

# South Yorkshire low carbon energy supply chains: Heat Pumps sector summary



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## 1. INTRODUCTION

This sector summary focuses on the potential and challenges for the heat pump sector in South Yorkshire. It sets out existing UK policy on heat pumps and outlines the current state of the sector, before exploring heat pump supply chain, employment and skills within South Yorkshire. Findings are based on a review of policy literature, existing research and interviews with 10 industry stakeholders (including installers, manufacturers, accreditation and industry bodies). This summary forms part of a wider study of six energy sectors (carbon capture and storage, insulation, heat networks, heat pumps, hydrogen and small-scale nuclear). An outline of overarching findings from the study is published alongside these sector summaries and can be found here [hyperlink to summary report].

We found that there is strong potential for job creation and business growth in the region, particularly heat pump installation. There is opportunity for South Yorkshire to be leading region for heat pump deployment and jobs.

However there are significant labour and skills shortages hampering growth: SYMCA can unblock this through investment in and coordination of training offers – both in apprenticeships and reskilling for existing heating engineers and allied sector like electrical engineering. There is also a need to grow demand through investment in retrofit and support through local planning for new developments.

## 2. BACKGROUND

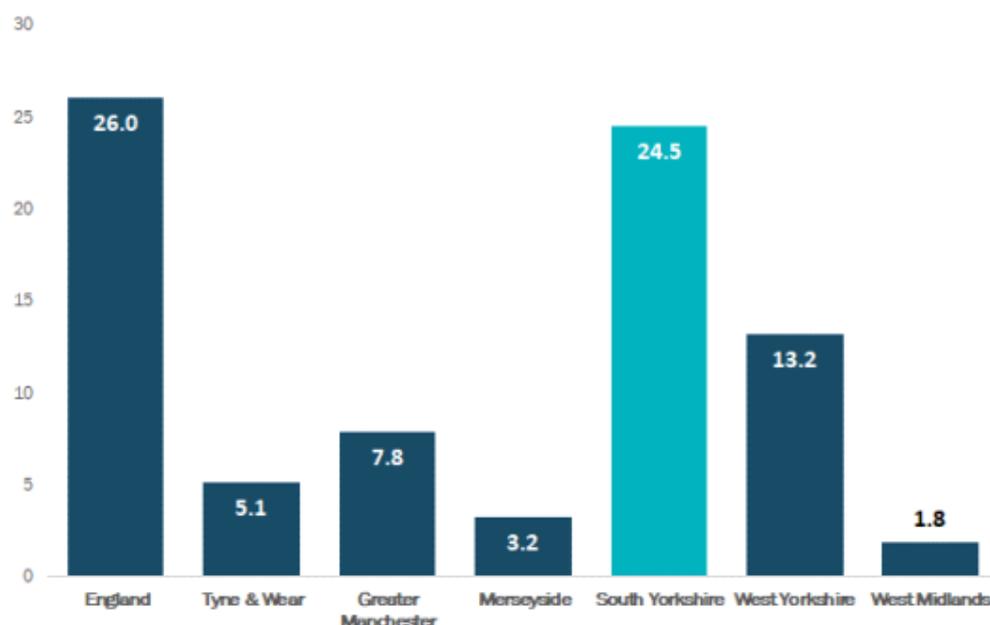
The UK government has pledged 600,000 heat pumps will be installed per year by 2028. Gas boilers are set to be banned from new homes by 2025, and rising gas prices also increase incentives to move towards other heating sources. Taken at face value this suggests a huge potential market for heat pumps over the coming years.

However, current installation rates are low and the UK lags behind other EU nations. In 2018, for example, 275,000 heat pumps were sold in France, compared to just 27,000 in the UK.<sup>1</sup> Renewable Heat Incentive registered installations in South Yorkshire were lower than for other parts of Yorkshire and Humber but almost double that of any other metropolitan regions, as shown in Figure 1 below. This is likely in part because South Yorkshire also contains fairly large rural areas with off-gas properties.

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<sup>1</sup> European Heat Pump Association (2019) Markets outlook 2019. EHPA [https://www.ehpa.org/fileadmin/red/09\\_Events/2019\\_Events/Market\\_and\\_Statistic\\_Webinar\\_2019/20190624\\_-\\_EHPA\\_Webinar\\_outlook\\_2019\\_-\\_Thomas\\_Nowak.pdf](https://www.ehpa.org/fileadmin/red/09_Events/2019_Events/Market_and_Statistic_Webinar_2019/20190624_-_EHPA_Webinar_outlook_2019_-_Thomas_Nowak.pdf)

**Figure 1: RHI registered installation per 10,000 households in Metro Regions**



Source: BEIS Domestic RHI Deployment Data July 2020 and ONS Household numbers by local authority estimates, 2018.

Various incentives for heat pump employment have been put in place by the UK government which have led to steady but not transformative growth in the sector over time. The Renewable Heat Incentive – set to close to new applications in 2022 - was introduced in 2011, providing a subsidy for heat production to offset cost of heat pump installation. The Green Homes Grant was introduced in September 2020 but closed after just six months following a series of problems with implementation. Installers complained about the detailed process of becoming registered a GHG provider and delays in receiving payments. GHG was felt to have damaged customer and installer confidence in housing retrofit. It is not yet certain what will replace GHG although an announcement is expected as part of the government's Autumn spending review.

Heat pumps also face competition from calls for hydrogen-fuelled heating systems which some argue will be less disruptive for customers. Even if deemed viable and cost-effective it is unlikely that hydrogen heating could be deployed at scale quickly enough to entirely displace growing heat pump demand. But it is creating uncertainty in the industry, particularly among manufacturers.

Despite market and policy uncertainties, the overall picture is for significant growth in demand for heat pumps over the coming decade and supporting deployment will be necessary for South Yorkshire to meet its own carbon reduction targets.

### 3. SECTOR PROFILE

The heat pump sector can be roughly segmented into four parts: R&D, manufacture, sales and distribution, and installation.

#### 3.1. R&D and Manufacturing

At present R&D presence in the UK is limited. The majority of larger manufacturers who have manufacturing capabilities in the UK are owned by companies whose headquarters are outside the UK and R&D is likewise located outside the UK. However, respondents representing manufacturers argued that growth in the UK market would lead to more R&D functions being located in the UK to develop better products to meet specific needs of the UK market.

According to analysis for BEIS by Eunomia<sup>2</sup> there were 33 manufacturers active in the UK heat pump market, four of which manufacture air source heat pumps (ASHP; the dominant technology for domestic heating). 32% of heat pumps installed in the UK were manufactured in the UK, with Mitsubishi (ASHP), which has an assembly site in Scotland, and Cornwall-based Kensa (ground source heat pump; GSHP) the market leads.

<sup>2</sup> Eunomia (2020) Heat Pump Supply Chains. UK Government [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/943712/heat-pump-manufacturing-supply-chain-research-project-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943712/heat-pump-manufacturing-supply-chain-research-project-report.pdf)

UK Heat Pump manufacturing is mostly parts assembly and individual components are almost all sourced from outside the UK. Given price pressures on components respondents were not confident that there was scope for developing UK-based component supply chains.

Our interviews with manufacturers and sector organisations identified that several UK gas boiler manufacturers are either in the process of, or are actively considering setting up heat pump production lines. Ideal recently announced investment of £16 million to begin production of ASHP, hydrogen boilers and heat network interfaces at in Hull. However, another manufacturer said that decision-making has been hampered by uncertainty over future heat policy, especially whether hydrogen will form an important part of future domestic energy mix.

There are currently no heat pump manufacturing plants based in South Yorkshire. Existing boiler and/or heat pump manufacturers are largely considered to be fixed in their current locations within the UK, the closest being Ideal in Hull and Vaillant in Derbyshire. Manufacturers had historic ties to their locations and see no reason to relocate. Given potential for market growth our interviews suggest there might be some potential to secure inward investment from overseas companies seeking to locate manufacturing capabilities in the UK. South Yorkshire is potentially an attractive location due to logistics links, relatively cheap land and availability of relatively cheap labour. The case for investment would be strengthened if South Yorkshire was able to position itself as a leading region for deployment, and skills excellence.

### 3.2. Installation and Sales

There are 2,017 Microgeneration Certification Scheme (MCS) registered installers in the UK, covering a range of technologies, including heat pumps. 1,112 of these are registered for ASHP installation and 682 for GSHP (there is significant overlap between the two). According to MCS data there are 23 registered installers based in South Yorkshire.

Broadly speaking there are three different business models:

- Self-sufficient installers, who do not take on contractors, mostly delivering their own projects or working with developers. These tend to focus on relatively local geography for work (e.g. one

installer said they would consider anything within 1-hour's drive; another works mostly in South Yorkshire).

- Sub-contractors who install for other heat pump companies. Often sole-person enterprises, sometimes operating through 'umbrella' accreditation schemes. There is some confusion about the rules of the umbrella scheme. Some sub-contractors use the accreditation of the contractor without being accredited themselves.
- Contractors who have a small in-house team but also sub-contract to other installers. These tend to have a bigger geographic reach.

Most of the installers we spoke to in South Yorkshire saw significant opportunities for growth and some companies were aiming for exponential growth over the coming years. One company had grown its turnover to £8 million over a period of five years and sought to increase this by 1000% over the next three years. But, as with many small businesses, not all were seeking to grow, preferring instead to maintain a steady state. These businesses had turnovers ranging from £300-800,000 of which heat pumps installations consisted of around 50% on average: businesses also installed other renewable technologies and/or gas boilers. Perceptions about future growth of the industry were slightly tempered by recent fall in demand during the Covid-19 lockdowns and what was perceived as mismanagement of the GHG, with uncertainty about future policy incentives. All respondents saw labour and skills supply as significant brakes on growth (see Section 4).

#### **Quality control**

A major concern for the industry is quality control. Heat pump installers have to be accredited by MCS for installations to be eligible for RHI. In theory this ensures minimum standards for installations and provides a level of assurance to potential customers. Installers saw the need for such standards but also felt that there were serious drawbacks to the current scheme. RHI comes to a closes in 2022 which might reduce need for MCS accreditation, if future schemes to do not require registration.

MCS was seen as overly bureaucratic by most but also perhaps more importantly, as not sufficiently focused on quality control. MCS implements checks on firms, including of a small number of installations per year, but installers claimed that these checks were insufficient to provide robust quality control

across all installers. Despite the existence of MCS, poorly designed and incorrectly installed heat pump systems were seen as a big problem for the industry, causing significant reputational damage.

The short-lived GHG favoured larger installers or those looking to seize the opportunity to expand rapidly. Smaller installers (the majority) expressed some frustration about this, arguing that quality was being compromised in doing so and damaging the reputation of the industry.

“...locally there was a couple of companies that were very prolific at selling and we’re now picking up all the remnants of where they’ve sold systems and then they’ve gone out of business and the customer’s been left with a system” (HP2)

GHG also created a boom in demand that could not be fully met by the industry at such short notice, creating a bottleneck for installations, exacerbated by administrative and payment delays from the GHG.

It was not possible to get a full picture of sales and distribution companies for the UK or for South Yorkshire. Swedish heat pump manufacturing firm NIBE has a sales and distribution arm based in Chesterfield, and one of the installers we spoke to said that they worked with a sales manager for an international firm who was based in Sheffield. NIBE is currently looking to expand its workforce and premises.

## 4. EMPLOYMENT AND SKILLS

The European Heat Pump Association (EHPA) estimate that there are around 2,000 jobs in the heat pump sector across the supply chain. This is based on annual deployment of around 30,000 heat pumps: an increase to 600,000 installations per would increase this number significantly. The UK Heat Pump Association estimate a need for around 40,000 heat pump installers alone (not including the rest of the supply chain and aftercare) by 2030, more than 20 times the current number of registered installers. A maturing market will also likely attract investment in other parts of the supply chain, including manufacture, bringing further employment benefits.

Based on our consultation with heat pumps installers based in South Yorkshire we estimate there are between 150 and 200 people directly employed by installers with perhaps half as many again working as self-employed sub-contractors.<sup>3</sup>

The greatest employment benefits (and skills challenges) are will be in installation, given the size of the challenge to retrofit the UK housing stock and the relatively labour intensive nature of heat pump installation. It is estimated that heat pumps and systems take around twice as many labour hours to install as gas central heating. This also means that there will be a net employment gain as gas heating systems are phased out.

### 4.1. Manufacturing and R&D

As outlined above, there might be potential to build manufacturing capabilities in South Yorkshire, and the region is well placed geographically in terms of logistics and proximity to population centres in the North and Midlands. However, heat pump manufacturing jobs are relatively low-skilled, with tasks focusing on assembly rather than production of parts, and production processes are increasingly automated. As a result the potential for manufacturing alone to bring good quality jobs to the region are limited. The main case for attracting manufacturing would be as part of a ‘zero carbon heat cluster’ centred on a centre of excellence for skills, and R&D.

### 4.2. Installation and Sales

The potential for growth in the industry means there are potentially significant employment opportunities. However the location of opportunities will partly depend on speed of deployment in different places, but also on the extent to which large installation companies and/or manufacturers directly employing installers come to dominate the market (and their employment practices).

As outlined at the start of Section 3, all things being equal, heat pump installation growth will lead to significant employment opportunities. Heat pump installation is more complicated than gas boiler and heat system installation. This means that the skills requirements are different, requiring more detailed advance calculation and system design.

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<sup>3</sup> Based on mean number of 8 employees per firm cross 10 firms consulted for this research.

“If I could find two more heat pump engineers I could double my turnover, but you can’t find them” (HP1).

“...you’ve got this opportunity to be involved with an industry that is quite exciting for the younger generation because it’s not just pure plumbing and the traditional craft, the IT side is interesting, the fact that the units are more complicated and you’re needing to know a bit more about the background technology to understand what they’re doing and why they’re not working or why they are working. I think personally it’s a great industry, at the moment there appears to be, there’s a premium to be had for people working in the industry that understand it and are good at their job.” (HP2)

But respondents felt that this premium will be eroded quite quickly once ‘traditional’ plumbers and gas engineers begin to reskill for low carbon heat technologies. There was a sense that plumbers and heating engineers as a whole currently “have got their head buried in the sand ... The plumbers have got this general attitude that it’s not going to affect us, I don’t need to be worried” about the upcoming transformation of domestic heating (HP2).

Recruitment for some businesses tends not to be a regular occurrence. For these smaller businesses the recruitment model is to take on people who need training from scratch or heating engineers who retrain (e.g. HP1, HP2):

“...we’ll have him on-board and expose him to the industry directly, so he’ll pick up the skills, but as far as his training is concerned through the apprenticeship it’s basic skills for electrical and mechanical, plumbing and things. It may just be that that’s what this person’s chosen, I think when you start getting educated in air source heat pump technology you’re already qualified in electrical plumbing and mechanical services” (HP2)

One reason businesses take on and train staff directly is that training provision is generally perceived to be poor, although the training market is quickly evolving. All interviewees talked about their concerns with shortcomings in existing provision, including:

- No local FE provider of apprenticeships that include HP training. Barnsley College provides environmental technology options in its electrical engineering and plumbing apprenticeships but

installers said that this did not include practical training for heat pump installation.

- Manufacturer training limited to use of equipment in ‘lab conditions’: a need for more on the job training to understand how the challenges of installing heat pump systems in practice.

There are also some specialist training centres whose training tends to be similar to that offered by manufacturers. Until recently there were very few of these but it is a fast-growing training market, in response to increased demand stimulated by GHG:

“If you go back six months there were only two training centres in the UK that were running training, now you can’t move for organisations telling you they’re experts on heat pumps ... The issue we’ve got there is it’s just a rush and they’re just churning people through so we’ve got organisations that aren’t necessarily skilled at heat pump installation, they’re training them like an academic qualification for a vocational job which I don’t think is right.” (HP4)

Installers were clear that there was a need for a change in approach to training provision, both in terms of apprenticeships and training for accreditation. On the latter they argued for an approach more led by installers than manufacturers, who could provide practical training based on ‘real world’ experience. Installers felt that there was a role for SYMCA to coordinate and support high quality skills and training provision across the City Region potentially through supporting development of training centre of excellence for microgeneration technologies.

## 5. WHAT CAN SYMCA DO?

The central message for national policy was the need for greater consistency of message with longer term funding/policies in place. Subsidy is welcome and necessary but needs to have clearer, longer-term timeframes and be very clearly linked to low carbon technologies.

For SYMCA, the overarching recommendation is to orientate investment and policy coordination towards development of a low carbon heat technology ecosystem for the region. This can be achieved through investment in and coordination of an improved skills offer, investment in housing retrofit and supporting location of distribution, manufacturing and installation businesses within

South Yorkshire. Specific recommendations revolve around these three goals:

### **Demand-side interventions**

- SYMCA should immediately establish an ambitious retrofit programme to stimulate demand, using discretionary powers to emphasise use of local labour and skills development in deployment.
- Working with local authorities to ramp up requirements on low carbon heat technologies in new developments, for instance to stipulate use of heat pumps in new builds before 2025. Developers are still reticent to diverge from traditional gas heating technologies.

### **Supply-side interventions**

- There is appetite from installers for a city-regional skills academy, with installers working with training providers to ensure that trainees were provided with sufficient 'real world' training experience. This would likely require partnership with existing FE and HE providers. A potential quick win would be to work to ensure heat pump technology is included in existing gas and plumbing and/or environmental technology apprenticeships offered in the region.
- There is a need for a communication campaign to influence existing plumbing and gas engineers perceptions of low carbon heat technologies: how can they be supported or encouraged to reskill?
- Establish contact with leading international boiler and heat pump manufacturers to understand potential for locating to the UK, and specifically to South Yorkshire. This will create some jobs (although the majority will be low skilled) but would also help to build a critical mass of heat

pump activity. Wider gains might be achieved if R&D potential can be established (e.g through links to the regions' universities, which both have relevant expertise).

South Yorkshire has so far been slower than many other regions to capitalise on low carbon economic opportunities. Focus on low carbon heat technology could be one route to building a distinctive offer for the region.

### **Other Reports**

- [Low Carbon Energy Supply Chains, Employment and Skills in South Yorkshire: Headline Findings](#)
- [South Yorkshire low carbon energy supply chains: Carbon Capture, Utilisation and Storage \(CCUS\) sector summary](#)
- [South Yorkshire low carbon energy supply chains: Heat Networks sector summary](#)
- [South Yorkshire low carbon energy supply chains: Hydrogen sector summary](#)
- [South Yorkshire low carbon energy supply chains: Insulation sector summary](#)
- [South Yorkshire low carbon energy supply chains: Nuclear sector summary](#)

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