

The Heat in Buildings Supply Chains Delivery Plan: Towards an Industry for Green Heat

November 2022

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Ministerial Foreword

Having access to warm, comfortable places to live and work is essential to our nation's health and wellbeing, and is a fundamental part of driving economic and societal development across our country.

Throughout history we have largely been reliant on burning fossil fuels, in spaces that were built with limited regard to thermal performance, in order to keep warm. Our commitment to end Scotland's contribution to climate change by 2045 simply means that we must move away from this way of heating our buildings.



Alongside this, we have recently seen higher energy bills as a primary driver in the cost of living crisis, pushing more people into fuel poverty. It is essential that we protect households and businesses from future such swings in energy costs, and pursuing a long term shift in the way we heat our buildings is central to achieving that.

Our Heat in Buildings Strategy, published in October 2021, sets an ambitious vision for decarbonising the heat supply of Scotland's buildings and removing poor energy efficiency as a driver for fuel poverty. Building a strong, skilled supply chain that's capable of delivering at scale in all areas of Scotland is central to the delivery of that Strategy.

I believe that Government has a key role to play in supporting the developmental needs of the supply chain by creating the right conditions through a set of clear market signals, appropriate financial support and using the convening power of government and the wider public sector to remove friction and increase the pace of transformation.

If we invest wisely, we can view the need for supply chain development not only as a challenge which must be met in order to deliver on our ambitions, but as a substantial opportunity for Scotland's economy. Building robust, local supply chains, maximising the use of Scottish products and providing companies with a platform to export to a growing UK and international market for zero emission heating technologies, can all support a long term return on the economic cost of our heat in buildings transition.

The tangible actions set out in this document are the next step in our journey towards establishing a new industry for green heating in Scotland and I look forward to working with partners across the sector as we work to deliver the ambitions of this plan together.

Patrick Harvie MSP

Minister for Zero Carbon Buildings, Active Travel and Tenants' Rights

A handwritten signature in black ink, appearing to read 'Patrick Harvie'.

Introduction

Our Heat in Buildings Strategy, published in October 2021ⁱ, sets an ambitious vision for decarbonising the heat supply of Scotland's buildings and removing poor energy efficiency as a driver for fuel poverty.

For ease of reference, throughout this document, we refer to that vision as 'Green Heating', essentially, heating our buildings in a way that's fair on people, and fair on the planet.

Green Heating includes both the way we supply heat, as well as the thermal performance of the buildings being heated. Fundamentally, in order for heating to be green, it needs to be:

- ❖ Generated in a way that does not contribute harmful greenhouse gas emissions to the environment.
- ❖ Used in properties with a high level of thermal performance
- ❖ Delivered at a price that's affordable to consumers.

The industries that currently service the heating and building improvement markets in Scotland possess a deep knowledge and understanding of our built environment and offer a strong base to support the Green Heat transition.

However, in order to support delivery at the pace and scale required, we need to mobilise more companies to deliver services to this market and grow the overall size of the workforce.

As well as increasing in size, industry will also need to undergo a cultural and business model change in order to improve productivity, streamline services and develop new, attractive Green Heat propositions for consumers.

Our ambition is to see the emergence of a new Green Heat sector in Scotland, with a laser focus on delivering the ambitions set out in our Heat in Buildings Strategy, and equipped to support the transformation of our building stock.

Building a new Green Heat Sector means creating the right conditions for businesses to transition and grow, as well as attracting new entrants to the market. This document sets out the action we are taking alongside public sector partners, and in collaboration with industry, to make that happen.

A note on the scope of this plan:

Whilst some of the detail and actions included in this plan are relevant more broadly, this document focuses primarily on the supply chain required to support the Green Heat transition in the domestic property market. This is in recognition of the complexities associated with larger scale non-domestic building services and the corresponding challenges for the supply chain.

We will be consulting separately in due course on our approach to regulating for zero emissions heating in non-domestic buildings as set out in the Heat in Buildings Strategy. As part of this we will be seeking views on supply chain challenges specifically for non-domestic buildings, allowing us to refine our approach to public sector action in this respect.

Executive Summary:

- ❖ This document provides an overview of Scotland's heating and building improvement sector, and provides background to the challenges and opportunities of developing the supply chain for Green Heat.
- ❖ We set out how the supply chain will need to grow and change to meet future demand driven by our proposed regulation of heating and energy efficiency. This includes the need for supply chains to innovate, and develop more attractive consumer propositions for Green Heat.
- ❖ We set out that growing the sector and driving structural and business model change, is a significant opportunity for businesses already active in the sector, and those looking to enter or diversify into it. We also recognise that government can play a key role in providing a supportive ecosystem for this to happen.
- ❖ We set out roles and responsibilities for supply chain development across our public and private sector partners, as well as the new Heat and Energy Efficiency Scotland, which will play a key role in coordinating activity across Scotland's public sector landscape to drive collective impact on developing a sector for Green Heating.
- ❖ We outline the action we are taking, including:
 - ❖ Making available up to £17.6 million for investment in research, development and innovation within the Green Heat sector
 - ❖ Launching a challenge to establish Scotland as a destination for Green Heat manufacturing
 - ❖ Undertaking a refresh of the Climate Emergency Skills Action Plan, setting out our approach to planning for Green Heat Skills
 - ❖ Using public procurement to maximise the supply chain impact of our funding programmes
 - ❖ Providing a dedicated programme to raise industry's awareness of the Green Heat transition
 - ❖ Consulting on a new supplier led incentives scheme to provide a route to market for innovative business models and new consumer propositions.

Chapter 1: Policy Context

Overview

❖ **We are bringing forward new regulations for heat and energy efficiency and it is essential that the Green Heat supply chain is prepared to support the pace and scale of consumer demand this will drive in the future.**

Our Heat in Buildings Strategy, published in October 2021, commits to bring forward a legislative framework to drive zero emissions heating and energy efficiency deployment.

Furthermore, the Bute House Agreementⁱⁱ commits the Scottish Government to delivering a shared policy programme with the Scottish Green Party. This includes phasing out the need to install new or replacement fossil fuel boilers, in off gas areas from 2025 and in on gas areas from 2030, subject to technological developments and decisions by the UK Government in reserved areas.

The policy programme also commits to considering home and building upgrades at the point of sale, change of tenancy, and refurbishment to meet a standard equivalent to EPC C, on a mandatory basis from 2025 onwards, requiring all homes to be upgraded by 2033.

Our commitment to such regulation means that in the near future, many property owners will be required by law to change the way they heat their buildings and improve energy efficiency. Recent years have seen around 3,000 renewable heating systems installed in Scotland's homes annually. It is estimated that this will need to increase to around 124,000 systems installed between 2021 and 2026, and need to peak at over 200,000 new systems per annum in



the late-2020s. It is therefore essential that the supply chain is capable of delivering at the pace and scale required in all areas across Scotland.

❖ **There is a forecast gap in a number of specific Green Heat skillsets, but many of the core trades and professions needed to support this already exist across the Scottish Economy**

We estimate that the Green Heat supply chain is largely balanced at existing levels of demand, albeit with some constraints reported in remote and rural areas, and in response to current global supply chain challenges affecting the construction sector and other industries across the economy at large. In these circumstances we are working with stakeholders to find resolutions to such specific challenges as they emerge.

Our recently completed Heat in Buildings Workforce Assessment Projectⁱⁱⁱ provides an overview of the forecast demand for skilled workers to support future deployment rates of heat pumps, heat networks, thermal insulation and direct electric heating systems. Additional demand for skills is also forecast in project management and design roles, as well as in

professional consultancy services and manufacturing sectors.

Fortunately, many of the core skillsets needed to support supply chain growth already exist within Scotland's economy, and upskilling can be supported through relatively short training courses. For example, plumbing and heating engineers already possess the fundamental knowledge required to install zero emissions heating systems, but may require upskilling to enable specification and installation of less familiar technologies such as heat pumps.

Whilst there are no specific statutory minimum qualifications required to install zero direct emissions heating systems, or carry out energy efficiency works, we have worked with industry to define a set of recommended minimum skillsets and qualifications and have published this as part of an Installer Skill Matrix^{iv}.



This matrix has been integrated into the certification schemes that underpin quality assurance in a number of our funding programmes, and we encourage the private sector to also use this in any non-public funded works.

❖ **Beyond a need for workforce growth, many businesses will also need to undergo a cultural and business model change, adapting to develop new, compelling, consumer offers in order to compete in the Green Heat market.**

Fossil fuel heating technologies such as gas boilers can generally be replaced quickly, with a small number of trained installers. Conversely, zero emissions heating technologies are more complex, requiring the coordinated input of a number of different trades and professions, often alongside associated works to improve the thermal performance of buildings or upgrades to pipework and utilities.

Businesses in Scotland's plumbing and heating sector will likely need to adapt their business models to accommodate longer, more complex heating system installations and integration with wider works as part of a whole building approach to decarbonisation.

Central to this will be the need for the public to be assured of the quality of work that is being carried out. A transformation of the way building fabric retrofit works are carried out is underway following the implementation of the 'Each Home Counts' review in 2015. The PAS2030/35 British Standard sets out the process for domestic retrofit and defines the specialist roles required to deliver this. This includes a 'Retrofit Coordinator', effectively a technically skilled 'account manager', taking on responsibility for the customer at all stages of a retrofit project.

The Scottish Government believes that quality assurance is critical for achieving our climate change and fuel poverty goals; without it, there is no

assurance that the products and systems being installed are appropriate for consumers and buildings, that they are installed to a high standard and that they will achieve the carbon and cost performance that is expected. Therefore, as set out in our recently published Heat in Buildings Quality Assurance Policy Statement, we are adopting the principles of this standard for works funded under a number of Scottish Government schemes, including our loan and cashback scheme for homeowners and our fuel poverty support programmes. We also anticipate further voluntary uptake of this standard from privately funded works in the consumer market.

Over time, training provision will need to adapt to provide for the multi-disciplinary skillsets required to undertake retrofit projects and green heat installation. Additional provision will also be required to ensure that those with a responsibility for advising consumers, and overseeing the delivery of work, are competently trained to a high standard.

With the need for increased coordination across trades in the installation of zero emissions heating technologies, and the introduction of the retrofit coordinator role for energy efficiency retrofit works, the largely fragmented supply chain of existing contractors in the heat and building improvement sector will need to adapt to new business models and ways of working. In doing so, it is essential that businesses in the sector are supported as part of Just Transition which also supports fair work practices and leaves no one behind.

There are already a limited number of companies actively offering an integrated service for Green Heat in the market. This includes companies delivering programmes of work as part of larger contracts for portfolio property owners in the social rented sector, as well as an emergence of Community Interest Companies building co-operatives to offer a community based approach to home energy decarbonisation.

Ultimately, there is a need to grow the number of businesses offering attractive and compelling consumer propositions within the market for Green Heat, ensuring that in the future, the market supports consumers triggered by regulation and that the consumer journey for such work becomes as streamlined as possible.

❖ **Our £1.8 billion funding for Heat in Buildings in this Parliament is helping to prime the market, but we also need to build trust with suppliers and remove market friction.**

Currently, consumer demand for Green Heat remains low¹ and many businesses with the necessary core skillsets in the supply chain are small and micro scale suppliers with a low capacity for taking risk. Supplier confidence has also been weakened by a history of short term approaches to supporting the market, with stakeholders calling on both the Scottish and UK Government to implement a long term, strategic approach to allow the Green Heat market to develop.

¹ Our Heat in Buildings Strategy estimates that at current levels of demand, each year around 3000 zero emissions heating systems per year

are installed, and around 45,000 properties are improved to EPC level C.

In the development of this plan, we have engaged closely with industry to understand the barriers to supply chain growth. Responses to our consultation on the Draft Heat in Buildings Strategy^v, as well as feedback through our Heat Pump Sector Deal Expert Advisory Group^{vi} have highlighted the lack of clear demand for Green Heat products and services as a major barrier to growth.

Conversely, key stakeholders on the demand side of the market have cited a lack of supply chain as a barrier to increased pace and scale of deployment. The Zero Emissions Social Housing Task Force^{vii} raised concerns regarding access to suitably qualified and experienced contractors, whilst recognising the role of the social housing sector as an anchor for growth and investment in the supply chain.

Similarly, respondents to our Scoping Consultation on the New Build Heat Standard^{viii} have highlighted concerns from housing developers regarding the need for investment in the infrastructure, workforce and supply chain across the sector.

Removing friction between supply and demand sides of the market is essential to build early momentum towards a Green Heat sector. Government has a key role to play here in working to build trust across stakeholders and ensuring that our financial support is deployed in a way that supports a visible pipeline of work for the supply chain.

❖ **Building a new Green Heat industry presents an opportunity to retain spending in the Scottish economy as well as capture international export opportunities**

The total cost of decarbonising Scotland's buildings is estimated to be in the region of £33 billion between now and 2045². Maximising the retention of this spend within the Scottish economy is a priority for our programme.

We have a strong foundation on which to build, with the traditional heat and building improvement sectors in Scotland currently generating an annual turnover of £2 billion and supporting around 12,500 full-time equivalent jobs in servicing today's demand^{ix}.

Overall, we estimate that an additional 16,400 jobs will be supported across the economy in 2030^x as a result of investment in the deployment of zero emissions heat, with further jobs supported through retrofit energy efficiency works.

Building strong and competitive Scottish supply chains for Green Heat will be critical to unlocking the high-volume delivery required to support our Heat in Buildings Strategy, and also offers the potential to compete in markets outside of Scotland. For example, European Union's Strategy for Energy System Integration^{xi} suggested the need for electrifying heat of a large part of Europe's residential and commercial buildings,

² Cost expressed in real terms (today's prices). This estimate is based on a high electrification pathway. Other pathways could result in a different distribution of costs (for example with lower building level investment costs but higher costs upstream in the energy system).

Note that it is possible that as technology develops and the market scales up, real costs could fall over time. By way of comparison, there have already been very significant falls in the costs of renewable electricity generation.

leading to a target of around 50 million heat pumps installed by 2030.

Our Heat Pump Sector Deal Expert Advisory Group have highlighted the opportunity for Scotland to be a centre for manufacturing of zero emissions heat and energy efficiency technologies, both in terms of supplying final products as well as component parts.

Scope of the Green Heat Supply Chain

The Green Heat supply chain can be roughly segmented into the **Heating, Building Fabric, Energy Infrastructure** and **Enabling** sectors, with upstream and downstream roles across each.

Rather than forming a single dedicated sector, the supply chain for Green Heat is currently best considered as several overlapping trades who also serve wider markets for construction and building improvement.

Delivering the Green Heat transition will likely require increased coordination, structuring and streamlining of supply chains into a dedicated 'Green Heat Sector'.

Figure 1 presents a non-exhaustive overview of the key trades, professions and organisations aligned with the Green Heat supply chain.

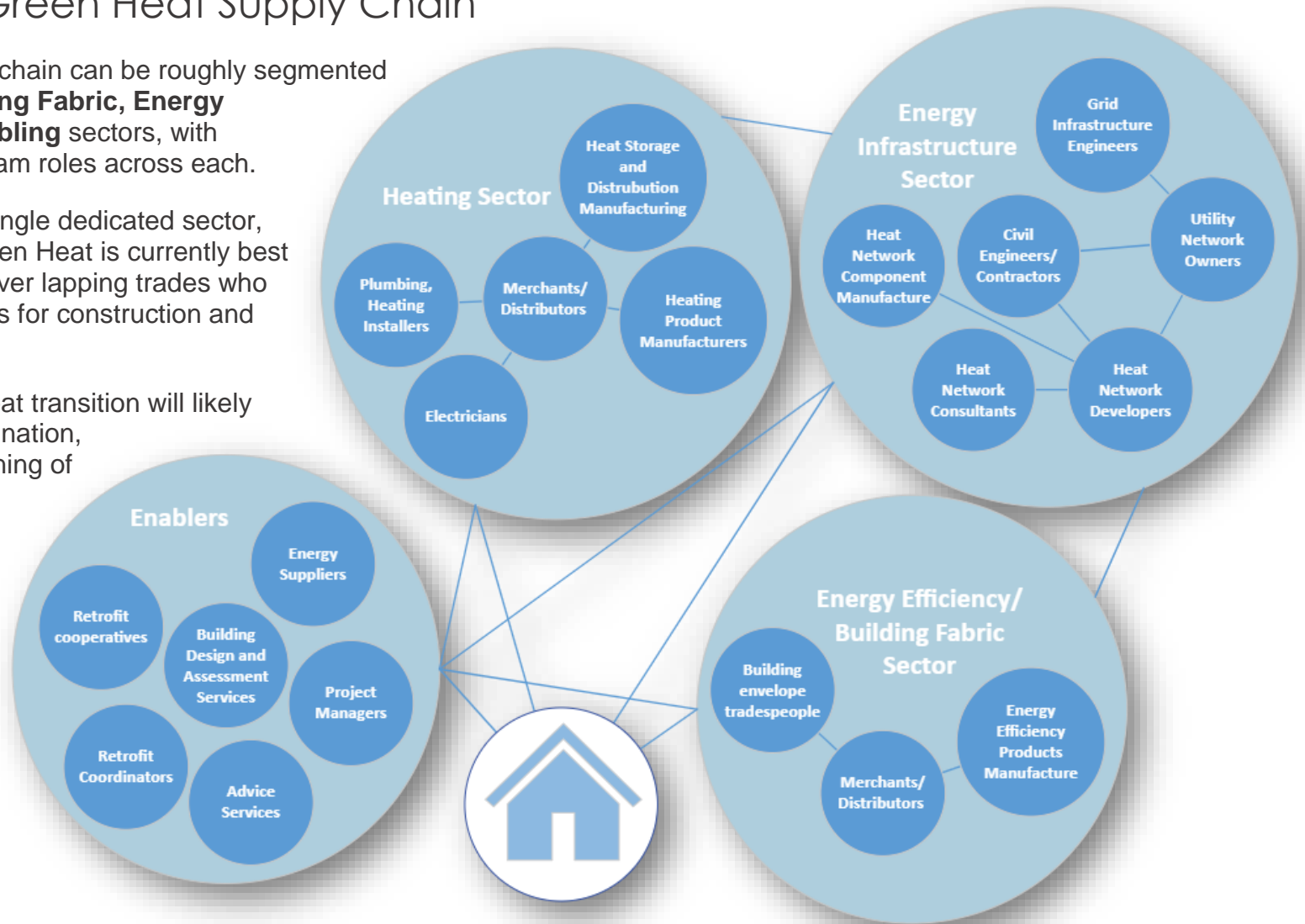


Figure 1 Overview of Trades, Professions and Organisations in the Green Heat Supply Chain

Structure of the Green Heat Supply Chain

The current structure of the green heat supply chain, at least that which serves individual domestic properties and small scale non-domestic properties, is highly fragmented, with micro-businesses and SMEs providing installation services and acting as the main interface with customers. A 2022 NESTA report^{xiii} into the heat pump sector highlights that this structure will most likely need to evolve in order to promote a more streamlined service for property owners, and drive increased productivity across the sector.

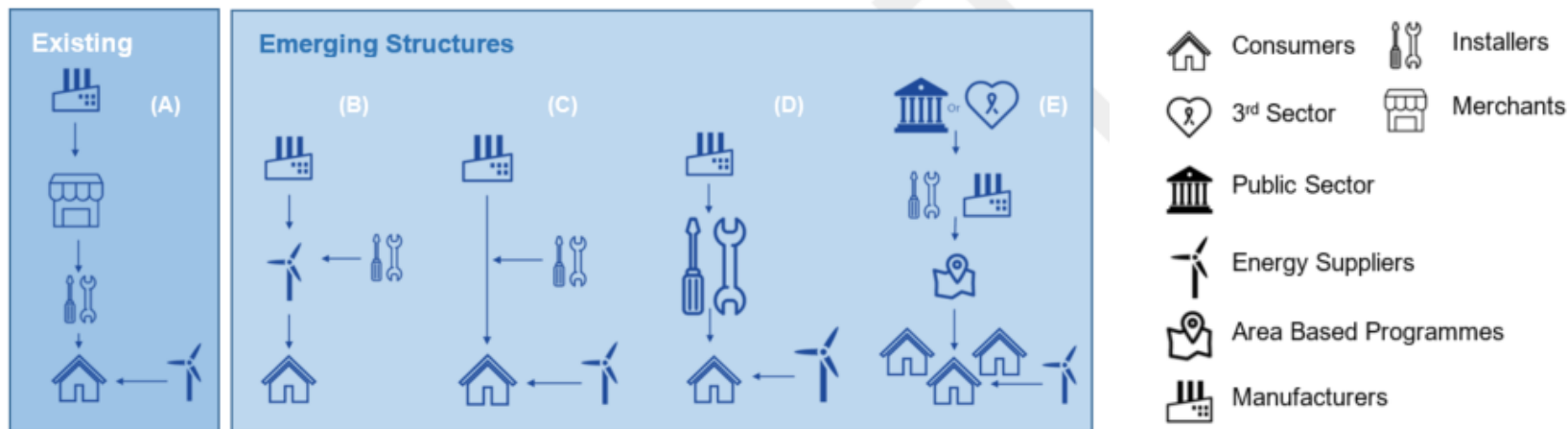


Figure 2 Overview of existing and emerging structures in the Green Heat supply chain

- Installer led** – Customers contract work directly to installers, often sole traders or microbusinesses, who purchase equipment from merchants with manufacturers and energy suppliers playing a secondary role.
- Energy Supplier Led** – Energy suppliers offer Green Heat measures to their consumers, often as a financed package or through approaches such as ‘energy as a service’, installation works and equipment supply might be sub-contracted to third parties, or delivered by the energy supplier themselves.
- Manufacturer Led** – Manufacturers offer Green Heat measures directly to consumers, taking on more responsibility for design and coordination.
- Large Scale Installer Led** – Larger scale installation companies offer a more integrated service to consumers.
- Area/community based coordination** - Public/3rd Sector organisations play a role in coordinating the supply chain to deliver large scale, area based, programmes of work at a community or local authority level.

Building a Supportive Ecosystem

Building a Green Heat Sector will be a national endeavour requiring the support of organisations across our public sector, as well as commitment from key anchor segments of the market alongside the drive and dedication of industry. We commit to working in partnership with the sector to explore the potential for a mixed delivery economy involving both public and private sectors. Industry will of course play a key role in the development of the sector, using their knowledge and expertise to build compelling propositions in response to the needs of consumers. There may also be potential for public sector capacity to play a role and we are actively exploring this opportunity. Our plans to regulate the heat and energy efficiency market, which will deliver a forecast pipeline of work valued at over £33 billion between now and 2045, will provide a compelling opportunity for Scottish supply chains.

Given the prevailing market challenges as outlined in Chapter 1, we recognise that Government has a key role to play in creating a supportive ecosystem for supply chains to develop. Our supply chain support framework follows a push/pull model, creating a pathway that transitions Scotland’s conventional heating and energy efficiency industries into an aspirational sector for Green Heat. The actions in this framework, as presented in figure 3, are discussed in detail in the later sections of this document.

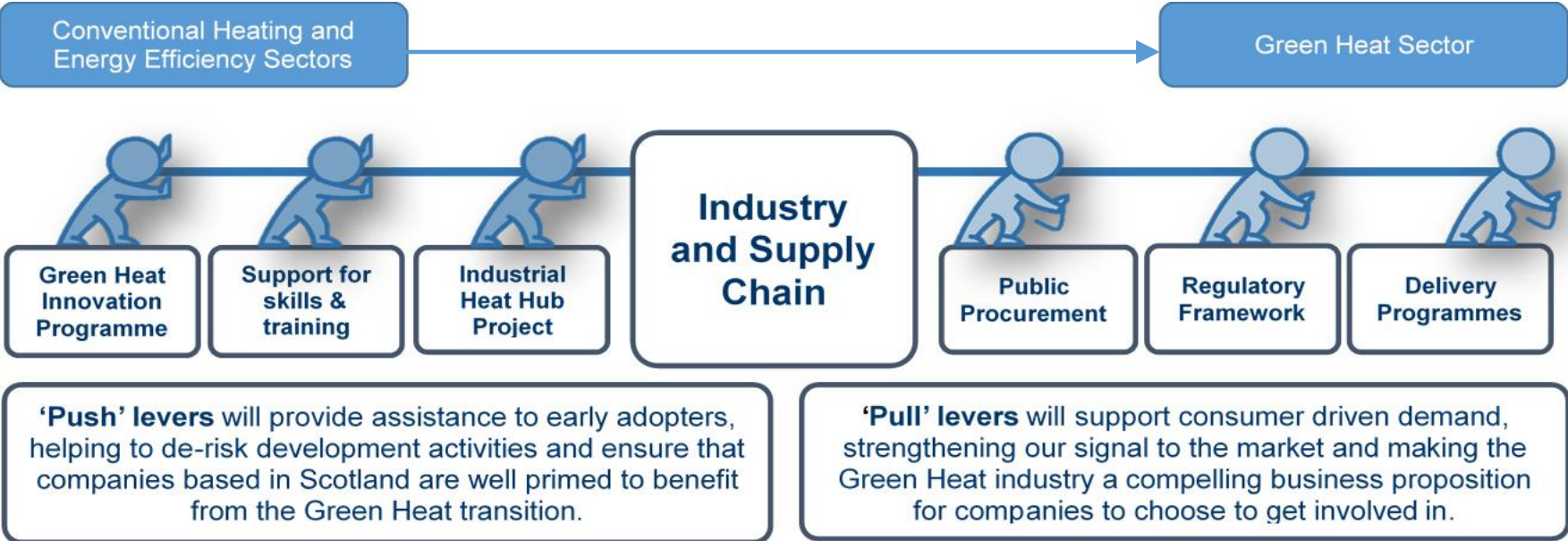


Figure 3 Towards a Green Heat Sector - Push/Pull Model for Industry and Supply Chain Development

Chapter 2 : Roles and Responsibilities

The Scottish Government

The Scottish Government largely has devolved responsibility for heat and energy efficiency matters and has a statutory commitment to deliver Scotland's emissions reduction targets as set out in the Climate Change (Scotland) Act 2019^{xiii}, as well as the statutory targets set out in the Heat Networks (Scotland) Act 2021^{xiv}. We fund a number of heat, energy efficiency and fuel poverty programmes with a commitment to make available at least £1.8 billion of capital funding during this Parliamentary term.

We are responsible for bringing forward a regulatory framework which will drive the pace and scale of the Green Heat transition in the years ahead. We are also responsible for working with the UK Government in areas of reserved policy such as regulation of the gas and electricity networks, energy market pricing and consumer protection.

Heat and Energy Efficiency Scotland

Heat and Energy Efficiency Scotland has been established as a virtual Agency working within the Scottish Government's Directorate for Energy and Climate Change. This brings together a range of key delivery functions including existing advice and support schemes into a single organisational structure and will help us drive an increase in the scale and pace of the heat transition in the coming years.

The Agency has a remit to accelerate transformational change in how we heat and use energy in homes and buildings, aid public understanding and awareness, and co-ordinate delivery of investment. The Agency will transition to a dedicated body by 2025.

Working with existing bodies, Heat and Energy Efficiency Scotland will have a role in helping to co-ordinate and build the necessary supply chains and associated skills required to deliver the Heat in Buildings Strategy.

Scotland's Enterprise Agencies

Scotland's Enterprise Agencies include **Scottish Enterprise (SE)**, **Scottish Development International (SDI)**, **Highlands and Islands Enterprise (HIE)**, and **South of Scotland Enterprise (SOSE)**. Each have a role in supporting businesses and communities across their jurisdiction to create quality jobs and develop local economies.

In the Green Heat transition, our enterprise agencies have a responsibility to support businesses, maximise value capture by Scottish companies and support industrial innovation and collaboration to solve complex challenges in response to market needs.

Scottish National Investment Bank

The Scottish National Investment Bank launched in November 2020. The Bank invests in line with its three strategic missions – to achieve net zero, tackling place-based inequality, and harnessing innovation – and seeks to invest where the private market is unable to provide all of the capital that a business or project requires.

The Bank can invest from £1 million up to £50 million in projects or businesses to support their growth or development; and can invest through both debt and equity investment. It has a particular emphasis on supporting businesses to grow and scale, supported by its ability to provide patient investment and long-term capital.

The Bank invests on commercial terms and aims to attract private sector funds to co-invest alongside its public sector capital.

The Scottish National Investment Bank sees an important role for itself in the transition to net zero heat, and strong alignment to its missions. It has already made investments in the Green Heat supply chain and continues to seek opportunities to invest across the innovation, manufacture, installation, and maintenance of products and services relating to net zero heat.

Skills Development Scotland

Skills Development Scotland (SDS) is Scotland's national skills body, working with people and businesses to help them apply their skillsets. In the Green Heat transition SDS is responsible for informing and supporting a shared understanding of skills requirements to inform a multi stakeholder response across academic pathways, work based training and upskilling and reskilling. They are also responsible for administering Modern Apprenticeships on behalf of Scottish Government.

Scottish Funding Council

The Scottish Funding Council (SFC) is the national body for funding teaching, learning and research in Scotland's Colleges and Universities. SFC have also invested in Scotland's Innovation Centre network to support collaboration between industry and university research.

In the Green Heat transition, SFC have a key role to play in terms of ensuring that colleges and universities are equipped to deliver the courses required to reskill and upskill the existing workforce, as well as providing the necessary learning that will support new entrants into the Green Heat sector.

Energy Saving Trust

Energy Saving Trust are an independent organisation and trusted voice on energy efficiency and heat decarbonisation. Energy Saving Trust currently deliver a number of funding and advice programmes under contract to the Scottish Government and are also funded to work with the supply chain to build awareness of the Green Heat Transition.

Built Environment – Smarter Transformation

Formerly the Construction Scotland Innovation Centre, Built Environment – Smarter Transformation (BE-ST) are supported by the Scottish Funding Council and Scotland's Enterprise Agencies. Their aim is to accelerate the built environment's transition to zero carbon by bringing together the construction industry and key stakeholders from across built environment ecosystems - academia, government, public & private sector clients and working alongside the people of Scotland to drive transformational change. BE-ST offers a platform that supports innovation and

collaboration and can provide specialist advice, support, project funding and training programmes to organisations seeking to transition into the Green Heat sector.

Energy Skills Partnership

Energy Skills Partnership (ESP) is the Scottish college sector organisation that works with industry and government to ensure that the energy and construction sector's skills needs are met through an extensive offer in colleges across Scotland.

In the Green Heat transition, ESP have a key role to play as the interface between government, agencies and industry to meet national and regional skills needs aligned with emerging technologies, the Climate Emergency and the Just Transition to Net Zero.

Scotland Excel

Scotland Excel are the Centre of Procurement Expertise for the local government sector and have recently launched the Energy Efficiency Contractors Framework, designed to help the public sector cut carbon emissions, tackle fuel poverty and create warmer homes.

Scotland Excel have key role to play in harnessing the power of procurement to build the Green Heat sector, whilst streamlining delivery for public sector buyers and driving social and economic benefits through their contracts.

Scotland Excel is a critical partner to stimulate change within supply chain, offering support to existing and future framework contractors to transition to deliver Green Heat products and services to the market.

Buyers

Ultimately, demand for Green Heat products and services will be driven by property owners across the country. However, in the early stages of the transition a number of key anchor segments such as the new build sector, local authorities and social landlords have a key role to play as large scale buyers. We are working with such organisations to support their own Green Heat ambitions, and ensure this translates into a broader development of the supply chain to the benefit of the economy at large.

Industry and Supply Chain

Developing the Green Heat supply chain will mean industry creating jobs, investing in workforce, driving innovation and supporting cultural and business model change. The supply chain, particularly consumer facing roles such as installers and retrofit coordinators will have a key role as trusted voices in the consumer journey towards Green Heat.

We will continue to work closely with trade associations and representative bodies to engage broadly with industry, but we will also work directly with innovative companies and individual change leaders across the sector.

Chapter 3: Actions

Green Heat Innovation Support Programme

Our Heat in Buildings Strategy identifies **Heat Pumps, Heat Networks** and **Energy Efficiency** as the key strategic technologies needed to support the transition to Green Heat over the course of the next decade. These technologies are mature, readily available on the market, and have already been demonstrated at scale.

However, we believe there is scope for innovation to make green heating technologies easier to deploy, improve integration with the Scottish building stock, enhance efficiency and reduce operational and embodied carbon emissions.

This view is supported by feedback from our Heat Pump Sector Deal Expert Advisory Group, Zero Emissions Social Housing Taskforce and a recent 'Technology Needs Assessment'^{xv} conducted by Scottish Enterprise.

Supporting Scottish companies to respond to Green Heat innovation challenges provides an opportunity to build our competitive advantage, establish new Scottish supply chains, retain an increased proportion of spending through the Green Heat transition, as well as service a growing international market.

To help capture these benefits, we have established a new **Green Heat Innovation Support Programme** which will be delivered by Scottish Enterprise, and make available up to £17.6 million in support over the course of this Parliament.

The Programme will support Scottish based companies through a variety of channels, including:



- ❖ Support for developing ideas and testing concepts;
- ❖ Research & Development grant funding to support companies to further develop their solutions;
- ❖ Capital assistance to help companies introduce new products or processes to the market;
- ❖ Procurement based innovation challenges to develop solutions focused on the needs of consumers; and,
- ❖ Dedicated support for collaboration projects with European partners.

The programme will be live for applications on the 14th November 2022. For further details and to register your interest in the programme, please contact Scottish Enterprise³.

³ [Scottish Enterprise - Support for Businesses funding- Green Heat Innovation Support Programme](#)

Green Heat Hub Grand Challenge

In December 2021, our Heat Pump Sector Deal Expert Advisory Group made a series of recommendations to Scottish Ministers on the scope of a 'Heat Pump Sector Deal' for Scotland. The actions across this plan respond directly to the recommendations made by the Advisory Group, and we will publish a full, formal response in due course.

The report recommended that:



“Scotland's enterprise agencies should work with industry to support Scotland as a global centre of excellence for heat pump manufacture.”

In particular, “Scotland should consider options for creating, with heat pump industrial stakeholders, a heat pump industry hub to both directly support the large-scale roll-out of heat pumps in Scotland and ensure that this drives maximal economic opportunities and jobs for Scotland.”

Since the report's publication, we have worked with Scottish Enterprise to develop a Heat Hub project in direct response to this recommendation. However, we think there is potential to expand the heat hub concept beyond a narrow focus on the heat pump sector to include the full breath of supply chain required to support the Green Heat transition.

We envision the Heat Hub being a focal point for collaboration, innovation and inward investment across the Green Heat supply chain, helping to anchor companies in Scotland, as well as providing a window onto Green Heat solutions for consumers. In practice, this may be a new physical or virtual space, or could be built upon Scotland's existing innovation and enterprise infrastructure.

On 22 September 2022, Scottish Enterprise launched the 'Green Heat Hub Grand Challenge', to support consortia of organisations to develop proposals for a 'Green Heat Hub' to position Scotland as a leading location in Europe for Green Heat manufacturing.

The Grand Challenge will:

- ❖ Enable and facilitate industry, academic and third sector collaborations to drive leadership on the Green Heat transition; and,
- ❖ Develop an ambitious, robust, project proposal focused on the implementation and operational delivery of a Heat Hub in Scotland.

Following the completion of the Grand Challenge, Scottish Enterprise will work with consortia alongside public sector partners to review project viability and consider next steps.

Support for Skills and Training

Delivering a Skilled Workforce

The National Strategy for Economic Transformation (NSET) published in March 2022 set a 'Skilled Workforce' as one of the 5 policy programmes of action. Through the NSET Skilled Workforce Programme, we are committed to ensuring Scotland's workforce and employers have the skills they will need in the future, including the skills to support the transition to net zero. It recognises that sectors of the economy, and roles within these sectors, will face different challenges in the coming years, and that many individuals will need to upskill and retrain at various points in their career. Reflecting the scale and nature of the challenges and opportunities ahead, the Skilled Workforce Programme focuses on three key projects:

- ❖ Adapt the education and skills system to make it more agile and responsive to our economic needs and therefore our net zero ambitions.
- ❖ Support and incentivise people, and their employers, to invest in skills and training throughout their working lives.
- ❖ Expand Scotland's available talent pool, at all skills levels, to give employers the skills pipeline they need to take advantage of opportunities

In the immediate term our priority actions include:

- ❖ Establishing the purpose and principles for education and skills system reform and continuous improvement and ensuring that they align with our wider socio-economic vision for Scotland;
- ❖ Enhancing the content and reach of the Green Jobs Workforce Academy;
- ❖ Developing a stronger, simplified lifelong learning system, including support targeted at those who need it most; and,
- ❖ Launching a Talent Attraction and Migration Service to help employers recruit workers from outside of Scotland to help address labour and skills challenges.

The Programme builds on progress already made within the education and skills system to support the transition to net zero, which includes the publication of the Climate Emergency Skills Action Plan and the launch of the Green Jobs Workforce Academy.

Since publishing our draft Heat in Buildings Strategy for consultation in February 2021, we have increased our investment in Green Heat skills and training opportunities, including:

- ❖ Delivering **£1.49 million** of support through our National Transition Training Fund, supporting over 3,350 projected participants to access courses for heat pump, energy efficiency and retrofit construction skills.
- ❖ **£160,000** capital investment for colleges in the north of Scotland for heat pump and thermal insulation training equipment, with further investment in the South of Scotland colleges provided by the SP Energy Networks Green Economy Fund.
- ❖ Unlocking over **£140,000** of funding to help plumbing and heating apprentices to access additional training on heat pumps, supporting training for 84 apprentices in 2021.

We recognise the need to continue our support for skills and training and therefore, to support the implementation of this Plan we are:

- ❖ Undertaking a refresh of the Climate Emergency Skills Action Plan setting out our approach to planning for Green Heat Skills
- ❖ Bringing together education, skills and industry experts through the CESAP Implementation Steering Group with the aim of balancing skills supply and skills demand around Heat Decarbonisation
- ❖ Improving the content of the Green Jobs Workforce Academy ensuring information and advice reach the right people at the right time.
- ❖ Continuing to work with our skills agencies and training providers to identify and address any gaps in training provision or support

Talent Pipeline

As discussed in chapter 1, many of the core skills required to support the Green Heat transition already exist in the Scottish economy and can be supported through relatively short upskilling courses. For example, plumbing and heating engineers have many of the core skills required to install zero emissions heating, but may require upskilling on unfamiliar technologies such as heat pumps.

However, we recognise that there is a need to grow the number of people employed in the Green Heat sector to meet forecast future demand, as well as replacing workers leaving the workforce.

Many roles in the heat and building improvement sectors rely on apprenticeships as the sole route of entry, which in turn requires businesses to create such opportunities within their workforce. It is important that we maximise the apprenticeship pathway and that this training is well aligned to the Green Heat agenda. However, we recognise that alongside the apprenticeship route, there are also opportunities to build new pathways into the sector without compromising on quality, or the integrity of trades and professions.

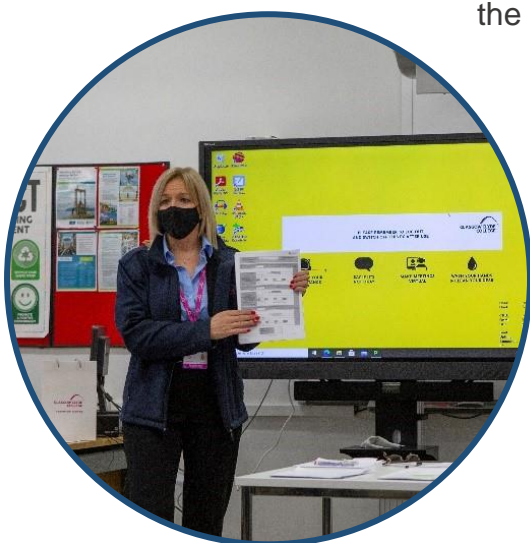
Skills Development Scotland are currently working with industry through the Climate Emergency Skills Action Plan, Heat Decarbonisation Sub-Group to consider these issues broadly and implement changes that will support workforce growth in the future.

Training Capacity

Ensuring adequate capacity to upskill and train the workforce is fundamental in supporting future growth of the sector. Recent investments means that there is broadly sufficient infrastructure in Scottish Colleges at current levels of demand for training.

According to the Energy Skills Partnership, there are currently 10 colleges in Scotland with capacity to train up to 150 heat pump engineers each month through relatively short upskilling courses for trained heating engineers, with an additional 4 colleges under development. Three colleges in Scotland currently offer training for thermal insulation with a further two training facilities due to open later this year. Wider training provision for Green Heat skills also exists in manufacturer training centres and other private sector settings across the country.

However, we recognise that training is not equally available across all geographic areas and in some instances, people need to travel considerable distances to access specific training. For this reason, we have invested in a mobile training centre for heat pump installation, accessible to any college in Scotland while being hosted by South Lanarkshire College, which will be capable in delivering on site training in rural areas across Scotland. This resource will come online by the end of 2022.



Coordinating a Dynamic Local Skills Response

It is vital that skills support and training provision are aligned at a local level with business needs and future local demands.

Skills Development Scotland are currently leading on pathfinder research to build the evidence base in the Glasgow City and Shetland Council area. This will build an understanding of forecast skills demand and identify gaps, providing a model for undertaking such an assessment in other areas.

The pathfinder research will be complete spring 2023.

Financial Stimulus and Public Procurement

As outlined in Chapter 1, we have committed to stimulate early growth in the Green Heat sector by making available £1.8 billion of funding for zero emissions heating and energy efficiency deployment over the course of this Parliament.

Part of this funding is being made available directly to individual property owners through grants, loans and cashback funding and, as discussed further below, we are exploring ways in which to directly subsidise Green Heat deployment through the supply chain.

However, we are also distributing a substantial portion of our funding at scale as grants for larger infrastructure projects, through contracts delivered by scheme administrators, or through work programmes in the public estate or social rented sector. These large scale funding programmes include:

- ❖ Our Warmer Homes Scotland Contract
- ❖ Area Based Schemes (ABS) - Delivered via Local Authorities
- ❖ Social Housing Net Zero Heat Fund
- ❖ Scotland's Heat Network Fund
- ❖ Green Public Sector Estate Decarbonisation Scheme

It is essential that we harness the power of public procurement to translate our investment through these large scale programmes into tangible developments within the supply chain. This means building a visible pipeline of opportunities for the supply chain to gain work generated through our funding, and working across the public sector to coordinate and streamline contracting approaches wherever possible.



There are already a number of operational procurement frameworks designed to support public sector contracting for zero emissions heating and energy efficiency works. This includes **Scotland Excel's Energy Efficiency Contractors Framework** which hosts 46 suppliers, 37 of which are Scottish businesses and is expected to be worth £800 million in total over the lifetime of the contract.

We are working closely with partners in Scotland Excel and Procurement Scotland to continuously review the framework contracting landscape and identify any gaps in provision.

Going forward, where possible we will adopt a new condition through our large scale programmes that any work procured with our funding is advertised through the Public Contracts Scotland online portal, including large scale sub-contractual work tendered after the primary contract award. We believe that this will help to strengthen our signal to the market and improve visibility of opportunities across the sector.

Procurement Case Study – Warmer Homes Scotland

Warmer Homes Scotland is our national scheme working to make homes warmer for those living in, or at risk of, fuel poverty by providing support for insulation and heating measures. More than £187 million has been invested through the scheme since its launch in September 2015 helping over 27,000 households throughout Scotland.

The scheme is currently operated under contract by Warmworks.

The procurement of the Warmer Homes Scotland scheme incorporated a number of community benefit obligations for the service provider to deliver, including an Energy Skills Plan which set mandatory targets for the provision of employment and training opportunities throughout the lifespan of the contract.

A collaborative and successful contract management approach has seen the initial targets met, and then subsequently expanded to deliver over 150 apprenticeships, more than 700 new jobs and over 3000 training and up-skilling opportunities across Warmworks and their supply chain.

We are currently procuring a new scheme provider for Warmer Homes Scotland and have set new, enhanced, mandatory targets for the provision of employment and training opportunities. The new scheme is due to go live in July 2023 and will report performance against community benefit commitments annually.



Green Heat Installer Engagement Programme



The Green Heat transition will mean substantial changes for existing suppliers and businesses operating in the heat and energy efficiency industries. It is important to ensure that businesses are fully prepared for the introduction of regulatory drivers and that those wishing to participate in the transition are given early notice of changes that will affect their business. This is particularly true of the installer supply chain which is dominated by small and micro-businesses and sole traders.

The Sustainable Energy Supply Chain programme is funded by the Scottish Government and administered by Energy Saving Trust. Since 2013 it has provided support and assistance for businesses in Scotland to help them participate fully and effectively in the supply chain for energy efficiency and micro-generation measures and installations. Over 4,000 people have benefited so far from the support provided by the programme.

We are now re-launching the programme as the 'Green Heat Installer Engagement Programme', with a dedicated focus on working with installers in the heat and energy efficiency supply chain. The programme will:

- ❖ Build awareness of policy developments as we bring forward further detail on our plans;
- ❖ Collate intelligence and feedback from the supply chain;
- ❖ Develop best practice guidance, toolkits and case study material for installers to benefit from their peers; and,
- ❖ Support installers to become a trusted voice to consumers in the Green Heat transition

Green Heat Supplier Led Incentive

It will be essential for the supply chain to develop new, attractive, propositions which streamline the Green Heat transition for consumers and coordinate delivery. We want to ensure that our funding programmes are designed to stimulate innovation within the market and that we realise any opportunities to drive down the cost of Green Heat installation.

We have a long history of offering financial support for zero emissions heat and energy efficiency through our Home Energy Scotland Loan and Cashback Scheme. We have committed in the Heat in Building Strategy to replace this cashback offer in 2022/23 with a new standalone grant scheme.

To date, this support has been offered directly to consumers, who are then responsible for sourcing their own suppliers to deliver products and services with advice and support from our Home Energy Scotland service. Since 2019, over 10,500 zero emissions heating, micro-renewable and energy efficiency measures have been supported in this way.

Feedback from industry through our Heat Pump Sector Deal Expert Advisory Group has suggested that to achieve the scale required to deliver upon the ambitions set in our heat in buildings strategy, a complementary approach to subsidising Green Heat works may be required to allow suppliers to develop compelling propositions which they can take directly to consumers.

We are therefore exploring the potential for a new supplier led funding scheme to be delivered in Scotland. We believe this may help to sharpen the impact of our financial stimulus, drive supply chain development through economies of scale and also provide a vehicle to drive up quality standards alongside wider fair work, diversity and equality objectives.

To better inform our decision making we are procuring specialist advice, research and analysis to inform the delivery and design of the scheme. Also, in recognition of potential sensitivities associated with the introduction of such a scheme, we will launch a public consultation later this year to seek views from a broad spectrum of stakeholders.

Both our advice on scheme design and public consultation are expected to conclude early 2023 and will be made publically available, at which point we will set out next steps.



Summary and List of Actions

Summary

In this document we have set out a vision for a new, aspirational Green Heating sector, built on the strengths of our existing heating and building improvement supply chains, with a dedicated focus on delivering the ambitions set out in our Heat in Buildings Strategy.

Building a Green Heat Sector will be a national endeavour requiring the support of organisations across our public sector, as well as commitment from key anchor segments of the market alongside the drive and dedication of industry.

The Green Heat sector will provide good, fair jobs and economic opportunities across Scotland, and will share in an anticipated £33 billion of spending required to decarbonise Scotland's buildings.

The actions contained within this document will operate together as an ecosystem of support, creating the conditions for industry to develop and grow over time. Moving forward, we will continue to work closely with stakeholders as we deliver this plan and consult further on our regulatory approach.

Summary of Actions

1. We will launch a new £17.6 million Green Innovation Support Programme
 2. Through the Green Heat Hub Grand Challenge we will develop plans for a new Green Heat Manufacturing Hub in Scotland
 3. We will undertake a refresh of the Climate Emergency Skills Action Plan, setting out our approach to planning for Green Heat Skills
 4. We will launch a new mobile centre for heat pump training
 5. We are delivering two local skills planning pathfinder projects for heat decarbonisation skills
 6. We will continue to incorporate supply chain development in our approach to procurement
 7. We will launch a new programme of engagement for heat and energy efficiency installers
 8. We will explore the potential for a new supplier led subsidy scheme to be delivered in Scotland
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- ⁱ Scottish Government, (2021) Heat in Buildings Strategy. Available at: <https://www.gov.scot/publications/heat-buildings-strategy-achieving-net-zero-emissions-scotlands-buildings/> [Accessed September 13, 2022].
- ⁱⁱ Scottish Government, (2022), Bute House Agreement. Available at: [Cooperation Agreement between the Scottish Government and the Scottish Green Party Parliamentary Group - Cooperation Agreement between the Scottish Government and the Scottish Green Party Parliamentary Group - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/cooperation-agreement-between-the-scottish-government-and-the-scottish-green-party-parliamentary-group-cooperation-agreement-between-the-scottish-government-and-the-scottish-green-party-parliamentary-group-gov.scot/) [Accessed September 14, 2022].
- ⁱⁱⁱ Climate Exchange, (2022), Clean Heat Workforce Assessment Project. Available at: [Clean heat and energy efficiency workforce assessment \(climalexchange.org.uk\)](https://climalexchange.org.uk/) [Accessed September 14, 2022].
- ^{iv} Energy Skills Partnership (2021), Scottish Energy Installer Matrix. Available at: [Scottish Installer Skills Matrix \(esp-scotland.ac.uk\)](https://esp-scotland.ac.uk/) [Accessed September 14, 2022].
- ^v Scottish Government (2021), Heat in Buildings Strategy – Analysis of responses to the consultation. [Supporting documents - Heat in Buildings Strategy - achieving net zero emissions in Scotland's buildings - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/supporting-documents-heat-in-buildings-strategy-achieving-net-zero-emissions-in-scotland-buildings-gov.scot/) [Accessed September 14, 2022].
- ^{vi} Scottish Government (2021), Final Report from the Heat Pump Sector Deal Expert Advisory Group. Available at: [Heat Pump Sector Deal Expert Advisory Group - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/heat-pump-sector-deal-expert-advisory-group-gov.scot/) [Accessed September 14, 2022].
- ^{vii} Scottish Government (2021), Achieving net zero in social housing: Zero Emissions Social Housing Taskforce report. Available at: [Achieving net zero in social housing: Zero Emissions Social Housing Taskforce report - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/achieving-net-zero-in-social-housing-zero-emissions-social-housing-taskforce-report-gov.scot/)
- ^{viii} Scottish Government (2021), New Build Heat Standard - scoping consultation: analysis. Available at: [New Build Heat Standard - scoping consultation: analysis - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/new-build-heat-standard-scoping-consultation-analysis-gov.scot/) [Accessed September 14, 2022]
- ^{ix} Office for National Statistics. (2021), Low carbon and renewable energy economy, UK: 2019, Available at: <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/finalestimates/2019>. [Accessed September 14, 2022].
- ^x Cambridge Econometrics. (2021), The Economic Impact of Decarbonising Heating to 2030 in Scotland, Available at: www.gov.scot/isbn/9781802014112. [Accessed September 14, 2022]
- ^{xi} European Commission (2022), EU strategy on energy system integration. Available at: [EUR-Lex - 52020DC0299 - EN - EUR-Lex \(europa.eu\)](https://eur-lex.europa.eu/lexuris/ui.do?uri=OJ:L:2022:180:TOC). [Accessed September 2022]
- ^{xii} NESTA (2022), How to scale a highly skilled heat pump industry. Available at: [How to scale a highly skilled heat pump industry | Nesta](https://www.nesta.org.uk/insights/how-to-scale-a-highly-skilled-heat-pump-industry). [Accessed September 2022]
- ^{xiii} Scottish Parliament (2019). Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. Available at [Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2019/12/contents). [Accessed 14 September 2022].
- ^{xiv} Scottish Parliament (2021). Heat Networks (Scotland) Act 2021. Available at [Heat Networks \(Scotland\) Act 2021 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2021/12/contents). [Accessed 14 September 2022]
- ^{xv} Scottish Enterprise (2021). Low Carbon Heat - Innovation Needs Assessment. Available at: <https://www.evaluationsonline.org.uk/evaluations/Search.do?ui=basic&action=show&id=738>. [Accessed 14 September 2022].



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