisation work, those that will be needed in increased demand, and new and emerging job roles. Not all of these people will

decarbonisation of heat in Scotland, **13.9 per cent of total employment** in Scotland in 2021.[7]

- 112,900 job openings are forecast in the broad occupations relating to decarbonisation of heat in the mid-term (2022-2025) and 254,700 job openings are forecast in the long-term (2025-2032).[8]

- **Vacancy data also shows a high demand for key occupations** as from January – September 2022, there were 2,400 job postings in the industries and occupations relating to decarbonisation of heat in Scotland, 0.4 per cent of total advertised vacancies in Scotland over this period.[9]

- **Vacancies in heat decarbonisation industries and occupations increased at a higher rate than all vacancies in Scotland** between September 2018 – October 2019 and September 2021 – October 2022.

- The occupations in the highest demand were **plumbers and heating and ventilating engineers**, accounting for over half of all job postings for vacancies in heat decarbonisation industries and occupations in Scotland.

- Almost 60 per cent of vacancies in heat decarbonisation industries and occupations were in the **specialised construction activities** industry.

Demand in Glasgow City Region

- In 2021, there **were 62,000 people employed** in the industries relevant to heat decarbonisation in Glasgow, **33% of total employment** in these industries across Scotland.[10,11]

- The data does not allow for the same level of detail as Scotland in respect of the number of people employed in occupations relevant to heat decarbonisation in Glasgow.

- Similar to the national picture, demand is also set to grow in Glasgow City Region over the next decade. In the medium-term, **14,500 job openings** are forecast across heat decarbonisation **industries** in Glasgow (**11.8%** of Glasgow's total job openings) and in the long-term **30,500 job openings** are forecast (**11.1%** of Glasgow's total job openings).[12]

- From January – September 2022, there were **800 job postings** in the industries and occupations relating to decarbonisation of heat in Glasgow, **34.1%** of total job postings in these industries and occupations across Scotland, **highlighting the prominence of these jobs in Glasgow**.[13]

- The number of vacancies for these job roles grew in Glasgow between 2018/19 and 2021/22 at a faster rate than the vacancies for these jobs across Scotland overall, suggesting a growth in demand for workers in Glasgow in recent years.

- **Plumbers and heating and ventilating engineers** accounted for **almost half** (46%) of all job postings for vacancies in heat decarbonisation industries and occupations in Glasgow between January – September 2022.

Demand in Shetland Islands

- There were **1,300 people employed** in the industries relevant to heat decarbonisation in Shetland in 2021, making up just **0.7% of total employment** in these industries across Scotland.[14]

- The data does not allow for the same level of detail as Scotland in respect of the number of people employed in occupations relevant to heat decarbonisation in Shetland.

be directly involved in heat decarbonisation however this figure gives an indication of the wider workforce with the skills and knowledge to potentially contribute to the work.

[7] Office for National Statistics (2022). Annual Population Survey. [Accessed via Nomis October 2022].

[8] Oxford Economics Forecasts (2022).

[9] Burning Glass (2022).

[10] Office for National Statistics (2022). Business Register and Employment Survey. [Accessed via Nomis October 2022].

[11] Employment data by occupation for Glasgow does not allow for the same level of detail as is available for Scotland, so this has not been included.

[12] Oxford Economics Forecasts (2022).

[13] Burning Glass (2022).

[14] Office for National Statistics (2022). Business Register and Employment Survey. [Accessed via Nomis October 2022].

- The construction workforce in Shetland is currently stretched and facing **labour shortages across a number of key roles** (particularly trades roles including **heating engineers**).[15]

- There is currently a **small number of job vacancies in heat decarbonisation industries in Shetland.** In the period January – September 2022, there were **100 job postings** in the occupations relating to decarbonisation of heat in Shetland, **12.2%** of all job postings in Shetland over this period.[16]

- However, the number of vacancies for these job roles grew in Shetland by 92% between 2018-19 and 2021-22 suggesting a **growth in demand for labour in recent years**. Job posting data pointed to a particular demand for **engineering professionals and engineering technicians**.

- **Customer service occupations n.e.c.**[17] accounted for **21.4%** of all job postings for vacancies in heat decarbonisation occupations in Shetland from January – September 2022.

Perspectives from Industry Consultations[18]

- Whilst current demand for low carbon heating technologies remains low across the country, the existing workforce are under pressure to deliver. There are not enough skilled workers who can install, maintain and promote low carbon heating products than will be needed to meet future demand.

- There is a need for more **investment** from both industry and government to help train staff and invest in low carbon technology. The government have **invested** e.g., through apprenticeships, training schemes, and incentives, however the cost of this transition **needs private finance as well as public finance.**

- Many job roles will be needed in **increased demand** to meet heat decarbonisation targets (**Table 1.1**) and others will be new and emerging (**Table 1.2**).

Table 1.1 Increased Demand Roles

Plumbers & Heating, Ventilation and Air Conditioning engineers	Surveyors
Heating, Ventilation, and Air Conditioning (HVAC) electricians	Quality assessors
Architects	Management roles
Roofers	Sales

Source: Employer Interviews (2022)

Table 1.2 New and emerging Roles

Heat pump installers	Retrofit designers and coordinators
Heat pump designers	Net zero heating sales and communication

Source: Employer Interviews (2022)

*"The pipeline of staff needs to come from three sources: **upskilling** existing staff, **growing the overall size** of the workforce, e.g., through apprenticeships, and looking for **staff from adjacent sectors** such as oil and gas" – Stakeholder interviewee.*

Consultations: Glasgow City Region considerations

- **Heat pumps may not be suitable for buildings in Glasgow** such as tenements which leak carbon and are relatively expensive to heat and insulate. Homes must be properly insulated for heat pumps to reach full efficiency, therefore a **'fabric first' approach** is essential. This is an approach which focuses on insulating buildings in the first instance to **reduce the demand for heat**.

[15] Skills Development Scotland (2022). Employer Interviews
[16] Burning Glass (2022). Job vacancies data for Shetland is based only on heat decarbonisation occupations, as there was limited data available on demand for jobs in heat decarbonisation industries in Shetland.
[17] Not Elsewhere Classified.
[18] Skills Development Scotland (2022). Employer Interviews.

- Due to the size and landscape of the **Glasgow City Region**, this would be an opportunity to introduce a district heating system. However, this would require major urban regeneration.

- There are also opportunities to use **geothermal** heating, an example could be tapping into the heat generated by the **Glasgow Subway.**

Consultations: Shetland Islands considerations

- Currently **many people in Shetland use peat to heat their homes** as it's relatively inexpensive. Therefore, there is a challenge in trying to **incentivise people** to swap from peat or oil to net zero heating.

- There are concerns around **fuel poverty** in Shetland as many people cannot afford the heat decarbonisation technology.

- There is also concern about the way heat pump **technology** works in northern areas. As the **air is colder** this may cause heat pumps to be **less effective.**

Evidence gaps and lessons learned

This research is part of a wider Pathfinder Project approach, and as such, it is novel and exploratory as well as complex and challenging, particularly regarding data limitations.

It is acknowledged that work from this analysis is a useful first attempt at understanding demand and would benefit in the future from replication of current analysis to track changes over time as well as further analysis to allow for a deeper comprehension of demand.

The key lessons learned from this research are summarised below.

1. From the extensive analysis of available data sources and industry, regional and national stakeholder consultations, it has been possible to establish a reasonable picture of demand relevant to heat decarbonisation for Glasgow City and for Shetland. Such evidence is a key component in looking to develop a dynamic skills response.

2. At the national level, despite growth, concerns remain in industry about the capacity of the current workforce to meet the demand, and there is a real need to continue to grow the size of the workforce. Skills gaps for key trades are anticipated to rise sharply over the next few years – particularly as the sector faces an ageing workforce.

3. There are competing demands, as jobs vital to heat decarbonisation cut across several industries and, within construction, they cut across multiple work areas. This will be an important consideration when looking at the existing provision of skills and the scale of planned investment.

4. Importantly, this research has allowed the identification of data strengths, limitations and gaps to be addressed to support a systematic gap analysis to inform a co-design approach with regional partners. The key data gaps are set out below:

- There is a significant gap around upskilling and reskilling data. More data and/or and mechanism to understand the current workforce upskilling and reskilling requirements is of vital importance in assessing how demand can be met.

- Furthermore, as heat decarbonisation is a new and emerging sub-sector, many jobs are not classified within the Office for National Statistics (ONS) Standard Industrial Classification (SIC) and Standard Occupational Classification (SOC) definitions. Therefore, it is difficult to accurately capture demand at this level. This challenge highlights the importance of the industry engagement and employer interviews which were crucial to identifying demand at a more detailed level. This is particularly true for Shetland where sample sizes are smaller for core data sets.

About the study

This study was undertaken by Skills Development Scotland (SDS) in Autumn 2022 to support the CESAP Pathfinder Work Package 2: Decarbonisation of Domestic and Commercial Heating Pilot. This research supports Action 3.1 and 3.2 which looks at high level analysis of demand for decarbonisation of domestic and commercial heating at a national and regional level. The analysis was undertaken by SDS and validated by the Heat Decarbonisation sub-group (including partners such as Scottish Government, Scottish Funding Council, Scottish Enterprise, and industry experts such as BE-ST and CITB and others).

The study uses a combination of employment and vacancy data sources to understand the volume and extent of heat decarbonisation demand across Scotland and the two regions. It uses employment

data for industries (5-digit SIC) from the Business Register and Employment Survey (BRES), occupation data (4-digit SOC) from the Annual Population Survey (APS), forecast data from Oxford Economics Forecasts and Vacancy data from Burning Glass Technologies (now renamed Lightcast).

Analysis was conducted to understand how many people were employed in industries and occupations relevant to heat decarbonisation. These industries and occupations were defined through consultation with industry experts.

It is important to note that heat decarbonisation is a new and emerging sub-sector and therefore some job roles do not exist within the Office for National Statistics Standard Industrial Classification codes and Standard Occupational Classification codes. As a result, data used in this research may not fully capture all activity. However, it will provide an indication of the volume of people who are likely to have the relevant skills to adapt to this transition.

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 Provision.
- *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.