Nesta Scotland briefing note on the draft Climate Change Plan

11 December 2025

Key points

1. **Target 110,000 Heat Pumps:** Scotland must commit to installing **110,000 heat pumps** over the course of the next Scottish Parliament, in line with the Climate Change Committee (CCC)'s advice. The draft Climate Change Plan currently implies a significantly lower and insufficient target of as few as 30,000 installs.

2. **Adopt Realistic Pathway:** The draft plan's emissions pathway is **unrealistic and backloaded**. The final plan should adopt a more gradual, credible pace of change, better reflecting the CCC's pathway to allow the clean-heat installer capacity to build up.

3. **Address Five Key Policy Challenges**: To support the necessary scale of change, the final plan must implement policies to address five key challenges: **affordability**, **making switching easier** for households, creating opportunities for **neighbourhoods** to switch at scale, supporting the **clean heat workforce**, and signalling a clear **phase-out of fossil fuel heating systems**.

Decarbonising heating is an opportunity

The Scottish Government's draft Climate Change Plan requires significant development to establish a credible pathway for decarbonising home heating, a vital step to make the most of Scotland's abundant, homegrown electricity generation. To meet the challenge, Scotland must target **110,000 heat pump installations** over the next Parliament, a figure aligned with the Climate Change Committee (CCC)'s advice.

Scotland’s electricity system is now built around renewables. There is increasingly more electricity available than we are able to use domestically or export, even when, in 2023, the equivalent of more than a third of the electricity generated in Scotland was exported. The opportunity is clear – **Scottish consumers can and should be able to access the low-cost clean electricity being generated on their doorsteps, and use it to heat their homes**. Doing so will reduce energy bills and make homes more comfortable and healthier to live in, and drive growth by creating demand for high-quality work and goods.

110,000 heat pumps in the next Parliament

The Climate Change Committee (CCC) publishes regular advice in line with the Scottish Government’s legal commitment to reach net-zero by 2045. This advice includes breakdowns of emissions by sector, including heat in buildings. The most recent advice (2025), outlines a pathway for heat in buildings, taking into account Scotland’s housing stock and relatively slow progress to date on heating decarbonisation.

In the CCC pathway the decarbonisation of heating will come primarily from replacing existing fossil-fuel based heating systems (such as gas boilers) with efficient electrified heating systems. It includes a pathway for different technologies, the pathway for heat pumps installations is shown in Figure 1.

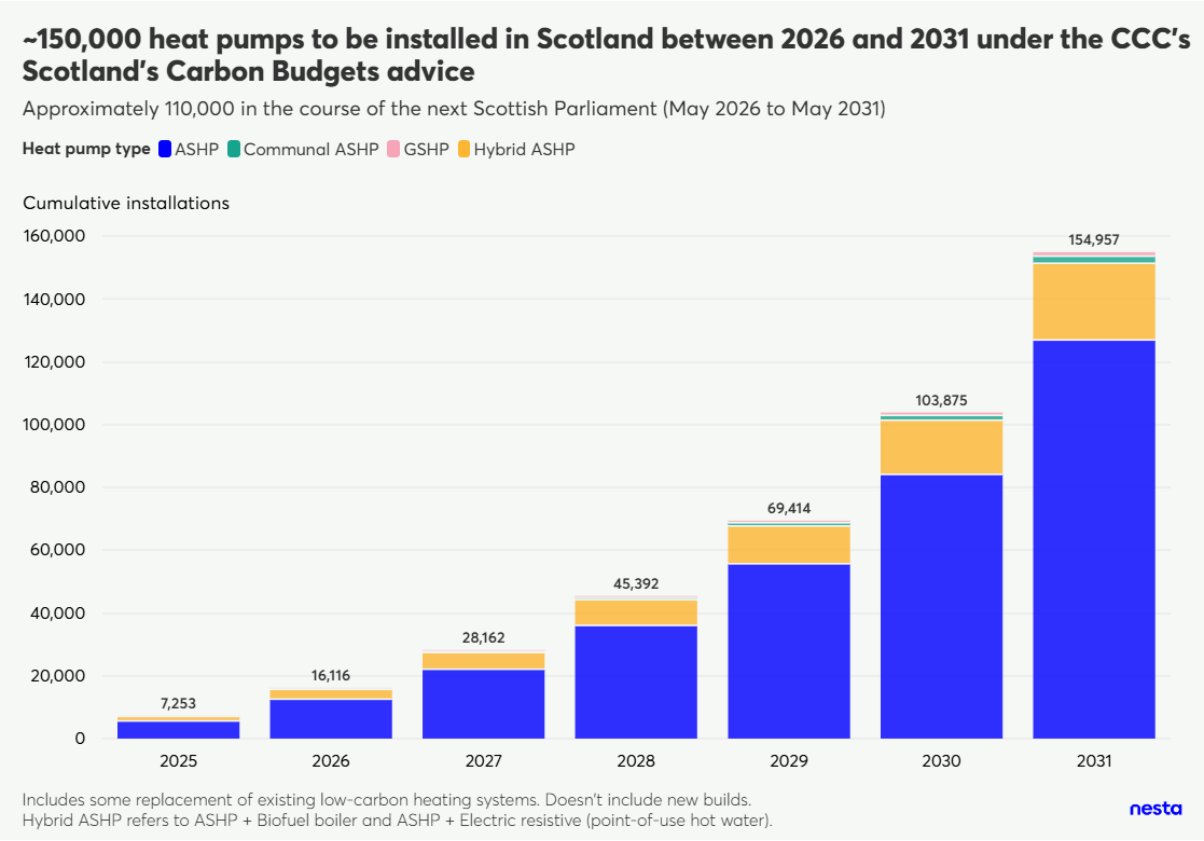

Figure 1. Projection of cumulative installations in Scotland

The key technology for delivering the decarbonisation of heat in most homes will be air-source heat pumps. Heat pumps are the proven, readily available replacement for gas and oil heating systems, and provide modern, efficient heating. They are used in at least 40% of buildings in Sweden, Norway and Finland.

There are probably around 45,000 to 55,000 individual heat pumps already operating in Scotland, providing heating to between 1% and 2% of homes. Analysis of the CCC's pathway by Nesta shows that **in total 110,000 heat pumps will need to be installed in Scotland between May 2026 and May 2031**, to be keeping pace with the CCC's recommended pathway for decarbonising homes. Rapid, consistent growth will need to occur in this period, with a sustained 50% or so increase to annual heat pump installs every year until the mid-2030s. From the mid-2030s onwards, more than 100,000 heat pumps will need to be installed every year in existing homes, and no gas boilers installed.

Supporting roles for other technologies

There will be smaller, but important, home decarbonisation roles for communal and shared heating systems, such as shared ground loops, networked heat pumps and low-carbon heat networks. Heat networks will have more important roles in relation to decarbonisation of large non-domestic buildings, such as schools, leisure centres,

office blocks and hospitals. Scotland has a relatively high proportion of homes that are tenements and flats. Shared heating systems, air-to-air heat pumps (air conditioning systems capable of providing heat), and direct electric heating systems, will be the right heating systems for flats that cannot install a typical air-to-water heat pump system, because of a lack of internal or external space. All these technologies have at their core, replacing fossil fuel heating with modern, highly efficient electric heating systems, able to put Scotland's homemade renewable electricity to work heating our homes.

Fabric measures, such as improved insulation, will be important in some homes, but plays a supporting role. Straightforward fabric improvements such as cavity wall and loft insulation offer a cost-effective way to improve building energy efficiency, but the vast majority of homes already have these types of insulation. Fabric improvements beyond these interventions however, such as solid wall insulation, show diminishing financial returns. While fabric improvements reduce the amounts of heat required from any heating system, their lower cost-effectiveness means that the CCC expects **fabric measures to deliver only around 14% of Scotland's emissions reductions between now and 2035**. Greater fabric improvements are more important in households in severe fuel poverty, where they can reduce under heating and the wider health and wellbeing benefits to the occupant may justify subsidising the higher upfront costs.

Hydrogen has potential applications for the decarbonisation of heavy industry and other hard to decarbonise sectors. Hydrogen however should not play a role in the decarbonisation of domestic heating, where it would be a costly, inefficient and disruptive solution.

Replace 'technology neutral' language, with technology-specific policy portfolio and household-centric approach

The Scottish Government describe their approach in the sectoral introduction as "*a technology neutral approach – one which supports a range of clean heating technologies based on what is best for a particular home, location or set of circumstances – will give property owners control over the decisions that affect their lives.*"

The principle of placing responsibility in the hands of property owners is sensible - home decarbonisation is ultimately asking for these property owners to make an investment in modernising and future-proofing their property/asset - which in many cases is also their home. However, it's not an accurate reflection of current policy or helpful to industry to describe this as 'technology neutral'. Currently the Scottish Government has **distinct funding and policy arrangements in place to support different technologies and different household types** - this reflects the different stages of supply chain development, and the different financial challenges that different types of clean heating face. For example, heat networks need large coordinated capital investment administered by large infrastructure companies, whereas many heat pumps are installed and delivered by SME plumbing and heating companies dealing on a one-to-one basis with individual homeowners. There are also gaps in funding and policy to support some key clean heat technology types - air-to-air heat pumps (air conditioners capable of providing heating) are likely to be important in Scotland's smaller homes and flats, but there is no grant available -

whilst the UK Government has announced a smaller heat pump grant (up to £2,500) will be available for air-to-air in homes in England and Wales - Scottish Government should similarly expand the HES grant.

Meanwhile rooftop solar now has a mature supply chain and is often cost-effective in Scotland, so the Scottish Government was right to remove universal grants and interest-free loans from rooftop solar, allowing solar subsidies to be focussed on fuel-poverty schemes (like Warmer Homes Scotland).

Instead, the final Climate Change Plan and the Heat in Buildings strategy due in 2026 should instead set out a vision and direction to industry and homeowners about how the various clean heating technologies will work in coordination, play complementary roles, and provide ballpark indications of their relevant scale of deployment and importance. However, it is important to be clear that, for the majority of individual households, heat pumps will be the most effective heating system to achieve a reliably warm home. It is therefore important that over time, the approach of 'helping homeowners choose the right technology for their home' should be developed at a more granular level, using the next iteration of the Local Heat and Energy Efficiency Strategies that local authorities in Scotland are statutorily required to regularly develop.

Recommendation

The final Climate Change Plan and the Heat in Buildings strategy promised for 2026 should:

- commit to installing 110,000 heat pumps over the course of the next Scottish Parliament, in line with the CCC's advice
- commit to delivering on the targets for heat network deployment set out in the Heat Networks Act
- make it clear that hydrogen will have no role in decarbonising home heating
- focus efforts on improving home energy efficiency on those homes that haven't deployed the most effective, lowest cost measures; and on households in the most severe fuel poverty
- drop the 'technology neutral' approach language, and adopt an approach that is technology thoughtful, has a technology-specific policy portfolio and is household-centric.

What pathway does the Draft Climate Change Plan commit to?

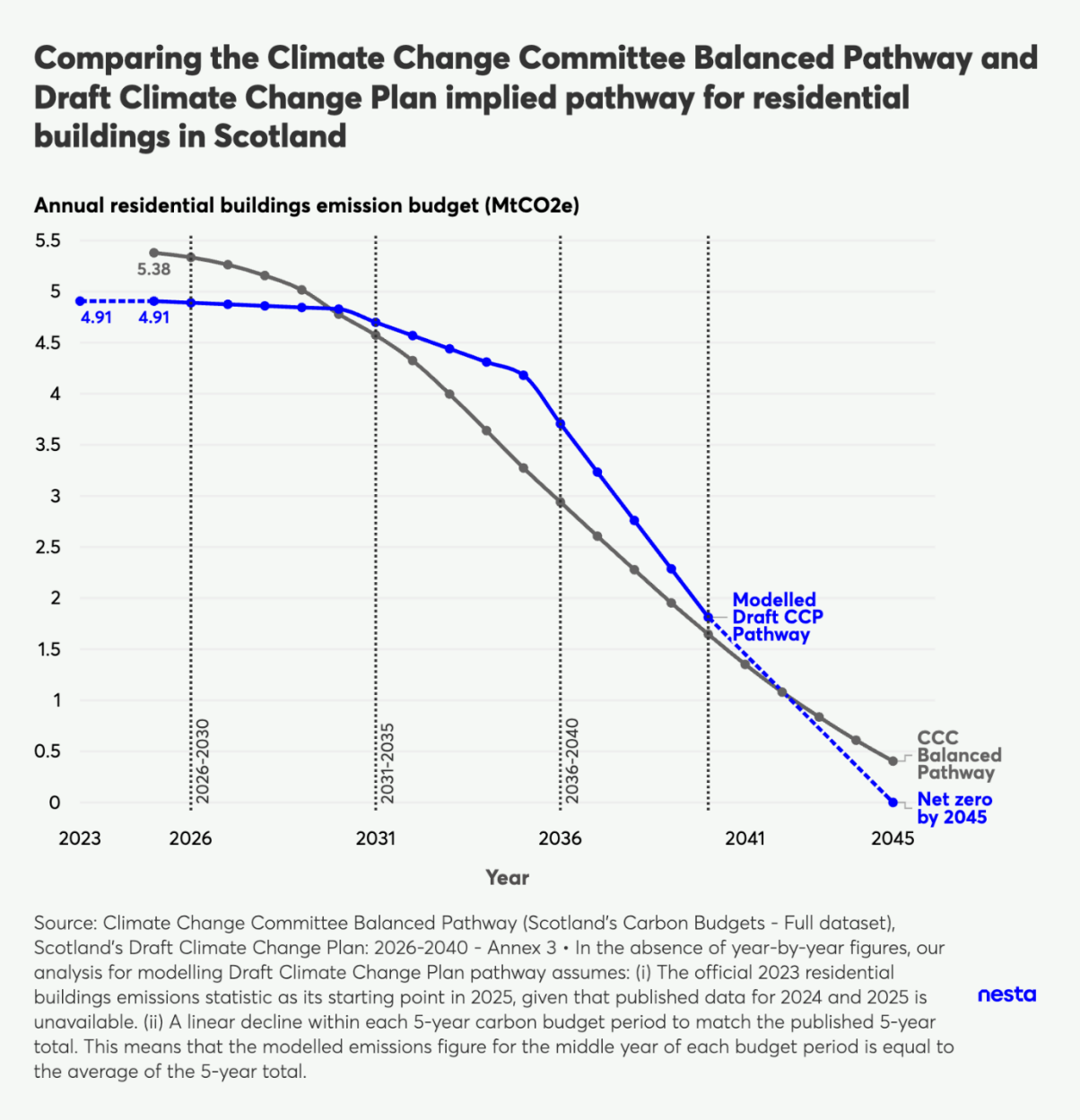

Figure 2. Comparison between CCC's Balanced Pathway and Draft Climate Change Plan's implied pathway for residential buildings in Scotland (emission budget)

Figure 2 compares the planned reduction in domestic building emissions from the Draft Climate Change Plan to the emissions pathway recommended by the CCC in May 2025. The Draft Climate Change Plan aims to reduce emissions from domestic buildings less in the 2025-30 and 2031-35 carbon budgets than recommended by the CCC. The Draft Climate Change Plan proposes a lower level of emissions reduction from domestic buildings in the 2025-30 and 2031-35 carbon budgets compared to the recommendations of the CCC. After 2035, the draft Climate Change Plan's pathway rapidly accelerates the annual rate of domestic building decarbonisation, towards the Scottish Government's target set for decarbonised buildings in 2045. Overall, the Climate Change Plan pathway results in greater total emissions from the domestic building sector for the whole 2025-2045 time period, in comparison to the CCC pathway.

The suddenness of the post-2035 emissions decrease in the Draft Climate Change Plan is unrealistic. A more gradual, steady approach to decarbonisation, as outlined by the CCC, gives more time for clean-heat installers and the clean-heat supply chain to build up capacity. It is unrealistic that the installation capacity for technologies like heat-pumps will be able to ramp up so rapidly, and that the long-lead in time for more involved infrastructure projects, like heat networks, will scale in such a short time frame. Using factors from the CCC's analysis, we have roughly translated the draft Climate Change Plan's pathway for domestic buildings emissions into an indicative heat pump deployment rate - Figure 3 shows this contrast in what is implied that the supply chain will need to deliver in terms of home installations. Using this rough calculation, the draft Climate Change Plan implies as few as 30,000 heat pump installs might be being targeted during the next Scottish Parliament period - effectively no improvement in the current rate of annual heat pump installations.

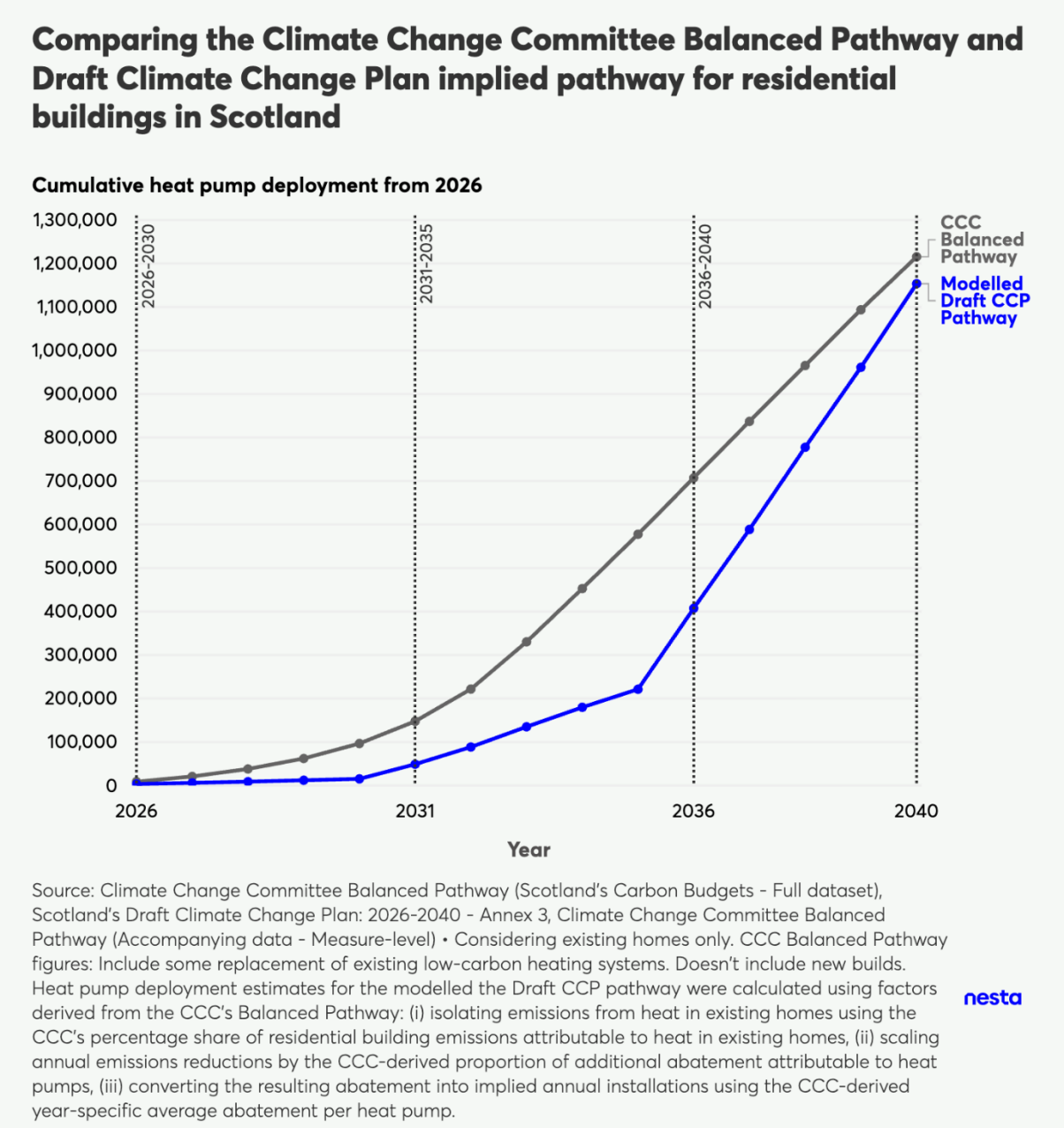

Figure 3. Comparison between CCC's Balanced Pathway and Draft Climate Change Plan's implied pathway for residential buildings in Scotland (deployment)

There is very limited detail offered in the Draft Climate Change plan on how the Scottish Government identified this pathway, nor how this planned decarbonisation pathway might be achieved. The Draft Climate Change Plan Monitoring and Analytical Annex includes no specific targets or scenarios for how an emissions reduction will be delivered. Examples of this could include a number of households in Scotland which will need to switch to clean heat technologies. There is no estimated breakdown of the technologies which achieve this, for example the number of heat pump installs needed or the number of households connected to heat networks.

Comparatively, the CCC recommendations come with a well evidenced plan for how domestic building will be decarbonised. This plan includes targets for the percentage of domestic homes using heat pumps and emissions savings from fabric improvements. The pathway assumes that around 2035, the annual rate of heat pump installations reaches roughly the current levels of annual gas boiler installations - again reflecting a reasonable assumption about the plumbing & heating industry's ability to deliver home heating upgrades. This assumption also implies limiting the number of gas boilers that are replaced before their expected useful 15-year life - with a boiler installed in 2034 being replaced at its 'natural' replacement point in 2049, before the CCC pathway fully decarbonises buildings.

Even within the Draft Climate Change Plan other sectors have much more detailed plans for how emissions reductions will be achieved. For example, in transport, the draft plan sets out emissions targets for subclasses of vehicles. By comparison, on the built environment the plan offers no detail beyond public, domestic and non-domestic.

Recommendation

The final Climate Change Plan and the Heat in Buildings strategy promised for 2026 should:

- better reflect the pathway outlined by the CCC, which presents a far more realistic pace of change
- include a pathway that takes into account the need to gradually build up clean heat installer capacity
- use the kind of evidence the CCC transparently presents about how the pathway was put together
- provide direction on the real-world changes that will be needed to keep buildings sector emissions on the pathway.

If the Scottish Government chooses to diverge from the CCC pathway in its final Climate Change Plan, much more detailed evidence than is provided in the draft, will be needed to ensure credibility.

What are the key policy challenges that need to be addressed?

In order to support **110,000 heat pump installations over the next parliament, and the other objectives the final Climate Change Plan should commit to,** the

Scottish government needs to have in place policies that address **five key challenges:**

- make clean heat technologies more affordable,
- make switching to clean heat easier for households,
- create opportunities for neighbourhoods to switch to clean heat at scale,
- help the workforce and industry be ready to ramp up installations and,
- phasing out of fossil fuel heating systems.

Affordability

The draft Climate Change Plan outlines how various funding schemes, ultimately totalling £1.67 billion over the current Parliamentary session, will provide immediate support. It also correctly highlights the need for the UK Government to urgently address the cost of electricity.

However, the plan lacks a long-term strategy for these funding schemes. Crucially, it does not explain how the reliance on subsidies can be reduced over time while still ensuring that clean heat remains affordable.

While public subsidies, such as those from Home Energy Scotland, are currently essential for boosting heat pump adoption and will remain so in the immediate future, their overall cost will inevitably rise as adoption increases. The Scottish Government must therefore prepare a longer-term approach to financing heat pumps as the market matures. Exploring future funding mechanisms now will provide households and installers with the certainty needed to plan their decarbonisation journeys effectively.

Easier for households

Home Energy Scotland (HES) offers a free advice service and acts as a central access point for support on energy efficiency, renewable heating, and fuel poverty. While planned regulation on minimum energy efficiency standards offers protection against high bills, particularly in the private and social rented sectors (assuming the Scottish Government completes implementation), the Plan offers no specific policies to modernise or improve the HES service, nor to address other obstacles households face when transitioning to clean heating.

Despite offering more generous financial support—including a rural uplift and interest-free loans—and tailored guidance for householders on heat pump installations, HES has achieved a per capita uptake comparable to the less generous Boiler Upgrade Scheme in England and Wales.

To address this, the Scottish Government should enhance the HES service. This involves **making it easier for households to access HES grants and loans and incorporating lessons learned from the challenges faced by both consumers and installers.** For heat pump installations to scale up, the HES grant and loan process must be efficient and quick for installers, encouraging them to actively

promote the scheme. The Scottish Government should consider the following changes:

- Make accessing the HES advice service optional for households seeking the grant and loan.
- Remove the requirement for a 'qualifying report' to access the heat pump grant.
- Continue exploring options to reduce the paperwork required for grant and loan payouts.
- Reconsider the desirability of paying the grant directly to the householder rather than the installer (as done in England and Wales).

Neighbourhoods switching at scale

The draft Climate Change Plan is quite comprehensive regarding a policy programme for supporting heat network development through funding and regulation. Local Heat and Energy Efficiency Strategies (LHEES) provide a pathway for planning neighbourhood-scale switches.

However, more policies are needed to foster a wider pipeline of area-based clean heat projects, as envisioned by the Green Heat Finance Taskforce's second report, and to assist the many Scottish households in flats and tenements in collaborating on heating upgrades with their neighbours. **Area-based approaches** will be crucial. These are coordinated strategies that facilitate the transition of multiple households within a specific geographic area—such as a street, neighbourhood, or larger region—to low-carbon heating systems. Nesta is actively researching multiple approaches to area-based heat decarbonisation through our "Clean Heat Neighborhoods" concept.

Workforce

The Scottish Government should **support the growth of the clean heat workforce**. Specifically, it should provide dedicated routes for new entrants, such as apprenticeships, and facilitate the transition of existing gas engineers to heat pump installation. This could be achieved through a multi-year grant, similar to the scheme currently available in England.

Nesta is actively addressing this gap through the Start at Home scheme, which allows industry professionals to use the HES grant to install a heat pump in their own home. A pilot in Scotland demonstrated the high potential of this approach to help heating professionals move from installing gas and oil boilers to offering heat pump installations as a core part of their business.

Phasing out fossil fuel heating systems

The draft Climate Change Plan commits to a target for “decarbonising heating systems by 2045, where reasonable and practicable to do so”. The draft Heat in Buildings Bill would make this target a statutory requirement for Scottish Ministers to make plans towards meeting. The draft Climate Change Plan also confirms that the

New Build Heat Standard will ensure that new homes will soon all be built without fossil fuel heating systems. While most of the policy actions that will need to be taken to achieve this are reserved to the UK Government, there are no policy options presented in the draft Climate Change Plan that might signal when replacement gas boilers might stop being an option for existing Scottish homes, and when the gas grid could be phased down in certain areas of Scotland.

Recommendation

The final Climate Change Plan and the Heat in Buildings strategy promised for 2026 should:

- Commit funding for Home Energy Scotland through to at least 2029 as the UK government has done for the Boiler Upgrade Scheme. HES remains the main source of funding and support for households to install heat pumps in Scotland, consumers and installers alike need certainty in knowing what type of support they will be able to access.

- Commit to making the Home Energy Scotland process smoother and easier to navigate for homeowners, and get installers on board with promoting the HES grant and loan.

- Support local authorities to deliver clean heat projects, through ensuring they have capacity to build effective local partnerships that continue to develop Local Heat and Energy Efficiency Strategies, and create deliverable project opportunities from them. Funding should be used to pilot ambitious, large-scale multi-tenure neighbourhood co-ordinated switches to clean heating.

- Provide clarity and motivation for upskilling, through long-term policy signals. And subsidise training for switching of plumbing and heating professionals from gas to heat pumps. This should be equivalent to the Heat Training Grant that is available in England.

What role does the UK Government need to play?

While the Scottish Government has significant powers to help achieve the decarbonisation of heating, there are some aspects that will need the UK government to use reserved powers.

A Warm Homes Plan is expected from the UK government imminently.

The most influential reserved policy area where the UK government could make changes to accelerate home heating decarbonisation is electricity pricing - the gap between higher electricity and lower gas prices, is currently the largest gap since 2022.

The recent UK Budget took important steps, moving policy costs that had been placed on electricity bills into general taxation. This will help all households, and will be particularly welcome for homes using direct electric heating, like storage heaters - who will save around £250 per year as a result of decisions in the UK Budget. In 2023 there were 166,000 homes in Scotland that used direct electric heating, and

more than half were classified as being in fuel poverty - higher than for any other heating type.

However, Nesta estimates that the gap between electricity and gas prices will remain at a ratio of 4.1:1 in the period after April 2026 once the budget measures take effect - this a much wider gap than is the case in neighbouring European countries. More work from the UK government will be needed to be done to make heat pumps decisively cheaper to run than gas boilers. This could include further action to replace policy levies away from electricity bills, or more fundamental changes to the energy market.

The UK Warm Homes Plan should also make decisions on the future of UK government funding for fuel poverty alleviation, following the ending of the Energy Company Obligation scheme at the UK Budget. The Warm Homes Plan should, in our view, give the heating industry a clear long-term pathway, using UK-wide policies like the Clean Heat Market Mechanism, a decision to rule out hydrogen for home heating, and other regulation.

Draft Heat in Buildings Bill

A draft Buildings (Heating and Energy Performance) and Heat Networks (Scotland) Bill was published alongside the draft Climate Change Plan. The draft bill will not be progressed until after the elections in May. While the Scottish Government has chosen not to legislate on home heating before May, heating and energy will be a key issue during the election and a delivery priority for any future administration.

The bill as it currently stands contains important proposals for supporting heat networks. Heat networks will help some homes (particularly new builds, flats and tenements) and non-domestic buildings make the switch to clean heating. The bill however is lacking in terms of policies to support the installation of heat pumps. As heat pumps will be the key technology for decarbonising most of Scotland’s homes, improving the bill’s provisions in this area is vital to securing real progress in the path to net-zero.

The bill is an opportunity to develop a strengthened and expanded enabling framework for the increased adoption of clean heat technologies, particularly heat pumps. The bill can provide certainty for consumers, installers and other stakeholders on how decarbonisation of domestic heating will progress in Scotland. This certainty will help to leverage private finance in the sector and increase investment in Scotland's heating industry.