# Green Heat Finance Taskforce Report: Part 2

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Scottish Government
Riaghaltas na h-Alba

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# Foreword

Exploring new ways of paying for adapting our homes, businesses and communities for a cleaner, greener future has reinforced our understanding of the need for a systems approach to a complex and multi-layered generational challenge. In this, our second report, we have focussed on creating attractive investment propositions which stimulate economic growth in Scotland, and deliver reduced bills and improved health for Scotland's people, as well as reducing Scotland's emissions. If we get this right, it will deliver substantial benefits while helping reduce future costs.

Our first report (November 2023) set out individual property options and financial products including green mortgages, which are increasingly available. Property Linked Finance has potential if it can be developed in Scotland. This report applies a collective lens, focusing on options for place-based solutions, heat networks and social housing.

Legislative, regulatory and policy clarity from the Scottish and UK Governments is needed to give businesses, public institutions and individuals the confidence to invest in energy efficiency measures and install clean heating.

Heat accounts for almost one fifth of Scotland's emissions and we see no path to net zero which does not include decarbonising heat as a key component. While this will be a two decade journey, it is imperative we begin that journey now. We need to see swift, coordinated and determined action to scale up heat pump installation rates, as well as providing the supportive environment required for heat networks to grow and flourish.

Lack of demand for clean heating, rather than the availability of finance, proved to be a key barrier. For collective property solutions this manifests itself in the lack of a credible investment pipeline and individual projects that can be scaled into programmes capable of attracting institutional investment.

The need to come together across a shared clean heat mission for government at all levels, between governments, business, education and wider civil society, is critical to success. Our call to action sets out clear roles and asks of different organisations.

Collective solutions offer the potential to drive economies of scale and reduce the costs to individuals, while also providing an attractive investment opportunity, provided risks can be effectively minimised for private investors and a sustainable revenue stream created. Blended finance, combining public and private financing, can increase the reach of what can be done with public funding alone, while not leaving the private investor to bear all the risk.

Given the relative newness of blended finance models in the clean heat space, we believe central programme and project support, including access to technical and professional advice, is essential to helping local authorities or other project sponsors develop individual business cases to an investment ready stage. We make recommendations for establishing such support units for social housing specifically, as well as for place-based delivery more widely.

The finance sector has demonstrated a willingness to engage and make available the finance needed to deliver. However, Scotland needs to act quickly if it is not to be overtaken by the rest of the UK and internationally as they develop solutions. Bold and ambitious leadership and urgent action from both governments is required to provide a clear pathway for the steps needed to decarbonise heat and unlock clean heat opportunities.

Scotland, its people and businesses, stand to benefit from our clean heat transition and we look forward to early and decisive action from the Scottish Government. Taskforce members have indicated their willingness to support that journey and I thank them sincerely for their commitment, insights, perseverance and valuable contributions throughout.

**Sara Thiam**, Chief Executive Officer, Prosper

**Chair of the Green Heat Finance Taskforce**

This report has been brought to you by the independent Green Heat Finance Taskforce and is published on its behalf by the Scottish Government

# 1. **Executive Summary**

### Introduction to Taskforce

The cost of heating homes and buildings in Scotland is having a negative impact on health outcomes, life chances and a productive economy. Transforming how buildings are heated can deliver multiple social and economic benefits and ensure Scotland achieves its 2045 climate goals.

This Taskforce was established to identify innovative financing solutions to transition Scotland's homes and buildings to clean, affordable heating systems. The need to leverage private sector finance to supplement constrained government resources, whilst minimising the financial burden on citizens grappling with cost-of-living challenges, was central to the Taskforce's deliberations.

In considering the challenges and opportunities associated with this heat transition, it became clear that financial products alone are insufficient to achieve the step change required and that additional action is required to ensure:

- projects reach a level of maturity to attract investment and finance;
- strong business cases with demonstrable returns for models that deliver clean heat and energy efficiency are brought forward;
- coordination and delivery of "collective approaches" that facilitate the access of project developers to financial resources; and
- a clear delivery plan forms part of an integrated approach which overcomes barriers and can be scaled.

**Key recommendations:** the Taskforce recommends that as soon as possible, and ideally in the next six months:

1. **Accelerate and coordinate the testing of a place-based demonstrator approach across Scotland**:
    - This innovation process and delivery plan should clearly articulate the design of a coordinated **Place-Based Demonstrator Programme**.
    - Develop a fully operational **Programme Development Unit** that shall have the capability to deliver this Place-Based Programme by helping provide multi-disciplinary technical assistance and nurturing feasible funding streams for place-based projects.
    - Integrate and leverage **heat network and social housing** projects.

2. **Accelerate the development of heat networks**:
    - Establish a forum bringing together industry, cooperatives and the wider public sector, to **address heat network policy gaps** at pace.
    - In collaboration across layers of government, alongside regulators and others, agree and articulate **simplified heat network delivery pathways**.
    - Provide financial and advisory support certainty for heat networks to 2030 by **committing to multi-year funding** for project development and delivery.

3. **Accelerate blended finance solutions utilising public and private financing for social housing retrofit**:
    - Set out plans for establishing a **Social Housing Project Support Unit**.

- Conclude and publish work with the Scottish Federation of Housing Associations (SFHA) and others, providing a robust evidence base supporting **business case development for retrofitting social housing** across Scotland.

4. **Scottish and UK Governments to develop a 'Clean Heat Mission' approach starting with clear goals and a coordinated delivery plan for the clean heat transition;**
   - Map existing **financing and governance structures** at different levels of government to support project sponsors and individuals to more easily navigate the system.
   - Ensure that energy and infrastructure planning takes account of waste heat, including future waste heat from data centres, hydrogen production and the opportunity for thermal storage.
   - Consistently evidence and communicate the **financial and non-financial benefits** of retrofit, clean and affordable power and clean heat.
   - Agree a **Memorandum of Understanding** between the Scottish and UK Governments to align strategies and solidify a partnership approach to optimising delivery of clean heat support in Scotland.

We believe that driving the decarbonisation of heat in buildings requires early, coordinated and determined effort to build the necessary momentum for change. We would therefore like to see clear and prompt action against our above recommendations, accompanied by regular updates on progress.

**Why do we need to transform heating in our buildings?**

Our homes and the way we heat them remains a key challenge for Scotland. Our poor housing stock and our reliance on gas is contributing to the current elevated cost of living and the number of people living in fuel poverty in Scotland[1]. The impacts of the high cost of heating Scottish homes are profound: it affects community and individual health outcomes, educational outcomes, and wider economic productivity. It is therefore imperative to transform our buildings to create affordably warm homes and enable Scotland to become a thriving place to live and work.

This challenge, of improving the quality of homes – warmer homes at lower cost – is inextricably linked to the realisation of substantial personal as well as wider societal, economic and environmental benefits to Scotland. It follows, then, that any delays in making the necessary improvements to Scotland's buildings, and the way in which they are heated, will continue to impact negatively on peoples' lives, as well as failing to maximise the economic opportunities presented by the clean energy transition. Improving our homes is truly a generational challenge that will impact almost all people in Scotland while also delivering wide individual and societal benefits.

[1] 861,000 households (34% of all Scottish households), Scottish House Condition Survey: 2023 Key Findings, Scottish Government, January 2025.

**Our starting point to address the challenge**:

As an expert group we have come at this work from lots of different positions. Our main starting points for addressing these challenges were:

a) **Need for private finance**: this generational change cannot be achieved with public funds alone. This means we must create the conditions to attract private finance, recognising this will require a financial return on investment whilst protecting just transition outcomes for the people of Scotland. Change on this scale will require alignment of many factors, including the expansion of existing and new financing mechanisms and the development of new structures focused on financing building retrofit. Public and private sources of financing will both be necessary and will need to be coordinated in such a way that they do not crowd each other out or limit choice for individual property owners.

b) **Lack of projects at scale**: we see no major issue with the supply of private finance per se, although private lenders will require a reliable return on any investment. The challenge is that there are a lack of scaled projects for investment to flow. More needs to be done to build a pipeline of investible projects that enable a just transition to clean heating.

c) Attractiveness of investment for individual householders means that **collective solutions need to be explored** that can share the costs of larger schemes that should explicitly aim to bring the costs down over time. The cost of repaying borrowing to deliver clean heat can exceed the energy cost savings created, particularly if the payback period is longer than home tenure or ownership. Furthermore, much of the current private finance offer for retrofit is typically closer to consumer than mortgage finance rates. Because paying for a clean heat transition individually further exacerbates cost of living pressures, this reinforces a lack of consumer demand for clean heat, as we highlighted in our Part 1 report.

d) **UK energy market design:** a key regulatory barrier to delivering clean heat cost effectively has been the UK's electricity market design (pricing electricity at the cost of the last megawatt hour [MWh] needed to balance the system – which in recent years is gas). This issue is outside the scope of this report and needs to be addressed at UK level alongside other features of electricity market design that are necessary to scale-up clean heat and retrofit activity.

e) **Heating is generally more expensive in Scotland** than elsewhere in the UK for several reasons: colder northern temperatures, poor building performance as measured by energy efficiency (noting that social housing performs much better than average), a notable proportion of off-gas grid homes, and persistently high energy prices – driven by UK market design and the cost of gas relative to electricity.

f) **Recent high and volatile cost of gas** in turn is set by international markets and is prone to volatility due to international events, for example in recent years by war in Europe. Getting off carbon intensive gas should be a priority for our energy transition and energy security.

g) **Finance is one part of an interconnected set of changes** required: finance provision is one of many factors influencing the overall rate of conversion to clean, affordable heat. Factors discussed in our Part 1 Report such as supply chain capacity, skilled installer availability, quality assurance of work and confidence that correct measures are being installing are all important. Alongside this, regulatory certainty that is carefully balanced so as not to constrain economic growth opportunities is necessary to drive an increase in the level of clean heat installation.

**Partnership approach**

Our Part 1 report focused on financing solutions for individual property owners. This report focuses on mechanisms for collective groups of properties through place based approaches, heat networks and social housing options. However, no one organisation or stakeholder grouping can create a thriving market for clean heat and energy efficiency. Successfully delivering the scale of change required by the heat transition will require coordinated and collaborative activity across parties. Key responsibilities for different actors are noted below.

**Scottish Government** - Demonstrate leadership by setting explicit goals for delivering clean heat and energy efficiency upgrades as part of adopting a Clean Heat Mission to foster market confidence:

- Regulate the use of fossil fuels and energy performance requirements for heating to create demand for alternatives, while supporting a just transition ;
- Provide leadership in engaging with the public to demystify the clean heat journey;
- Support development of a framework for investing in place-based projects, alongside private financing and provide clarity on heat network delivery paths.

**UK Government** - Rebalance relative gas and electricity prices:

- On the energy side -
    - Ensure electricity and gas market design and the Clean Power 2030 Mission are aligned with Scotland and UK delivery of clean heat and economic growth;
    - Ensure that regulatory decisions act to support and not stymy economic growth and investment in the clean heat transition.
- On the finance side -
    - Support development of a regulatory framework that encourages development of innovative consumer finance solutions;
    - Ensure blended financing funds are fully accessible to Scotland;
    - Establish the regulatory framework that enables institutional investors to invest in retrofit projects without breaching capital buffer levels; and
    - Ensure that consumers have access to free and independent routes to redress, covering both public and private sectors.

**Local Government** - In coordination with others, educate individuals and local businesses on actions required:

- Building on LHEES, coordinate and sponsor development of place-based projects, seeking out opportunities to aggregate projects into programmes;

- Explore opportunities for developing heat networks alongside industry partners, including by providing anchor loads;
- Collaborating across neighbouring authorities to join up on heat plans at an appropriate spatial level, while agreeing planning projects to prioritise; and
- Continue to deliver clean heat projects across their social housing stock.

**Private Finance Community** - Accelerate the development and testing of innovative retrofit finance products:

- Train intermediaries and customer facing staff on the features and benefits of existing home upgrade financing products;
- Collaborate with government and public bodies to de-risk investments in clean heat and energy efficiency through mechanisms such as blended finance; and
- Work across industry and with others to develop and communicate consistent messaging around clean heat, with the aim of growing the overall market.

**Industry and Supply Chain** - Deliver boiler replacement plans and scale-up low carbon heating installations, including providing targeted homeowner advice on clean heat benefits;

- Support the development and maintenance of heat networks, including partnering with local authorities in their development;
- Ensure quality installations, warranties, and workforce upskilling; and
- Commercialise innovation in product and service development and deployment.

**Third Sector and Academia** -

- Support local authorities and community organisations in the development and delivery of place-based solutions;
- Foster innovation in technologies, processes and delivery models;
- Help educate and inform consumers, including through provision of trusted advice;
- Ensure Third Sector organisations are adequately resourced to provide advice and support.

**Conclusions and next steps**

We reiterate the importance of establishing a robust legislative, regulatory and policy framework as soon as possible in order to provide lenders, people and installers with the clarity and confidence necessary to drive market development. This is essential to enable development of the financial products and models discussed across our two reports.

We do though have concerns about the pace of policy delivery, as well as the degree to which recommendations from our Part 1 report have been acted upon. We note that Scotland was regarded as being ahead of the rest of the UK only a few years ago. This is no longer the case. Moves to develop and test place-based financing models are already happening in English metropolitan areas and across Europe. As such, we underscore that delays in delivering these changes are having, and will increasingly have, negative impacts on people’s lives across Scotland.

While there is an imperative and responsibility on us all – individuals, business, public and third sector organisations and investors – to act, success will require clear and coordinated leadership across all layers of government as it is government that sets the rules within which we all operate.

As we believe the key leadership role must fall to government, we look forward to the Scottish Government's response to our reports along with the strong action which must follow promptly if potential environmental, economic, health and societal benefits which can be delivered by the clean heat transition are to be realised.
We stand ready – as individuals and organisations as well as collectively – to fully play our part.

# 2. **Introduction**

Our homes are not fit for purpose. The United Kingdom's housing stock is among the worst in Europe, characterised by high costs, limited space, and aging infrastructure. The Resolution Foundation reported that UK households pay significantly more for housing compared to other advanced economies, with homes being smaller, older and more expensive to heat[2].

Our homes and the way we heat them helps drive fuel poverty. Being unable to live in safe, warm homes leads to excess death[3] and ill health. It was estimated the NHS spent at least £2.5 billion per year on treating illnesses directly linked to cold, damp and dangerous[4] homes. These are preventable tragedies with great human suffering. Poor health caused by fuel poverty is also a brake on productivity in our economy. In the 21st Century we should not accept this. We need to tackle the root causes once and for all, and make the investments we need to bring our housing stock up to more acceptable standards. This will lead to better, healthier, more productive and joyful lives for all of us.

There is an **urgent need for systemic investment** in energy efficiency and heating solutions in Scotland.

Whilst individuals and communities are already impacted by our poor housing, it is also having a systemic effect on our climate, and residential heating is the UK's second largest emitting sector. Solving fuel poverty and creating warmer homes goes hand-in-hand with meeting our net zero goals. The Climate Change Committee's (CCC) Seventh Carbon Budget[5] shows that on their balanced pathway they expect fuel poverty to fall 77% by 2050, with an 11% fall between 2025-2030 (driven by energy efficiency) and a further 66% between 2030-2050[6]. The Scottish Government also has legislative fuel poverty targets in Scotland[7].

The CCC states the following as being important in the costs of the transition:

- **Efficiency gains versus retrofit costs**:
  Heat pumps are three to four times more efficient than gas boilers. This increased efficiency can lead to lower energy bills over time, as heat pumps use less energy to deliver the same heating output.
- **Upfront retrofit costs**:
  Most UK homes are designed for gas heating. Transitioning to heat pumps therefore requires a one-off retrofit or improvement in many cases – this

[2] Britain's housing stock offers worst value for money of any advanced economy, Resolution Foundation, March 2024.
[3] During the winter of 2018/2019, Scotland reported 2,060 excess winter deaths. Factors such as low income, inefficient heating systems, and poor housing conditions contribute to this elevated mortality rate Increased Winter Mortality - EAS.
[4] Fuel Poverty, Cold Homes and Health Inequalities in the UK, Institute of Health Equity, August 2022.
[5] The Seventh Carbon Budget (2038 to 2042), Climate Change Committee, February 2025.
[6] Ibid. Page 172.
[7] The overarching target is that in the year 2040, as far as reasonably practicable, no household in Scotland is in fuel poverty and, in any event, no more than 5% of households are fuel poor, no more than 1% are in extreme fuel poverty and the fuel poverty gap is no more than £250 (in 2015 prices). The legislation sets interim targets within this for 2030 and 2035. Tackling fuel poverty in Scotland: a strategic approach, Scottish Government, December 2021.

includes modifying building infrastructure to accommodate the different system, such as updating radiators or improving insulation.

- **Sizeable element of total net zero costs**:
  These one-off retrofit costs for home heating are considered a significant part of the overall transition to net zero. While operational savings are expected later, the initial investment needed from households is substantial.
- **Need for policy support**:
  To make the transition affordable and accessible, the report emphasises that government support (such as grants or low-interest loans) will be crucial. This policy intervention is needed to help households cover these upfront costs without causing undue financial burden.

**Benefits of transition**

While the costs and damage associated with climate change often tend to be a focus of debates, there are also substantial economic opportunities. This was recognised by a HM Treasury analysis of issues related to the net zero transition, which concluded that "*an orderly transition for the economy could realise more benefits [....] than an economy based on fossil fuel consumption*[8]."

These benefits would be both direct, in terms of jobs and Gross Value Added (GVA) as well as indirect, through improved population health, something which would also boost productivity and the economy through reduced sick absence and less pressure on healthcare systems. Throughout this report we seek to set out the positive case for taking action to address one of the key sources of emissions – heating – by explaining where and how these benefits can be captured, noting that many will be distributed at a local level, for it will be small and medium-sized enterprises (SME) that install a significant proportion of the upgrades required. While this might not be headline grabbing, it will still play a vital part in supporting local communities, by creating and maintaining skilled local jobs.

Climate change is a vast topic. Our focus has been on one small but important part of the challenge – identifying the financing mechanisms and models that can help finance the upfront costs of converting all Scotland's buildings to clean heating systems, a cost estimated in the Heat and Buildings Strategy (2021) as being £33 billion, though may in reality be significantly more.

Some of these costs will need to be paid for by the Scottish and UK Governments, and will be necessary to ensure a just transition, although it is clear that significant private sources of financing will also be required, as public budgets for Scotland will be unable to cover this overall cost alone. It is also apparent that a 'one-size-fits-all' solution will not work, and that it will therefore be necessary to foster a broad menu of options, one that will allow property owners to access the solutions that are best suited to their particular circumstances.

A summary of our Part 1 report (Nov. 2023) is attached at **Annex 1**. Building on the focus on financing solutions for individual property owners from our Part 1 report, this

[8] Net Zero Review: Analysis exploring the key issues, HM Treasury, October 2021.

report will focus on mechanisms that might apply across properties collectively, through place-based solutions, heat network models, and social housing options.

There are an increasing number of reports looking at aspects of financing the transition to net zero in general, with several looking at parts of the heat transition specifically. We do not wish to duplicate work of other groups or repeat the analysis available elsewhere. Instead, as we discuss the themes covered in this report, we shall merely point towards good work that is already available.

Our recommendations focus on identifying the practical steps that we believe can - and must - be taken in the short and medium-term to drive progress towards the installation of clean heating systems at scale. Given our finance remit, we have limited our recommendations to areas that relate directly to the flow of finance towards retrofit.

However, we do wish to reiterate a point discussed in our Part 1 report, namely that the lack of consumer demand, rather than the lack of a supply of finance per se, is the greatest barrier to achieving the Scottish Government's clean heat ambitions. In doing so, we also wish to underscore the direct correlation between lack of consumer demand and the cost of living challenges. This means people will want to be confident that the savings from clean heating and energy efficiency installations at least outweigh the costs of repaying any upfront financing used.

Steps to boost the demand for clean heat are therefore essential, and must be taken forward in parallel with the measures recommended in both our reports if the transition to clean heat at scale is to be successful in Scotland.

While much of this report is directed at the Scottish Government, it is an independent report, and, as such, we offer views that draw on members' experiences to identify where blockages exist in the system and suggest how these might be addressed.

Moving on from talking to testing and demonstrating is now critical. It is only by doing, and not just discussing, that property owners in Scotland will manage to successfully install clean heating systems on the scale that is required. And it is only by removing emissions from heating properties that the potential economic, emissions reduction and health benefits of the transition can be realised.

# 3. **Applying a Place-Based Lens**

## 3.1 Overview and context

An effective place-based approach will comprise a programme of multiple projects and various technologies. Heat networks serve a particular area, while social housing provides affordable accommodation in a given location. Even for individual property owners, the surrounding circumstances will influence the choices they make. There could be considerable benefits from taking a holistic view which aligns and integrates the various technology or sectoral activities happening in an area.

When we talk about place-based models, we are talking about holistic programmes of activity that aggregate demand from individual projects to create a scale that makes them attractive investment opportunities. Our reasoning for focusing on place-based mechanisms as a key theme reflects our balanced view that retrofit can most effectively be delivered at scale by aggregating individual action and projects into coherent and coordinated place-based approaches. Such an approach can drive tangible, longer-term economic, regeneration and health benefits. Indeed, research suggests that adopting place-based decarbonisation approaches could deliver net zero goals at around a quarter of the cost of top-down approaches, with half of the energy demand and greater co-benefits[9].

Solutions aimed at the individual households within an “able-to-pay” market are unlikely alone to lead to the mass action required. Developing an engagement and delivery approach to decarbonising many households concurrently within multiple neighbourhoods has the potential to change this economic balance by:

1. unlocking economies of scale in reducing the upfront cost;
2. enhancing and broadening the value and benefits created; and
3. aggregating demand to unlock cheaper forms of finance.

It has the additional potential to unlock a more attractive narrative for both citizens and wider communities, so as to help ensure that they buy-in to the need for transition. Without the desire of homeowners, the transition simply will not happen.

Part of this more attractive narrative is to make the transition financially beneficial for all. “Willing-to-pay” rather than “able-to-pay” is a more relevant term and is driven by whether the net impact on a households ongoing finances i.e. will finance repayment costs be larger or smaller than any reduction in ongoing bills?

Given high upfront costs and relatively small energy bill savings, typical consumer finance products may generate a negative net impact on the finances for those who choose to fund individually. Place-based approaches create the opportunity to build collective models that can change this balance and significantly improve the narrative of participation.

[9] Accelerating Net Zero Delivery: Unlocking the benefits of climate action in UK city-regions, Innovate UK, March 2022.

The key challenge for this approach is that cross-sector, place-based projects are complex to design and deliver, and have not yet been done at the scale required in a clean heat context. While there is clear engagement from local government, gaps in both capacity and capability is holding back development of proof of concept demonstrators. This, in turn, is hindering the creation of a pipeline of viable projects. Overcoming this will require provision of a significant increase in structured revenue funding to support local authorities to develop individual clean heat and energy efficiency projects, which can then be aggregated into investible programmes.

As we move to an electrified future for transport, the powering and heating of homes becomes more connected to the provision of electrified personal transportation, creating a single local energy system. While this creates opportunities for system efficiencies, it also adds complexity in a Scottish context as some policy areas are devolved and some are not. Coordinated and collaborative action between Scottish and UK Governments is therefore vital.

We are already seeing this place-based approach being embraced in certain English metropolitan areas, something that Scotland will also need to prioritise if it is to avoid falling further behind other parts of the UK. Crucially, committing to developing place-based projects and programmes will help ensure that Scotland is well-placed to secure at least its fair share of any UK-wide competitive funds that are launched. On a positive note, the development of Local Heat and Energy Efficiency Strategies (LHEES) should provide a solid basis from which to develop place-based projects, although mechanisms will be required to foster cross local authority collaboration where there are shared opportunities and potential for joint innovation in delivery.

### 3.2 Current place-based heat approaches in Scotland

#### Local Heat and Energy Efficiency Strategies (LHEES)

LHEES provide a framework for locally-led and tailored clean heat solutions. Scotland's 32 local authorities have a statutory duty to develop these strategies and delivery plans and to update them every five years. They create a strategic, long-term plan for an entire local authority area to decarbonise heat, including:

- identifying strategic zones suitable for heat networks;
- setting out how each segment of the building stock needs to change;
- identifying strategic heat decarbonisation zones, and setting out the principal measures for reducing buildings emissions within each zone;
- prioritising areas for delivery of heat decarbonisation action; and
- providing a strategic plan that can help target funding and investment.

The development of LHEES has also provided insights for other place-based approaches. Firstly, place-based approaches will need to reflect a need for methodological approaches that are sufficiently harmonised to allow coordination across councils, given that similar approaches to data and analysis are needed to facilitate the involvement of third-party partners. However, 'one-size-fits-all' approaches will also need to be avoided, so as to ensure that solutions fit local conditions.

Secondly, access to sufficient resources and capacity within councils during both the development and implementation of LHEES has been a significant issue. Due to constraints within some councils, the development of LHEES were outsourced to consultancies, rather than building internal capacity, constraining the ability to move from long-term strategy development to delivery. Furthermore, many councils do not have the resources to develop full investment plans to support LHEES implementation, although this is a challenge reflected across the UK, as noted by the 2024 UKERC UK-Wide Local Energy Planning Review[10].

Scottish Area Based Schemes

The Scottish Government funds local authorities to develop and deliver energy efficiency programmes in areas with high levels of fuel poverty. This funding is blended with owners' contributions and funding from Registered Social Landlords (RSLs) that may choose to insulate their properties at the same time.

These Area Based Schemes (ABS) are designed and delivered by councils, together with local delivery partners. They target fuel-poor areas to provide energy efficiency measures to a large number of Scottish homes, while delivering emission savings and helping reduce fuel poverty. ABS provides a good example of place-based delivery, albeit one which largely utilises grant funding. Building on this experience to develop commercially viable models (which are less reliant on grant funding) offers one route to establishing a more comprehensive structure for place-based clean heat delivery.

### 3.3 Key principles underpinning place-based retrofit approaches

Place-based approaches tend to be local authority-led, as they are the bodies most likely to have a coordinated understanding of local circumstances and will be responsible for a number of properties that could provide anchor demand for schemes, as well as connecting to wider policy initiatives such as heat network zoning. At a smaller scale community organisations may take on a leadership role, while social landlords also deliver a targeted place-based approach through their retrofit programmes. However, local authorities remain key, as delivery of retrofit at scale will involve using other statutory functions such as the planning system.

Some overarching principles to guide place-based delivery include:

- community involvement is essential and fosters greater acceptance and understanding so projects much be co-developed with communities;
- ensure local resources, assets and geography shape project development;
- consider the social and economic context of a place to ensure solutions are fair and just, whilst enhancing local economies and jobs;
- apply a multi systems lens and seek to integrate clean heat projects with other systems to create a more efficient and integrated approach to sustainability;
- design in resilience to how local climates might change due to global warming.

[10] Planning Works: Local Energy Planning to Accelerate Net Zero, UK Energy Research Centre (UKERC) 2024.

**Annex 2** provides some summaries of place-based activities which are tailored to the needs and strengths of different locations.

We would like the Scottish Government to create demonstrators for comprehensive place-based approaches to test:

- harnessing synergies and efficiencies across the different sectors;
- aggregating projects up to an investible scale;
- avoiding issues caused by taking a more siloed approach; and
- testing approaches to managing risks around the costs involved and management uncertainties at the planning stage around ultimate success.

Testing a programmatic approach could offer costed net zero transition plans for a location that builds upon the process started through LHEES. Potential linkages could also be made to other existing work strands, such as Ofgem's proposal for Regional Energy Strategic Plans, which will be taken forward by the National Energy System Operator (NESO) and will interact with the Strategic Spatial Energy Plan (SSEP) for energy systems across Britain[11].

### 3.4 Barriers and challenges

Place-based solutions seek to benefit whole communities socially, economically and environmentally. However, the case for investment is primarily based on the financial return (principally from reduced energy costs) and often largely ignores the wider socio-economic benefits. At current capital costs and energy pricing, the financial returns are insufficient to mobilise enough return-seeking debt capital, so as to fully cover the upfront capital costs. This means that a market-led solution is unlikely to occur without significant intervention.

Focusing on an individual property approach requires using a combination of subsidy (to cover the remaining cost gap) and policy to compel households to act. In the absence of a rebalancing of the relative gas and electricity prices at a UK level, an individual property approach is unlikely to lead to the change required without significant additional demand levers.

A core principle of place-based approaches is the ability to aggregate interventions into a local project vehicle and then apply blended finance to fund this vehicle, effectively providing retrofit as a prefunded service to households in that area.

This avoids the requirement for individual households to take on debt or make any upfront financial contribution and instead 'pay' for the transition through an ongoing service, or comfort fee, which would be covered by the reduction in their original energy bill. Work is required on the mechanism for this payment, including what levers sit at Scottish Government level and what options require UK Government action.

The economics dictate that this payment would need to be maintained for several decades and so it would likely be attached to the property electricity meter rather than to the individual householder, i.e. it would remain in place for whoever lived in

[11] Jointly commissioned by UK, Scottish and Welsh governments to NESO in October 2024.

the property in the future and continued to benefit from the upgrade. Some households may still choose to self-fund and therefore receive the full energy bill reduction, but this can be an active choice and affordability no longer becomes a key barrier.

The UK's legislative environment adds to challenges around this in relation to developing innovative models like Demand Aggregation Financing (DAF) which can refer customers to lenders as an alternative to financing through the project vehicle.

However, the key challenge is a capacity, capability and resource gap within the local public sector to develop projects. This constrains development of a pipeline that can be aggregated into an investible programme. However, public-private partnerships can overcome barriers to project development, mobilise investments, and ensure more effective delivery of large-scale energy efficiency programmes. For example, iChoosr is a private organisation who have collaborated with over 200 UK councils in delivering residential rooftop solar installations. These have successfully aggregated demand, brought down costs and delivered individual benefits.

The 'capacities framework,' developed through research on similar initiatives in England, provides six inter-linked and inter-dependent forms of capacity that are crucial for local authorities to deliver national energy policy. They are outlined below.

**Table 1** – Description of different types of capacity

| Capacity type | Description |
|---|---|
| Responsibility | Statutory duties; defined administrative authority; often assigned by central government and/or national constitution |
| Political authority | Policy discretion; ability to make policy decisions in relation to the locality, rather than contributing to national policy |
| Finance | Financial resources; local tax raising abilities; capital assigned from central government; land |
| Personnel | Personal capital; number and quality of staff capable of making and implementing energy policies |
| Knowledge | Experience; access to specific forms of knowledge; sustainable learning and innovation |
| Energy materialities | Proximity to energy resources; low carbon energy assets; local infrastructure |

Source[12]

Gaps or limitations around the above capacities adversely impact on the ability to deliver maximum value for money by constraining the optimisation of:

[12] Policy, politics and materiality across scales: a framework for understanding local government sustainable energy capacity applied in England, C. Kuzemko, J. Britton, April 2020.

- project **scale**: capital to development funding ratio needed;
- **operational scale**: ability to scale in light of consumer finance challenges;
- **leverage**: private to public capital funding ratio; and
- **impact**: societal benefit – the scale of public benefit generated.

Measures to successfully address these in delivering place-based retrofit models fall under four broad categories, which we shall consider in turn:

- **technical capability** and resource to develop projects and programmes;
- **generating interest amongst financers** including achieving a critical mass of sign-up;
- **brokering services** matching investible projects to interested private finance;
- **Securing demand** with sufficient customer sign-up to ensure required returns

Technical capability

As revenue funding availability is limited, coordination of spend is important here – as a methodology for place-based decarbonisation is developed, projects can learn from each other and share input from third party expertise. This will require moving away from a simple competitive project-by-project grant funding approach to a programmatic approach which can more efficiently deploy limited revenue funding by:

- building up local authority in-house capacity and capability;
- building up centrally provided support for local authorities;
- coordinating between projects (fostering a programmatic approach); and
- aligning spend on external expertise between projects.

Indeed, this is the approach of the Local Net Zero Accelerator programme from the Department for Energy Security and Net Zero (DESNZ) and employed by the Local Net Zero Hubs in England. Potential practical solutions to the challenge of limited public sector budgets include giving consideration to leveraging public sector revenue funding to bring in philanthropic and/or commercial contributions to fund technical assistance. Another avenue might be to consider making project development grant funding repayable under certain conditions. The repayment requirement could fall on the project vehicle and therefore be paid out of project capital rather than from the local authority. If administered by an arm's length body, repaid grants could then be recycled into further projects.

Another important factor influencing the value for money of public sector spend is the ability to reduce the capital requirement relative to the outcome. Increasing capital efficiency has a leveraged impact on reducing public sector contribution to the capital. If capital efficiency can be increased, that is, reducing the size of the cost without reducing the size of the value created, then the total public funding required will also reduce, even as the amount of return-seeking finance remains the same.

Optimising spend, including considering how generation, storage and energy efficiency investments interact and can mutually reinforce each other can reduce the capital required per unit of carbon. Including collective assets, such as heat networks or networked ground source arrays can improve capital efficiency.

Generating interest amongst financiers

A key attraction of place-based models is the potential to achieve a critical mass through procuring and installing measures in high volume and in an integrated way. Creating this aggregated demand can lower the element of risk and therefore the cost of available capital.

As a means to foster greater aggregation under the place-based 'umbrella', we would advocate specific activities such as:

- detailed consideration and design of 'the pipeline process', encompassing all its component parts, including origination, project development, procurement and then aggregation;
- exploring regulatory reform which simplifies requirements around getting credit brokering licences while addressing other barriers which encourage increased private sector participation including around effectively managing lender risk exposure. The role of a Hubs Model of Procurement in fostering longer-term partnerships with the private sector should also be considered;
- testing the 3Ci/Living Places Net Zero Neighbourhood delivery model;
- utilising LHEES to develop an investible pipeline, one with the opportunity to innovate blended finance structures to fund that pipeline at scale;
- creating finance pathfinders which utilise existing resources to support experimentation in testing place-based models; and
- partnering with the finance community to develop aggregation models that can be applied in a clean heat context within Scotland.

Importantly, financial institutions look for simplicity, so when a mix of assets is being aggregated it is important to have clear synergies between them. Lessons on how to leverage private finance to help deliver at scale can be learned from elsewhere, for example, around offshore wind or the Power Networks Distribution Centre. We would also wish to highlight the appetite that already exists amongst some private sector employers for secondments into the public sector to help build capacity. This is an avenue that we would see as being beneficial to explore further.

While blended finance will be required to deliver these place-based models – and it is essential that the public sector provides some of the funding as a sign of its commitment – there is also the need to maximise the private sector component. A financial return for capital funders is essential, and typically consists of a contribution from energy bill savings. This can be achieved in different ways:

a. **Patient finance** – by extending the settlement period, the repayment of the capital component is spread over a longer timeframe, making the amount repaid each year smaller. This supports developing approaches that are suitable for private finance looking for long-term investment, for example, pension funds, life assurance and other annuity products[13]. In relation to pension funds specifically, it is understood that this would entail the adaptation

[13] The Association of British Insurers (ABI) established an Investment Delivery Forum in 2023 to act as a catalyst and facilitator for driving investment of £100 billion into projects focusing on green infrastructure and housing over the next 10 years. Solvency UK: Cross-sector co-operation to drive £100bn investment into UK projects | ABI (July 2023). In its Final Report (July 2024) the Forum also noted 3Ci's Net Zero Neighbourhoods as a key area it wishes to explore further.

of certain fiscal rules for calculating public sector net debt to account for investment in productive assets by the National Wealth Fund and Great British Energy[14]. Typically, these sources of funds need to invest at scale, meaning that aggregation becomes key, and can be delivered in a place-based scheme by planning for multiple properties within a neighbourhood.

b. **Lower cost finance** – fund design and the application of de-risking instruments can reduce risk, thereby reducing the required rate of return for investors. A lower interest rate means that the annual interest payment is smaller, and so more of the financial return can be used to repay capital. By aggregating investment demand to a fund structure, de-risking can be applied at a portfolio rather than project level, which is likely to be more efficient.

c. **Commercial alignment** – in addition to the financial return and the benefit to society, other commercial interests may benefit from the decarbonisation of place being considered. Co-investment from these interests could be negotiated into the funding, alongside traditional funds, and used to support:
   - reducing long-term energy grid demands, benefiting network operators through reduced network upgrade requirements;
   - reducing rainwater run-off to the sewage network through the inclusion of sustainable urban drainage components to the design, thereby reducing operational costs and reputational risks for water companies; and
   - increasing built environment measures that improve properties EPC ratings, delivering mortgage book decarbonisation for mortgage providers within the scheme area, and enabling them to meet their regulatory requirements.

Brokering services

There are two broad approaches to matching projects with funding:

i. a financial brokering phase, to match individual projects with funders; and
ii. a fund development approach, to aggregate funding into a single vehicle, which then funds multiple projects.

i.) Financial Brokerage

The financial brokerage phase involves translating technical projects into investment prospectuses, socialising the project opportunities with the relevant finance community, and arranging the legal, financial and due diligence support required to execute the deal. Developing such a service is something that the Local Authority Advisory Service is exploring in England as part of Local Partnerships[15].

The financial brokerage strand of the Local Authority Advisory Service seeks to bridge the final gap between the finance community and investible projects. It

[14] Mobilising pension capital for net zero: a policy blueprint for the UK, IFM Investors, October 2024.
[15] Local Partnerships is a not-for-profit entity jointly owned by HM Treasury, the Local Government Association and the Welsh Government. It is dedicated to working with UK Central Government, Welsh Government, Councils, Combined Authorities and other public sector organisations to deliver value for public money including though place-based initiatives and in tackling climate change. Taskforce member GFI is working with Local Partnerships on this.

recognises that private financiers will be more likely to engage if they are presented with clear investment prospectuses that are accompanied with a level of due diligence (on the detail of individual strands of a project or aggregated programme).

The financial brokerage service would therefore seek to act as an intermediary and translator between private finance and public sector-led projects, so that relevant financial details were presented in a standardised way, making it easier for investors to assess and support public sector sponsors to secure other sources of funding such as grants. Building on this, the brokerage service could negotiate and execute deals on behalf of public sector sponsors.

Developing a credible brokerage service could also prove beneficial in terms of smoothing the journey for future projects, as private financiers come to trust the analysis from the brokerage service, making them more open to early engagement and negotiation around investible projects within a credible pipeline.

ii.) Fund Development

A fund development approach involves creating a single aggregated blended finance fund designed specifically to invest in multi-asset, place-based projects.

This could build on existing fund structures such as the Scottish Partnership for Regeneration in Urban Centres (SPRUCE), the Mayor of London's Energy Efficiency Fund (MEEF), and Efficient Decentralised Generation of Energy (EDGE) funds, blending a range of public and private sources of capital (both grant and repayable).

A key advantage of this approach is that it would provide project sponsors with a single point of funding and allow for greater standardisation of approach (business case templates, reporting structures, etc.) while also allowing de-risking approaches to be applied more efficiently at the fund rather than the project level.

It may well be the case that a financial brokerage approach is more appropriate to drive learnings for initial demonstrators (with a likely greater reliance on public funding) with funds making more sense as approaches start to scale. Again, a fund approach would likely benefit from collaboration with other UK regions to facilitate larger investors being able to invest at a national scale.

Securing demand

A key challenge that must be overcome to affect the huge transition required to meet net zero targets is to find a narrative and funding models that drives mass take-up of change. Simplistically, the behavioural change challenge can be broken into two key components: the motivation to participate; and the ability to afford to participate.

Both are necessary to drive mass take-up, although, as our Part 1 report discussed, there is a range of inter-linked factors that will influence consumer confidence to install clean heat or energy efficiency measures. These include factors such as, providing trusted advice and information to enable people to make informed decisions, having routes to redress which protect consumers if something does go

wrong, and delivering the general marketing activity that increases individuals understanding of what the heat transition means for them and how to act.

The ability to fund the transition is often thought about in terms of the individual's ability to borrow. The reality is that many households do not have the credit capacity to borrow the sums required to fund a whole-house retrofit in one go, even if they wanted to. Scotland has an ageing homeowner population, and, after the age of 55 years, access to longer-term borrowing products such as 25 year mortgages or retrofit equity release products for mortgage-free homeowners, is limited. First-time buyers continue to be severely impacted by the housing affordability crisis, and typically do not have further borrowing capacity after buying a first home. Financial solutions and subsidies therefore need to be tailored to the diverse needs of different demographics.

Furthermore motivation to borrow through a compelling narrative for property owners is currently lacking. Evidence suggests that the goal of reaching net zero is not yet a compelling enough narrative in and of itself. The Scottish Government's Public Engagement Strategy (PES) published shortly after our Part 1 report, set out commitments that would help to develop and promote a consistent narrative on heat transition benefits. Disappointingly, very little progress seems to have been made to date with delivering the PES, a situation we hope the Scottish Government will address quickly.

Linking the changing of heating systems to outcomes that are meaningful to daily lives is likely to be more successful in gaining broad buy-in to act. For example, lower electricity bills as a direct result of more efficient heating systems, reduced energy usage though installation of energy efficiency measures, and improved health outcomes.

### 3.5 Taskforce insights from potential models considered

The cross-sector decarbonisation of a local area, encompassing multiple households, requires the installation of the physical and operational infrastructure to deliver a range of initiatives including, renewable heat provision, renewable power generation, and active and / or electrified travel options.

Investments will include elements with area-wide scale, such as heat networks and EV (electric vehicle) charging infrastructure, through to individual building scale, such as insulation and rooftop solar, which could be aggregated on a street-by-street or neighbourhood scale, with co-design input from the community.

This capital investment can deliver a range of inter-related benefits by driving:

- reduced emissions;
- reduced costs through the avoidance of energy curtailment, or need for energy grid upgrades through the inclusion of energy generation and storage;
- creating a financial return that can be captured from avoided energy costs, lower cost transport options, and, potentially, service fees around aspects such as mobility services; and
- additional value for society through physical and mental healthcare cost reductions, fostering local economic growth and productivity.

The Net Zero Neighbourhood (NZN) model was originally developed by the partners now at Living Places in 2021[16] and set out with 3Ci in its published business case in 2023[17]. It has generated substantial interest by those looking at place-based models. The concept takes a multi-asset approach to neighbourhood decarbonisation across domestic and commercial property retrofit, renewable energy, transport and waste. A key aim for this model is to reduce the scale of public subsidy required, whilst delivering interventions at no additional upfront cost to the homeowner.

In summary, this place-based model:

- delivers multiple interventions at a neighbourhood level to achieve scale;
- provides a blended funding model combining public and private investment;
- generates revenues by capturing part of the energy savings that result from the retrofit work; and
- links to local regeneration plans to maximise socio-economic co-benefits.

While not a place-based retrofit financing model, the UKGBC Retrofit Playbook is also worth highlighting as a tool to help local authority sponsors to develop projects and programmes. It provides a comprehensive resource to support local and combined authorities in the development of retrofit policies and initiatives, through sharing best practice and guidance. The Playbook forms part of the Accelerator Cities Programme, a project designed to support and enable local and combined authorities to take action on home retrofit. It is run by UKGBC and partners, with co-funding from EIT Climate-KIC. The Playbook is a guide, designed so that local authorities can 'dip into' those sections that are most relevant and useful to them.

Following on from the first phase of its work on a coordinated, area-based transition to low carbon heating[18] – using open collaboration to create a blueprint for an ambitious, coordinated approach to decarbonising homes – Nesta has announced plans for a dedicated webpage that will include updates on new projects, case studies on existing heating projects, and insights into Nesta's research.

Heat as a Service (HaaS) is another model that could facilitate widespread adoption of low carbon heating systems. By offering heating services rather than the upfront sale of equipment, it makes transitioning to renewable heat more accessible to households. This model ensures that the ongoing cost of heating is tied to performance and energy savings, which can drive adoption of energy efficient technologies. Challenges in developing HaaS models at scale tend to be due to complications around the ownership, and no commercial offering is currently available across the UK as there is currently insufficient market demand[19].

### 3.6 Route to unlocking opportunity – Programme Development Unit

In articulating a clear approach to place-based delivery, we would look to the Scottish Government to take a leadership role in coordinating activity to –

[16] Green Neighbourhoods as a Service
[17] Net Zero Neighbourhoods: an opportunity to sweeten the deal for investors - 3ci, June 2023.
[18] Clean heat: coordinating the switch street by street, Nesta, June 2024.
[19] More information on HaaS models can be found at Box 1 on page 44.

(a.) develop new commercial models that begin to catalyse the development of a strong project pipeline of clean heat initiatives; and
(b.) facilitate the steps to de-risk large-scale investment, along with mechanisms that balance investor returns with community benefits.

While we have focused specifically on clean heat projects, we note that the need for a "real" project pipeline was among the recommendations of the First Minister's Net Zero Investor Panel, which highlighted that projects forming the pipeline needed to be properly costed, shaped and prioritised[20]. We fully concur with this reasoning.

The question is how to develop that pipeline for clean heat? We have concluded that a critical gap still exists. That is around the capacity and capability of project sponsors – often local authorities, although it can also be social landlords, third sector or community organisations – to develop projects in detail to an investment-ready stage. We do, though, recognise that comprehensive project development along these lines is an onerous and detailed undertaking, one that will require technical, legal and financial input.

Further, the methodologies to create the complex, place-based projects are not yet well established. We both need to innovate and design methodologies, while delivering the projects to test and iterate them. This suggests that simply plugging individual local authority capacity and capability gaps will not be sufficient. For a period at least, we think this means working with a smaller cohort of local authorities to develop approaches that can then be scaled across Scotland.

It is on this basis that we believe the Scottish Government can play a key role through the establishment of a **Place-Based Programme** driven by a new **Programme Development Unit** – somewhere that can provide a coordinated source of advice and specialist input, as well as helping to aggregate individual projects into scaled programmes and introducing sources of private capital.

A Programme Development Unit would need three core areas of funding:

- An initial cohort of local authorities would be given ring-fenced revenue funding for three years to ensure sufficient capacity to drive programmes forward in each location, and to support specific input to their demonstrator (for example, in relation to data acquisition, or partnership development for resident engagement).
- A central coordinating Unit to manage the programme, ensure learnings between demonstrators and with other national programmes are maximised; and to coordinate access to any required third-party expertise around engagement, governance, supply chain activation, business case development and securing funding.
- A budget to access third party expertise. A specific mechanism could be established for this procurement, or the Scottish Government could choose to leverage the dynamic procurement system (DPS) set up by DESNZ for its Local Net Zero Accelerator programme for exactly this purpose.

[20] Investor Panel: Mobilising international capital to finance the transition to Net Zero (First Minister's Investment Panel) November 2023.

This structure would create a portfolio of Full Business Case (FBC) demonstrators that could be aggregated into an appropriate programme structure and collectively seek capital funding for implementation (through a brokerage service and/or establishment of a dedicated fund structure). Testing this could provide a template for roll-out of the approach more widely across Scotland.

Structures from existing blended finance funds could be modified to bring together central government de-risking instruments, such as guarantees or first loss capital, with grant capital and a range of private long-term debt instruments from both development banks and the commercial sector. This approach is demonstrated through the Greater London Authority's (GLA) Green Finance Fund, which was launched in 2023 with aggregate funding of £500 million and has since allocated almost £220 million to eight eligible projects. The Green Finance Institute (GFI), a member of this Taskforce, were engaged to design and launch the GLA's Green Finance Fund, including assessing financial models, project identification, corporate governance, and staffing requirements.

We acknowledge the potential risk of a Development Unit being overwhelmed by the sheer number of projects it is asked to support. Careful consideration will therefore be essential in determining when to offer detailed project support. One potential approach could be to offer a form of 'triaging' service as a gateway to receiving fuller assistance. This could offer an initial high-level assessment of a project's investment readiness and sign-posting those at an earlier stage of development to existing guidance that is appropriate to their current needs.

This would allow the Development Unit to focus its technical and professional expertise on the more developed projects selected to be part of the Place-based Programme. Such an approach would mean providing overarching guidance to all projects in the development of the Business Case (Strategic Outline Case (SOC)) and then working more extensively with projects at the Outline Business Case (OBC) stage. With support of a brokerage service, projects could then move to the Full Business Case (FBC) development and implementation phases. This is likely a simplification of the actual pipeline maturity process with a number of phases of FBC delivery for each OBC project area as groups of residents form who are willing to move together within specific defined time periods.

**Table 2** – Programme Development Unit 'triaging' service

| **Idea** → → → → → → | **Gateway** (strategic) → | → → **Delivery** |
|---|---|---|
| <u>Strategic Outline Case</u><br><br>Business partners | <u>Outline Business Case</u><br><br>Project Development Unit input | <u>Full Business Case</u><br><br>Brokerage advice<br>Procurement frameworks (materials, installation, etc.)<br>Framework contracts |

We would see the Scottish Government as being best placed to lead on the creation of the Demonstrator Programme and the associated Development Unit, particularly

to ensure that the existing public landscape is fully integrated into the programme. However, the Unit must draw on the financial expertise available through the Scottish National Investment Bank, Scottish Futures Trust (SFT) and the Economic Development Agencies, along with the knowledge and experience gained by a range of NGO/third sector organisations such as Living Places and GFI[21]. Subject to procurement, these organisations could work together, drawing in others like 3Ci as helpful, to ensure that the programme will be able to balance project development with investor readiness and appetite.

**Direct, Indirect and Community Benefits of place-based retrofit**

3.7 Direct and indirect benefits

Clearly articulating the direct benefits (economic and employment) as well as indirect benefits (health and communities) should form a key part of the engagement and communications activity that is required to secure buy-in. Our considered view is that the transition to clean heat can and should be viewed as an opportunity for Scotland to capitalise on these benefits, rather than being seen as merely a cost.

The Government of Ireland summarised the multiple benefits of retrofit well in its National Retrofit Plan[22] –

> As recognised by the International Energy Agency, the traditional focus on energy savings as the main goal of energy efficiency policy has, at times, led to an underestimation of the full value of energy upgrades. Retrofit [and] home energy upgrades can bring multiple benefits, such as enhancing the sustainability of the energy system, supporting strategic objectives for economic and social development, promoting environmental goals and increasing prosperity.

**Direct** benefits relate to GVA and jobs impact. Most obviously, there is the work for businesses advising on or installing retrofit measures, with these businesses then creating and/or maintaining jobs. As many of the firms involved are SMEs, and because action is needed for properties right across Scotland, these direct benefits will tend to be distributed at a local level. There are also export opportunities for manufacturers in the clean heat and energy efficiency supply chain.

Additionally, more energy efficient properties use less energy and therefore (all else being equal) mean lower energy bills. By means of example, Citizens Advice has highlighted that homes that upgrade their energy efficiency to EPC band C could save up to £951 per year per household[23]. For these households it can mean more disposable income which can be spent on clean heating systems, as well as in the

[21] Given the forermost's work establishing similar structures with a range of national and local authorities.
[22] National Retrofit Plan, Department of the Environment, Climate & Communication [this Plan was originally published as Chapter 14 of its Climate Action Plan 2021], Government of Ireland | *Rialtas na hÉireann*, November 2021.
[23] Insulation Nation: The roadmap to a future of affordable energy bills, Citizens Advice, September 2022.

local economy, where it will deliver multiplier impacts by supporting other service jobs and activities.

Direct benefits from heat transition

**Table 3** – Direct benefits from heat transition

| Improved outcome | Less spend on energy | Increase in GVA |
|---|---|---|
| • Supporting benefits | • More resilient business / household budget<br>• Increased local capital circularity<br>• Increased opportunity for growth and renewal | • Increased job opportunities<br>• Locally distributed jobs<br>• Increased growth increases tax income<br>• Growth (including export) opportunities for supply chain e.g. heat pump manufacturers |

**Indirect** benefits include warmer, safer homes, leading to healthier people, a corresponding reduction in healthcare spending, and increased productivity. This can happen by virtue of homes experiencing fewer conditions such as damp, resulting in people becoming sick less often, or chronic conditions like asthma having fewer flare-ups.

Productivity benefits from improved health will derive from fewer sick days, which, in turn, will enable firms to produce more from a given cost base. Individuals working in more comfortable and stable temperatures may also be better able to concentrate and therefore get through more work within a given time. Similarly, warmer, healthier homes are also more likely to lead to better educational outcomes for children.

There are also the resultant savings for the NHS. Cost-benefit analyses of the return on investment that could accrue from preventing fuel poverty amongst children and young people suggest that, for every £1 spent on reducing fuel poverty, a return in NHS savings of 12 pence can be expected from children's health gains. When adults in the family are also included, this increases to 42 pence[24]. Furthermore, common illnesses caused by cold homes during the winter currently cost the NHS around £1.4 billion every year[25]. By improving energy efficiency in homes, not only can energy bills be reduced, but the financial strain on the NHS can also be alleviated by preventing cold-related health issues. Research by others, including by the London School of Hygiene and Tropical Medicine (LSHTM) echoes these health benefit conclusions[26].

[24] The impact of Fuel Poverty on Children, Policy Briefing, commissioned by 'Save the Children', written by Professor Christine Liddell, Dec. 2008; and Building the Future: The economic and fiscal impacts of making homes energy efficient, Cambridge Econometrics, Oct. 2014.
[25] UKGBC, Our work, home retrofit.
[26] Evidence on the health impacts of increasing home energy efficiency and/or winter heating, James Milner & Paul Wilkinson, both of LSHTM (2016).

Indirect benefits from heat transition

**Table 4** – Indirect benefits from heat transition

| Improved outcome | Healthier people | Avoided future costs of climate inaction |
|---|---|---|
| Supporting benefits | • Year-round more comfortable homes<br>• Less spend on healthcare<br>• Increased productivity | • More stable politics / society<br>• Increased energy security<br>• Reduced insurance and adaption costs<br>• Potential future government revenue stream from investment<br>• Action on heat needed to avoid catastrophic climate change |

Community benefits

Alongside direct and indirect economic benefits, the potential community benefits should form part of the compelling narrative, which builds support for action at local, regional and national levels. In this respect, community is generally taken to comprise actors within a particular location that have a detailed knowledge of the local area, and that work together to deliver localised solutions to given challenges. However, much of the narrative around community benefits could also be applied to an interpretation of communities that focuses on a group of people that share a common identity, for example, religious affiliation[27] or armed service veterans.

There are two aspects to community benefits worth considering. Firstly, there is the potential for place-based retrofitting projects to deliver wider community benefits and regeneration activities. Secondly, there is the opportunity, with agreement from the communities, to utilise community benefit funding from income streams available to a community, for example, from near-by wind turbines to fund retrofit projects.

A place-based model like the Net Zero Neighbourhood model proposes creating a not-for-profit Special Purpose Vehicle (SPV) to act as the entity responsible for delivering the place-based retrofit project and managing the blended finance stack. The SPV can also be responsible for a range of community investments that are co-designed with the local community. This will shift the narrative from a technical conversation about energy efficiency and carbon savings, to one about community regeneration and prosperity, whereby delivering coordinated retrofit activity can help unlock other enhancements valued by the community.

[27] The Scottish Episcopal Church has committed £6.524 million over seven years on its Net Zero project. This includes an addition to existing funds allocated for buildings and the church's rectory green fund, as well as co-funding of a Heritage Energy Expert. Individual congregations contribute to Eco-Congregation Scotland.

In relation to using funding available to a community to deliver retrofit projects, an example of a potential source is provided by the Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments (first published in 2014[28]) which encouraged the renewables industry to contribute towards community benefits funds. Such contributions provided a total of £15.7 million in 2019. They are voluntary arrangements, where the guideline for payments is £5,000, index linked, for each installed megawatt per annum[29]. Such community benefits payments could, though, be made compulsory processes, thereby directing funds towards local communities[30].

Substantial community benefit from energy related income is, furthermore, expected over next 30 plus years, with this growing markedly over time. It would therefore be helpful to have a strong pipeline of capital for projects and revenue funding for technical studies to inform spending by communities on solutions that could be replicated in other areas, whilst also providing visibility of supply chains for communities to utilise. By providing readily available and varied solutions, communities would be able to pick up a model that they are attracted to, tailor the business case and finetune the proposal, then replicate it across locations, perhaps with mentoring for inexperienced communities by more experienced communities.

While such benefits would need to be balanced against other priorities a community may wish to fund, such an approach does offer a potential route to helping finance local retrofit projects. However, as most communities are unlikely to possess the expertise and resources to develop coordinated retrofit installations for the whole community, it is more likely that the payments will need to be used alongside other funding sources, such as grants, to help people take individual action. Access to some central source of expertise and advice would help communities plan and deliver small-scale place-based projects.

A separate consideration relating to community benefits that needs to be taken into account during the project development phase is the question of who any longer-term benefits (beyond payback of the initial capital costs) should accrue to – commercial partners or to the community. A case can be made for either and it could be an important factor in securing buy-in from all parties involved. This is a question that should be addressed as part of the business case development process, supported by the advice that a Programme Development Unit could offer. Getting the initial governance design right will help ensure that a fixed portion of any revenues are funnelled directly back to the community at large.

[28] Scottish Government Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments, Scottish Government, November 2018.
[29] Community benefits from onshore renewable energy developments: Guidance on good practice principles for communities, businesses, local authorities and others, Scottish Government, May 2019.
[30] The Cost of Living: Impact on Rural Communities in Scotland, RSE Advice Paper, April 2023.

# 4. **Heat Networks**

## 4.1 Overview and context

Heat networks have been established as a reliable heating solution for the past 50 years across Europe, most notably in Scandinavian countries, where, in certain cases, heat networks are supplying more than 70% of a nation's annual heat demand. In Scotland, they will have an important role to play in achieving clean heat, especially in dense urban areas. The Scottish Government has identified heat networks as a key 'low-regret' technology that will help deliver the transition to clean heat[31].

There are, however, gaps in policy limiting certainty needed by investors to invest in them. In Scotland there are heat network targets of 2.7 TWh (terawatt-hour) by 2026, 6TWh by 2030 and 7TWh by 2035[32], and yet it is estimated that heat networks currently supply around only 1.5% of heat[33].

What are heat networks?[34]: heat networks distribute heat or cooling from a central source and deliver it to public buildings, shops, offices, hospitals, universities and homes. Economies of scale mean that heat networks are also uniquely able to use local sources of low carbon heat which would otherwise go to waste, such as from factories, data centres, the ground or rivers[35].

Heat networks include both district and communal heating, as defined by the Heat Networks (Scotland) Act 2021 ("the 2021 Act"). A 'district heat network' is defined as a network where thermal energy is distributed from one or more sources of production to more than one building. A 'communal heating system' is a system where thermal energy is distributed from one or more sources of production to one building comprising more than one building unit.

We focus on district heating schemes, as communal heating, such as systems servicing a single block of flats, will most likely be defined by financial structures that are more akin to those discussed as part of the place-based approach in Chapter 3. In contrast, district heating schemes are typically large-scale infrastructure projects that service multiple non-domestic buildings with high heat demands, alongside clusters of domestic consumers (including social housing stock).

## 4.2 Broader benefits

The value of heat networks is not just as cost-effective providers of low carbon and low cost heat to residents, public sector organisations and businesses. They have a range of other benefits, including providing:

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[31] Heat networks - Renewable and low carbon energy - gov.scot
[32] Heat Networks (Scotland) Act 2021 (Part 8).
[33] Heat Networks Delivery Plan: review report 2024, Scottish Government, March 2024.
[34] Heat networks, Department for Energy Security & Net Zero and Department for Business, Energy & Industrial Strategy, 18 July 2016.
[35] Heat Networks Delivery Models, Scottish Futures Trust, 20 February 2024.

- a valuable grid-balancing service by being able to store excess renewable generation, avoiding curtailment costs, and subsequently providing cheaper heat. Curtailment costs between January 2021 and April 2023 were £1.5 billion and are expected to rise significantly[36].
- storage for excess heat provided by other industrial processes. Hydrogen generation, for example, is only 60-70% efficient, with the remaining energy being lost as heat. By pairing these other components of the energy transition with heat networks, the cost of heat for surrounding consumers can be further reduced.
- cooling services for new economy infrastructure such as data centres. By selling cooling to these facilities, not only can they operate more cost effectively, but cheap heat can then be provided to heat consumers.

### 4.3 Financial context

District heating networks are able to connect and service large anchor loads with predictable heat demand over multiple decades, providing investors in turn with stable, long-term financial returns. Due to the scale of the investment, district heating schemes in the UK have historically been financed through project finance, under long-term contracts (typically 40 years).

In the past two decades in particular, the UK has experienced a substantial increase in deployment of larger scale district heating. Powered mainly by gas-fired Combined Heat and Power engines (CHP) those heat networks have been able to produce cheap heat more efficiently to serve connected customers, whilst also producing electricity to cover local needs, or export electricity to the grid for additional revenue.

In the past, projects were also able to benefit from the non-domestic Renewable Heat Incentive (NDRHI) a UK Government subsidy based on the amount of renewable heat generated. This substantially improved a project's viability and returns to investors. The NDRHI was closed to new applications in March 2021.

Scotland saw a few good examples of CHP powered district heating schemes, most notably the Aberdeen Heat and Power schemes, which continues to expand and service customers across the city, with the core aim of providing affordable heat and reducing fuel poverty.

Drawing on national and international examples, it is safe to say that district heating is an established and reliable solution for area-wide heat provision, whilst their economics and risk profile have made private finance more accessible compared to other means of heat decarbonisation. Crucially, given current technologies, district heating might be the only cost-effective and technically feasible solution in dense urban areas with many pre-1920s buildings.

However, with the advent of the need to provide low carbon heat as well as the closure of the NDRHI, heat networks have had to change their approach, with more focus on waste heat. Low carbon heat networks face new challenges, which have

[36] Heat Networks: The Battery Alternative, EnergiRaven, November 2024.

aggravated their risk profile, seemingly making the sector a less profitable investment opportunity.

For example, a recent report by Burges Salmon[37] surveyed 80 investors and developers in the heat network space. It found that 69% of investors said that heat networks represent an attractive prospect and over 60% said that heat networks can generate sustained investment. However, investors and developers alike noted important barriers that need to be addressed through appropriate policy and regulation in order to attract finance similarly to other sectors. The report also noted that investors sought 'large margins' and 'incentives' from government.

We have identified a series of challenges that permeate the heat network sector.

### 4.4 Cost of capital

The Scottish Government aimed to bridge the transition and demonstrate the viability of low carbon infrastructure through the Low Carbon Infrastructure Transition Programme (LCITP), which was open from 2015 to 2021 and made financial support available to innovative low carbon infrastructure projects that have potential for replication. This approach led to the successful delivery of renewable heat network projects like the Queens Quay heat network in Clydebank, and the Advanced Manufacturing Innovation District Scotland (AMIDS) heat network in Renfrewshire.

Those two schemes are the first of their kind in Scotland and the UK: Queens Quay being the first large-scale district heating scheme to extract heat from a river using a water source heat pump; and AMIDS using fifth generation low temperature heat to power their heat networks. However, the schemes required high upfront capital investment, having total capital costs of over £12 million and over £7 million respectively.

As the LCITP had a wide scope, and to help meet the ambitious targets for heat network deployment contained in the 2021 Act, Scotland's Heat Network Fund (SHNF) was launched to focus high value grant funding on low carbon heat networks.

The SHNF can offer grant at up to 50% of the project's total eligible capital costs, helping bridge the funding gap required to reach target investment levels, which typically revolve around 10% over a 40-year period. This is essential because, even in mature markets like Denmark, there is continued government grant support to build and expand heat networks. The Scottish Government will therefore need to consider options for extending the available grant funding offering to reassure and encourage investment.

Both the private and public sectors appreciate that current levels of grant support are unlikely to be sustainable longer-term. Hence, it is imperative that the Scottish Government, in collaboration with industry and institutions like the SNIB and the National Wealth Fund, starts exploring and developing the financial mechanisms of the future. These could include a role for blended finance models to mobilise private

[37] Getting to Net Zero - The potential for heat networks in our communities (burges-salmon.com).

capital, as set out in the Green Finance Strategy[38], where UK Government committed to working with the GFI to explore blended finance models.

Private investors and developers, though, have shown a substantial interest in heat networks that can provide long-term returns, provided there is a stable and supported market.

However, we would note that long-term ownership of heat networks does not have to be conflated with provision of long-term funding or indeed the delivery of the network itself. National, municipal and cooperative ownership models can be considered, paired with long-term debt funding and outsourced delivery and operation contracts.

Experience from a number of industries, such as the privatised English water companies, the rail system and the short-lived privatisation of the UK's nuclear assets in British Energy in the 1990s, suggest that private capital may at times prioritise shorter-term returns for shareholders that conflict with the longer-term investment needs of these types of assets, leading to infrastructure underinvestment and degradation of service levels[39].

### 4.5 Scale and demand risk

For heat networks to be investible, developers need certainty that sufficient customers will connect to the network. This is one of the biggest factors restricting private sector investment. The GFI makes this point in its 2020 report[40], which found that projects have been of smaller scope and scale historically, with difficulties in securing connections from key off-takers, making it challenging to minimise the risk of investment.

One route, as evidenced through Scotland's Midlothian-Vattenfall Joint Venture example in Shawfair, is ensuring connection by leveraging public-private partnerships. SFT, in collaboration with the Scottish Government[41], published a report in February 2024 that assessed the potential roles that a range of delivery models (alongside a number of complementary enabling structures / mechanisms) could play in helping to accelerate the pace and scale of heat network deployment. The report found that Joint Ventures and Strategic Partnerships can bring about many advantages for the deployment of heat networks, including demand assurance. Under those models, demand assurance stems from the fact that the public sector commits its buildings to connect in return for an agreed and contractually fixed long-term tariff.

SFT also advises that most developers will not invest significantly without customer contracts to provide assurance that there will be sufficient demand to recover its investment. The absence of such 'demand assurance' is a key reason why developers can be unwilling to invest in large-scale heat networks. This is generally

[38] Mobilising Green Investment - 2023 Green Finance Strategy.
[39] Without Foundation: A critique of the essay Foundations by Bowman, Southwood and Hughes, Energy Networks - Arthur Downing's Substack, December 2024.
[40] Financing zero carbon heat: turning up the dial on investment, A report by the Green Finance Institute's Coalition for the Energy Efficiency of Buildings, December 2020.
[41] Heat Networks Delivery Models, Scottish Futures Trust, 20 February 2024.

true for both public and private sector developers, although their objectives, investment criteria and risk appetite tend to be different. Sufficient demand assurance can be achieved by developers entering into long-term agreements with owners of anchor loads. The most attractive anchor loads are usually large public buildings, such as hospitals, where there is confidence in a high heat demand that will be sustained over many years, combined with low counterparty risk.

However, this means that residential demand is often entirely ignored when developing the business case for heat networks, with the exception of new build and potentially large blocks of single ownership existing housing, such as concentrations of social housing.

We would therefore note a key potential synergy with the previous section of this report on place-based approaches. Heat network zoned areas could seek to secure mass sign-up of multi-tenure properties, including of residential housing, to provide anchor loads for the network, strengthening the business cases and further derisking the heat network by allowing overall cheaper provision of heat. How this might work in practice would need explored further with industry.

In the absence of regulatory levers, developers have relied on negotiations to attract long-term contractual agreement with large heat loads, such as public sector buildings, before investing in a heat network. This has been demonstrated to work for the construction of new heat networks, but it has not been effective for the expansion of heat networks. We believe consideration of the case for mandatory connections to heat networks should be a top priority in exploring ways to provide demand assurance, albeit this would also require careful consideration of any potential impacts on consumers.

### 4.6 Cost to the consumer

Low carbon heat networks predominantly use electricity to run large-scale heat pumps to transfer heat to and circulate water around properties. The cost of heat for low carbon heat networks is therefore driven by the cost of electricity, which costs approximately 4-5 times the price of gas. Anecdotally, the electricity costs to run a heat network can contribute up to 80-90% of the total lifecycle costs of the network.

The need to rebalance relative gas and electricity prices is therefore crucial to support decarbonising of heat networks. We have made this point about the importance of rebalancing prices throughout this report, and the CCC, in its Seventh Carbon Budget report, also highlights that making electricity cheaper is a key theme underpinning most of its recommendations.

Heat from heat networks needs to be low-carbon and low-cost to attract consumers. To make heat affordable, more needs to be done to capture significant amounts of waste heat[42] from industrial processes, distilleries and electricity generation. Innovation can support greater use of waste heat (that would otherwise be lost into

[42] ClimateXChange identified almost 2TWh of waste heat across approximately 932 sites in Scotland in 2020.

the atmosphere or sea) and support the business case for heat networks and their expansion.

District heat networks also offer other opportunities to reduce cost such as seasonal thermal storage and solar thermal. Tanks situated onsite stabilise the systems and enhance flexibility, both for the district heating system, and for the wider energy system.

### 4.7 Long-term regulation and engagement

The 2021 Act introduced powers to regulate the Scottish heat networks market for the first time. Specifically, the Act proposed a regulatory framework which would include powers on:

- Zoning (designation);
- Building Assessment Reports (BAR);
- Consenting;
- Licensing; and
- Permitting.

So far, zoning and BAR secondary legislation has come into force. We understand that consenting and licensing are currently being explored. Permitting, which would give exclusivity rights to a developer for a zone alongside the potential for mandatory connection, is still being considered. Scottish Renewables, the renewables trade association, called for the permitting regulations to be consulted on and passed into law. To provide certainty for investors, the 2021 Act must be fully operational.

In parallel, the Energy Act 2023 was passed by the UK Parliament in October 2023. This proposed a full regulatory framework for heat networks in England & Wales, whilst also affecting key reserved areas for Scotland such as heat network consumer protection.

The UKG's regulatory framework has largely been welcomed as helping to provide certainty for the sector. At the same time, some perceive Scottish regulation as lagging behind, lacking the clarity of the rest of the UK. This may be negatively impacting investor interest by creating uncertainty. The Scottish Government has indicated that it plans to introduce the heat network regulations, however industry is moving forward with local, district and regional projects. There is a high risk that action overtakes policy, leaving the sector disjointed, with poor investment potential.

In its recent report[43], Scottish Renewables specified the policy gaps in Scotland's heat network policy landscape. We urge the Scottish Government to take heed of this report's recommendations.

[43] National Heat Networks: A Vision for Scotland, Scottish Renewables, November 2024.

# 5. **Social Housing**

## 5.1 Overview and context

Almost a quarter of Scotland's domestic properties are socially rented homes. The approximate 600,000 social homes are provided by local authorities (52%) or Registered Social Landlords (RSLs) (48%). Local authority housing stock is ring-fenced within overall local authority accounts so that it cannot operate at a financial loss, whilst also not being able to cross-subsidise wider council programmes. Housing Associations are privately owned, not-for-profit organisations that provide and manage affordable homes.

Income sources for local authority housing and RSLs are a combination of tenant rent and government grants, as well as revenue generation through asset sales. Outgoings are related to managing and maintaining their existing stock (including empty properties which are not generating rental income), repaying debt and delivering capital expenditure programmes to invest in new houses and / or upgrade existing stock. In 2023-24, local authority housing income was over £1.4 billion, of which around £910 million was spent on the supervision, management and maintenance of housing, and almost £344 million was spent on loan charges, leaving a surplus of just £120 million for investment in capital programmes[44].

The sector has, however, been leading the way on energy efficiency in recent years, with 65% of Scotland's social housing stock rated EPC band C or better[45]. This will have been supported by the Social Housing Net Zero Heat Fund (SHNZF) which was initially launched in 2020 under the LCITP and ran for one year before becoming a standalone fund. The standalone fund was subsequently extended to 2026 to provide support for energy efficiency and low carbon heating projects.

However, over 500,000 gas boilers continue to heat socially rented properties[46], meaning that, while the sector is performing better than Scotland's housing stock overall in terms of energy efficiency, a significant amount of work remains to be done if Scotland is to achieve its clean heat (and wider net zero targets) targets.

Retrofit of the social housing sector also presents a significant opportunity to influence the wider clean heat transition, as it can offer a scale that can underpin growing market demand, therefore providing an initial boost for trades that deliver upgrade works. Social landlords can play an influential role in building broader support for clean heat installations and delivering community benefits, as they are already heavily embedded in, and trusted by, the communities in which they operate. Social housing cannot, though, play this leadership role to its full potential in the absence of policy certainty, technical assistance and funding support.

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[44] Housing Revenue Account (HRA) Statistics: Scottish Local Authority Housing Income and Expenditure 2023-24 (near actuals) and 2024-25 (estimates), Scottish Government, November 2024.
[45] Energy Efficiency, Scottish House Condition Survey: 2022 Key Findings, Scottish Government, February 2024.
[46] Key Attributes of the Scottish Housing Stock, Scottish House Condition Survey: 2022 Key Findings, Scottish Government, February 2024.

## 5.2 Policy Background

This relatively strong energy efficiency performance across the social housing sector has been aided by the clear regulatory framework that has been in place. This was initiated by an Energy Efficiency Standard for Social Housing (EESSH[47]) which was designed to encourage social landlords to remove poor energy efficiency as a driver of fuel poverty, and to contribute to achieving the Scottish Government's climate change emissions reductions targets. Its successor, EESSH2, sought to build on this by requiring all social housing to meet (or could be treated as meeting) EPC Band B, or be as energy efficient as practically possible by the end of December 2032. It also stated that no social housing below EPC Band D should be re-let from December 2025, subject to temporary specified exemptions.

The Scottish Government has in recent years been working closely with the social housing sector on a Review of EESSH2[48]. This work led to the co-development of proposals for a new SHNZS. While the Scottish Government has yet to set out details on how it will take forward the Standard, it should provide a helpful boost to clean heat installations, and we would encourage it to set out the practical way forward with the Standard as soon as possible.

The Zero Emissions Social Housing Taskforce (ZEST) report[49] in 2021 explored what is required to achieve zero emission social housing in a way that balances supporting tenants with reducing energy bills and carbon emissions. Its recommendations covered eight main themes and identified 35 actions it considered necessary to achieve a just net zero in the sector. In its response, the Scottish Government identified this Taskforce as the most appropriate route to follow-up on the finance related actions from ZEST[50]. This has therefore provided a starting point for our consideration of social housing retrofit finance challenges and opportunities.

**Barriers and challenges for retrofitting social housing**

Many of the challenges impacting on installation of clean heat and energy efficiency measures in social housing mirror the type of considerations that organisations have to wrestle with in making investment decisions around any programmes. These include factors such as financial cost and return over time, funding availability, confidence in deliverability, and prioritisation relative to competing pressures.

Financial case challenges

Local authority housing departments and Housing Associations have to make longer-term plans based on high confidence levels that income streams ensure expenditure is affordable. This creates natural financial pressures of matching expenditure to revenue. However, these have become more pronounced over this decade as the rate of increase for a range of costs, including maintenance and repair, insurance and energy, have all outstripped the headline rate of inflation, which itself has sat at

[47] launched in March 2014, replacing the energy efficiency elements of the Scottish Housing Quality Standard (SHQS).
[48] Energy Efficiency in Social Housing, Scottish Government, 2024.
[49] Achieving net zero in social housing: Zero Emissions Social Housing Taskforce report - gov.scot.
[50] Scottish Government response to: Zero Emissions Social Housing Taskforce report, June 2022.

a consistently higher level than the rate of increase in rental income. This means that social housing providers have been facing steadily increasing costs against a background of limited revenue growth, therefore limiting flexibility for increasing expenditure on what could be considered non-essential or non-core activities.

The forces acting to increase costs, while limiting revenue increases, also impact on decision making around borrowing. Higher interest rates, as have been the case in recent years, make the cost of borrowing higher, and, combined with the difficulty in generating additional revenue, can mean adhering to financial covenants related to existing lending constrains further borrowing. Or, at the very least, makes it highly unattractive to organisations seeking to manage their finances prudentially.

The split incentive challenge discussed in our Part 1 report is relevant here, as the costs of installing clean heat and energy efficiency fall on the social landlord, while the benefits in terms of reduced energy bills and warmer, better insulated homes accrue to tenants. Mechanisms need to be developed, tested and scaled for monetising the benefits from upgrades to create a reliable revenue stream for social landlords, which can then be used to repay the initial costs of borrowing taken on to fund the upgrades.

Energy efficiency measures would reduce bills by reducing energy usage, all else being equal, while heat pumps can also reduce bills by being more efficient than gas boilers. However, behavioural changes required to reap these potential benefits may not always occur, and with electricity being relatively expensive compared to gas in the UK, there is a risk that tenants are pushed into fuel poverty by having their primary heating source converted to electricity. Some social landlords highlight this as an important consideration, noting that installation of battery storage alongside clean heat installations is often necessary to enable tenants to take advantage of the lowest cost energy tariffs required to generate bill savings.

Management case challenges

Regulatory clarity, as was provided through EESSH and EESSH2, has helped provide the confidence in planning work, which has resulted in social housing stock being notably more energy efficient than Scotland’s overall housing stock. However, that ability to confidently plan for the longer-term is currently being impacted by the delay in announcing next steps with establishing the SHNZS. Without clarity on the new Standard, it is difficult for social landlords to plan confidently.

Social landlords also need to think about sequencing of work and to determine the most appropriate clean heat technology for their stock. In particular, they are keen to avoid installing heat pumps in properties that could subsequently be served by a heat network, and where connection to a heat network would be lower cost per property. The financial case for development of a heat network would also be strengthened if social housing within its reach could help provide anchor loads.

Social landlords would benefit from greater clarity on the forward pipeline of locations that will actually be served by a heat network. Taking the next steps with LHEES to develop local delivery plans as well, as creating the enabling structures for heat network development, will support social landlords in prioritising their retrofit plans.

Social landlords also have to deal with challenges of upgrading individual properties within mixed ownership blocks. This can limit their ability to install whole building upgrades unless agreement can be reached with other owners around the nature of the works and sharing of costs.

The place-based models discussed in section three of this report may provide a solution to this mixed ownership challenge by avoiding the requirement for upfront contribution to costs. Indeed, social housing retrofit projects may provide the best initial testbeds for place-based approaches with a “no-regrets” offer being made to owner-occupiers and private rental landlords in the shared ownership blocks to test potential approaches.

In an echo of the challenges local authorities and other project sponsors face in developing place-based models, social landlords may lack the resourcing capacity (given other competing priorities) or technical expertise to develop and deliver detailed retrofit programmes. This is especially likely to be the case for smaller RSLs and it is unlikely to be cost effective for each organisation to contract the specialist expertise needed on an individual project basis. Indeed, this challenge is arguably greater in social housing than for the development of wider place-based initiatives because individual projects are likely to be of a smaller scale with social housing.

### 5.3 Taskforce insights from financing mechanisms considered

Critical to the success of all options we have identified for financing retrofit in social housing is the ability to create a revenue stream to enable the upfront financing to be repaid. Without such a revenue stream it will only be possible to finance retrofit at scale through grant provision (a situation which is unlikely to be affordable to the Scottish Government and which would be more generous than the current SHNZF, which provides 50% funding towards energy efficiency projects and 60% funding towards clean heat installation).

No one model is likely to work across the social housing sector given its diversity in terms of organisational structure, size, rural compared to urban nature, and differing property archetypes. A range of models will therefore need to be developed and tested to provide all social landlords with the opportunity to utilise the approach that is most relevant to their particular circumstances. Notable potential models range from approaches which are most familiar to the sector (charitable bonds) to those which are more complex, and which would take longer to establish, yet potentially offer a more complete solution (such as an off-balance sheet sustainable infrastructure vehicle model).

#### Extension of a charitable bond model

Social landlords are currently able to borrow from the Scottish Government funded Charitable Bond Programme[51], which is administered by Allia, but for investment in new build properties only. Through the programme social landlords can borrow sums

[51] Charitable Bonds housing investment reaches half a billion, Scottish Government, March 2025.

over £1 million for up to 15 years at a rate of interest set slightly above gilt yield rates, and which is therefore more attractive than commercially available rates.

As a version of the charitable bond model already exists, it is something the sector would be familiar with and therefore an extension to enable borrowing for energy efficiency or clean heat upgrades would not appear overly complex or daunting for social landlords. The Scottish Government would retain the overall risk around repayment, although the loans would remain on the social landlord's balance sheet, meaning it would impact on their general financial position, including potentially with covenants associated with existing borrowing.

Funding for the extension of the charitable bond model would not necessarily need to be supplied directly by the Scottish Government. Other potential sources of funding for such a programme could include banks, insurance companies and pension funds, the UK Wealth Fund, or a combination of these sources. At least initially it would be expected that some level of Scottish Government funding would continue to be required to reduce the risk profile of the investment for other parties, and help to keep the level of interest charged to social landlords as low as possible.

Off-balance sheet special purpose vehicle

An off-balance sheet model would seek to address the challenges social landlords face in taking on more borrowing, while still enabling the delivery of energy efficiency and clean heat upgrades, without the social landlord having to pay the full costs upfront. This approach would involve establishing a special purpose vehicle (SPV) that can contract with individual social landlords to deliver upgrade projects which the social landlord then pays for through a service charge.

As the SPV raises the financing, coordinates the work, and installs the upgrades, the social landlords do not have to secure the full funding costs upfront, and therefore do not incur additional debt on their balance sheet. Instead they would contract with the SPV to make payments over time for a service charge, an ongoing cost that would not be treated as a debt on their balance sheet. The SPV would then repay the investors at an agreed interest rate, using the service charge received from social landlords, to cover their management costs and make those repayments.

Again, Scottish Government funding would be required, at least in the initial phases, to finance the SPV and leverage financing from other private sector sources to create a blended finance structure. This Scottish Government financing could be in the form of first loss capital, therefore reducing the risk for other investors and allowing the overall finance package raised by the SPV to attract a lower rate of interest than would be the case if expecting the private sector to carry the full risk. This, in turn, would allow a lower service charge to be levied on social landlords.

A further potential benefit of this type of model is that the SPV could attract and maintain the technical and professional expertise required to develop and deliver energy efficiency and clean heat upgrades. This could include establishing relevant procurement frameworks to make it easier and quicker to draw down the services, specialist expertise, and accredited installers.

An SPV type model is, however, more complex, and would therefore take time to establish. It would also be something that the sector was less familiar with and could therefore be more nervous about utilising its offering, at least until the approach had been demonstrated and proven. A number of other considerations would also need to be worked through as part of the detailed design and testing of this approach. Factors that would require further exploration include:

- how the SPV should be structured and the nature of the relationship between shareholders;
- who owns the assets and is responsible for their maintenance;
- what happens with the assets at the end of their lifespans; and
- how to effectively allocate and manage risk across parties over time, so that the Scottish Government does not bear all the risk (through first risk capital) while ensuring the risk profile is commercially attractive for private investors.

Energiesprong[52]

Some of the concepts outlined above, as well as the considerations discussed in the section of this report on wider place-based models, have been put into practice by Energiesprong, a not-for-profit organisation funded by DESNZ, along with UK Research and Innovation (UKRI) and Innovate UK. Being an independent team of retrofit experts, Energiesprong work with local authorities, housing providers, building firms and the supply chain to:

- develop and test innovative retrofit strategies, models and tools;
- aid the delivery of innovative schemes to upgrade homes, and;
- showcase real-life examples of transformation.

Building on their experience in the Netherlands, Energiesprong work with both social landlords and with suppliers to coordinate and deliver upgrade programmes, which install energy efficiency and clean heat in social housing. This includes procurement and quality assurance support, which helps the supply chain to get matched with landlords, as well as helping social landlords develop robust project business cases.

Those business cases are focused around the Energiesprong comfort plan model, which replaces some or all a tenant's energy bill post-retrofit, and is underpinned by a performance guarantee that promises them a comfortable, healthy home for the same (or less than) they paid before. This comfort plan is a type of heat as a service approach, something that is not generally available in Scotland on a commercial basis at present. However, social housing does offer the strongest opportunity to develop and test the heat as a service offering, which could then potentially be launched on a commercial basis to other residential properties.

[52] About Energiesprong UK.

**Box 1** – Heat as a Service

**Heat as a Service**

The Scottish Government commissioned a research study into Heat as a Service (HaaS) in early 2023[53]. This study assessed the case for encouraging a range of HaaS business models in Scotland[54], models based on a service provider covering the upfront costs of installing a clean heat system, then charging a monthly fee for the equipment and / or energy provision and / or maintenance. The research confirmed that only Denmark currently has an operational full subscription-based model, although Denmark's experience may not readily transpose to Scotland.

The research did not anticipate that HaaS models would generate substantial new demand for heat pumps. Rather, they could offer a different option for people already considering the installation of a heat pump. This is particularly the case as they can help to simplify heat pump installation for individuals by providing an end-to-end service, from installation right through to maintenance and energy supply.

The research concluded that the HaaS market in the UK is currently not sufficiently developed for it to offer a short-term option for installation of clean heat systems in any substantial numbers. This reflected the fact suppliers had not developed workable models that could easily be rolled out while overall demand for heat pumps was low. There were also concerns expressed around contractual issues and how they would be dealt when properties changed ownership (although Property Linked Finance might offer a solution to the changed ownership challenge).

Raising funding through sale of carbon credits

Some Housing Associations have sought to raise funding for energy efficiency and clean heat installations through the sale of carbon credits, utilising the Retrofit Credits scheme which has been developed by HACT, a social housing charity. Under the scheme, a methodology has been developed to measure both the carbon savings and social value created by retrofit activities. This is then used to issue retrofit credits which are sold on the market to provide the Housing Association with revenue to offset the upgrade costs they incurred. To quality assure the retrofit credits, they have been developed under the Verified Carbon Standard, the world's leading certification programme for emissions reduction projects.

While an interesting approach, we are aware of concerns about the ability for a retrofit credits model to be scaled, with some parties believing it can only ever provide a niche solution, rather than become a regular route to unlock finance across the sector. There are also a number of issues linked to the environmental integrity of offset credits, particularly within the voluntary offset market. The future regulatory path and evolution of international markets for carbon credits was also highlighted as a risk associated with this model.

[53] Through ClimateXChange (CXC) with study carried out by LCP Delta and Changeworks.
[54] Heat pumps on subscription, Scottish Government, August 2023.

# 6. Innovation and the role for different parties in heat transition

Innovation

Innovation is driving change - and at pace - in places and in energy markets across Europe. Innovation is happening in technology, in financial products and services, and in approaches to enable adoption of new solutions by individuals, business and communities. Scotland will need to learn from developments elsewhere, and government, working with industry and the wider public sector, to successfully foster innovation to mobilise the private finance to retrofit Scottish buildings at scale.

Scotland's National Innovation Strategy[55] set out a vision to transform Scotland's economy over the next decade by placing innovation at the heart of its economic growth. One of the four key programmes identified in the Strategy is the energy transition, focused on harnessing Scotland's natural capital, regional expertise, internationally leading research and innovation capabilities and business activity[56]. All these factors will be relevant for the heat transition.

Experience from elsewhere in Europe shows that delivering systemic change cannot be done by any one actor, or with any one solution. Instead, we need to innovate across the entire system to create the enabling conditions for change. Across Europe – and more recently the UK – the notion of 'Missions' is being used to convene relevant actors, to orchestrate and aggregate emerging solutions and to scale the impact at the speed required. This is supported by peer-learning (between local authorities, business and civic actors) of what works and what does not.

One such Mission is the EU's Mission for Climate Neutral and Smart Cities[57], aiming to help 100+ cities (including Glasgow) to meet their ambitious 2030 net zero targets. Retrofitting buildings to provide clean, affordable heating systems is one of the major challenges being faced by cities and regions across the continent, and Scotland should look to learn from the innovative solutions being deployed elsewhere, with the aim of adapting successful approaches to Scottish conditions.

## 6.1 Role of Government

Since the publication of our Part 1 report, a new UK Government has been elected, while the Scottish Government has reverted to operating as a minority government. This is creating new opportunities for joint working, both within the Scottish Parliament and between Scottish and UK Governments.

The current UK Government has reinvigorated the drive for improved energy efficiency and clean heat installations as part of their journey to achieve net zero, with efforts being coordinated across Westminster by the former head of the CCC[58]. The creation of Great British Energy as a new publicly-owned company to drive

[55] National innovation strategy 2023 to 2033, Scottish Government, June 2023.
[56] The Public Contracts (Scotland) Regulations 2015.
[57] EU Mission: Climate-Neutral and Smart Cities, the European Commission.
[58] Chris Stark to lead Mission Control to deliver clean power by 2030, UK Government, July 2024.

investment in clean home-grown energy will support these efforts. As will the establishment of the National Wealth Fund, which will build on the work of the UK Investment Bank and British Business Bank to mobilise billions of pounds of investment in the UK's clean energy and growth industries.

However, further action is required, including from the UK Government and regulators, to deliver the scale and pace of transformation required to successfully decarbonise heat. In reaching our conclusions, we have sought to identify some clear priority areas for government focus, whilst noting that there are multiple, sometimes overlapping, potential roles for government to play.

One critical avenue for government action is reflected in the UK Government's Warm Homes Plan, which aims to combine grants and low-interest loans to support investment in insulation, solar panels, batteries, and low carbon heating systems[59]. A number of positive steps have already been announced as part of this Plan:

- funding for the Warm Homes Plan to upgrade up to 300,000 homes next year;
- removing blockers in the English planning system for heat pump installations;
- boosting funding for the Boiler Upgrade Scheme;
- setting out proposals to raise product standards for space heating;
- introducing a reformed Clean Heat Market Mechanism in April; and
- announcing award recipients for the Heat Pump Investment Accelerator Competition[60].

In a Scottish context, the Scottish Government should take on a pivotal role of providing leadership and strategic direction, one that instils market confidence and encourages others to act. This means providing visibility on what governments intend to achieve, establishing clear plans including defining who does what and instilling confidence that plans are deliverable.

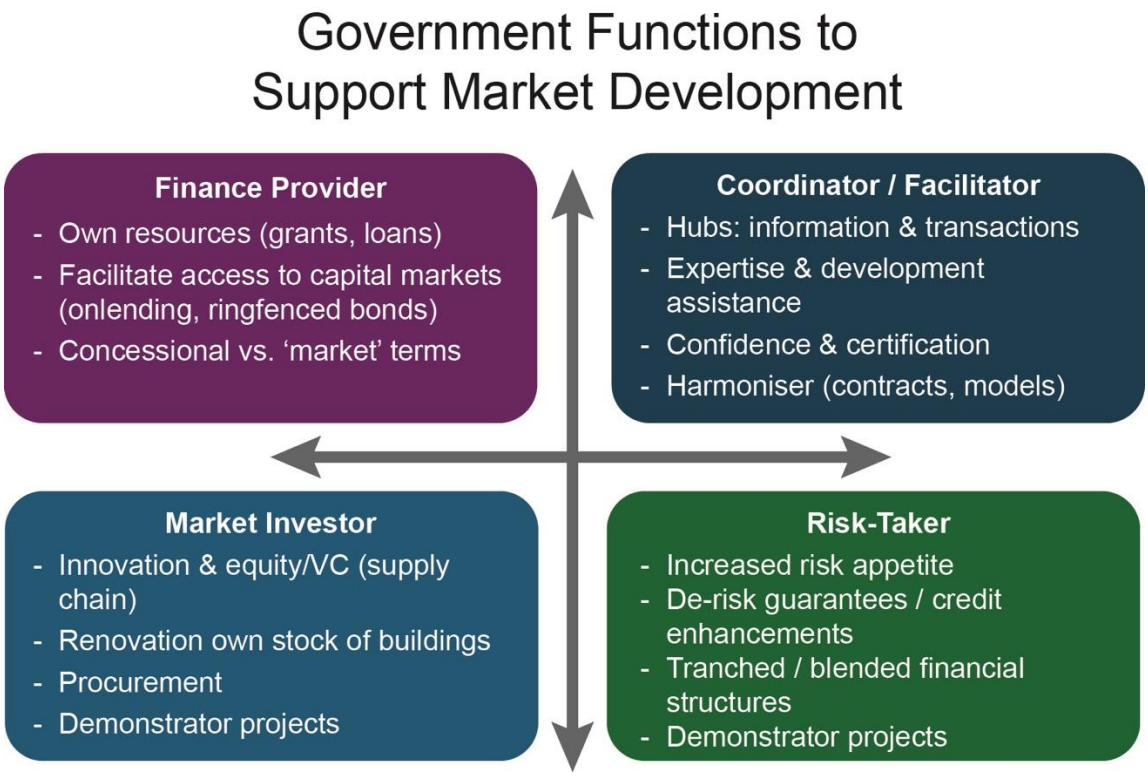
We would see three key policy objectives for Scottish and UK governments:

1) ensuring a stable regulatory environment: both in terms of financial and energy market design and regulation, so that it encourages investment in green housing upgrades and offers greater clarity on potential project returns;
2) filling gaps in market development: help project developers overcome barriers, including where coordinated and aggregated action represents better value for money than individual action; and
3) improve risk perception of financial actors: by 'shifting' risk perception and helping de-risk projects, including through providing public estate anchor loads to underpin project demand or offering first-loss capital.

The main roles for government (Scottish and UK) in addressing the above objectives are as: (a.) financial provider; (b) coordinator or facilitator; (c.) market investor; and (d.) risk taker. Regulation(s) underpins each of these roles.

[59] Make Britain a clean energy superpower, Labour Party Manifesto, June 2024.
[60] Help to save households money and deliver cleaner heat to homes - GOV.UK, UKG, Nov. 2024.

**Diagram 1** – Government functions to support market development




Source: Dr. Ian Cochran, presentation to GHFT (Nov. 2023)

## 6.2 Barriers and challenges

As energy and finance are both regulated at a UK level, decisions taken by the UK Government and regulators have significant scope to influence the success of Scottish Government clean heat initiatives. Alongside this, the blended finance structures underpinning the place-based, heat network and social housing options discussed in this report, require clarity around multi-year public funding contributions if they are to successfully attract private investment. This will be difficult to provide as the Scottish Government needs to balance the budget each year and has limited borrowing powers, constraining its ability to make multi-year funding commitments.

## 6.3 Route to unlocking opportunity

The UK Government has an important role to play and has already taken some promising steps. For example, the establishment of Great British Energy, backed by £8.3 billion of new money should help drive delivery of clean power by 2030. Given it will be headquartered in Aberdeen with offices in Glasgow and Edinburgh, it should also provide fresh opportunities for the collaborative commitments of both UK and Scottish Governments to be put into action. Amongst its functions is investing in energy systems alongside the private sector, as well as leading projects through their development stage. Both are relevant to challenges identified and recommendations made in this report around delivering place-based clean heat projects at scale.

The National Wealth Fund should also support this as it seeks to partner with the private sector and local government to increase investment and drive growth across

the UK, supported by almost £28 billion for investing. The Fund deploys capital based on where project pipeline opportunities emerge, and does not ringfence capital geographically. However, it does have offices in each devolved nation headed up by a local director solely responsible for project origination.

The Scottish Government should therefore work with both Great British Energy and the National Wealth Fund to explore how Scottish projects can draw on the funding and support services available, while the UK Government should ensure that both organisations seek to achieve a geographic spread on where they invest.

We have noted those conclusions from the First Minister's Net Zero Investor Panel's report which were most relevant to our work, principally that: (a) providers of infrastructure capital are conservative, have long-term horizons and a defined risk appetite; (b) scale matters for reasons of return and costs of transaction; and (c) there is limited appetite among investors for complex or piecemeal transactions.

We also wish to highlight the important role that public procurement can play across all the roles for government, noting that it is a key lever government can use to support market development. Building momentum early is important, rather than focusing on the overall cost or potential scale for the market (as it will not reach that potential without the initial momentum). This means that government funding support – both Scottish and UK – is going to need to be front loaded, with greater short-term contributions than may be required once markets have become more established.

It is also worth reiterating again here that one of the key steps the UK Government must take to encourage an acceleration in the uptake of clean heat installations is to rebalance gas and electricity prices. While care would be required with any rebalancing to ensure people who remained on gas were not pushed into fuel poverty, lowering the relative costs of electricity could have a transformational impact on stimulating demand for clean heating systems.

Recognising that our Part 1 report recommendations tended to cluster around the coordination role for government, we have sought in this report to draw out more recommendations that relate to the roles and responsibilities of wider actors.

**Key roles and responsibilities of different parties**

**Scottish Government**

- Demonstrate leadership by setting explicit goals for delivering clean heat and energy efficiency upgrades, as part of adopting a Clean Heat Mission designed to foster market confidence, enabling local authorities and communities to 'forward engineer' plans to deliver at scale.
- Regulate the use of fossil fuels and energy performance requirements for heating to create demand for uptake of alternatives, while supporting a just transition.
- Provide leadership in engaging with the public to demystify the clean heat customer journey.
- Work with local authorities, experts and stakeholders to aggregate place-based solutions that can be rolled out at scale.

- Support development of a framework for investing in place-based projects alongside private financing, including supporting enabling regulatory change.
- Collaborate with organisations, such as Local Energy Scotland and Home Energy Scotland, to promote community-led projects and provide tailored advice, support, and retrofit delivery services that align with local goals.
- Provide clarity on future policy and delivery pathways for heat networks, as well as certainty over multi-year funding over the remainder of the decade to offer developers confidence to invest.
- Act to deliver the recommendations made across our two reports.

**UK Government**

- Rebalance relative gas and electricity prices

On the energy side -

- Ensure electricity and gas market design and the Clean Power 2030 Mission are aligned with Scotland and UK delivery of clean heat and economic growth.
- Ensure that regulatory decisions act to support and not stymy economic growth and investment in the clean heat transition.

On the finance side -

- Support development of a regulatory framework that encourages development of innovative consumer finance solutions (e.g. scaled green loan markets, aggregated demand models) working in collaboration with others to leverage expertise in designing market-based approaches to scaling home energy retrofits.
- Ensure blended financing funds, including activity of the National Wealth Fund and Great British Energy, are fully accessible to Scotland.
- Establish the regulatory framework which enables institutional investors to invest in retrofit projects, without breaching capital buffer levels.
- Ensure that consumers have access to free and independent access to redress covering both public and private sectors.

**Local Government**

- In coordination with others, deliver local advice and information campaigns to educate individuals and local businesses around the actions required and benefits of decarbonising heat.
- Building on LHEES, coordinate and sponsor development of place-based projects, seeking out opportunities to aggregate projects into programmes.
- Explore opportunities for developing heat networks alongside industry partners, including providing anchor loads by committing to connect local authority buildings.
- Collaborating across neighbouring authorities to join up on heat plans at an appropriate spatial level, while agreeing planning projects to prioritise.
- Partner with community-focused organisations - such as Local Energy Scotland, and retrofit delivery providers such as Home Energy Scotland - to align efforts in reaching local goals and engaging effectively with communities.
- Continue to deliver energy efficiency and clean heat projects across the social housing stock under local authority ownership.

**Private Finance Community**

- Accelerate the development and testing of innovative retrofit finance products.
- Train intermediaries and customer-facing staff on the features and benefits of existing home upgrade financing products.
- Collaborate with government and public bodies to de-risk investments in clean heat and energy efficiency through mechanisms such as blended finance.
- Work across industry and with others to develop and communicate consistent messaging around clean heat, with the aim of growing the overall market.
- Work together to leverage expertise and insights into market-based solutions for scaling decarbonisation.

**Industry and Supply Chain**

- Deliver boiler replacement plans and scale-up low carbon heating installations, including providing targeted homeowner advice on clean heat benefits.
- Support the development and maintenance of heat networks, including partnering with local authorities in their development.
- Ensure quality installations, warranties, and workforce upskilling.
- Commercialise innovation in product and service development and deployment.
- Members of trade associations working together on shared concerns.

**Third Sector and Academia**

- Support local authorities and community organisations in the development and delivery of place-based solutions.
- Provide technical and delivery support to communities, local authorities and other groups seeking to advance projects.
- Partnering with local government to increase the development of heat networks.
- Foster innovation in technologies, processes and delivery models.
- Help educate and inform consumers, including through provision of trusted advice, explaining the benefits of clean heat technologies.
- Ensure Third Sector organisations are adequately resourced to provide advice and support.

# 7. **Conclusions, Recommendations and Next Steps**

## 7.1 Conclusions

In striving to achieve clean heat throughout Scotland, the cost of living is perhaps the greatest near-term challenge. High energy costs are outwith Scotland's control given that electricity market costs are set by UK market design and currently driven by the cost of gas[61]. However, what *is* in Scotland's control is how much energy we need to use to keep houses warm, more cheaply than now. Through innovation in regulations, financing and technology adoption by people and communities, we can deliver both social and economic benefit, build resilience against future energy price shocks, and support climate change mitigation.

While acknowledging the costs and damage of climate change, the substantial economic and social opportunities associated with successfully transitioning to clean heat should not be overlooked. Throughout this report we have sought to set out the positive case for taking action to address one of the key sources of emissions – heating – by explaining where and how these benefits can be captured, noting that many will be distributed at a local level.

In doing so, we have also sought to underscore that it is a lack of consumer demand (and complexity for consumers wishing to take action) that represents the greatest barrier to achieving the Scottish Government's clean heat ambitions. Steps to boost the demand for clean heat are, therefore, essential and must be taken forward in parallel with the measures recommended here. Public and private sources of financing will be required to cover the overall cost of the transition to clean heat. Also, as we outlined in our Part 1 report, a range of finance options will be required to enable individual property owners to access the solution that is best suited to their circumstances.

This Part 2 report is about the action that is needed to drive progress in the installation of clean heating systems at scale within and across Scotland. It is only by taking concerted action and purposeful steps – as we outline here – that property owners in Scotland can successfully install clean heating systems at scale. And it is only by removing emissions from heating properties that Scotland can achieve its wider net zero targets and capture the associated economic opportunities.

It is worth reiterating again, though, the need for immediate actions which create market and consumer confidence by providing clarity around clean heat and energy efficiency requirements. Regulatory and policy certainty is central to providing this confidence and we are disappointed at the pace of progress in providing this clarity over the past eighteen months. We urge the Scottish Government, as a priority, to set out its way forward in providing the legislative, regulatory and policy direction required to drive forward action on this, including to set firm timescales.

Similarly we urge the UK Government to take prompt and decisive action to create a wider regulatory environment that balances reducing emissions with stimulating

[61] The cost of gas being set by international markets and affected directly, in recent years, by war in Europe.

economic growth, and which makes investment in heat an attractive proposition. Rebalancing relative gas and electricity prices should be the priority and would be a game changer in stimulating growth of the clean heat market.

## 7.2 Recommendations and reasoning

### 1) **Accelerate and coordinate the testing of a place-based demonstrator approach across Scotland**

- Building on demonstrator programmes being developed in places such as Bristol, London and the West Midlands, and individual projects being developed in Scotland, the Scottish Government, in close collaboration with Scotland's local authorities and CoSLA[62], should design, agree and publish a project plan to develop and then accelerate a place-based approach to the delivery of retrofit, decentralised clean heat generation and storage and clean heat activity at scale across Scotland.

- This innovation process and delivery plan should clearly articulate:
  i. the design of a coordinated **Place-Based Demonstrator Programme** to explore and develop place-based approaches in a Scottish context with a cohort of Scottish local authorities;
  ii. the development funding required to deliver this programme in the most cost effective way, including dedicated support to the cohort of local authorities, funding for a Programme Development Unit to coordinate the programme (see below) and funding available for collective procurement of third party expertise as required;
  iii. how it will integrate with and maximise opportunities and approaches from existing social housing and heat projects;
  iv. how it will work with all key stakeholders and how it will set the roles of different parties;
  v. how finance mechanisms will give effect to this plan; and
  vi. all associated timelines to delivery.

- The Scottish Government – with appropriate support from relevant finance experts, and all other relevant parties – should develop a fully operational **Programme Development Unit** that shall have the capability to deliver this Place-Based Programme, by helping to provide multi-disciplinary technical assistance and nurturing feasible funding streams for place-based projects.

- This Programme Development Unit should also be tasked with ensuring that place-based projects integrate with and leverage **heat network and social housing** decarbonisation projects referenced in the following two recommendations.

Taskforce Rationale

We believe that there is a need for the Scottish Government to set out a heat delivery plan that clearly articulates the actions required to achieve its ambitions,

[62] The Convention of Scottish Local Authorities.

working backwards from the end point to confirm what steps will need to be taken, by whom, and by when. It will be important that the delivery plan clarifies all associated timeframes in which actions need to be undertaken. The delivery plan should also maximise synergies with social housing and heat network projects, as they can act as a catalyst to explore place-based approaches in a very tangible and practical way. This is what the Strategic Partnerships component of the Warm Homes: Social Housing Fund 'Wave 3[63]' funding was explicitly designed to promote.

As laid out in this report, we believe the potential of a place-based approach for this heat delivery plan is significant. It can:

- reduce the upfront costs through economies of scale;
- create a more attractive narrative for communities and households;
- aggregate funding requirements, allowing the application of innovative blended financing to transform the financial impact on households; and
- create a strong, local demand signal to help mobilise the supply chain.

However, a place-based approach requires the management not just of the flow of finance, but a range of other closely related factors, including supply chain capacity, skills availability, trusted information provision and quality assurance of work. Action is required across all these areas and in a coordinated way. Sequencing is also important, as the right factors need to be in place at the right time. Even when looking at the finance component in isolation, for the successful development of blended finance models the sequencing of activity matters. Considerations around legal and governance structures, market engagement, operational management, solution procurement, and communications, amongst others, all need to be taken into account in the development of blended finance structures.

There is currently a critical gap within the project delivery landscape, which relates to the lack of fully developed projects that are investment-ready. Full project development is a detailed undertaking, one that will require technical, legal and financial input. The necessary skills and expertise are something that project sponsors – often a local authority – may lack, or at the very least be limited in their capacity to focus on clean heat projects. This constraints the degree and / or speed at which projects can be developed.

We believe that a key role the Scottish Government can play in fostering a pipeline of investible heat projects is through the establishment of a coordinated Place-Based Demonstrator Programme that would be designed to explore and develop place-based approaches in a Scottish context with a cohort of Scottish local authorities.

As part of this Programme, the Scottish Government should establish a central Programme Development Unit as a key operational arm of the Clean Heat Delivery Plan. The aim of the Unit should be to work with project sponsors within this cohort to develop deliverable projects, secure delivery financing, and to collate learning from the testing of different place-based delivery models. This process should also include detailed consideration of how delivery governance structures can best ensure a fair split of risk, responsibilities, and benefits between parties. Such a Unit would also provide a valuable focal point for engagement with investors, and could

[63] What was previously the UK Government's Social Housing Decarbonisation Fund (SHDF).

play an important role in streamlining engagement between investors and project sponsors at the right stage in a project's development.

Our recommendation is that the Programme Development Unit initially focuses on a selected cohort within the wider heat programme, while the methodology is being developed, rather than try to support all projects across Scotland. Otherwise, there is a risk that a Programme Development Unit would be overwhelmed by the number of projects it is asked to support. As methodologies become more established, support can be provided more broadly as the Programme scales and is replicated across Scotland.

We would see the Scottish Government as being best placed to lead on creating this Programme and Unit, particularly to ensure that the existing public landscape of funding and support (including SFT, and the Economic Development Agencies) is integrated into the programme. However, the Programme and Unit must draw on the financial expertise available through the SNIB and others, such as GFI, 3Ci, Living Places, Great British Energy and the National Wealth Fund, as may be helpful.

**2) Accelerate the development of heat networks**

- The Scottish Government should establish a forum bringing together industry, cooperatives and the wider public sector, to **address heat network policy gaps** at pace, including planning to implement the outstanding regulatory levers under the Heat Network Act, and set out a long-term vision that will help to ensure Scotland's heat network market remains competitive and attractive to investors.

- The Scottish Government, in collaboration with the UK Government, local authorities, regulators and others, should agree and articulate how best to **simplify heat network delivery pathways**, including encouraging consistency in project development and by specifying and promoting preferred approaches in partnership with places that are pursuing those approaches.

- The Scottish Government should **commit multi-year funding** over the next five years to provide certainty on financial and advisory support for heat networks to 2030, so as to provide greater confidence to the market, thereby enabling it to develop, finance and deliver projects securely. Building on this the Scottish Government, in collaboration with the industry and key financial sector stakeholders and public funding bodies, should explore alternative financial mechanisms that could support the deployment of heat networks in the long-term.

Taskforce Rationale

The Taskforce believes that much more can be done in this area at pace. Increased policy support is essential if we are to make investing in heat networks attractive to investors. Action must be taken quickly and the Scottish Government needs to establish a long-term vision for heat networks in Scotland; a masterplan with a strategy setting out how these are going to be delivered.

To achieve this we believe that some sort of forum and development support is urgently needed. A quick win could be to set up an industry forum to strengthen engagement with the heat networks industry. More generally the Scottish Government must set out its aims and intent to reengage with stakeholders.

As part of the mission approach we suggest in this report – we strongly advise that Government colleagues must immediately consider the role of heat networks in a holistic approach to the energy system of the future and build it in from the start. Heat solutions cannot be pushed into the background with a view to tackling later. We need whole energy system planning and SG and UKG alongside NESO and ScottishPower Energy Networks to work together to integrate heat into energy system planning.

As public confidence more than investor confidence is needed in the low-carbon heating technologies we discuss here we also strongly encourage the Scottish Government to prioritise making progress with commitments set out in its Heat in Buildings Public Engagement Strategy which was published shortly after our Part 1 report.

However, action can also be taken to instil confidence in the heat network sector which in turn can help encourage investment and development of networks. As development and construction of heat networks is a multi-year undertaking, the current lack of clarity around future Scottish Government funding support can been seen as a constraint on developing heat networks. It will therefore be important to provide the sector with some certainty over future funding availability to provide the confidence necessary to encourage projects to be brough forward.

Clarity on the future development of heat networks, both in terms of locations where they will be built and the timing of their development, is important in supporting the wider heat transition. Knowing if and when a heat network will be available can help plan whether or not alternative technologies like heat pumps should be considered for a property. While this will be true at an individual household level, it is particularly relevant for social landlords in planning their upgrade programmes as they will want to ensure they do not install heat pumps in properties that could subsequently have been connected to a heat network at a lower cost. In turn the potential anchor loads from social housing or groups of individual properties could support the business case for a heat network, although developers will still require confidence that government funding support for the heat network will continue to be available.

3) **Accelerate blended finance solutions utilising public and private financing for social housing retrofit**

- The Scottish Government should set out plans to establish a **Social Housing Project Support Unit** and identify the practical steps it will take in partnership with social landlords to start testing the deliverability of the most promising blended finance models for retrofitting socially rented homes.

- The Scottish Government should conclude and publish work with the Scottish Federation of Housing Associations (SFHA) and others that will

provide a robust evidence base supporting **business case development for retrofitting social housing** across Scotland, including around the variation of costs and reasons for this, as well as the scale of energy savings resulting from upgrades and other social and economic benefits, which can support blended finance approaches.

Taskforce Rationale

This report has highlighted potential financing models that could support retrofit for social housing. However, the list is far from exhaustive, and we have not considered the suitability of different models for different types of social landlord, although note a recent report by SFT has looked at a wider range of models[64].

However, in line with a common theme we have raised throughout this report there is now a need to find practical and pragmatic ways to move from model theory to testing of potential approaches. This will require partnership working across government, social landlords (including their representatives, such as SFHA and the Association of Local Authority Chief Housing Officers - ALACHO) and we look to the Scottish Government to set out a credible plan for how that can be taken forward.

This recommendation's call to establish a Social Housing Project Support Unit very much echoes our first recommendation which is focused on the need for such a Unit to support wider place-based programme development. However, a social housing specific Support Unit will also be helpful as it can provide expertise that is relevant to the particular challenges facing the sector. It may also potentially be quicker to set-up and could therefore act, alongside the existing Heat Network Support Unit, as a testing bed for the structure of a wider place-based support unit.

Social landlords differ by size, their geographic location, and the property archetypes. Average cost figures for upgrades therefore are likely to disguise the actual costs social landlords are incurring in different circumstances. Understanding these variations will help inform which financing models might be most appropriate for different social landlords, as well as the degree to which public funding might need to be varied to make blended finance models viable within the sector. This includes considering the impact that varying public funding within a blended finance model might have on the risk private lenders attach to their contributions and therefore the interest social landlords will need to pay to access a blended finance package.

We also think it would be helpful to evidence the levels of energy usage savings delivered post upgrade as, all else being equal, reduced energy usage would generate reduced energy bills. This could create a potentially useful revenue stream to repay any upfront financing costs. If this is possible, it could mean that tenants are better-off financially post-upgrade, even if rents were increased or a service charge was raised to cover repayment of financing costs. Creating a new sustainable, longer-term revenue stream for social landlords could open-up an

[64] Financing and funding the decarbonisation of Scotland's social housing, Scottish Futures Trust, March 2025.

expanded range of private and / or blended financing models to the sector and also create a market for testing heat as a service models.

4) **Develop a 'Clean Heat Mission' approach starting with clear goals and a coordinated delivery plan for the clean heat transition**

- The Scottish and UK Governments should adopt a more proactive and coordinated 'mission approach,' to demonstrate collaborative leadership working between government, civic and business leaders, with a view to creating a platform or framework(s) that will bring otherwise disparate actors together to test new financing solutions and learnings across the range of sectors required to deliver the energy transition covering all tenure types and integrating energy efficiency, generation, storage and heat.
- The Scottish Government should tabulate lead heat-related institutions and local authorities including the sources of capital they have access to.

- Work with all interested parties to create targeted and agile mechanisms designed to provide dedicated resources for the provision of coordinated retrofit, clean power and clean heat project and infrastructure delivery.

- Ensure that energy and infrastructure planning takes account of waste heat, including future waste heat from data centres, hydrogen production and the opportunity for thermal storage.

- The Scottish Government should research or collate existing consistently evidence and communicate ensure consistent communications on the **financial and non-financial benefits** of retrofit, clean and affordable power and clean heat, including articulating the savings for owners and tenants across the domestic and commercial sectors, but also considering a wider range of potential beneficiaries. Following on from this, the Scottish Government should explore how these benefits can produce revenue streams and other returns necessary to secure upfront blended finance investment.

- The UK Government and Ofgem should, as a matter of urgency, explore how to effectively redesign the UK's electricity market, to rebalance the relative gas and electricity prices at a UK level, and, in a way that will stop electricity prices being driven by high cost imported gas.

- Streamlining and synergies - In the light of the above, the Scottish and UK Governments should agree a **Memorandum of Understanding** to take an integrated approach across Clean Power 2030 and a new Clean Heat 2030 mission, with common aims and solidify a partnership approach to optimising delivery of clean heat support in Scotland.

Taskforce Rationale

A collaborative 'mission approach' acknowledges that there is no one actor that can solve systemic challenges, hence the need for collaborative leadership working between government, civic and business leaders. It is precisely because no one

organisation has all the answers that points to the need for a formal platform or framework(s) to facilitate the testing of new financing solutions and learnings through peer learning coupled with substantial and substantive capability / capacity building.

Recognising that they do not have all the answers or the funding to solve the issue of getting clean heat into all buildings, the Scottish and UK Governments should use their (combined) substantial convening powers to bring otherwise disparate actors together to test new financing solutions and learnings. By establishing structures to enable ongoing engagement such a platform would be well-placed to identify collaborative and collective steps that will help to drive clean heat uptake.

Developing a clean heat delivery plan should be an initial focal point of establishing a coordinated 'Clean Heat Mission' approach. Steps to develop a Plan include:

- Setting explicit goals for delivering clean heat and energy efficiency upgrades:
  - recognising the different mixes and timeframes for clean heat and retrofit delivery, including building on LHEES to create holistic clean heat delivery plans for an area;
  - identifying infrastructure needs (pipes, wiring, networks) as well as gaps, for example those that may arise in taking an integrated place-based approach;
  - exploring views on costs, benefits, opportunities and risk allocation; and
  - Spatial element – identifying the locations which provide an opportunity for early and rapid testing of place-based models which can then be learnt from with lessons applied to model roll-out more widely.

There are currently a range of delivery schemes available across Scotland along with advice services as well as both national and local level strategies. However, what clean heat and energy efficiency means at an individual property level is not well understood by the majority of the public, making starting their clean heat journey a daunting prospect for many. The Scottish Government therefore has an important leadership role to play in educating people and demystifying the clean heat journey irrespective of someone's starting point. Part of this will involve communicating the scale of benefits, relative to costs for different types of property, as well as across urban and rural areas.

Understanding the benefits and returns at an individual level will be important in developing the blended finance models that will underpin place-based delivery as it will help to evidence the scale of benefits which can be achieved as well as the potential scale of a revenue stream which could be created to repay upfront costs over time while still leaving property owners better off. This in turn will help provide confidence for institutional investors that any funding models they help captialise would create a sustainable revenue stream over the medium-to-longer-term.

Energy and finance are both regulated at a UK level, meaning that the decisions taken by the UK Government and Regulators have significant scope to influence the success (or otherwise) of Scottish Government clean heat initiatives. A key regulatory barrier to delivering clean heat cost effectively is the UK's electricity market design. Fundamental change to the UK's electricity market design should be addressed by the UK Government with the specific purpose of bringing electricity

prices down to below three times the cost of the price of gas[65]. Action by the UK Government on this will ensure low carbon technologies are cheaper to run than fossil fuel alternatives, generating a market pull for the likes of heat pumps.

We also note that Clean Energy Industries is one of eight growth-driving sectors identified in the UK Government's Industrial Strategy green paper[66], which highlights how the UK's financial services sector will play a core role in providing the tens of billions needed to finance the net zero transition, alongside providing thousands of jobs in every region of the UK, with emerging hubs in Belfast, Leeds, Cardiff, and Glasgow, and a global centre in Edinburgh, driving regional growth. In this context, we welcome the UK Government's commitment to partnership with the devolved governments, thereby ensuring this will be a UK-wide effort that will support the considerable sectoral strengths of Wales, Northern Ireland and Scotland. We believe establishing structures to formalise this partnership working would be beneficial.

Next Steps

This concludes this Taskforce's work. We believe there is a compelling case for clean heat and improved energy efficiency. Action is necessary to deliver on climate targets as well as to unlock the economic and wider socio-health benefits of the transition. As we cannot research our way out of the challenges presented by climate change, it is now time for concerted and coordinated action to deliver the changes required.

We look forward to seeing the Scottish Government's response to our recommendations. Members stand ready, individually and collectively, to support the delivery of actions which can accelerate the clean heat transition in Scotland.

[65] Policy solutions: Rebalancing bills in an affordable way, UK Energy, July 2025.
[66] Industrial Strategy green paper, Invest 2035: The UK's Modern Industrial Strategy, UK Government, October 2024.

## 8. Annex 1 - Summary of Part 1 Report

We published our Part 1 report in November 2023, highlighting barriers constraining private finance provision for installing clean heating systems, identifying opportunities to develop new products at scale and making nine recommendations to the Scottish Government intended to help increase the flow of private finance through products best suited to individual property owners' circumstances.

We concluded that the market for financing retrofit is currently immature but expanding, and has substantial growth potential in the short, medium, and longer-term, provided demand for clean heating systems increases sufficiently. This includes through products such as additional secured borrowing, consumer finance solutions integrated into retrofit journeys, equity release specifically for retrofit, and property (as opposed to individual) linked finance.

We acknowledged that ensuring financing solutions are ready to deploy, and at scale, is just one aspect of creating a functioning market for green finance. Other key factors include, skills availability, supply chain capability, trusted customer advice and quality assurance procedures. All these factors need to be addressed alongside finance, and all require concerted and coordinated action across the short to medium-term if Scotland's clean heat ambitions are to be realised.

Underpinning this, we highlighted the need to foster market confidence by providing clear signals around the direction of policy development. Engendering such confidence for lenders will allow them to continue to develop new finance products. This will also extend to businesses, encouraging them to invest in upskilling their workforces and building their supply chain capacity. The needs of consumers must also be considered and will necessitate the consistent provision of reliable and trusted advice on the best solutions for individual property owners, as well as quality assurance and routes to redress should anything go wrong. Our first report therefore recognised the role that effective regulation can provide in market making.

We also highlighted that individual property owners with the ability to self-fund at least part of the required works are most likely to be the early adopters, and that some individual finance products covering the upfront costs of work are the closest to being deployable at scale in the short-term. Our Part 1 recommendations were:

1. Scottish Government, from early 2024, should work with the Green Finance Institute, Scottish Financial Enterprise (SFE) and others to expand current market engagement with brokers, finance providers, distributors and quantity surveyors to generate greater public awareness of financing products like green mortgages and encourage their expansion;

2. Scottish Government should begin work, from early 2024, in partnership with the Equity Release Council, to develop an information framework and guidance for Green Retrofit Equity Release products;

3. Scottish Government should research co-investment vehicles – blended finance with public and private input – with the support of the Scottish National

Investment Bank (SNIB), SFE and SFT, to identify by the end of 2024 where and how to test the approach in Scotland;

4. Scottish Government should collaborate with the Green Finance Institute to research the potential for Property Linked Financing in Scotland, with a view to establishing a scalable demonstrator by May 2025;

5. Scottish Government should review and publish, by the end of 2024, the potential of incentivising domestic property owners to increase levels of retrofit works through fiscal and taxation policy;

6. Scottish Government should review and publish, by the end of 2024, analysis of how non-domestic rates reliefs can better support and encourage investment in energy efficiency and zero direct emissions heating (ZDEH);

7. Scottish Government should seek to mitigate the split incentive issue by researching and piloting, by early 2025, the potential for green rental agreements, to encourage retrofitting in rented properties;

8. Scottish Government should immediately engage the UK Government and regulators to drive action on ZDEH and energy efficiency deployment, and support coordination of activities between parties; and

9. Scottish Government should, by mid-2024, map current heat in building data gaps and establish a framework to promote open data sharing to address these.

# 9. Annex 2 - Examples of place-based models in practice

There is a wide range of local authority led or delivered clean heat initiatives in Scotland and across the UK. Some examples are summarised below:

1. Orkney – Local Renewable Integration: the Orkney Islands have become a hub for renewable energy innovation due to its strong and abundant wind and marine resources. The islands use locally generated renewable electricity for heating through heat pumps and district heating systems. The ReFLEX Orkney project aims to create an integrated, local energy system that uses renewables to meet the energy demands of the community. This place-based approach leverages the islands' geography and resources to support decarbonisation.

2. Glasgow – Urban Heat Networks: in Glasgow, the focus has been on developing district heating systems, which are networks that provide heat from a central source to multiple buildings. These systems often use waste heat from industrial processes or energy efficient, low carbon technologies like heat pumps. An example is the Glasgow City Council's commitment to install district heating as part of the city's Climate Emergency Action Plan.

3. Highlands and Islands – Biomass and Local Materials: in the rural Highlands and Islands, a different approach is needed due to low population density and remoteness. Communities in these areas are using local materials to build highly energy efficient homes, such as the *Passivhaus*, which requires very little heating. This place-based solution takes advantage of local resources such as forests for biomass and focuses on reducing heating demand through better building standards.

4. Edinburgh – Energy Efficiency and Retrofit: in Edinburgh, the focus is more on retrofitting older buildings. Given the city's historic architecture, the challenge is adapting these buildings for modern energy systems without compromising their heritage value. Place-based solutions here include upgrading insulation, installing modern heating systems and integrating renewable energy where feasible. This reduces energy demand and carbon emissions, while preserving the city's character.

5. Aberdeen – Offshore Wind and Hydrogen: Aberdeen is known for its oil and gas industry, but it is also transitioning to renewable energy. The city has been investing in offshore wind farms and developing hydrogen energy projects, such as the Aberdeen Hydrogen Bus Project, which uses green hydrogen to power public transportation. In heating, the place-based strategy is to leverage offshore wind to produce hydrogen, which can then be used for domestic and industrial heating needs.

Each of these Scottish regions is developing a decarbonisation strategy that reflects its local strengths – whether that is wind, marine energy, biomass or the ability to retrofit older buildings. Focusing on such varied and tailored place-based solutions in this can enable significant progress towards achieving its carbon reduction targets, whilst also addressing the very particular needs of its diverse communities. Leveraging local assets and resources in support of a place's decarbonisation journey is also happening elsewhere in the UK and internationally.

Greater Manchester Combined Authority (GMCA) have worked with GFI to explore five innovative financial solutions in the region that will offer homeowners and landlords access to attractive sources of private and blended capital to fund energy efficiency upgrades to their homes. They also explored a Net Zero Neighbourhood approach in the southern district of Wythenshawe, which now forms part of the Combine Authority's £8 million funded Local Net Zero Accelerator programme.

Building on work of London Borough of Hounslow to develop a demonstrators focused on its social housing, London Councils[67] has created a London Net Zero Neighbourhood cohort, which is exploring how to develop a programmatic approach for a group of demonstrators for local authorities. London Councils has now commissioned Living Places to design and cost a comprehensive place-based demonstrator programme for this cohort with clear parallels to recommendations in this report around the need for a Central Unit leading an overall programme.

West Midlands Combined Authority initiated a Net Zero Neighbourhood demonstrator programme in 2021, with an initial demonstrator being developed in the Brockmoor area of Dudley. This programme has now received a significant boost of £6 million funding from DESNZ as part of the Local Net Zero Accelerator (LNZA) which will see additional demonstrators developed in each of the other six constituent local authorities during 2025. The goal here is to create a Combined Authority scale portfolio of projects and explore the overlap with broader generation and heat investments across the region.

**Bristol City Leap** is an innovative partnership approach involving a twenty-year joint venture partnership between Bristol City Council, *Ameresco* and *Vattenfall Heat UK*, designed to accelerate green energy investment and decarbonise the city. Over the next five years, Bristol City Leap will deliver nearly £500 million into low carbon energy infrastructure – such as solar, wind, heat networks, heat pumps and energy efficiency measures – all of which will help Bristol become carbon neutral by 2030.

Bristol City Leap was principally designed to avoid the drag of repeated ongoing public procurement for delivery of individual projects by adopting a long-term programmatic approach. During the first five years of the partnership, at least £424 million will be invested in a range of large infrastructure projects, including the significant expansion of Bristol's award-winning Heat Network, which provides local businesses and residents with access to reliable, affordable low carbon heat from sustainable sources. Solar panels and low carbon heating systems will be installed at local schools, the council's social housing will be made more energy efficient, and substantial investment will go into community-owned renewable energy projects.

Building on this, Bristol City Council is also currently testing a programmatic approach in its Innovate-UK funded Mission Net Zero project, looking at a Net Zero Neighbourhood approach aligned to the heat network investment, which is already coordinated with the City Leap. The City Council is also commissioning a Regional

[67] the collective of local government in Greater London. It is a cross-party organisation that represents London's 32 borough councils and the City of London.

Climate Investment Plan for Bristol and the three neighbouring local authority areas to bring the full range of investments required into a single investment portfolio.

**Budapest** serves as good example of a Central Eastern European city whose housing stock is in poor technical condition, yet almost completely in private ownership. Many current owners do not have sufficient funds to invest into their buildings with huge infrastructure gaps related to energy efficiency and energy poverty also prevalent in the region.

Budapest receives only a fraction of EU funds due to the high level of GDP per capita; and its municipal government has been deprived, by central government, of its main income sources, leaving it unable to intervene in the housing market without outside support. However, Budapest has committed to develop a pilot to develop retrofit finance models in collaboration with commercial banks and international financial actors. It will set up a Climate Agency at local government level to coordinate action amongst stakeholders, designed to help ensure that project development is informed by relevant specialists and financing secured.

The **Netherlands** also plans to test how local public climate finance could leverage funding from private and government sources. Its main tool will be District Investment Platforms set-up in the seven largest cities, and where government, companies, residents and investors will co-create joint district investment plans. This framework is aimed at speeding up investments and ensuring their effectiveness by developing coherent plans taking account of stakeholder views, project pipelines, budgets and possible financial partners at district level.

The pilot is based around multi-city collaboration, with local authorities, accepting that pilots run in isolation will not be successful. This offers potential to create larger scale, enable pilots to be tested in a wider range of circumstances and foster partnership working across layers of government and with industry and the public.

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