

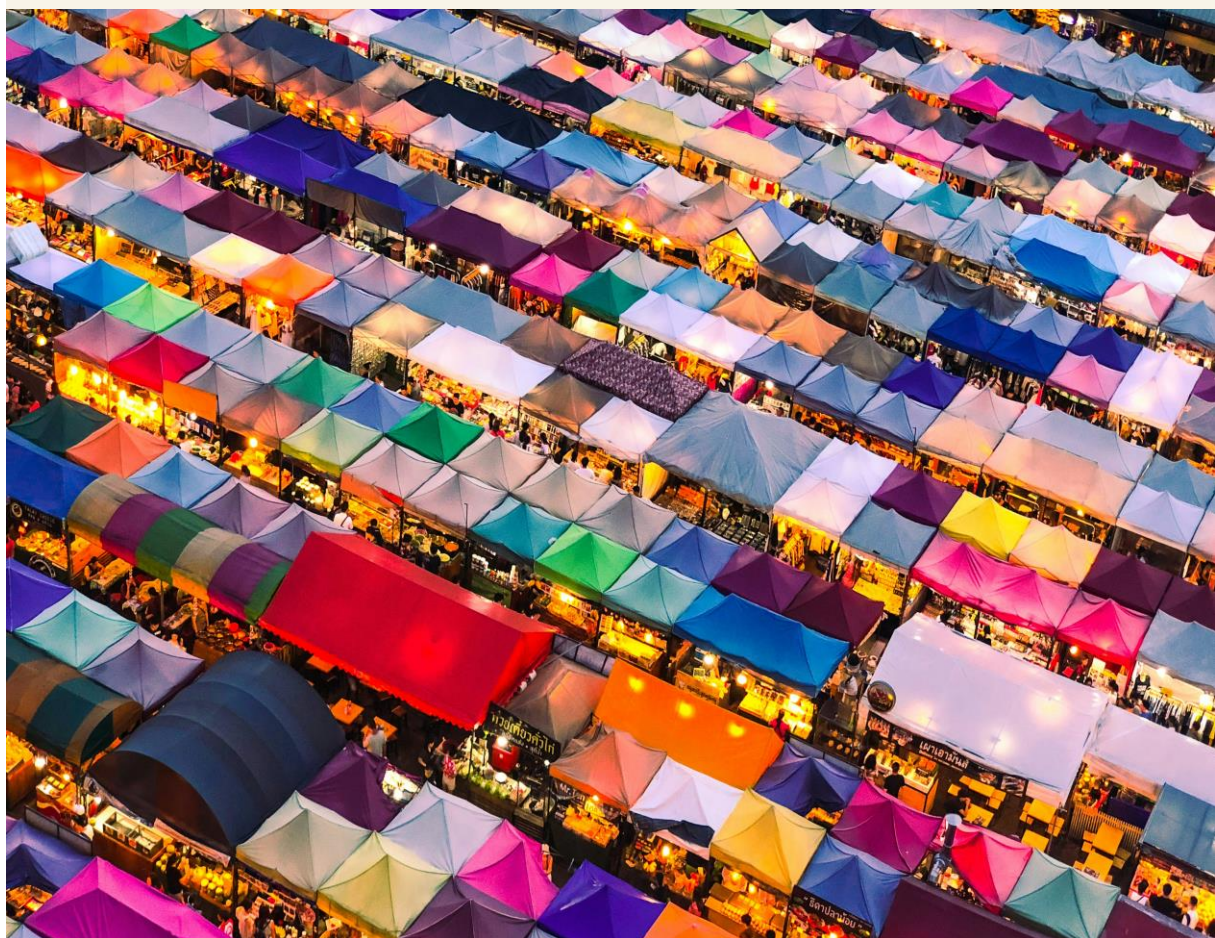


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REPORT APRIL 2024

# CREATING A HEAT PUMP MASS MARKET IN THE UK UNLOCKING ACCESS TO AFFORDABLE CLEAN HEAT

LEO VINCENT





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E3G is an independent climate change think tank with a global outlook. We work on the frontier of the climate landscape, tackling the barriers and advancing the solutions to a safe climate. Our goal is to translate climate politics, economics and policies into action.

E3G builds broad-based coalitions to deliver a safe climate, working closely with like-minded partners in government, politics, civil society, science, the media, public interest foundations and elsewhere to leverage change.

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## SUMMARY

Heat pumps will be the primary technology for decarbonising the way we heat our homes, but currently the UK lags behind European and American peers – frequently finishing ‘bottom of the league table’ for the number of heat pumps installed.<sup>1</sup> This report considers a range of viable routes to market for heat pumps and sets out the financial offers needed to underpin them.

Despite the challenges, the UK has a proud history of nationally co-ordinated heating system transitions. The decade to 1977 saw 13 million homes converted from using town gas to natural gas,<sup>2</sup> and another shift happened in 2005, when it became required for all fossil boilers to be installed as efficient, condensing models. With the right coordination and leadership from government, the UK can make similar strides towards cleaner, and even more efficient heating systems. As pressure grows on the public purse, this paper proposes a range of policy levers which would be low cost for government.

A range of challenges are hindering the development of a mass market for heat pumps in the UK. Heat pumps remain more expensive than gas boilers, which frustrates uptake. Although heat pumps are three times as efficient as gas boilers, electricity unit prices are around three times higher, effectively eliminating the efficiency benefits from a running cost perspective. Policy changes can make heat pumps the most cost-effective option for consumers, without the need for expensive and permanent subsidies.

This report sets out what can be done to accelerate the heat pump market, focused on this twin challenge of upfront and running costs. The report is principally focused on air source heat pumps, although many of the recommendations could also help support growth of the ground source heat pump market.

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<sup>1</sup> **European Heat Pump Association (EHPA), Market Data, June 2023** (accessed 19/03/2024)

<sup>2</sup> **Office for Budget Responsibility, ‘Decarbonising domestic heating: lessons from the switch to natural gas’, July 2021** (accessed 19/03/2024)



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### **Recommendations**

1. Lower the cost of electric heating, and of electricity more generally, to improve heat pump running costs.
2. Support the development of new business models for heat pump purchase, including leasing and service options and more flexible tariffs.
3. Unlock private and public finance options, such as property-linked finance, demand aggregation, and attractive retrofit loan offers.



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## CHAPTER 1

# REDUCING THE COST OF ELECTRICITY

Electricity is currently too expensive in the UK. Between 2018 and 2022, electricity was on average 4.4 times more expensive than gas.<sup>3</sup> Not surprisingly, this can disincentivise electrification. Nesta found that countries where the cost of electricity is high in relation to gas tend to install fewer heat pumps.<sup>4</sup>

The UK can reduce the price of electricity by building renewables at pace and developing more flexible options for electricity consumption and demand. A renewables-based system will shield the UK from volatile international gas prices which can spike substantially, as seen after Russia's illegal invasion of Ukraine. Building an electricity system running largely on renewables could reduce bills to below pre-crisis levels by the 2030s.<sup>5</sup>

Creating this low-cost system requires a national plan to rapidly build the right assets in the right place. These policies must get a good deal for citizens and ensure that once built, the assets are operated to meet the needs of the country at the lowest cost.

## Near-term options to ensure the affordability of heat pump running costs

Per unit of energy consumed, levy costs are almost eight times more expensive for electricity than gas. Higher levy costs mean that electrically heated homes pay far higher taxes than homes heated by gas boilers. For an average home heated by a gas boiler, gas levies amounted to around £30 in 2020/21, or almost 8% of running costs.<sup>6</sup> In the same year, an average home heated by a heat pump paid £150 in levy costs just for heating, plus £110 in levy costs for electricity used

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<sup>3</sup> Nesta, [How the UK compares to the rest of Europe on heat pump uptake, August 2022](#) (accessed 19/03/2024)

<sup>4</sup> Nesta, ['How the UK compares to the rest of Europe on heat pump uptake', August 2022](#) (accessed 19/03/2024)

<sup>5</sup> [Cutting the bills: UK households profit from clean power, Ember, October 2023](#) (accessed 16/04/2024)

<sup>6</sup> [Electricity levy rebalancing: Make clean heat accessible to all UK households, October 2023](#) (accessed 05/04/2024)



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for appliances. If the total cost of electricity used for a heat pump was around £700 per year, levies accounted for around 23% of running costs.

While noting the benefits of incentivising economy-wide electrification through shifting levies from all electricity bills into general taxation, as a near-term step, we propose a targeted exemption for electric heat users: a clean heat discount. An exemption on 3.5 MWh of electricity per year for electrically heated homes would reduce running costs by around 15% for heat pumps and 5% for direct electric heating. E3G analysis shows that this could help ensure heat pumps cost the same to run – or are even cheaper – than a gas boiler (see Table 1). The average cost in revenue foregone, over three years between 2024/25 and 2026/27, would be a maximum of £390m a year for all electric heating, or £90m a year for heat pumps and £300m for direct electric heating.<sup>7</sup>

This two-tier system is successfully deployed in Denmark, where households installing a heat pump will receive a discount on the amount of electricity used for heating. This tax exemption, alongside a suite of other complimentary policy measures and regulation, has resulted in a booming Danish heat pump market and a faster transition to clean heat than many other European countries.<sup>8</sup>

*Table 1: Average annual heating costs for a medium-sized household before and after levy discount and a smart tariff (2024/25 to 2026/27, for illustrative purposes). Includes the daily standing charge for gas but not electricity (heat pump users can disconnect from the gas grid).*

Heating	Before levy discount (£)	After levy discount (£)	After smart tariff (£)
Gas boiler	694	694	694
Heat pump (COP 2.8)	843	710	639
Heat pump (COP 2.94)	803	673	586
Direct electric	2362	2229	2228

<sup>7</sup> **Electricity levy rebalancing: Make clean heat accessible to all UK households, E3G, October 2023** (accessed 16/04/2024)

<sup>8</sup> **Which Countries Are Winning the European Heat Pump Race?, the Eco Experts, April 2023** (accessed 16/04/2024)





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## Key recommendations

- > Support long-term measures to permanently and structurally lower electricity prices. This will include accelerating the introduction of new renewables into the grid, further investment in the grid itself, and policies to capitalise on heat pumps as flexible assets.
- > Progress with the Review of Electricity Markets Arrangements (REMA) to reform market arrangements to facilitate the decarbonisation of the electricity system, and to restructure the way that levies are paid on bills, so they are no longer disproportionately loaded on electricity.
- > Consider near-term options to lower heat pump running costs, including a potential reduced rate for electricity used by heat pumps. An exemption on 3.5 MWh of electricity per year for electrically heated homes would reduce running costs by around 15% for heat pumps, achieving cost parity with gas.



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## CHAPTER 2

# BUSINESS MODELS AND CONSUMER OPTIONS

Most UK homeowners purchase a new heating appliance (usually a gas boiler) when their existing appliance is at the end of its working life, paying for it upfront and owning it outright. Achieving a mass market purely via this route to market would require a significant focus on reducing the upfront cost of heat pumps, including via innovation and subsidies. For households where the cost of installing a heat pump is likely to remain higher than a fossil fuel alternative, or where the household does not have the money to purchase the product outright, alternative models may play an important market-building role. This section overviews the leading options, explores what barriers they face, and what policy measures could overcome these.

### Costs of heat pumps

Currently, heat pump installation costs can vary significantly. Under the Boiler Upgrade Scheme (BUS), the median cost of installation is £13,339 (see Table 2).<sup>9</sup> The size, age and nature of the property as well as the need, in some circumstances, to replace radiators or resize pipes all contribute to this variation in total installation price.<sup>10</sup>

Innovation is underway to reduce costs. For example, Octopus Energy announced a heat pump offer that will be “free” for households that do not need additional work to fit the system, coupled with the BUS.<sup>11</sup> Reducing the time taken to install heat pumps – making installations more modular – would also reduce costs.

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<sup>9</sup> GOV.UK, 'Boiler Upgrade Scheme statistics: January 2023', February 2023 (accessed 19/03/2024)

<sup>10</sup> Heat Pump Chooser, 'How much does a heat pump cost in the UK? (2023)', April 2023 (accessed 19/03/2024)

<sup>11</sup> Octopus Energy, 'The Cosy 6 heat pump: revolutionising heating the Octopus way', September 2023 (accessed 19/03/2024)

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Table 2: Costs of heat pumps installed under the Boiler Upgrade Scheme (January 2024)

	Air source heat pumps	Ground source heat pumps
Mean cost of installation	£13,339	£26,838
Median cost of installation	£13,200	£24,549
Lower quartile cost of installation	£10,998	£17,763
Upper quartile cost of installation	£15,590	£35,263

While the upfront costs of a heat pump are higher, the total lifetime costs can be lower, as heat pumps typically last longer than gas or oil boilers – with modern units operating for 25 years or more.<sup>12</sup> Gas boilers can be expected to last up to 15 years.<sup>13</sup> Government messaging can highlight this, encouraging people to view heat pumps as the lower cost long-term option. This will be supported by rebalancing gas and electricity costs on household bills, with the aim of making electricity bills cheaper.

## Upfront purchase and subsidy

The current default for heat pump purchases is for homeowners to meet the full costs of installation upfront, with support from the BUS, which offers subsidies of £7,500 (previously £5,000). The advantage of this business model is that consumers are familiar with it, and it avoids the need to manage long-term contractual relationships with service providers.

Subsidy is likely to remain an important part of the policy toolkit, particularly as the heat pump market ramps up in the late 2020s and early 2030s. There are several basic ways to improve the efficacy of existing subsidy schemes, such as investing in quality advertising and marketing, and offering consumer advice outlets for prospective grantees.<sup>14</sup> Grants should be linked to concessional financial offers (more in the next section). Countries with more successful heat pump rollouts tend to combine generous subsidies with easy to access, low-cost

<sup>12</sup> **Invictus Mechanical, 'What is the Life Expectancy of a Heat Pump?', November 2021** (accessed 19/03/2024)

<sup>13</sup> **Warranty People, 'How Long Does A Gas Boiler Last?'** (accessed 19/03/2024)

<sup>14</sup> **Electrify Heat, 'Getting the BUS rolling: Unlocking the potential of the Boiler Upgrade Scheme', July 2023** (accessed 19/03/2024)



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finance. By contrast, the UK's subsidy does not come with any government-backed low-cost finance.<sup>15</sup> Overall, subsidy needs to work in concert with other enablers – lower running costs, long-term certainty, greater awareness and advice.

The level of subsidy can reduce over time as installation and technology costs fall. However, for low-income households, significant subsidy should remain in place long-term.

### Key recommendations

- > Maintain universal grants (tapered over time) to ensure households can purchase heat pumps upfront. Grants should be structured in a way that can be utilised for other business models (i.e., demand aggregation, leasing models).
- > Advertise schemes widely and provide independent advice to boost scheme uptake.
- > For low-income households, the government will need to fully support homes to decarbonise. Heat pumps can be included as part of the offer in locally led, whole house retrofit programmes.

## Leasing and service models

Leasing models are increasingly popular with UK consumers for purchasing cars and other high-cost appliances. Under a leasing model the payment is spread, reducing upfront cost, and instalments can be both inflation-proof and tax deductible. With the leasing of heat pumps, energy savings can also be offset against the leasing fee. There could be an added option for the consumer to upgrade to a newer technology.<sup>16</sup> Low-cost finance could also be integrated into business models.

The desirability of leasing – bundled with services like maintenance and smart electricity tariffs – has started to take off in other European countries. Germany's largest heating installer, Thermondo, offers heat pump rentals at a competitive

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<sup>15</sup> **Regulatory Assistance Project, 'Getting on track to net zero', March 2021** (accessed 19/03/2024)

<sup>16</sup> **Leasing Life, Financing zero-emission heating is not just about heat pumps, June 2023** (accessed 19/03/2024)



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price point.<sup>17</sup> Estonia has seen a significant increase in heat pump deployment over the past few years,<sup>18</sup> in part due to consumers being able to access business models whereby they rent heat pumps for 10–15 years, avoiding upfront and regular maintenance costs. Eesti Energia offers heat pumps with zero deposit, regular maintenance, and free spare parts.<sup>19</sup> In fact, demand for this service exceeded predictions by four times.<sup>20</sup>

Service models are also considered promising for heat pumps, sometimes termed “heat as a service”. Under this approach, suppliers sell assets (like a heat pump, storage, or an electric vehicle) and electricity as a bundle – like a mobile phone contract sells a handset alongside minutes and data. This approach is seen as a particularly important development for a decarbonised electricity system in which consumer flexibility and efficiency are a valuable resource (see below).

The government will have a role to play in ensuring households are protected if they cannot keep up payments (i.e., to ensure that lenders or service providers are not forcibly removing heating systems from customers who default) and, conversely, providing lenders adequate security. Measures should also be put in place to mitigate a potential reduction in electricity supplier competition, as consumers are “locked in” to lengthier contracts tied to their heating systems. Government can also help de-risk early leasing models, while industry builds risk data and gains comfort in the credit risk.

### Key recommendations

- > Support an attractive consumer offer for leasing and heat-as-a-service models: Consumer awareness, engagement and protections will help familiarise and provide confidence to households around this new business model for heat.
- > Support lenders and service providers to scale up new business models: Explore opportunities to de-risk leasing and service models for consumers and lenders.

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<sup>17</sup> Reuters, ‘Germany’s Thermondo offers rental option on home heat pumps’, June 2022 (accessed 19/03/2024)

<sup>18</sup> EHPA, Heat pumps in figures: 2021 EU market and global outlook, July 2022 (accessed 19/03/2024)

<sup>19</sup> Eesti Energy, 2023. Air-to-air heat pump (accessed 19/03/2024)

<sup>20</sup> Energy and Climate Intelligence Unit, Poland, Estonia among states beating UK at heat pumps, leaving us 20% more dependent on gas imports, November 2022 (accessed 19/03/2024)

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## Flexibility

It is increasingly common for electric vehicles to be charged flexibly and treated as distributed energy assets. This means consumers charge their vehicles when electricity is cheap – making the most of abundant renewable generation when there is low demand – and stop charging (or even discharge some electricity back to the grid) when electricity is more expensive. This process can be automated, so that consumers define how much charge they want by when, and the vehicle charges smartly to fill the battery at lowest cost.<sup>21</sup> This not only reduces costs for EV drivers, but also reduces the cost of the electricity system, as it reduces the need to build new networks and power stations.

Heat pumps can provide similar flexibility with the right technology, under the right market structure.<sup>22</sup> Whether through storage or switching on earlier than they otherwise would and off at peak times, heat pumps can provide flexibility by shifting electricity demand outside of peak hours. This approach can reduce the running costs of the heat pump, and reduce the cost of the electricity system for everyone. Trials are ongoing: Passiv UK and Samsung are developing smart controls for heat pumps that can lower bills by 35% with increased efficiency, optimising time-of-use tariffs and onsite generation.<sup>23</sup> Further innovation in smart operation is recommended.<sup>24</sup>

Operating heat pumps (and other assets) flexibly needs to be convenient for consumers, and non-discriminatory for those who may be less able to engage in demand side flexibility (such as the elderly, disabled or less mobile). Innovative supply tariffs will be the mechanism for achieving this. They are the interface through which consumers are incentivised to move their demand to off-peak times or for a supplier to optimise the use of assets in exchange for lower energy prices. Retail policy will need to encourage these innovative tariffs and manage the transition. This may require additional consumer protections to ensure that new contracts are fair and enable competition within the market. Protecting consumers from digital exclusion, or an unfair two-tiered system, will be important.

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<sup>21</sup> [Energy Saving Trust, 'Smart charging for electric vehicles'](#) (accessed 19/03/2024)

<sup>22</sup> [Nesta, Automating heat pump flexibility: results from a pilot, September 2023](#) (accessed 19/03/2024)

<sup>23</sup> [Passiv, Passiv UK and Samsung to unlock heat pump flexibility as part of Interoperable Demand Side Response programme](#) (accessed 19/03/2024)

<sup>24</sup> [UCL Energy Institute, Flexible heating: how does it work and how does it feel?, January 2023](#) (accessed 19/03/2024)

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Traditionally there have been barriers which stop consumers being paid to flex their demand. Some of these have now been removed but some remain. The government's Smart Systems and Flexibility Plan outlines actions to remove these barriers. For example, it looks to accelerate the rollout of smart meters and to regulate smart assets. The work must continue to remove these barriers. Additionally, a substantial innovation programme should be funded to develop flexible heat pumps and assess how much they can reduce bills for consumers. Furthermore, intermittent renewables will mean very cheap electricity at some times, with periods of higher costs when storage, dispatchable generation, and demand-response play a bigger role.

### Key recommendations

- > Remove barriers to consumers using heat pumps flexibly. This begins with delivering the actions in the 2021 Smart Systems and Flexibility Plan. Additionally, ensure retail policy drives innovative tariffs, look for ways to accelerate the rollout of smart meters, and remove barriers to the Capacity Market.
- > Fund a substantial innovation programme to develop flexible heat pumps and assess how much they can reduce bills for consumers.
- > Ensure all heat pumps funded through the BUS are smart-capable.

## CHAPTER 3

# MOBILISING PUBLIC AND PRIVATE FINANCE

Whether a household purchases a heat pump outright or chooses a business model which spreads the costs over time, both private and public finance are key to unlocking the investment needed in the UK's heating systems. Attractive private finance offers can help enable domestic heat pump purchases.



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Concessional finance can make offers more attractive, with public lending facilities providing a route to market for more consumers through the UK Infrastructure Bank, or potentially a new GB Energy fund.

## Unlocking private finance

Financial institutions are already stepping up their green finance products and services. Banks and building societies in the UK are launching green mortgage products at an increasing rate.<sup>25</sup> Examples include Nationwide's 0% interest loan and Octopus's partnership with Halifax to support low-cost heat pumps. While products generally focus on supporting the purchase of new or highly efficient homes, there is a growing focus on supporting households to improve existing properties.

Alone, finance cannot drive demand. Indeed, despite increased availability, uptake of green home finance products remains relatively low.<sup>26</sup> The introduction of fiscal incentives linked to green lending could help boost the market and encourage innovation – with proposals such as Green Stamp Duty.<sup>27</sup> Long-term certainty will also play an important role in spurring demand, for example through raising Minimum Energy Efficiency Standards, or mandating phase-out dates for new fossil heating systems.

Lenders wanting to support consumers on their retrofit journeys face prohibitively costly risk originating from the Consumer Credit Act (CCA). Revisiting the CCA to address barriers to retrofit lending is critical for helping lenders provide retrofit loans and underpin other innovative business models, including those explored in this section. In particular, lender liability under Debtor/Creditor/Supplier (D-C-S) loans (sections 56 & 75 of the CCA) – which makes the lender jointly and severally liable to the consumer for any misrepresentation or breach of contract – needs inspecting.

Misrepresentations or breaches of contract commonly relate to the technology itself, which lenders are unlikely to have expertise in, and will have little to no direct control over. Historically, the industry has incurred significant liabilities for the mis-selling of solar PV by installers in the 2000s, which led to a mass withdrawal of green products offered by major lenders. Amendments to

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<sup>25</sup> **Green Finance Institute, Green Mortgages** (accessed 19/03/2024)

<sup>26</sup> **Consumer attitudes towards greener homes, Natwest** (accessed 16/04/2024)

<sup>27</sup> Energy Efficiency Infrastructure Group, **Energy Saving Stamp Duty** (accessed 19/03/2024)





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legislation, specifically in relation to technologies newer to the UK market, could help to unlock new sources of finance. While this is currently in consultation for reform, this process will take several years to complete.

## Creating economies of scale through demand aggregation

One alternative business model that has already been successfully implemented for renewables is demand aggregation, whereby a critical mass of consumers in a local area procure technology at scale to reduce the cost. These integrated finance models can help to bring costs down through economies of scale and help build local supply chains. However, these models see the same barriers as green loans relating to the Consumer Credit Act (as above).

Examples of demand aggregation schemes include solar PV “group-buying” through companies like Solar Together.<sup>28</sup> iChoosr is another company which coordinates group buying solar schemes in Belgium, Japan, and the Netherlands. In Belgium, iChoosr partnered with KBC bank to offer integrated finance loans subsidised by the government at low interest rates. In the first year, they issued over €4m of loans: with over 630 loans issued with an average value of €6,900. Online price indicators allow customers to assess the cost of upfront payment versus loan over different payback periods (up to 48 months). Customers who opt for a loan are sent to the bank for credit checking and approval.

An example of a supply-side demand aggregation scheme was the “golden carrot” programme conducted through the Super-Efficient Refrigerator Program (SERP) in the US in the mid-1990s. The SERP Program featured a \$30m bid competitively awarded to the refrigerator manufacturer that could develop, distribute, promote, and sell the most energy-efficient, CFC-free refrigerator/freezer in the most cost-effective manner possible. This was achieved through a collaboration between the Environmental Protection Agency and Californian utility companies, who aggregated demand of consumers and created a highly successful drive for innovation and an attractive, industry led consumer offer.<sup>29</sup>

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<sup>28</sup> **Solar Together** (accessed 19/03/2024)

<sup>29</sup> **National Renewable Energy Laboratory, The Super-Efficient Refrigerator Programme: Case study of a golden carrot program, July 1995** (accessed 19/03/2024)



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The SERP and iChoosr examples demonstrate that there could be a role for government, local authorities, and development bank involvement in supporting demand aggregation. Public assistance in facilitating and brokering the link-up of communities, scheme-relevant operational buyers and law firms could enable an expanded and de-risked rollout with further consumer protection.<sup>30</sup>

## Property-linked finance

Although not yet available in the UK, property linked finance (PLF) can also provide a route to market for products which ultimately become part of the property, such as solar panels or heat pumps.<sup>31</sup> The cost of a heat pump purchased through PLF can be entirely set against a property, rather than the consumer. This provides 100% funding for a de-risked loan, which can be spread over a longer repayment period and transferred if the home is sold. The model in the US has leveraged over £13bn of investment in energy efficiency,<sup>32</sup> and has also been implemented in Canada and Australia.

### Key recommendations

- > Support business models which can spread the upfront costs of heat pumps, including demand aggregation schemes and property-linked finance. This could involve running trials underwritten or brokered by government or offering a golden carrot style programme for heat pumps.
- > Revisit the Consumer Credit Act to address barriers to green lending and reduce risk for lenders in supporting the uptake of heat pumps.

## Role of the UK Infrastructure Bank (UKIB)

The UK Infrastructure Bank (UKIB) could be supported to develop an attractive loan package to support home retrofit, combined with subsidies and concessional finance. These could be offered via energy service providers and/or retail banks, offering measures to smooth the consumer journey.

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<sup>30</sup> Green Finance Institute, **Financing zero carbon heat: turning up the dial on investment, December 2020** (accessed 19/03/2024)

<sup>31</sup> Green Finance Institute, **Property Linked Finance: RISING CONSUMER DEMAND FOR ENERGY EFFICIENCY AND THE NEED FOR FINANCIAL INNOVATION, September 2022** (accessed 19/03/2024)

<sup>32</sup> PACENation, **What is PACE Financing?** (accessed 19/03/2024)



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This model of concessional finance is successfully deployed in Germany under the KfW programme, delivered via retail banks. Kreditanstalt für Wiederaufbau (KfW) – the Reconstruction Loan Company – is Germany’s development bank, which has been lending to promote energy efficiency in buildings, as a core component of the bank’s model, since the oil crisis of the 1970s. For every €1 invested by the bank, building owners invested a further €6.<sup>33</sup> The scheme can generate almost as much in tax receipts as it costs in subsidy.<sup>34</sup> In 2021, KfW commitments reached a new high of €34.5bn.<sup>35</sup>

The KfW programme offers low-interest loans with a repayment subsidy and is available to every person and organisation (individuals, companies, municipalities, legal entities, etc.) to upgrade an existing home or build a new home. The programme is not solely focused on energy efficiency upgrades, but incorporating energy efficiency upgrades into a general building project will allow access to more generous loans. Support is greater for building renovation than for new builds.

The repayment subsidy reduces the loan amount to be repaid and shortens the repayment term. Renovation projects can access higher repayment subsidies by achieving higher energy efficiency, with greater support for the least efficient homes (+10%) and for the use of prefabricated components (e.g., façades or roof) (+15%). For both new builds and renovation, an additional subsidy of 50% is available for construction supervision. Consumers can choose two forms of financing: an annuity loan which is paid back over a set period at a set interest rate with consistent payments each period, or a bullet loan, where a payment of the entire principal of the loan, with interest, is due at the end of the loan term.

Several factors have been important to the success of the KfW’s efficiency programmes. The long-term nature of the programme, combined with favourable terms, relative ease of application and ability to link KfW packages together and with other sources of finance are all vital in making the scheme attractive. They incentivise energy efficiency upgrades at crucial “trigger points” like other home upgrades – like a new kitchen or loft conversion – or home purchases. The integration of the loans with connections to trusted sources of

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<sup>33</sup> Calculated from Institut Wohnen und Umwelt & Fraunhofer Institut (2018) **Monitoring der KfWProgramme “Energie-effizient Sanieren” und “Energie-effizient Bauen” 2016**; BFM (2016) Haushaltsgesetz 2016.

<sup>34</sup> **University of Birmingham, PATHWAYS FOR LOCAL HEAT DELIVERY, 2022** (accessed 19/03/2024)

<sup>35</sup> **KfW, Reporting Portal** (accessed 19/03/2024)



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advice and the supply chain has been important to pave a smooth consumer journey.

### Key recommendations

- > Mandate the UK Infrastructure Bank to develop an attractive concessional finance offer for home retrofits, as has been deployed successfully in Germany through the KfW.



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## SUMMARY OF RECOMMENDATIONS

Decarbonising our heating systems should be seen as nothing short of a national infrastructure priority – with electrification offering significant benefits for energy security, the economy and consumers. There is no one silver bullet solution. By supporting a range of approaches, the government can ensure that households and communities have the support, services and finance needed to make the upgrade.

### **Reducing the running cost of electricity**

- > Support long-term measures to permanently and structurally lower electricity prices.
- > Progress with the REMA to reform market arrangements to facilitate the decarbonisation of the electricity system.
- > Consider near-term options to lower heat pump running costs, including a potential reduced rate for electricity used by heat pumps.

### **Business models and consumer options**

- > Maintain universal grants (tapered over time) to ensure all households can purchase heat pumps upfront.
- > Support attractive consumer offers for leasing heat pumps, heat-as-a-service and smart/flexible models.
- > Support lenders and service providers to scale up new business models.
- > Fund a substantial innovation programme to develop flexible heat pumps and assess how much they can reduce bills for consumers.

### **Mobilising public and private finance**

- > Support business models which can spread the upfront costs of heat pumps, including demand aggregation schemes and property-linked finance.
- > Revisit the Consumer Credit Act to address barriers to green lending and reduce risk for lenders in supporting the uptake of heat pumps.
- > Mandate the UK Infrastructure Bank to develop an attractive concessional finance offer for home retrofits.