The role of heat pumps in building a high skill, high wage economy: A race to the top for standards and jobs

Photo courtesy of Your Energy Your Way

Background

A smooth transition to clean heating systems presents an opportunity to boost the UK's energy resilience, supporting UK households to make the switch away from reliance on volatile international fossil gas markets while spurring innovation and inward investment in the UK's manufacturing potential. A focus on quality jobs and high-standard training opportunities will be critical for ensuring effective implementation; securing outcomes which are desirable for families, workers and businesses - supporting the Prime Minister's vision for a high-wage, high-skill economy.[1] It will also translate into a better experience for households: ensuring world class installation and maintenance services.

Across the UK, there will be a significant increase in heat pump installations during this decade. The government set a target to install 600,000 heat pumps per year by 2028. While fossil gas heating systems will likely remain the dominant technology for some time, the government's proposal to stop installing gas boilers by 2035 sends a clear signal both to industry and to households of the long-term direction of travel. This will kick in even sooner for homes off the gas-grid, who will be replacing their fossil fuel systems with low-carbon alternatives from 2026.

[1] BBC, 2022. Boris Johnson: PM promises 'high-wage, high-skill economy'

Planning for the heating transition requires a significant step up from today's workforce. As at the end of March 2022 there were 1,294 MCS certified heat pump businesses who collectively delivered 7,783 heat pump installations in the month. An extrapolation of this would equate to a capacity for circa 90,000 installations a year delivered by the current MCS certified base of contractors - MCS estimates the sector will likely need a further 7,000 contractor businesses to deliver on the government's target of 600,000 heat pumps per year by 2028.[2] Analysis by the Heat Pump Association suggests that we will need at least 50,200 installers by 2030, based on deployment of 1 million heat pumps.[3]

Addressing the skills and jobs gap will require building upon the skill set of the current workforce, as well as encouraging new entrants into the workforce. It is essential that these jobs are high-quality, attractive and secure to build confidence in the market and ensure a skilled workforce who are trusted and meet the highest standards.

The Trade Union Congress (TUC) and E3G (who coordinate the *Electrify Heat* coalition) ran a workshop on good jobs in heat pumps in Spring 2022, attended by unions, engineers, heat pump installers, energy companies, heat pump manufacturers, standards bodies and experts. E3G and the TUC then conducted a review process, reaching out to wider industry stakeholders to gain further evidence and information. This paper overviews the key themes and recommendations, drawing out next steps for industry and government.

We note that these jobs are best viewed within the context of a broader transition for the industry – towards higher standards and better working conditions, as well as towards clean heat solutions. Therefore, to consider good jobs in heat pumps is to consider good jobs in heating more widely.

Certain heat pump knowledge, skills and experience fit within the existing competences of those who are highly skilled in the heating engineering and plumbing workforce. While heat pumps remain a small sector of the market, for experienced and skilled heating engineers these competencies may be understood as a bolt-on to core skill sets. Going forward, design will be split out from installation – so existing heating engineers will still be able to install with cross-training and certification.[4]

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[2] Figures provided directly by MCS

[3] Heat Pump Association, 2020. Building the Installer Base for Net Zero Heating

[4] Heat Pump system design prior to installation, requires knowledge of how best to design low temperature heating systems. MCS has recognised this distinction between design and installation skill sets in the recently published Heat Pump Installation and Design standards. This is reflected in industry standards: As of April 2022, there are now two MCS standards - one design, one install

Understanding and supporting good jobs in heating

What are the key conditions and attributes of good, secure jobs in heating?

During the workshop, it was noted that good jobs in heat pumps need to be understood within the wider context of both the industry, and the individual worker. Heat pump skills fit alongside the skill set of existing recognised trades, including heating engineers and plumbers. These core skill support workers' capacity to work across traditionally distinct occupational boundaries - to which heat pump knowledge, skills and experience can be added. Themes which came up during the discussion are outlined in table 1. The discussion then turned to consider certain themes in more detail.

Table 1: Key conditions of good jobs in heat pumps

Pay	**Sector stability**	**Training & skills**	**Working conditions**	**Standards**
• Fair pay • Attractive pay • Market rates • Incentivised • Pensions	• Strong & clear government policy (fossil fuel phase out; building regulations; long-term funding) • Enough demand • Consumer engagement • Domestic manufacturing • Ethical supply chains	• Valuable skill set • Broad and deep skill sets • Advanced apprenticeships • CPD • Funding and incentives • Ongoing professional/ technical development • NVQ level 3 • Marketability	• Direct employment (in contrast to bogus self-employment) • Employment continuity • Holiday and sick pay • Unionised and union recognition • Rewarding and fulfilling • Collective bargaining • Safety • Diversity • Flexible	• High standards • Strong audits

Pay

The concept of 'fair pay' refers to collectively agreed and negotiated rates of pay within a sector, set at an industry level and seen in advanced European and Western economies, with a wider direction of travel seen in Germany, Belgium and the Netherlands. The US also has a long-standing precedent in construction on public and federal projects, called "prevailing wages" under the Davis-Bacon Act of 1931. The Biden administration has stated that they want to extend the concept of collectively bargained prevailing wages to the

whole US economy.[5] The Spanish government has recently restored the concept,[6] and the New Zealand government has also brought it in.[7]

By setting a "going rate", a race to the bottom is avoided, and pay levels can remain attractive - while also ensuring appropriate levels of competence, which translates into high quality service for consumers. Setting a "going rate" could help promote high standards across the sector, acting as a barrier to companies seeking to out-compete each other through cutting corners on quality and workpersonship. This is important in light of research which finds that installers have seen a reducing rate of pay over the last decade, compared to other sectors/UK average.[8]

While fair pay could be (and in some sectors, is) achieved through industry-wide agreements independent of government, there could be an important role for government in achieving fair pay in the case of heat installations. This is because of market failure: in a sector dominated by micro-firms, achieving a sufficient coverage of minimum standards on work, competency, or pay is inevitably vulnerable to under-cutting on price by less qualified installers keen to cut costs. Government leverage over fair pay includes legislation (as practiced in Wales and Scotland's Fair Work regimes) or procurement requirements (for example by specifying that government grant funded installations must fulfil certain requirements aligned with a national industry agreement).

It was noted that skills and market pay rates are linked. If people have high quality training and marketable skills, they will get better rates of pay. This underscores the need to ensure high standards across the sector.

Sector stability

Government policy which demonstrates stability, clarity and longevity were noted as important to provide longer-term confidence. This is particularly true where jobs have previously been closely connected to government programmes like the Energy Company Obligation. Where changes are not made clear and in good time, industry has to respond quickly to changes, upskilling and upscaling the workforce quickly. It was noted that "one change in government policy could pull the rug underneath everyone" – emphasising the importance of long-term certainty, which is delivered upon.

We can learn lessons from what has worked well in the past, including where clear regulation has helped develop a workforce. The smart meter mandation provides an analogy, with regulation making clear that suppliers were obligated to install meters in homes and the industry responded by supporting thousands of jobs. Clear government signalling on the future role of heat pumps can also help boost supply chains, which should be embedded within a framework which provides meaningful opportunities to

[5] US Government, 2021. American Jobs Plan

[6] Institute of Employment Rights, 2022. Spanish Government restores collective bargaining

[7] Lexology, 2021. Fair Pay Agreements are coming to New Zealand in 2022: what will change for employers?

[8] Social Market Foundation, 2022. Installing for time? New evidence on the attitudes of home heat installers towards decarbonisation and heat pumps

train as bona fide plumbers, heating engineers, technicians and electricians - offering job opportunities and employment mobility for their working lives, whilst developing the UK skills base for the long term.

At the same time, some stakeholders noted that the narrow qualifications provided to smart meter installers have exposed them to risk of redundancy as the smart meter installation programme nears completion: this demonstrates the importance of supporting the creation of broad skill sets. Nonetheless, there could be opportunities to develop comprehensive up-skilling strategies to support smart meter installers to become heat pump or EV charge point installers equipped with competencies on a par with other routes.

Working conditions

It was noted that generally (with some exceptions), the gas network industry is has relatively good terms and conditions and stable employment as well as a higher union density. Wages for gas network staff are rising at the moment, unlike those elsewhere in the economy, as there is a shortage of gas network engineers. Multi-employer national collective agreements also continue to maintain working conditions and standards in wider engineering services disciplines, including plumbing and domestic heating, heating and ventilation and electrical, where SME employers tend to predominate. It was noted that it is important to consider levels of unionisation within sectors related to heat pumps, as this can have significant impacts on pay levels and broader job quality.

Sole traders would be outside the scope of union membership, although can become members of certain trade associations to access business, technical and commercial benefits. These individuals should be distinguished from bogus self-employment and false self-employment.

Employers could potentially be covered by relevant national collective agreements including the Joint Industry Board for Plumbing Mechanical Engineering Services in England and Wales (JIB-PMES), the Scottish and Northern Ireland Joint Industry Board for the Plumbing Industry (SNIJIB), and the BESA Joint Conciliation Committee of the Heating, Ventilating and Domestic Engineering Industry. If these agreements were given legal force and/or underpinned through procurement, this would guarantee a minimum standard of competency as well as pay across a large proportion of, if not the whole, sector, contributing to a higher-skilled, higher-paid workforce.

Skills

There was agreement from workshop participants on the need to ensure high quality training and upholding standards across the heating sector, with concerns of a 'dumbing down' in recent decades resulting from the roll-out of combination boilers. This is particularly important in the shift towards heat pumps, where there could be more scope for error in installation and maintenance than with gas boilers. With heat pumps, thermal storage, including hot water storage will often be needed, and radiators and pipework will

need to be sized appropriately. There is a need to improve training standards across the industry, not just to heat pumps, starting with energy literacy. Industry is currently working to develop training standards to ensure consistency of quality across accredited courses. Over time, this should include accrediting employer-based training, for example when a large company starts their own training course.

Industry-recognised skill sets were considered important, with individuals establishing different core skill sets with "bolt-on" elements added later, providing them more functional flexibility and marketability to avoid a siloed approach. Many participants noted that fast-track training undermines conditions and quality, as well as representing a threat to public safety. Safety failure rates of gas installations by non-apprentice qualified gas engineers are double those of ex-apprentices.[9] A rushed approach could mean that people are not equipped with core flexible skillsets, lack real competence and are more vulnerable to changes in policies. It was noted that training should be understood as part of a broader education, including broader aspects of energy literacy - for example, advising customers on energy efficiency measures.

There was discussion on apprenticeships, recognising that while these can be a key and affordable route for the industry, it is important to ensure their quality. This includes both apprenticeships for young people and for adults, with a key role for the recognition of prior learning for experienced workers in line with recognised apprenticeship standards. It is crucial that apprenticeships follow the International Labour Organisation definition for a quality apprenticeship, including "meaningful social dialogue, a robust regulatory framework, clear roles and responsibilities, equitable funding arrangements, strong labour market relevance, and inclusiveness".[10] Effective quality control mechanisms are needed to ensure the quality of apprenticeships - with the quality of each individual apprenticeship monitored, ensuring consistently high learning outcomes, irrespective of the apprenticeship provider or employer.

There is a challenge in the sector where a high proportion are sole traders, for whom the direct financial and time cost to take on an apprentice is more significant. There is likely therefore value in re-examining existing heating apprenticeship programmes and their promotion. There is also a new Low Carbon Heating Apprenticeship due to come online later this year.

At the same time, there is a need to promote better routes for those in further education into the industry. While there is a good level of interest among young people for getting involved in the industry, each year, many young people are being trained in colleges who then can struggle to find jobs due to courses that leave them half- or low-qualified. Overcoming these structural issues will be important to build up the next generation of heating experts. There would also be value in outlining the key pathways available to

[9] Gas Safe Register, 2017. Decade Review

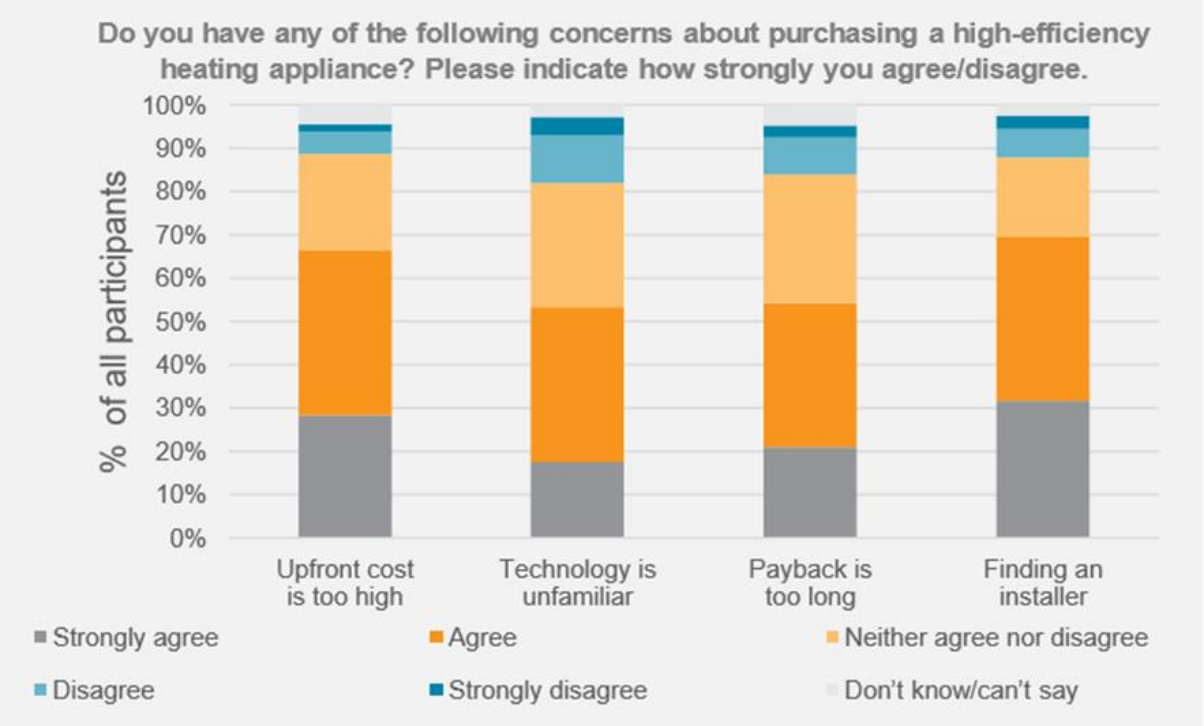
[10] International Labour Organisation, Apprenticeships definition

becoming a heat pump installer so that routes can be chosen dependent on practical and academic experience.

Standards

Standards across industry, skills and training are essential to build trust and confidence in the market. The fragmented nature of the market can add challenges in auditing and compliance. Putting systems in place to ensure high standards before the market really takes off was noted as key. Standards bodies like MCS can play an important role in defining what a competent installer looks like, strengthened moving forward to include retrofits and new builds.

Research from Delta EE,[11] demonstrated below in figure 4, shows that over 30% of potential customers surveyed had strong concerns about finding an appropriate installer for a high efficiency heating appliance. Developing a strong workforce of skilled and accredited installers, across all of the technologies required, will be an important step towards driving consumer take-up and building trust as we move towards net zero.



There are two parts to consider with different requirements: the company and the engineer. Standards bodies like MCS should have authority over this - they have an important part to play regarding what constitutes a 'competent company' as an entity for consumer confidence. Some workshop attendees raised the need to widen the scope of MCS certification, to include not only safety but also efficiency of the installation with a requirement for minimum efficiency (COP and SCOP) values achieved for an installation to pass.

[11] Delta EE, September 2020, *The 2020s is the decade to decarbonise heat*

Defining individual installer competency requires a holistic consensus across industry and across the UK, e.g. relevant recognised employers trade associations, trade unions, bona fide industry skills and technical bodies, with consideration to emerging sector specific competency frameworks via "Setting the Bar", the HSE's Building Safety Regulator.

What are the concerns regarding jobs in heat pumps, for those currently working in adjacent sectors?

Themes which came up during the discussion are outlined in table 2. Key concerns include cost, time and standards of training; unsafe installations; job security; inconsistent standards; bogus self-employment and false employment, and market fragmentation

Table 2: Concerns regarding jobs in heat pumps for those currently working in adjacent sectors

Sector stability	Standards	Working conditions	Training and skills
• Consistent and long-term consumer demand • Clear, long-term policies • Better offers elsewhere • Regional variations (i.e., rural vs urban)	• Unsafe installations • Sector fragmentation • Race to the bottom • "Gas Safe" model - minimalist safety, but not real competency	• Job security • Bogus self-employment and false employment • Lack of stable/ direct employment • Workers left behind • Bureaucracy • Lack of national collective agreement • Exploitative businesses • Pay and pension, including wage exploitation • Inflexibility • Lack of motivation • Lack of union recognition	• Cost of training • Inadequate / low quality training • Lack of skills in design • Time off work to undertake training

Working conditions and sector stability

Job security was the key concern participants raised – linked both to working conditions (i.e., direct employment opportunities and good rates of pay and benefits) but also long-term certainty created through government policy conditions.

At the micro level: currently, most installers work within very small operations of 1 to 10 people. The issue of fragmentation is not specific to the heat pump market, but a wider feature of the engineering services sector. Participants noted concerns that the fragmented and unstructured nature of the market can sometimes lead to lower working conditions and standards, with risks around bogus self-employment. It can also lead to a lower quality and issues in fitting and installation, altering the product's efficiency. This has been seen in insulation work, with buildings not achieving promised standards of energy

efficiency because the material was not fitted properly. In turn, this risks undermining consumer confidence in products and services, with implications for the wider sector.

As the market grows, some larger companies are also transitioning towards heat pumps. Concerns were raised around whether these large companies will continue to recognise existing training standards and union conditions, as this has not always been the case – for example, in energy companies' transition from thermal generation to offshore wind. Initially, incentives and pay were agreed upon to make for attractive jobs in the sector, but as the offshore wind industry has grown, the incentives have been reduced.

At a macro-level, the scale and speed of the transition add uncertainty, particularly for those already employed as part of the existing workforce. This risk could be exacerbated in certain parts of the country if the transition does not happen evenly and gradually. This could imply a higher risk for people being employed on unfavourable terms and conditions in those areas.

A key concern was regarding low confidence in past and current policy plans – with a lot of frustration from the lack of information and policy certainty in the short, medium and long-run. Installers present in the discussion noted that this creates inertia and a climate of doubt. The lack of clear decision-making concerning the scale of the heat pump market, and some of the incoherence in policy and deployment have further exacerbated these issues. There was concern over the risk of 'boom-bust' policy making, which has been seen previously with the solar industry and the Green Homes Grant. This acts as a deterrent to investment, therefore preventing the market from developing to the next level. There is a need for clearer messaging, decision making and accountability, to build trust and confidence for consumers, industry, the workforce and wider heat pump landscape.

Training and skills

Participants agreed the costs of upskilling or reskilling training can be a deterrent if workers are expected to pick up the tab themselves or are employed by micro businesses with limited resources. Delays due to bureaucracy in government schemes, mean that organisations can still find themselves exposed to financial risks when footing the bill upfront.

Structure and content of the training was also discussed during the session. Participants agreed that a core skill set needed to be agreed upon at national level, including through National Occupational Standards and Apprenticeship Standards, and further training and specialisation could be considered for workers afterwards.

According to attendees, some of the training funding available today (e.g. such as some Skills Bootcamp 16-week courses) lacks the tailoring and industry input required to respond to the variety of needs depending on future installers' profiles. It is both too long for those who already have experience in the field, and too short for those that come with no prior experience.

A case study for gender diversity

Supporting gender diversity and inclusivity should be centrally considered as we look to scale the clean heat workforce. Women's participation in the energy and heating sector has been historically low, and remains below that of the wider economy to this day. There are approximately 12,000—15,000 female plumbers in the UK, or around 1% of the total number, which sits somewhere between 120,000—150,000. This time of transition of the heating industry represents the opportunity to rebalance these numbers, and doing so provides multiple advantages:

- Advertising and making good jobs in clean heat more appealing to women would help fill the workforce shortage, helping scale up the deployment of clean heat around the country.
- There is consumer demand for more women in the sector. A study by the Federation of Master Builders found 40% of homeowners would feel more comfortable hiring a woman tradesperson, especially families with children and elderly people. As the clean heat transition concerns every UK household, ensuring workforce diversity could be important to support successful delivery.
- There is already an appetite among workers. Around the UK, several initiatives are taking place to help women access training and job opportunities to enter the clean heat workforce.

There are multiple ways in which gender diversity in the sector can be promoted:

- This starts at school and in higher education, by making sure careers in clean heat are promoted to women.
- Making the industry more inclusive through best-practice recruitment (e.g. anonymous application forms and diverse recruitment panels), networking events by and for women and shared resources, is also crucial to both show that there is space for women, and in increasing visibility, creating space for women.
- Specific scholarships and on-site programs are also one of the many ways to help attract more women in the workforce and break down enduring biases.
- "Return to work": Consider opportunities for women to enter the sector after a career break.
- Support trailblazing initiatives and companies who are seeking to overcome barriers to women entering the sector, for instance providing support for targeted traineeships paid an attractive salary, as proposed by *Your Energy Your Way.*[1]

1. Following conversations with *Your Energy Your Way. The proposal is to support a cohort of female installers paid at an attractive salary to facilitate high quality, peer to peer learning within the group and with other plumbers and heating engineers within and outside the company, alongside award winning industry commentator and trainer Betateach. For more information contact Leah Robson* leah@yourenergyyourway.co.uk

Key recommendations for industry

There was discussion on an industry agreement which sets standards to ensure high quality jobs, supporting a trained workforce.

- **Fair pay**: Support the adoption of fair pay across jobs in domestic heating, by negotiating and building upon existing sector-wide national agreements with unions, and setting a "going rate" as seen in other advanced economies. Industry should also support the government to introduce legislation or procurement requirements. The concept of fair pay refers to collectively agreed and negotiated rates of pay within a sector and set at an industry level, and can be adopted both by larger companies and SMEs. They help maintain attractive levels of pay and avoid a race to the bottom. Pay and market rates being tightly linked, this could also be a good way to ensure high quality training and skills across the sector. The concept has made its proof in the rest of Europe.
- **Consistent, quality skills and training**: Build upon industry-recognised skill sets – such as agreed Competence Persons Schemes and MCS, as well as other established apprenticeship standards and frameworks – with incentives and enforcement to ensure all training routes meet these standards and incorporate a robust framework for individual competence. Ensure qualifications support core trades skill sets and energy literacy, to provide individuals with more flexibility in the job market, and avoid a siloed approach. Qualifications should cover full heating system design, including heat loss calculations, siting of thermal storage and appropriate sizing of radiators and pipework.
- **Clear, compelling communications**: Improve marketing and communications around jobs, apprenticeships and training opportunities for those still in education – supported by government, and promoted by industry and local delivery partners.
- **Enforcing industry-wide quality standards**: Ensure that the recognised industry standards are enforced, especially during a time of considerable market growth, with a corresponding responsibility on regulators and enforcement bodies, and redress channels for industry clients and end-consumers. Standards bodies like MCS can play an important role in defining quality work and installation, as well as monitoring performance post-performance, in turn helping build consumer trust.
- **A just and fair transition:** Support those currently working on gas networks and gas boilers to transition to on zero carbon solutions, including by providing appropriate financial and non-financial support for reskilling, recognising existing competencies, and working alongside various relevant bodies to identify necessary requirements.
- **Gender diversity:** Promote jobs and skills to school leavers and those in further education, considering additional incentives - for example, targeted scholarships and apprenticeship bursaries. Adopt best practices in recruitment and retention (e.g. anonymous application forms, diverse representation on selection panels, workplace mentorship schemes, and regular equalities audits).
- **Unionisation**: Allow and support installers to organise and join trade unions. Enable high levels of unionisation to be transferred from the gas sector to heat pumps. This can have a significant impact on pay levels and overall job quality.
- **Apprenticeships**: Support high standard apprenticeships with effective quality control mechanisms - with the quality of each individual apprenticeship monitored, ensuring consistently high learning outcomes, irrespective of the apprenticeship provider or employer.

Key recommendations for government

- **Provide long-term confidence through policy and funding**: Ensuring long-term confidence through policy stability, clarity and longevity. This should include for example providing clarity of the policy timelines for phasing out fossil heating systems; certainty around the future of the Boiler Upgrade Scheme and other government subsidy schemes which cover heat pumps; and a roadmap for the future of the gas grid. This will be essential for overcoming the low industry confidence which has resulted from previous 'boom-bust' policy making.
- **Support quality skills**: Ensure government-backed green skills schemes provide learners with high quality skills which are genuinely equivalent to existing occupational standards (e.g. embodied in apprenticeship standards/ frameworks) and immediately transferable for retrofit and heating market, enabling valuable CPD and retrofit skilling of the existing skilled workforce, and direct pathways into apprenticeships and work based learning for those leaving full-time education and entering the industry towards good jobs. Skills should cover full heating system design, including heat loss calculations, siting of thermal storage and appropriate sizing of radiator. This might include skills in monitoring performance post-installations to ensure high quality services.
    - This should build upon and improve current schemes offered through the Department for Education, Skills Development Scotland, Qualification Wales and other relevant bodies.
    - Develop licensing systems to embed an approach which includes common, regulated competence-based qualifications
- **Fair pay**: Support industry to take a negotiated approach towards fair pay across jobs in domestic heating, setting a "going rate" as seen in other advanced economies. This can be achieved through legislation or procurement requirements (for example, by specifying that installations funded through a grant scheme meet the standards set by a relevant national industry agreement). Support an end to bogus self-employment.
- **Support job security**: Where possible, support conditions for more direct employment, apprenticeships and upskilling – for example, by implementing employment status reform, in line with the Good Work Plan, presented by BEIS in December 2018; reforms of tax and employment legislation and public procurement.
- **Gender diversity:** Adopt and promote best practices in recruitment and employment practices. Support targeted communications and networking opportunities to promote gender diversity, workplace mentorship schemes, and regular equalities audits).
- **Stakeholder engagement**: Consult widely with the heating and wider engineering services industry and worker representatives on green skill plans when establishing new legislation and schemes.
- **Communications on training opportunities and benefits**: Support public and industry communications efforts to encourage training and reskilling, including through links to further education. This should include providing clarity to those looking to upskill or reskill on how to become a heat pump installer via public communications.
- **Incentivise and support uptake of training opportunities:** Provide funding schemes and structure to support the training necessary to scale up the workforce. For example, the Heat Pump Association recommends £300 for the first 5,000 installers. Government can work with companies to support and encourage employees to undertake additional training; as well as engaging with workers and unions to take further steps to ensure that low carbon jobs are secure and attractive.

Appendix - other relevant resources

- **Installer skills matrix in Scotland:** This approach adopts a trade qualification and upskilling model: https://www.gov.scot/publications/consultation-scottish-skills-requirements-energy-efficiency-zero-emissions-low-carbon-heating-systems-microgeneration-heat-networks-homes/pages/7/
- **Plumbing apprenticeship standard** (which currently includes a renewables pathway): https://www.instituteforapprenticeships.org/apprenticeship-standards/plumbing-and-domestic-heating-technician-v1-0
- **RAC and heat pump engineering apprenticeship standard**: https://www.instituteforapprenticeships.org/apprenticeship-standards/refrigeration-air-conditioning-and-heat-pump-engineering-technician-v1-1
- **Low carbon heating technician apprenticeship standard** (in development): https://www.instituteforapprenticeships.org/apprenticeship-standards/low-carbon-heating-technician
- **Domestic electrician standard (incorporating low carbon heating, such as heat pump controls (in development))**: https://www.instituteforapprenticeships.org/apprenticeship-standards/domestic-electrician

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