Securing Net Zero: How can the UK transition to more sustainable buildings?

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Changes for the Better

Contents

Foreword from Russell Dean

Russell Dean, Deputy Divisional Manager, Living Environment Systems, Mitsubishi Electric

Getting the UK to net zero by 2050 is essential to tackling the climate crisis, yet we are struggling to stay on track.

With the way we heat our buildings accounting for a third of these emissions[1], decarbonising our building stock will be critical to achieving the challenging targets ahead of us. That's why Mitsubishi Electric is dedicated to working with our partners in government and industry to find solutions to the decarbonisation challenge.

The encouraging truth is that we already know how we can rapidly decarbonise. Proven technologies like heat pumps, modern building standards which encourage high quality, environmentally sound buildings, and the right support from Government, are critical.

But for us to do so, we need to be able to take businesses, homeowners and installers with us.

Unfortunately, there are still many barriers in the way. Many people still don't know about the benefits of renewables, despite their enthusiasm for decarbonisation. And even if they do want to make the switch to low-carbon alternatives, problems like the high cost of electricity are a significant barrier.

We are also facing the challenge of training enough people to design, install and commission the technology in people's homes and businesses. The more installers who can recommend low-carbon alternatives to consumers, the better.

Finally, we need the clear policy direction which states how buildings should be fitted for low-carbon technologies, and built in a way which reduces their emissions. The new Government has the opportunity to deliver a generational shift, with the publication of new standards for our Future Homes and Buildings, and a new decarbonisation agenda.

All of these factors together offer a golden opportunity for the new Government to work with industry to overcome these identified barriers and accelerate adoption.

I'm pleased that Mitsubishi Electric, alongside our partners at forums such as this parliamentary roundtable which informed this report, can make a contribution and I hope that this report drives even greater action.

1: Decarbonising heat in homes - Business, Energy and Industrial Strategy Committee

Foreword from Wera Hobhouse MP

Wera Hobhouse MP, Member of Parliament for Bath

We are lucky to live in a country where net zero is, by and large, an accepted necessity. But how we achieve that in the context of our buildings is, frustratingly, still a question to which we need to find a clear answer.

I was grateful to be asked by Mitsubishi Electric to host and chair its parliamentary roundtable, during which we considered what more we need to do to decarbonise buildings.

We have made some progress on this agenda, but as I am sure most of us would agree, not enough; our discussion, and this report which draws on the ideas shared during it, is an attempt to accelerate that progress.

A bold, ambitious plan is needed for the decarbonisation of our buildings, which will help to power us towards our net zero goal. Manufacturers like Mitsubishi Electric stand ready to meet the demands of a net zero economy; they just need policy which will support them in securing that outcome.

And that policy must bring with it every part of the value chain, from manufacturers, to installers, and homeowners and businesses.

Government is central to that collaboration. Putting in place policies which drive a preference for proven technology will allow us to build a generation of new homes and buildings which move the burden of decarbonisation away from homeowners, and give businesses the certainty they need to decarbonise the huge range of non-domestic buildings in the UK.

I hope that this report, and the recommendations within, will be the catalyst for further action. I look forward to the conversations it will begin, and to being part of the drive in Parliament and beyond for change.

About the roundtable and research

The roundtable was held on Wednesday 23 October 2024 in Parliament.
The participants were:

- **Wera Hobhouse MP,** Member of Parliament for Bath (Chair)
- **Achilleas Georgiou,** Public Affairs and Communications Manager, Mitsubishi Electric
- **Dan Smith,** National Sustainability and Construction Manager, Mitsubishi Electric
- **Jane Dennett-Thorpe,** Deputy Director Net Zero Strategy, Ofgem
- **Jonathan Ducker,** Head of Regulatory Affairs, Kingspan Insulation
- **Jim Dyer,** Director for the Built Environment, Sovereign Network Group
- **Tina Fawcett,** Associate Professor and Acting Leader of the Energy Programme, Environmental Change Institute (ECI), University of Oxford
- **Phoebe MacDonald,** Head of Policy and Public Affairs, Royal Institute of British Architects (RIBA)
- **Emma McKelvie,** Policy and Communications Officer, Energy Saving Trust
- **Pete McNeill,** Senior Retrofit Development Manager, Centre for Sustainable Energy
- **David Melhuish,** Chief Development & Sustainability Officer, The Gym Group
- **Daniel Paterson,** Director of Policy and Government Affairs, Sector Specialisms and Electrify Industry
- **Jon Saltmarsh,** Chief Technology Officer, Energy Systems Catapult
- **Olivia Smalley,** Head of Policy and Communications, Heat Pump Association
- **Rachel Solomon Williams,** Executive Director, Aldersgate
- **Chris Watling,** Senior Commercial Manager, Low Carbon Heat OVO
- **Matt Webster,** Head of Environmental Sustainability, British Land
- **Charles Wood,** Deputy Director of Policy, Energy UK

Mitsubishi Electric and Censuswide conducted a survey of 2,275 respondents across the UK. This polled 2,025 homeowners between the 25th and 30th of July, and 250 heating, ventilating and air conditioning (HVAC) installers (including plumbers) between the 25th of July and the 6th of August 2024.Unless otherwise stated, all statistics used in this report are based on this survey.

Introduction

If the UK is to meet its net zero ambitions, the way we build, insulate, and heat our buildings will need to change.

Many of the approaches and solutions that will be required are well known, and yet the UK still lags behind other European nations when it comes to adopting the low-carbon technologies and techniques needed to create a building stock fit for the future.

How we design, build, and retrofit our buildings will play a key role. A proposed boom in housebuilding should see us building homes which will not need to be retrofitted for energy efficiency later.

Meanwhile retrofitting will be a critical activity in the non-domestic sector, with 70% of non-domestic buildings constructed before 1995[2].

But the UK is currently not doing enough. On heating, out of 17 European countries examined in 2021[2], the UK had the slowest rate of heat pump installation, and current targets to install 600,000 heat pumps a year in residential properties by 2028 look hard to reach.

On retrofit, homeowners do not know enough about the full range of measures they might have to take to decarbonise their home, from improving insulation to installing low-carbon heating.

There are many reasons for the slower pace, including a lack of awareness, the combined cost of buying and installing a heat pump, and the high cost of electricity for running it, which often makes the cost of running a heat pump more expensive than a gas boiler.

It was with this in mind that Mitsubishi Electric brought together a group of experts to discuss recommendations, solutions and strategies that will help the UK to transition to sustainable buildings to help secure net zero.

The insights shared during that parliamentary roundtable have been combined with the results of a survey of consumers and installers, considering the adoption of heat pumps.

This report is a summary of those findings, complete with recommendations for Government and industry, which build and expand on existing government frameworks and approaches.

In this report, we consider:

- How we can **drive better public understanding of, and action around, building decarbonisation**
- How we can **create the right regulatory and legislative environment to drive decarbonisation**
- How we can provide more **support for skills and manufacturing capacity.**

We hope it makes a useful contribution to the public debate around how we decarbonise our buildings, and help the UK achieve its net zero ambitions.

2: Nesta, How the UK compares to the rest of Europe on heat pump uptake, published 8th August 2023

Recommendations

1. The Government should create a national energy advice service to provide a central point of reference for homeowners and businesses to understand the best ways to decarbonise their buildings, including information on accreditation schemes.
2. As part of the Government's consultation on Reforms to the Energy Performance and Building Regime, it must ensure reforms to EPCs recognise the carbon value of introducing low-carbon technologies, rather than penalising them for increased running costs until the price of electricity can be reduced.
3. The Government must provide further clarity around what future financial support will be made available to homes and businesses to adopt low-carbon technologies such as heat pumps, including by setting out details of its Warm Homes Plan in the Spring.
4. The Government should commit to rebalancing the levies applied to electricity relative to gas, and commit to de-coupling the wholesale price of electricity from the wholesale price of gas, to give certainty to industry about the future costs associated with electrification.
5. The Government must commit to implementing new buildings standards, reflecting the clear preference for heat pumps and other established low-carbon technologies, including the widespread adoption of Minimum Energy Efficiency Standards (MEES) for all building types.
6. The Government must adopt a new Heat Decarbonisation Standard, setting out a retrofit framework to improve the energy efficiency and reduce the carbon impact of each property over time.
7. The Government should endorse the UK Net Zero Carbon Building Standard, which has been created by the industry, for the industry, and sets out net zero carbon requirements for all major building types, based on a 1.5°C trajectory.
8. The Government must publish a comprehensive suite of measures it will take to support the domestic supply chain for the manufacture of low-carbon technologies, including funding levels and timeframes.
9. The Government should convene an industry advisory panel, to inform its approach to supporting the decarbonisation of buildings.
10. The Government must develop a package of support for the training of heat pump installers, including re-training of existing engineers.

Driving better public understanding of, and action around, building decarbonisation

49%

would prefer to buy a low carbon home

79%

still use a gas boiler in their home

Public support for net zero

There is strong public support for the UK Government's commitment to net zero, with research undertaken by Mitsubishi Electric in 2023 showing that most Britons (66%) agree that if the government does not tackle climate change now, it will be failing their citizens[3].

People are increasingly interested in transitioning to more environmentally friendly homes, with KPMG finding almost half (49%)[4] would prefer to buy a low carbon home. And yet, despite this, almost eight in 10 (79%) still use a gas boiler.

This contradiction was echoed during the parliamentary roundtable that helped inform this report.

"We know that our customers want to decarbonise", **Chris Watling, Senior Commercial Manager, Low Carbon Heat at OVO** told us, "but most – around 60% - are unaware of the measures they need to take to do so. We want to provide information, and support them on the journey to making energy better."

Almost a fifth (18%) of homeowners still believe gas boilers are the most sustainable heating option, and just 25% believe heat pumps are the most environmentally friendly alternative as a result. Driving awareness of heat pump technology, and its benefits, is therefore crucial.

"Most people know that their gas boiler keeps them and their radiators warm," **Olivia Smalley, Head of Policy and Communications at the Heat Pump Association**, told us, "but we need to help consumers understand how heat pumps work, and the behaviour changes that may come with them."

Mirroring homeowner and business views on heat pumps and their benefits, installers also believe a lack of awareness of the technology is the number one barrier for clients looking to install these solutions. 62% believe homeowners are unaware of the benefits heat pumps can offer, though fewer (33%) believe this lack of awareness is as acute amongst businesses.

3: IPSOS research
4: Half of consumers would prefer to buy a low carbon home - KPMG UK

"We're finding a lot of our customers have set their own science-based targets or corporate targets, and are now demanding electrified buildings", **Matt Webster, Head of Environmental Sustainability at British Land**, told us, "we're seeing heavy customer demand for this; all of our buildings now have a net zero carbon pathway."

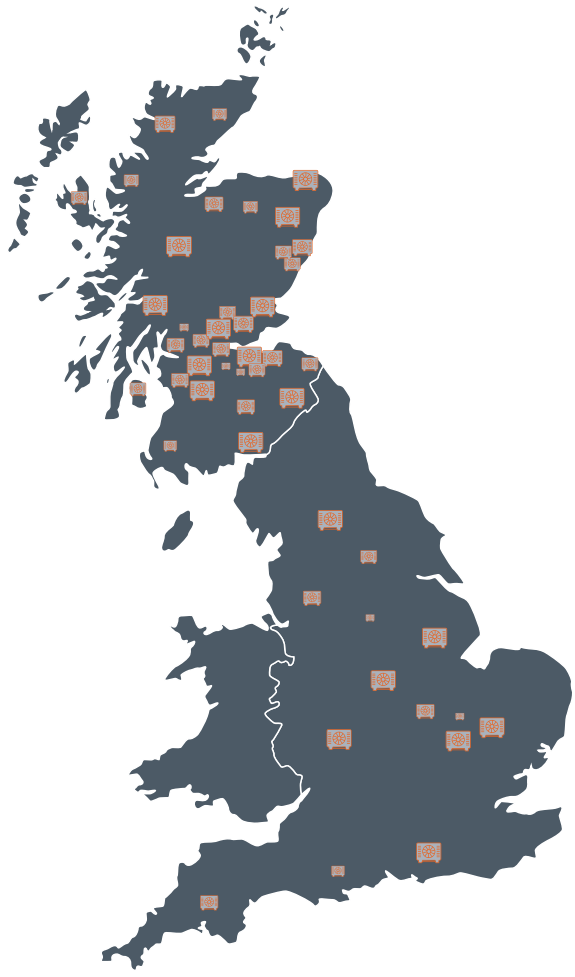
Trusted sources of information

One of the barriers to better understanding amongst the public that was identified at the parliamentary roundtable was a fear and risk of there being a 'wild west' of information for both homeowners and businesses when it comes to deciding how to heat, and how to retrofit, buildings.

While the industry has made some strides towards educating consumers, there was concern at the roundtable that not enough had been done to provide people with the certainty that they needed. **Jane Dennett-Thorpe, Decarbonisation and Energy Transition Lead at Ofgem**, noted that "trust in the energy sector is relatively poor. We need to have some trusted intermediaries that are going to be delivering advice. There's also a lack of co-ordination of delivery [of household heating and energy efficiency measures] at the moment."

And knowledge is also a barrier for installers; as **Charles Wood, Deputy Director of Policy at Energy UK**, cautioned: "People trust their tradespeople; if those installers give misinformation about heat pumps or they don't have the correct training, consumers are misled."

Rachel Solomon Williams, Executive Director of the Aldersgate Group, recommended that there should be a national energy advice service; **Emma McKelvie, Policy and Communications Officer at The Energy Saving Trust**, referenced Home Energy Scotland, which delivers impartial, tailored advice to households, and also acts as a sole referral route to the Home Energy Scotland loan scheme as an example of best practice, adding that "since 2017, Scotland has tended to install around two times more air source heat pumps and solar PV panels per 100,000 homes than England, according to MCS data. The key distinguishing factor being access to personalised advice and low-cost finance through Home Energy Scotland."



Scotland has installed 2.5 times more air source heat pumps and solar PV panels per 100,000 homes than England

Hyper-local measures can also be used to encourage heat pump adoption. **Tina Fawcett, Associate Professor and Acting Leader of the Energy Programme**, Environmental Change Institute discussed her involvement in Clean Heat Streets, a DESNZ-funded pilot, that aims to increase the uptake of heat pumps in very small local areas. “There’s trusted people door-knocking and engaging with people at this hyper-local level, really understanding what the local community needs; for example, is it about health, is it about comfort, is it about affordable running costs?”

This lack of trust is less of an issue in the commercial sector. **Matt Webster from British Land** noted that they are able to work with the “best of the best” when considering who they source technology from, and who installs it. There is however clearly work to do to ensure homeowners have access to trusted information to help them to decide that they want to transition to decarbonised heating.

Participants at the roundtable also discussed the importance, and shortcomings, of Energy Performance Certificates (EPCs). For many consumers, EPCs are the primary way to understand the energy performance of a building. However, it was noted that, because of how EPCs are currently assessed, they do not consider the carbon benefits of installing a heat pump, only the increased running cost, exacerbated by high energy prices.

“EPCs in their current format do not recognise advantage of a heat pump”, **Jonathan Ducker, Head of Regulatory Affairs at Kingspan Insulation** told us. “You need to start valuing the carbon impact of the technology you’re putting into buildings as well as the cost savings; decarbonised heating needs to be installed alongside an improved building fabric, both are necessary.”

Pete McNeill, Senior Retrofit Development Manager at the Centre for Sustainable Energy added that he is concerned about “a lack of enforcement of EPCs, and the risk of fraud. Local authorities just do not have the resources for enforcement; and the same goes for the commercial sector.”

If the public are to have trust in the metrics used to analyse buildings, these metrics must be fit for future purpose, and there was general agreement among the group that EPCs should be reformed to reflect this.

Overcoming installation cost barriers

Even if there are these trusted sources of information available, barriers still exist to homeowners and businesses installing new tech, or retrofitting their buildings; primarily cost.

There are currently several subsidies and grants available to help ease the initial upfront cost of installation. For families and small to medium-sized businesses, this has included the Boiler Upgrade Scheme (BUS), which the Government has said in the Autumn Budget will receive more funding. Scotland has an equivalent scheme, the Home Energy Scotland Scheme.

The new Government has also promised to introduce the Warm Homes Plan, backed by £3.4 billion in funding, as well as introduce Minimum Energy Efficiency Standards for rented properties.

Greater financial support appears to be the number one motivator towards installing a heat pump, or retrofitting a building, with 44% of homeowners wanting a funding grant to cover the cost of installing a new system in their building; as **Jane Dennett-Thorpe from Ofgem** told us, “upfront costs are a real barrier.”

Our research also suggests a better understanding of what the monthly costs will be, would also help – with almost 40% of homeowners reporting that a lack of evidence of the long-term cost savings from installing a heat pump is stopping them from installing one in their home.

Recommendations

1. The Government should create a national energy advice service to provide clear communications to drive awareness of environmentally friendly ways to heat buildings in the UK, and provide a central point of reference to for homeowners and businesses to understand the best ways to decarbonise their buildings, including information on accreditation schemes.
2. As part of the Government’s consultation on Reforms to the Energy Performance and Building Regime, it must ensure reforms to EPCs recognise the carbon value of introducing low-carbon technologies, rather than penalising them for increased running costs until the price of electricity can be reduced.
3. The Government must provide further clarity around what future financial support will be made available to homes and businesses to adopt low-carbon technologies such as heat pumps, including by setting out details of its Warm Homes Plan in the spring.

Creating the right regulatory and legislative environment to drive decarbonisation

> *"If you took out a gas boiler in most residential buildings and replaced it with a heat pump, at this stage you would almost always end up with a higher running cost, but the carbon impact would be five times better than the gas would be. So, we need to rebalance those costs."*
>
> Jonathan Ducker, Kingspan

The cost of electricity

The wholesale price of electricity in the UK continues to be higher than that of gas. Decoupling the price of electricity from that of gas would fundamentally reduce its cost and make more sustainable heating methods using electricity more affordable.

As **Jonathan Ducker from Kingspan** told us: "If you took out a gas boiler in most residential buildings and replaced it with a heat pump, at this stage you would almost always end up with a higher running cost, but the carbon impact would be five times better than the gas would be. So, we need to rebalance those costs and reduce heat demands to help keep the running costs down."

The best way of achieving this would be by decoupling the price of electricity from the price of gas, which research suggests would have saved businesses £2,426 and homeowners £131 per year on their energy bills during the energy crisis of 2021-23[5].

Almost half (44%) of households report they would either consider or immediately switch to a heat pump if electricity prices were lower and heat pumps were cheaper to run. This sentiment is echoed amongst installers, with over a quarter (27%) agreeing that decoupling electricity from gas would increase heat pump uptake.

This was a view echoed by **Olivia Smalley of the Heat Pump Association** during the parliamentary roundtable, who noted that "we want to be able to say that heat pumps are both good for the environment, and a lot cheaper to run than your typical fossil fuel boiler. Unfortunately, because the price of electricity remains approximately four times the price of gas, it's a challenge to do that with absolute confidence, although it many cases they do provide cost savings."

Decoupling electricity from gas would also move energy requirements away from volatile oil and gas prices. This would support greater energy security for the UK, while also accelerating the adoption of renewable heating.

5: University of Manchester research

It would also provide wider societal benefits and a route to decarbonise our wider economy. Whole-system electrification is key, but only achievable by reducing costs, as **Rachel Solomon Williams** told us: “the cost of electricity is a massive disincentive to installing heat pumps. It’s also a massive disincentive to lots of other forms of electrification.”

The second way to drive down the cost of electricity in the short term is by removing government levies from electricity bills. At present, 16% of the average electricity bill is from levies, compared to 6% of a typical gas bill[6]. This means the cost of running lower carbon, electricity-based heating, such as heat pumps, remains significantly higher than that of a gas boiler.

This move is supported by the Committee on Climate Change (CCC), which recently advised the government to remove levies from electricity bills to support the transition to net zero. Cornwall Insight has predicted doing so would reduce bills by around £300 per year for homes heated using electricity[7].

Several countries are already putting this into action. France has introduced an additional carbon charge on fossil fuels, including gas[8], while Spain has cut VAT on energy bills and reduced tax on electricity[9]. Energy ministers at the European Union have also extended a cap on gas prices until January for member states to protect consumers from high prices, while also speeding up the deployment of renewable energy[10].

6: Energy & Climate Intelligence Unit | Are ‘green levies’ going up in…
7: Remove levies from electricity to ramp up renewables: new report – MCS Foundation
8: Macron launches ‘ecological plan’ to cut France’s dependency on fossil fuels | Emmanuel Macron | The Guardian
9: Spain extends measures to help with living costs into 2024 | Reuters
10: EU energy ministers agree to extend price cap on gas until January 2025 | Euronews

Updating building standards

The cost of home heating can also be reduced by constructing buildings which are designed to be more efficient to heat and run.

The UK has some of the least energy efficient housing in Europe, making green homes initiatives a critical component of the Government's net zero agenda. However, it has yet to officially commit to decarbonise residential heating through legislation.

Daniel Paterson, Director of Policy and Government Affairs for Sector Specialisms and Electrify Industry noted that "we're still building homes that are EPC B and C rated. We're still building homes with gas boilers. We're still building homes that will need retrofitting in years to come. That is a complete misuse of resources."

Government must provide long-term certainty about how buildings should be adapted for low-carbon technologies. "Legislation needs to be robust, and it needs to serve as a levelling playing field for commercial developers to create the environment for the supply chain to have a chance to get a foothold" Jim Dyer, Director for the Built Environment at Sovereign Network Group noted.

New building regulations introduced in 2021 recognised the importance of building energy efficiency, but they did not provide the industry with the framework for how to improve efficiency, or share which technologies should be deployed. With the regulations now in force, they should be supplemented with a framework to encourage the adoption of innovative, low carbon technologies, and provide examples of such technologies, including heat pumps.

Phoebe MacDonald, Head of Policy and Public Affairs at the Royal Institute of British Architects noted the importance of metrics in building suitable frameworks, commenting that "at the moment we don't measure operational energy, which is how much energy a building actually uses. If we don't know this, how can we reduce it? This metric could be used for new builds within the Future Homes Standard."

Crucially, however, new standards must only be a starting point. As **Daniel Paterson** told us, "as soon as the next Future Homes Standard is out, we'll be looking to improve on that. We can go better. We can go bigger than we are."

Driving a retrofit revolution

But new build is only part of the story. For residential buildings, the UK housing market has a wide range of existingbuilding types, with varying degrees of energy efficiency. These buildings require a range of measures, including heat pumps, to decarbonise heating. For homeowners, the prospect of retrofitting a home is daunting.

“This is going to take a long time”, **Jane Dennett-Thorpe** said: “there may be some people that are now engaging and thinking about how they retrofit their houses, but a lot of people just need to be made aware of the need to retrofit – for example, asking themselves if they should replace their gas boiler at the appropriate time.”

Decarbonising these buildings could be achieved through a phased approach, incorporating both the introduction of low-carbon technologies and retrofit measures. A phased improvement of standards puts less immediate impact on consumers, and allows the market more time to adjust.

The commercial industry has also been working on its own frameworks to decarbonise its own buildings. With the vast majority of non-residential buildings constructed before 1995, having a clear framework for the decarbonisation of non-residential buildings is key. As **Dan Smith, National Sustainability Construction Manager at Mitsubishi Electric** reflected:

“At the moment, we don’t really have a defined pathway. We’ve got a lot of guidance from within the industry; RIBA, 2030 Challenge, LETI design guides, UK GBC design guides and, more recently, the UK Net Zero Carbon Buildings Standard; but these are still just guidance. This means that from the asset owners’ points of view, it comes down to a decision about risk.”

Phoebe MacDonald, gave more detail:

> *“The UK Net Zero Carbon Buildings Standard will allow you to robustly verify if your building is net zero carbon aligned. The sector wants to lead; we need government to put the right measures in place.”*

Furthermore, as with the rented sector, the Government must confirm its ambition that all non-domestic buildings must meet the Minimum Energy Efficiency Standard (MEES) of being EPC B by 2030, to drive further decarbonisation.

Proper policy co-ordination

Fundamentally, to put in place the right regulatory and legislative measures to support decarbonisation, there must be joined up thinking across government. As **Charles Wood** told us, “Government does need to look to deliver a more coordinated approach to policy that sits across multiple departments. So far, it has been the Department for Energy Security and Net Zero pushing forward as far as possible, but hitting a wall when it comes to the Ministry of Housing, Communities and Local Government, the Department for Business and Trade, or the Treasury. Having a coordinated push towards the same direction would be a fantastic change.”

Recommendations

1. The Government should commit to rebalancing the levies applied to electricity relative to gas, and commit to de-coupling the wholesale price of electricity from the wholesale price of gas, to give certainty to industry about the future costs associated with electrification.
2. The Government must commit to implementing new buildings standards, reflecting the clear preference for heat pumps and other established low-carbon technologies, including the widespread adoption of Minimum Energy Efficiency Standards (MEES) for all building types.
3. The Government must adopt a new Heat Decarbonisation Standard, setting out a retrofit framework to improve the energy efficiency and reduce the carbon impact of each property over time.
4. The Government should endorse the UK Net Zero Carbon Buildings Standard, which has been created by the industry, for the industry, and sets out net zero carbon requirements for all major building types, based on a 1.5°C trajectory.

Support for skills and manufacturing capacity

Improving upskilling, capacity building and infrastructure investment is required to help the UK achieve environmental aims and net zero. It's more important than ever that heating engineers are trained to install energy-efficient technologies in our buildings, and that we have the manufacturing capacity to produce them.

Building manufacturing capacity

The Government has identified heat pumps as one of the pivotal technologies that can make a difference in the required timeframe due to their efficiency, suitability for a wide range of applications, proven technology and their availability to be deployed at a mass scale today. And the UK is ready to meet the challenge of this deployment.

Olivia Smalley of the Heat Pump Association noted, that the HPA represents "about 90% of the manufacturers of heat pumps that are supplied to the UK market, and they are very clear that they have the capacity to meet the demand, should the government introduce the right policy and regulations, like the Future Homes and Buildings Standard."

Mitsubishi Electric is the UK's leading manufacturer of heat pumps, at the company's industrial complex in Livingston, where heating, ventilation and air conditioning systems have been manufactured for more than 30 years. However, while demand for heat pumps in the UK is rising, for manufacturers like Mitsubishi Electric to plan for the future and grow the manufacturing base in the UK, policy certainty is needed.

This was a consensus view during the parliamentary roundtable.

"Government funding for decarbonisation comes in fits and starts", **Jim Dyer** told the roundtable. "A supply chain can't build and invest if you don't know in two years' time that that funding's going to be there again. So, government policy needs to be connected and really long-term to allow manufacturers to invest."

It is welcome that the UK Government has provided additional funding to grow the heat pump manufacturing supply chain. This, and other measures, will go a long way to provide the certainty that is needed both to increase manufacturing, and increase the number of trained engineers.

"If we don't know what the industry is going to be doing in the future, there's no incentive for businesses to support apprenticeships and support training for their staff," **Rachel Solomon Williams** cautioned,

"because they need to know that that demand will be there. And so real clarity is needed about the future of this industry and industry in general."

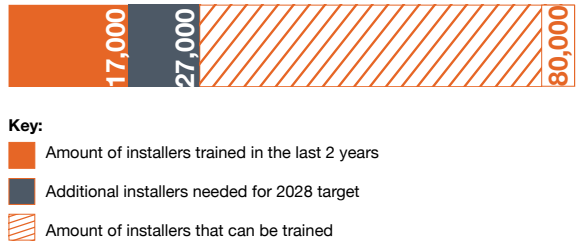
Jon Saltmarsh, Chief Technology Officer for the Energy Systems Catapult offered an international comparison "In 2019 the Macron Government introduced primarily financial incentives and managed to achieve a doubling of air-source heat pump installations within 12 months. They're now up to 600,000 installations a year. So, they've gone from about 100,000 to 600,000 over the course of 10 years."

Wera Hobhouse MP noted the need for political consensus: "in order to get continuity, we must engage cross-party; not just government, or spokespeople, but anybody across the political spectrum."

Supporting installers to upskill

The current heat pump installer market is notably lower than the demand for installations, and as the Government's goal gains momentum — this gap will only grow. In fact, Nesta, the innovation agency for social good, found that there is a shortfall of 27,000 installers needed to reach the 2028 target[11]. This scarcity affects property at every part of its lifecycle, from initial advisory work to ongoing maintenance.

This is despite a significant amount of capacity to train installers: "Our members can train around 80,000 installers (around 30,000 in annual recognised heat pump training qualifications and around 50,000 in manufacturer specific training per year"), **Olivia Smalley of the Heat Pump Association told the parliamentary roundtable**, "but our data shows that in the last three years the sector has trained 17,000. There's a lot of capacity to train these heat pump installers, but they need clarity that there's going to be work for them, to put money in their pockets."



While bridging the current installer gap remains a substantial task, there are strong indications that installers support the transition to low carbon heating. In fact, over half (56%) of installers have expressed an interest in undergoing heat pump installation training in the next year.

It's clear that supporting installers in installing heat pumps – whether that's through training, financial incentives or communicating the technology's benefits – is another crucial piece of the puzzle in driving heat pump uptake. Of the installers we surveyed, 30% believe more financial support is needed from the government for upskilling installers, and a further 30% believe more options for upskilling are needed from manufacturers in order to increase heat pump uptake in the market.

It's not just about finding installers from among the existing base; the next generation are vitally important too. "We hope that the introduction of Skills England will create a bit of a clearer vision and focus on things like apprenticeships, which are so much needed," **Rachel Solomon Williams** tells us, "not just for heat pumps but for lots of other things as well."

As **Daniel Paterson** added: "We need to make sure that anyone coming onto the market now is being trained in the skills that they are going to need 10, 20 years from now."

11: The heat pump installer gap | Nesta

Recommendations

1. The Government must publish a comprehensive suite of measures it will take to support the domestic supply chain for the manufacture of low-carbon technologies, including funding levels and timeframes.
2. The Government should convene an industry advisory panel, to inform its approach to supporting the decarbonisation of buildings.
3. The Government must develop a package of support for the training of heat pump installers, including re-training of existing engineers.

Conclusion

As we forge the path towards net zero across the UK economy, decarbonising the way we heat our buildings will play a critical part in reaching this goal. Despite the proven benefits of low-carbon technologies including heat pumps, significant barriers to large-scale adoption remain.

For example, the cost of buying and installing a heat pump in homes and businesses remains out of reach for many as the cost of living continues to bite. This, coupled with misconceptions about their benefits and a lack of skilled installers to make this a reality, means the UK still has some of the lowest levels of uptake in Europe.

While we have already made initial progress in accelerating adoption of low-carbon tech, and retrofitting buildings, in the commercial sector, the new government has to tackle this challenge head on. The climate crisis is an intergenerational emergency which simply cannot be put on the backburner. Addressing these barriers to decarbonisation will not only reduce emissions, but lower energy bills and improve the UK's energy security.

Yet we need to make this financially viable, and put in place the standards and regulations which will allow us to do so.

In the short term, this can be achieved by removing government levies from energy bills and increasing the grants and funding available for homeowners and businesses looking to make the switch. Decoupling electricity from gas will not only reduce these costs further but support the creation of a more stable, independent energy supply to complement government initiatives like Great British Energy. In the longer term, new buildings standards, and stronger regulation, will help us adapt our building stock for the future.

It doesn't end there. Communicating the benefits of low-carbon technologies – whether that's to homeowners, large corporations or heating engineers – will further remove uncertainties surrounding the technology and increase current levels of trust to spearhead adoption. This will increase demand and, in turn, make the transition towards greener forms of energy a reality – ultimately allowing us to hit net zero by 2050.

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Note: The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R290 (GWP:3), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R454C (GWP:148), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

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