HOME IS WHERE THE HEAT IS

OUTCOMES REPORT

September 2023

THE SUSTAINABLE HOMES AND BUILDINGS COALITION

NatWest Group

British Gas

WORCESTER

BOSCH

citizens advice

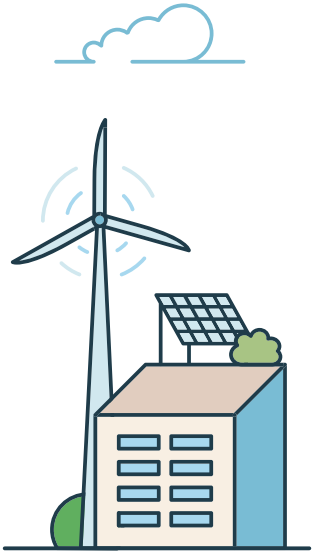
CONTENTS

ABOUT THE SUSTAINABLE HOMES AND BUILDINGS COALITION

In July 2021 NatWest, Worcester Bosch and British Gas, with support from Citizen's Advice, formed the Sustainable Homes and Buildings Coalition. The Coalition's core purpose was to influence policymakers and stakeholders to change their approach to energy efficiency. Instead of top-down Governmental programmes, strategies and schemes, the Coalition has endeavoured to show that by putting customers at the heart of the process, and through empowerment and guidance, real progress in decarbonising the UK's built environment, 15% of the UK's carbon emissions, can be made.

FOREWORD

SELAINE SAXBY
MP NORTH DEVON



When the Sustainable Homes and Buildings Coalition was formed in July 2021 and published its first report, in the run up to COP26, the decarbonisation agenda was primarily focused on the big-ticket items. We saw nations pledging to reduce global carbon emissions, the mobilisation of private finance and the upscaling of technological solutions. I was proud to see the UK forge a global leadership position on climate change and drive the global community to keep 1.5 degrees alive, but many of us felt there was a lack of a consumer centric approach. By this we mean empowering and engaging people across the country to make realistic and affordable changes in their own lives. It is only through Government working in partnership with people and businesses across the UK that true progress can be made.

This is why I am a strong supporter of the Sustainable Homes and Buildings Coalition. The Coalition's focus has always been on setting out a customer centric approach to domestic decarbonisation and working with partners to find solutions. A great example of the Coalition in action was the running of a fully funded home upgrade programme for nine properties across the UK. The purpose of this was to get real world experiences of the process people go through when upgrading their homes and to understand better the barriers to success.

> "Energy efficiency is not simply a means to meet our climate ambitions, but also one of strategic importance to safeguard national energy infrastructure."

With the atrocious implications of the war in Ukraine, and its impact on the cost of energy for businesses and households in the UK, a core fact came to the fore – the UK has the leakiest housing stock in Europe. In my own constituency of North Devon, I am experiencing this firsthand with my new home. The combination of higher energy unit prices and the amount of energy wasted in British homes has driven many to the brink of affordability. This has given the country a new perspective on energy efficiency – the need for us all to upgrade our homes and businesses is now clear to see.

I applaud the work of the Sustainable Homes and Buildings Coalition which has brought together Parliamentarians, policymakers and government officials to reconsider the strategic importance of energy efficiency as a means to solve the energy trilemma.

One area I will continue to work with the Coalition on is ensuring that we develop the supply chain to support a national home upgrade programme. As this report makes clear, the supply chain is one of the key barriers to success, as is a lack of trusted information to help guide customers to upgrade their homes. We also need to consider the skills imbalance across the country. Rural areas, which often have a higher proportion of older, energy inefficient homes, do not have enough skilled engineers to improve these older homes. The other element this report shows is that there is a real economic opportunity for businesses of all sizes up and down the country. The UK needs to upgrade 29 million homes according to the Committee on Climate Change[1] – that's a home a minute if the UK wants to meet its net-zero target.

I have enjoyed working with NatWest Group, British Gas, Worcester Bosch and Citizens Advice on this campaign to identify and break down the barriers to the roll out of energy efficiency, and there is undoubtedly more work to be done and lessons to be learnt – especially for rural parts of the country.

The UK is making progress and we are on the right road, but now is the time for us all to redouble our efforts and challenge ourselves to be a world leader in energy efficiency, and not an outlier. I look forward to working with the Coalition going forward as they continue to identify the barriers to success and find solutions to break these down. As a member of the Conservative Environment Network Advisory Committee, I will continue to play my part to drive this agenda forward.

1 Committee on Climate Change, UK housing: Fit for the future? 2019.

INTRODUCTION

LLOYD COCHRANE, HEAD OF MORTGAGES, NATWEST GROUP

Since launching the Sustainable Homes and Buildings Coalition with the support of Worcester Bosch, British Gas, and Citizens Advice back in 2021, three clear ambitions have united us. First, to redefine the conversation around energy efficiency to make it more focused on the customer and less on the technology. Second, to build a broad coalition of support with a bias for action to help Government make the best policy choices to support consumers. And last, but by no means least, to use the experience and expertise of business to demonstrate the positive impact of real-life home energy upgrades and shed light on the blockers that stand in the way of making this decade one of delivery.

Since our formation in 2021, we've welcomed some noticable progress from the government. This includes a public information campaign launched at the beginning of the year, the increase of £1.7bn through the Social Housing Decarbonisation Fund, and the additional £6bn for energy efficiency from 2025 onwards announced by the Chancellor in 2022.

In light of all the critical issues Government has had to deal with over this period, action has been pleasing to see. Few would disagree that energy efficiency has a role to play in supporting people with the cost of energy, reducing energy wastage, improving our energy security and achieving our climate ambitions.

Yet despite these actions, we're not quite there. Businesses and government need to work together to improve the regulatory structure and environment which incentivise homeowners, businesses, and consumers more broadly to embrace energy efficiency at scale. One solution we're keen to explore is the creation of a 'One Stop Shop' service for energy efficiency upgrades, to make the consumer journey smoother as another difficult winter of volatile energy prices is anticipated. The slow pace of progress of home energy upgrades, whether it be in the homeowner, social housing, or private rented sector, is costing people dear.

Building on our last Report, published in October 2022, the Coalition remains convinced of our five policy asks. These include:

- EPC reform
- Improving public awareness
- A review of the stamp duty system to incentivise homeowners to make sustainability-linked home improvements
- A commitment to long term finance from the Government and private sector working in partnership
- A laser like focus on unlocking the supply chain

All are vital to kick start delivery of home energy upgrades nationally.

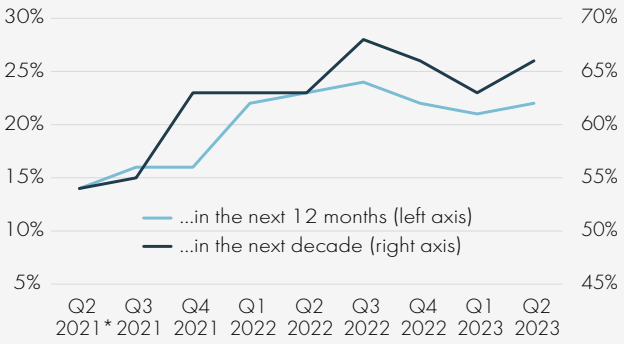
Over the past two years, in parallel to our convening role and policy advocacy, we've practiced what we preached: implementing energy efficiency improvements to nine pilot properties across the UK, and helping these households transform their properties into homes of the future. We wanted this Outcomes Report to showcase their personal experiences of the process and be candid about continued blockers that have so far not been fully addressed.

Over 1 in 5
prospective homebuyers said that an EPC rating of C or above was an 'essential' feature[2]

Having monitored their energy efficiency upgrade journeys from start-to-finish, in this report we share details surrounding the consumer experience and the journey these homeowners have been on. It is clear there are two bumps in the road that we must smooth out.

Firstly, information and trust. People are still struggling to find basic information and trusted advice which can help them understand what they need to do to upgrade their homes and better appreciate the cost. The second element is the supply chain. Simply put, the supply chain for this sector is currently under-skilled, (although businesses are improving this), the products needed are hard to source, which only adds to the cost and delay, and also hinders consumers' decision-making process. Ultimately, these two factors are putting consumers off futureproofing their homes and hindering the rollout of energy efficiency across our country.

Which of the following apply to your main property? Planning to make improvements to the environmental sustainability of the property...



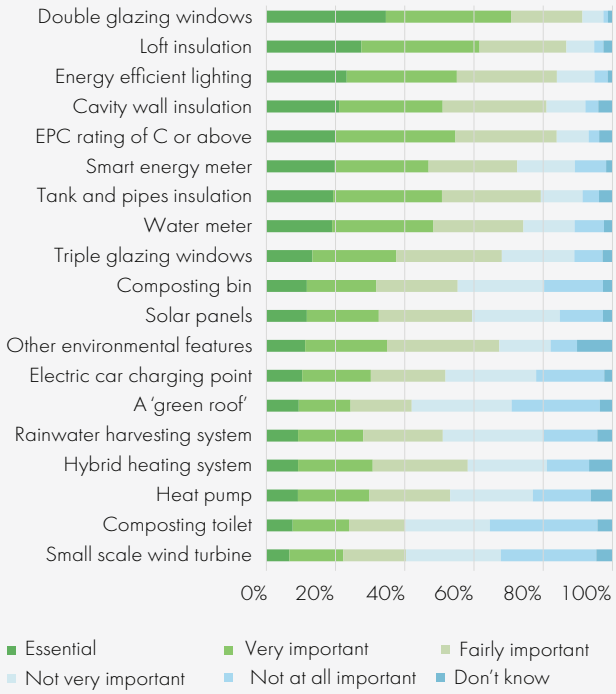
Notes: Homeowners (either own outright or buying with a mortgage). Respondents were permitted to say they planned to make changes in the next 12 months, in the next 1–5 years, and in the next 6–10 years.

*Q2 2021 based on May and June data only.

Sources: NatWest, S&P Global.

2 Greener Homes Attitude Tracker – July 2023 Update.

How important, if at all, would it be that the following environmental features are already installed?



Note: Households that are planning to purchase a property in the next 10 years, surveyed in Q2 2023.

Sources: NatWest, S&P Global.

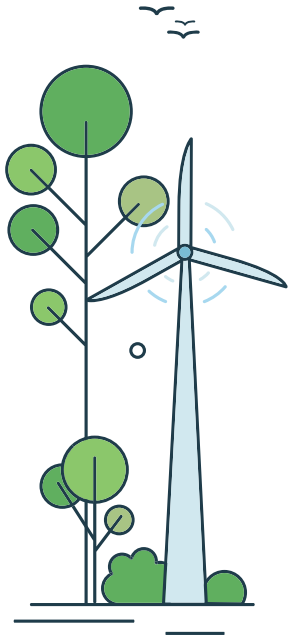
However, beyond these barriers, using data from NatWest's Greener Homes Attitude Tracker, it is clear there is concrete and resilient support for energy efficiency. But there remains one overwhelming barrier: cost, which is particularly challenging given the financial pressures that people are experiencing in the current cost-of-living crisis. This is why energy security needs to be a long-term goal for the UK to aspire to.

Despite this challenge, our data shows consumers want to futureproof their homes. They want to install heat pumps, solar panels, double and triple-glazing. The long-term signals are strong and encouraging. As the energy efficiency supply chain expands further – which the measures outlined in this report are aimed at supporting – prices will fall, unlocking access to home improvements for a larger proportion of households, further stimulating the market.

It feels to me we are on the cusp of a step change – hopefully our project has acted as a proof of the impact that can be made, and can help catalyse the country to move to proof of scale. I sincerely hope this report contributes positively to the efforts of the wider sector. I hope it moves us forward, towards a greener and more secure future, and that it galvanises action.

A REALITY CHECK ON DELIVERING HOME IMPROVEMENTS

ANDREW MIDDLETON, MANAGING DIRECTOR, BRITISH GAS ZERO



We've long been urged to think globally, act locally in the effort towards net zero – and you don't get any more local than starting at home. But even today, the choices, technologies and costs facing households can be overwhelming.

At British Gas, our team of over 7,000 engineers visit thousands of homes each year, which means we see first-hand the full range of the UK's diverse housing stock and know from experience what is needed to decarbonise heat in our homes.

Through our role as the installer of low carbon technologies across the properties in this project, and our experience as one of the largest heat pump and boiler installers in the UK, we have played a frontline role in the Home Improvement Pilot. Using the learnings from this trial and our broader experience in the low carbon heating market we know there are a number of challenges and opportunities in decarbonising homes across the UK.

One key component that is essential for the success of upgrading at scale is demand density, or the number of people in a given area that want to upgrade their homes. Without demand, momentum becomes more challenging as grant schemes will not work as effectively, industry will struggle to invest and build up their product lines, supply chains will not grow and business will not train or upskill their workers.

One of the successes of this pilot was that a number of the case studies identified were based in a similar geographical area in the Northwest of England: in doing so, commonalities can be identified, and learnings obtained. At British Gas, we are mobilising our local knowledge, engineering expertise, and trusted brands, to help facilitate demand and act as a catalyst in the market.

A large barrier to consumers is the upfront cost of heat pumps. At British Gas, we offer the lowest cost heat pumps in the UK – at prices creating parity to many boilers – however, it is the additional home upgrade costs which are preventing customers from installing heat pumps. We have seen from this pilot that some of the properties previously had poor cavity wall insulation and fixing this will cost thousands, yet it won't improve the properties' EPC ratings. It is hard to imagine that

consumers will be willing to spend thousands on costly measures to make a property heat pump ready which is why financial support from mortgage providers and greater clarity on Government incentives is essential.

Another area of concern is the lack of consumer awareness about the measures they need to take to decarbonise their homes. British Gas' research has shown that 78% of the public say that they are willing to make changes in their own homes to tackle climate change, but they do not know what measures are available to them – with only 48% of the public having heard of heat pumps and knowing what they are, compared to 89% for solar panels, and 25% for hydrogen boilers. And when asked what they would replace their existing boiler with, only 14% said they'd choose a heat pump. During the pilot we found that customers were not familiar with new technology and sometimes rejected the opportunity for lower carbon technology such as hybrid heat pumps over a new gas boiler.

That is why we created a new business unit – British Gas Zero – which is dedicated to solving these issues. We are providing customers with home health checks, to help households understand the inefficiencies in their properties and providing customers with an action plan on what they can do immediately to improve their home's energy efficiency and decarbonise their homes. This enables consumers to make informed decisions and offers them trusted advice on the financial support available from the Government as well as from businesses to fund more expensive measures such as insulation.

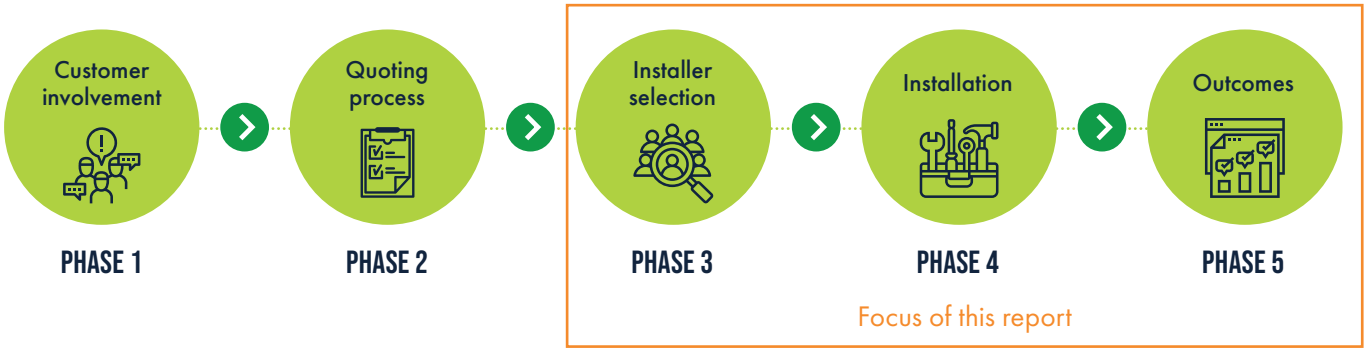
These insights are important not only for us, but for the whole sector as we support our communities on the journey to net zero. As our report finds, energy efficiency is no longer simply a climate issue, it's also a cost-of-living and energy security issue. For these reasons we encourage more businesses to follow suit and help their customers to understand not only the asks being made towards meeting the Government's net zero targets, but also the actions they can take at home to achieve them.

HOME IMPROVEMENT PILOT: OUTCOMES & LESSONS

The Home Improvement Pilot programme has been the cornerstone of the Coalition's work. This programme has helped to make the homes of nine families more energy efficient. These improvements have been funded by the Coalition, at no cost to the consumer, in return for each household providing feedback on the process and helping us to uncover the blockers for a nationwide home improvement programme. As a Coalition, we would like to thank each and every household who have been on this journey with us.

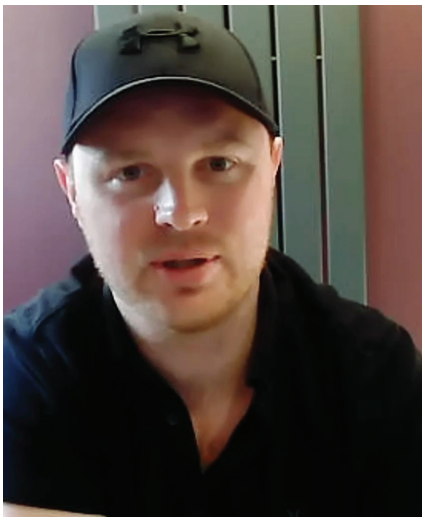
The Coalition has sought to keep the consumer experience at the centre of our work. Whilst we need policymakers and government to tackle the structural barriers around energy efficiency at a national level, we cannot forget that it is ordinary people who will have to undergo the process.

Because home is where the heart is, the Coalition is convinced that to make home improvements a success, the process must be as unintrusive as possible. By studying the rollout of home improvement upgrades on a case-by-case basis, we've uncovered important lessons and insights.



The Coalition set aside £250,000 to upgrade nine homes across the UK in order to understand better the barriers which exist beyond the financial considerations to energy efficiency improvements. The cost of the work on each property ranged from £8,000 to nearly £50,000 and in the majority of cases the overall valuation of the homes increased, and in some instances by a significant margin. In other cases, the improvements to EPC band ratings was not as high as we hoped but improvements on scores were achieved.

The following case studies represent a range of options homeowners could undertake to improve the energy efficiency of their homes. In the real world, homeowners have difficult choices and need to weigh up a range of different options before undertaking an upgrade to their homes. Nevertheless, by studying the rollout of home improvement upgrades on a case-by-case basis, we've uncovered important lessons and insights which policymakers and businesses must now consider carefully especially as more financial products for energy efficiency improvements come onto the market.



CASE STUDY 1 – BRYN STEPHENSON & RHONDA WINSKILL

Location	Tyne and Wear
Property type	Semi-detached 1983–1995
Initial EPC	D (56)
New EPC	C (70)
Work completed	Solar panels

OUTCOMES

Bryn and Rhonda decided not to install a heat pump or full insulation as they had just completed their own renovation work and did not want to cause too much upheaval. The couple decided to install solar panels and a storage battery which led to an improvement in their consumption from 18Kw to 1Kw per day.

> *"In hindsight, we wish we'd known about this earlier as we've been doing some home renovation and we could have made allowances for certain things."*

> *"The aspect of the home improvement we are most excited about is the solar panels. With Rhonda (my partner) being off on maternity for a year, it will be great to see the benefits that they will give us, and the potential savings when she's reduced her wages as well."*

> *"If it wasn't for the funding, we don't think we would have got to the point of installing solar panels at this moment in time. It's not something we'd ever really thought about, but the funding that the Coalition has offered, has meant it's an option we would really like to take."*

CASE STUDY 2 – TONI HARRISON & JOHN BELL

Location	Bootle, Merseyside
Property type	Terraced 1930–1949
Initial EPC	D (64)
New EPC	A (93)
Work completed	Solar Panels, External Wall Insulation, Loft Insulation, New Radiators

OUTCOMES

Toni and John's property was deemed not suitable for a heat pump. However, the couple were able to install a new energy efficient boiler, solar panels, external wall and loft insulation and for the first time were able to install radiators upstairs – which was a relief with the arrival of their new baby ahead of winter. Toni and John's house was taken from an initial EPC rating of D (64) to A (93) over the course of the pilot.

> *"The main motivator is energy bill costs. With energy bills rising in the UK, it's very difficult for a working-class family to pay the bills and keep the property warm."*

> *"It's helpful to know that the property is more sustainable and environmentally friendly, because it's helpful as a selling point to prospective buyers."*

CASE STUDY 3 – PHILIP ASTBURY

Location	St Helen's, Merseyside
Property type	Terraced 1930–1949
Initial EPC	D (64)
New EPC	C (77)
Work completed	Solar Panels, Air Source Heat Pump, New Windows

OUTCOMES

Philip fitted new windows on the first and ground floors of both sides of his house, an air source heat pump and solar panels. Since works were completed, he can feel the effect of the new windows on the warmth of his property. He believes that the reduced energy costs and environmental benefits of the work more than made up for the disruption caused during the installation process.

> *"I wouldn't change any part of the process! Everything's been smooth and seamless, and I've been more than happy with everything."*

> *"With waste heat from our homes, we're wasting fossil fuels that we're burning, which can't be good for the environment."*

> *"I'm in a much more energy efficient home, it's warmer and it looks nicer."*

CASE STUDY 4 – HANNAH FRANCE & ADAM WATT

Location	Wainfelin, Pontypool
Property type	Terraced 1900–1929
Initial EPC	D (64)
New EPC	B (81)
Work completed	Solar panels, Loft Insulation, External Wall Insulation

OUTCOMES

Hannah and Adam chose to go for external cladding at the front and back of their property, added roof insulation and installed solar panels. They felt that the disruption to the property had been quite reasonable and were incredibly happy with the immediate change in comfort levels. Hannah and Adam are excited to see the impact that the solar panels will have on the family's energy usage.

> *"It has been a phenomenal opportunity to have improvements done that I definitely couldn't have afforded on my own."*

> *"The benefits have been quite immediate with how comfortable the temperature feels in the home even as the weather is turning cold."*

> *"There's been a big change to the comfort levels of the home."*

> *"One thing I've learned since starting this process is just how many options we have now to make our homes more energy efficient."*

CASE STUDY 5 – LAUREN SANDFORD & LOUISE HAMILL

Location	Liverpool
Property type	Terraced 1900–1929
Initial EPC	D (55)
New EPC	B (84)
Work completed	Air Source Heat Pump, Solar Panels, External Wall Insulation

OUTCOMES

Lauren and Louise installed an air source heat pump, new water tank, and radiators to accommodate the heat pump. In addition, they chose to install external cladding, solar panels and a top-up of their loft insulation. The pair are looking forward to moving away from gas as their primary heat source and reducing the carbon footprint of their home, as well as being able to keep their house warm while keeping energy bills down.

> *"The most challenging part of the process has been logistics."*

> *"I feel very excited about the environmental benefits of the changes to the property."*

> *"With the age of the house, lots of modern solutions don't necessarily work very well or would not be in keeping with the property."*

> *"I hope that the things that we have experienced being part of the pilot will be able to inform policy and make practical changes to proposed infrastructure or how these projects might be undertaken in the future."*

CASE STUDY 6 – DONNA & ANDREW MCDERMOTT

Location	Coulsdon, Surrey
Property type	Detached 1950–1975
Initial EPC	D (62)
New EPC	D (63)
Work completed	Cavity Wall Insulation, New Windows, New Radiators, Smart Radiator Valves

OUTCOMES

The McDermotts were unable to go ahead with the installation of a heat pump, which was recommended during the initial survey, as it would have required significant insulation of the property at extremely high costs. The house was also deemed unsuitable for solar PV, due to the pitch of the roof.

> *"The most challenging part of the process so far was learning about all the new ways to make your home more energy efficient."*

> *"When the home improvement team came to assess the house, they showed us with a heat-source camera just how much heat we were losing out of the walls."*

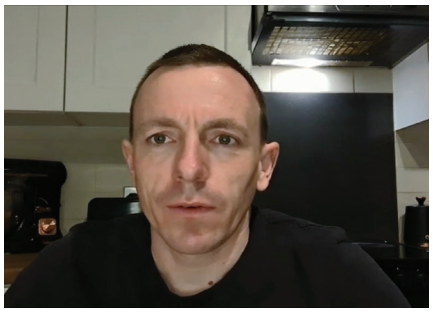
> *"We are most excited about the house being warmer. At the moment, we wear jumpers in the evening and have two duvets on the beds in winter."*

CASE STUDY 7 – CLARA PAUL & JOSH READING

Location	South London
Property type	Terraced 1900–1929
Initial EPC	D (58)
New EPC	D (62)
Work completed	Loft insulation and Flat Roof Insulation

OUTCOMES

Clara and Josh decided against installing External Wall Insulation for aesthetic reasons and concerns over its impact on the valuation of their property. Due to this decision, their EPC rating will not likely move into bands A–C.



CASE STUDY 8 – LINDA PARKINSON & JAMES MARSHALL

Location	Upchurch, Kent
Property type	Terraced 1900–1929
Initial EPC	D (60)
New EPC	A (94) expected
Work completed	External Wall Insulation, Solar PV, New Double Glazing

OUTCOMES

Due to their property being situated in a conservation area, Linda and James experienced delays in obtaining planning permission for their external wall insulation. In the end, external insulation was agreed to for the rear of the property, but only with spray cork rendering. However, even with incomplete external rendering, the house is expected to move from EPC band D (60) to EPC A (94) after completion of all the work.

> *"The one challenge is that they have been unable to insulate the front wall externally, so they have to insulate internally. But I don't see this as a huge issue."*

> *"What I have learned throughout the process is just how much can be done to an older property."*

> *"I am most excited about getting solar panels. It's something I have wanted for a long time but has been out of reach."*

CASE STUDY 9 – EMMA LEWIS & LESLEY DOEL

Location	Clydach, Swansea
Property type	Terraced 1900–1929
Initial EPC	E (48)
New EPC	E (48)
Work completed	Cavity wall insulation

> *"Our main motivation is to save energy."*

> *"We know there will be disruption, but we are just excited to get it done."*

> *"We have learned a lot about how much energy we are losing day to day and how this process will help us and the environment."*

LEARNINGS FROM EXPERIENCE

LEARNINGS	DETAIL
INSTALLER SELECTION	
A full home improvement programme has to be bespoke, often requiring multiple installers, which can lead to unexpected costs.	For a full home improvement programme, delivering maximum energy efficiency per the EPC report, investments can spiral. This may lead customers to taking an iterative approach to energy efficiency upgrades, which is often impractical, and in some cases unworkable.
Initial quote may be significantly over-priced, risking customers over-paying or disengaging from the process.	Some installer quotes were reduced substantially following scrutiny. This shows that quotes are not always correctly priced and, without the Coalition's scrutiny, customers, who may not know the steps to take to challenge, could be over-charged for services.
Finding trusted installers remains a challenge.	A lack of installers may hamper nationwide installation rates. However, as demand increases, businesses will rise to meet the challenge and the problem will subside. We welcome recent government initiatives to overcome this roadblock.
Contractors prefer large-scale projects.	We found that contractors are often unwilling to work at individual properties, in part due to dealing with complications of individual homeowners.
INSTALLATION	
Building work lead-times are a cause of concern for homeowners.	As with the quoting process, we experienced significant lead-times in getting tradespeople to start work on the properties, which caused notable concern for customers around timelines and how long their homes would be disrupted for.
Shortages in key points along supply chains will limit the wide scale roll out and adoption of energy efficiency technologies.	A lack of parts and high demand on tradespeople meant that lead-times for delivery and installation was a recurring issue. This was felt particularly acutely when it came to installing solar panels.
District Network Operator (DNO) notification and approval is a lengthy process.	DNO permission is required to ensure that upgrades do not lead to an overloading of the power supply to the home or local energy grid. As there is only one DNO per area, there is not an alternative option if a notification and approval process is delayed.
Conservation areas are limiting the reach and impact of energy efficiency upgrades.	Some councils' planning regulations, especially those in and around conservation areas, are blocking the installation of external wall insulation. Such restrictions mean houses will require internal wall insulation cladding, which is more disruptive, can reduce room sizes, and can require additional costs due to internal redecoration work.

LEARNINGS	DETAIL
Not all local authorities are well versed and supportive of the building efficiency upgrading process.	There appears to be differing levels of awareness and understanding across the different local authorities, causing substantial delays (due to cumbersome application processes, contradictory communications and unawareness of the actual planning process for certain efficiency upgrading technologies).
There is often no compelling reason for customers to get a revised EPC rating when improvements are made.	Customers regularly make improvements to their home without informing their lender. Some of these improvements – including insulation, smart thermostats, heat pumps, and solar panels – will make positive changes to their EPC score, but until a fresh EPC assessment takes place, these changes will not be recognised in the EPC register.
Some properties will require repair works before energy efficiency interventions can be undertaken.	For one property, we were ready to fit three different types of insulation (cavity insulation, timber wall insulation and flat roof insulation). Upon examination, the existing cavity wall insulation was poor and required significant costly repair. Due to the unexpected expense, we could not proceed with the planned insulation.

OUTCOMES

A well thought out home improvement project can, and should, increase comfort within the household.

Homes are deeply personal to consumers, and some will not want too much disruption in their own property at one time.

Whilst a home improvement process does involve disruption, consumers feel the process is immediately worth the effort.

Disruption levels are not as bad as expected and the resulting set up leaves consumers excited to see how efficient their homes are.

Consumers are excited by the prospect of making their homes more sustainable.

Each consumer's journey will be different, and due to the variety in the UK's buildings, some will require extremely bespoke solutions.

Planning restrictions can make home improvement projects complicated and local councils also need to raise their awareness of home improvement measures.

REFLECTIONS FROM OUR HOME UPGRADE COORDINATOR

PHILIP SALAMAN, MANAGING DIRECTOR, QUIDOS

Quidos started this project with the aim of showcasing what a quality and efficient home upgrade process can look like when implemented effectively. It was expected that there would be many lessons in this process that would hopefully ignite the need for a change in attitude surrounding upgrading a property. In completing the project, we believe it most definitely has. The people and stakeholders involved have increased their knowledge and awareness. However, as a business who considers themselves experts in energy efficiency and one who is used to managing major projects swiftly but competently, one lesson we didn't expect to learn is how the current processes are not set up for this to be the case for individual homeowners.

The project has made us double down on our opinion that "upgrading" is crucial, not only for net-zero aims and saving on energy costs but also to help property owners and tenants learn more about their buildings and in the process, how they can use less but save more. However, it has also unfortunately highlighted what we feel to be several major issues.

The biggest of these issues is the supply chain and the bureaucracy surrounding it. The lack of PAS (Publicly Available Specification for the installation of energy efficiency measures in existing buildings) approved installers willing to take on individual projects was astonishing and an issue which slowed the projects. We feel we need policy which incentivises growth in the supply chain, education which fills the skills gap, as well as support for the "able to pay" market, but arguably more importantly, the "able to re-pay".

Whilst we fully support and applaud the focus on large social housing projects, especially after seeing the effects of one of the biggest cost-of-living crisis in a generation, we feel the other housing markets are being left behind and call on all stakeholders and High Street lenders to come up with new policies, products and initiatives to do more. We have seen the Coalition play a major role in this, which we fully support.

Another big issue, which is rarely understood by a homeowner, is the current methodology that calculates the energy efficiency rating of a property (EPC). It often contradicts Government policy. There has been an action plan in place for several years which was supposed to modernise the way we assess properties. Due to the methodology bias towards cost, it puts off those willing to spend on low carbon heating and hot water. There has to be a multi-metric approach which considers all cost, carbon and energy used. It's good to see that RdSAP 10 will start to address these issues with a full recommendation for heat pumps, but due to the current cost focus in the methodology, it's appearance as a recommendation will be limited.

Ultimately, these issues are only going to continue to act as constraints that will slow down the upgrade process and slow down the rate at which we upgrade our building stock. Whilst the issues noted above seem all doom and gloom, it is far from that. We helped to successfully upgrade these properties. The people involved in this project are also something to be celebrated. Coming from different backgrounds, we have shown what can happen when we work together. These things alone have provided us with drive to continue to focus our efforts improving the energy performance of dwellings. Upgrading as a concept has proven to be what is needed: ensuring the process is fit for purpose is what we all need to work.

OVERCOMING CHALLENGES

Throughout the process, we came across a variety of challenges and blockers to the home improvement programme. Naturally, these varied in magnitude and appeared at different times during the programme.

Three areas act as hurdles to overcome urgently: strengthening the supply chain, addressing the needs of the social housing sector, and tackling challenges in the private rented sector.

Developing the UK supply chain is fundamental to our progress, especially in the social housing and private rented sectors. A more developed supply chain will kickstart a positive feedback loop, bringing down costs (the biggest barrier to uptake of energy efficiency products), which will further stimulate the market and the supply chain.

UNLOCKING THE SUPPLY CHAIN – THE UNTAPPED ECONOMIC OPPORTUNITY

CARL ARNTZEN, CEO, WORCESTER BOSCH

Government is committed to reducing energy use across the economy by 15% by 2030. This is a laudable and necessary ambition. But following more than a year of working tirelessly to upgrade nine properties, we are convinced that the supply chain is not yet equipped to deliver this. Individual homeowners are being left in the cold by a supply chain that is currently unfit for purpose.

ASSESSING THE CURRENT SITUATION

Four key factors are at the heart of the supply chain challenge, and each requires immediate attention.

A national skills shortage: Currently the UK does not have enough skilled workers to carry out the work required on a mass scale. Ashden estimates that over 400,000 builders and skilled heating engineers are needed for the industry to tackle the challenge of retrofitting 29 million homes in the UK, but just 200,000 people currently work on maintaining and upgrading existing homes. This is being echoed by the Construction Leadership Council, the UK Green Building Council, the Federation of Master Builders, and the Construction Industry Training Board who identified that the existing industry workforce needs to be more than doubled, with the training of around 500,000 new professionals and tradespeople across the sector as a whole. No one should expect to be match ready with half a team missing, and the shortcomings are there to see already.

> 400,000 builders and skilled heating engineers are needed for the industry to tackle the challenge of retrofitting 29 million homes in the UK[3]

Analysis from the Institute for Public Policy Research (IPPR) found that the UK is currently installing only 11% of the heat pumps, 12% of the cavity wall insulations, 3% of the loft insulations and 3% of the solid wall insulations needed by 2028 to keep pace with net zero.[4]

Considering the complexity of home improvements programmes, we know these require careful coordination too. On this front too, the supply chain shortages are evident. There are only 1,000 retrofit coordinators in the UK who are trained to manage retrofitting measures, and up to 50,000 more will be needed by 2030.[5]

A limited domestic manufacturing base: There is a focus on the big-ticket items required for energy efficiency such as heat pumps or solar panels. While this is critical – with 3.3 million heat pumps to be installed by 2030, rising to 8 million by 2035 – this is only part of the challenge.[6] Indeed, a significant part of the problem relates to the availability of ancillary equipment such as pipe work and insulation. Our experience of the pilots has shown how a lack of a few components can hold back a whole programme. Combined with a limited ability to manufacture these parts in the UK, it often leaves a homeowner at the mercy of global supply chains. This is a key reason why the UK should urgently look into the resilience of its supply chains for home improvement programmes.

3 Ashden, An urgent retrofit skills revolution must be locally led and nationally funded. 2022.

4 IPPR, Pump up the volume: A comprehensive plan to decarbonise the UK's homes. 2021.

5 Ashden, Retrofit: Solving the Skills Crisis. 2022.

6 ICAEW, Do heat pumps hold the key to a net zero future? 2022.

A reluctance to go for scale: Despite encouraging attempts by some local authorities and housing associations to generate large scale projects, the UK still suffers from a lack of scale in this market. Considered interventions will help to address this. A good example of where to start is in the UK's public sector buildings. One in seven (14%) NHS buildings are operating at 'G', the lowest Display Energy Certificate (DEC) rating, more than any other public sector category and less than 9% of public buildings in England and Wales meet the minimum energy efficiency standard requirement planned for 2030.[7] Improving the efficiency of public buildings would not only reduce running costs, leading to long term savings, but also send a clear signal to the supply chain that there is scalability in this market. We need to stimulate demand via improving the energy efficiency of public buildings, which in turn will stimulate supply.

Growing competition for products: Demand in Europe is growing for energy efficiency measures, international supply chains are being stretched and becoming more competitive, thereby reducing the pool of equipment which can be accessed at competitive prices. In Germany, heat pump installations rose by 53% in 2022 and in 2021 the heat pump market grew by 102% in Poland. Meanwhile, the UK risks falling behind, only installing 412 heat pumps per 100,000 people (the country is ranked 20th out of 21 European nations).[8,9]

The current situation with the supply chain is therefore a major opportunity for the UK. As the statistics highlight above there is a gap in skill sets, logistical support and a manufacturing base. If the UK were to break down some of the barriers this report has highlighted, the uplift in energy efficiency-based employment would give areas of the country a much-needed economic boost.

WHAT WE LEARNT FROM THE HOME UPGRADES

Our own findings confirm the broader trends in the UK. We struggled to find enough well-trained contractors who were willing to focus on an individual home. This led to significant delays in receiving quotes for work and adding to the negative perception of how long this type of work takes. This occurrence is felt particularly sharply when it comes to heating and solar engineers.

We also found that despite improvements, the customer journey still remains confusing for many, and the price differences between quote and completion were often staggering. In addition, the Coalition has run into delays in sourcing key pieces of technology, especially solar equipment, which in some cases had to be imported from abroad, causing further delays and adding additional costs to the projects. Finally, SMEs are not being supported to play their full part. One blocker is the shortage of space to store products: especially for SMEs who do not have the financial capacity to store the array of spare parts required to progress bespoke projects. By highlighting these specific issues, we're hopeful that further progress can be made.

7 Neos Networks, The public building 'energy efficiency' report: where can improvements be made to meet net-zero decarbonisation targets? 2023.

8 Clean Energy Wire, Heat pump sales in Germany jump 53 percent in 2022. 2023.

9 The Eco Experts, Which Countries Are Winning the European Heat Pump Race? 2023.

SOCIAL HOUSING – GOING FOR SCALE

ADAM SWASH, CO-FOUNDER, PINEAPPLE SUSTAINABLE SOLUTIONS

Upgrading social housing is a powerful lever to create the material pipeline density needed to improve the energy efficiency of the UK's housing stock, as well as supporting households that face rising living costs and inflation.

Social housing represents 16.6% of households in England and is well placed to create a steady demand for retrofit skills and services and offer employment opportunities for its communities and residents, supporting economic growth at a local and national level.

It can also improve the lives of millions of people who suffer from fuel poverty and cold homes, which have severe health and social impacts. Reducing fuel poverty and cold living conditions could prevent 10,000 excess winter deaths, saving the NHS between £1.4 to £2 billion annually. HACT estimate the social value created through an average retrofit could be as much as £4,500 per year.

To build on ambitious net zero targets from many Social Housing Providers (SHPs), more movement on the ground is now required. The inability for cost recovery from any capital outlay on building improvement programmes within the rent-regulated sector is leading to a piecemeal 'no regrets' approach to change. This challenge, combined with planning restrictions is resulting in delayed action.

To overcome these challenges, some social housing providers have been exploring new business models and partnerships to reduce the upfront costs, risks, and complexity of retrofit projects while ensuring benefits for tenants and the environment. There is often a lack of organisational capacity to drive forward some of the innovation required to overcome these obstacles, as social housing landlords need to continue delivering new affordable homes, existing repairs and services that support their tenants, with often limited resources.

Primarily, these schemes have looked at community generation and decarbonisation of heat using models that improve tenant comfort, reduce emissions, offer a guaranteed reduction in energy unit cost to the tenant and materially reduce the capital requirement from SHP by over 50%. For example, Penderi Retrofit Energy Project UK's largest renewable retrofit project, Innovative Community Solar Share scheme, reduces bills and saves up to 350 tonnes of carbon emissions. Insulating homes to EPC C could also result in bill savings of £495 per year on average, helping to reduce the cost of living pressure on households.

More recently, schemes have emerged using these models and supply-side scale to cross-fund retrofit measures to boost comfort, save money, and create local employment opportunities. For example, at Pineapple Sustainable Partnerships, we've worked closely with large suppliers (inc. NatWest Group and British Gas) to build a trial programme with Places for People. This trial programme will help inform procurement practices and regulation, and help unlock the market for rapid deployment of full home improvement upgrades boosted by existing government schemes.

We know that the social housing sector can be a leader and a catalyst for change in the UK's home upgrade agenda. We are keen to help develop a long-term vision for the sector and the areas it will support so stakeholders can make long-term investments with some certainty. The opportunity to create outcome-based programmes of support that allow more innovative projects to flourish, rather than prescribing specific technologies or standards are exciting. Finally, the inventiveness of the sector to test and scale new business models and partnerships such as allowing SHPs to sell or share energy with tenants or third parties, should be celebrated.

Alongside government, we must now consider how we can provide more certainty and reduce risk for home upgrade projects across the housing sector, such as by offering financial guarantees or contracts for difference for community generation schemes and investing in increasing the UK's air source heat pump supply chain. Using the social housing sector as a catalyst for deployment for energy efficiency is a no regrets option.

PRIVATE RENTED SECTOR – HIDDEN FROM VIEW

ZOE GUIJARRO, PRINCIPAL POLICY MANAGER, CITIZENS ADVICE

Did you know that homes in the private rented sector make up around a fifth of all homes in England and Wales? Over half of renters live in homes with an energy performance rating of EPC band D or lower and around a quarter of all renters live in fuel poverty.[10] With over 40% of tenants finding it difficult to pay their essential bills, it is clear that there would be real benefits in improving the energy efficiency of this sector.[11]

Looking at energy costs people in rented homes are paying throws the benefits of improving homes into stark relief. Taking into account the current energy price cap, people living in EPC E homes are paying £575 more on their annual energy bills than those living in EPC C homes. Calculations by Citizens Advice show that in the first six months of this year, tenants have spent over three quarters of a billion pounds heating inefficient homes. In addition, with competition for rented properties at an all-time high, tenants often have little choice but to rent poorly performing homes at an increasingly high rental cost.

There has been some action to improve the energy efficiency of privately rented homes through the introduction of the Minimum Energy Efficiency Standard (MEES) which requires privately let homes to meet a minimum of EPC band E. But in practice this has done little to improve the energy efficiency of the homes in this sector. The EPC E target is not high enough to make a demonstrable difference to people's standard of living and the cost cap of £3,500 is often not high enough to implement the measures needed. Most importantly, there is little to no monitoring and enforcement of the standard to ensure landlords comply with over a third of tenants reporting that their landlord did not provide them with an EPC despite it being a legal requirement.

Landlords are able to make full use of third-party funding to cover the full cost of bringing up their property to EPC E. This can include the Energy Company Obligation (ECO), local authority grants, and Green Deal finance. But with limited rental accommodation options, tenants are often too worried about retaliatory eviction to request improvements – while landlords can be concerned about disruption to sitting tenants. With mortgage costs to landlords increasing, this all adds up to a perfect storm when it comes to improving these homes.

> People living in EPC E homes are paying £575 more on their annual energy bills than those living in EPC C homes.

Driving up standards in this sector will require appropriate and properly enforced standards combined with incentives for compliance. Specifically from a Citizens Advice perspective, we'd like the government to maintain its commitment to:

- Strengthen the Minimum Energy Efficiency Standards in legislation so that all new tenancies are EPC C by 2025 and existing tenancies by 2028
- Increase the MEES cost cap to £10,000 and an effective enforcement regime put in place to ensure compliance
- Incentivise landlords to make energy efficiency improvements through changes to the tax system that would allow them to offset their energy efficiency investment costs against rental income
- Provide financial products and services that meet the needs of landlords to kickstart the market for green finance to help them cover the costs of energy efficiency improvements

10 DESNZ, Duel Data Poverty Tables. 2023.

11 YouGov poll. February 2023.

FIVE POLICIES FOR THE FUTURE

As we outlined in our last report, energy efficiency is no longer simply a climate issue, it is a cost-of-living issue and energy security one. And in some instances, as described above, in the case of the private rented sector it can even become a social justice challenge.

The following recommendations build on our work over the last two years, following the launch of the Government's Heat and Buildings Strategy in 2021. The data is showing that the desire is there – people want to change – but the national framework is currently not ready to realise people's ambition. The good news is that we are moving in the right direction.

It is our belief that if the following policy recommendations are implemented, demand for energy efficiency home improvement measures will increase, which itself will address many of the challenges we have come across in our Home Improvement Pilot.

POLICY PILLAR	DETAILS
1 DELIVER PRODUCT MYTH-BUSTING PUBLIC INFORMATION CAMPAIGN	Although public awareness around energy efficiency is on the rise, there remains a profound gap between the desire to make home improvements and the knowledge around how to undertake the change, especially with regards to the array of products available. Building on the success of the energy savings campaign launched by the Government earlier this year, the Coalition would support a second public information campaign, in collaboration with the private sector, to educate the public on the range of technologies and interventions available to drive the energy efficiency of their homes. This campaign should be used to dispel myths around specific technologies which are hurting consumer confidence.
2 MAKE EPCS COUNT	EPCs are a vital lever at government's disposal to drive this agenda forward. We suggest that government considers amending EPC methodology to ensure it reflects cost and carbon considerations, and mandates that EPCs are updated on a regular basis. As part of this reform, government should mandate the digitisation of EPCs. Finally, we feel more can be done by local authorities more consistently to ensure EPC displays in the private rented sector are enforced.

Only 36% of people are aware of ground- or air-source heat pumps as a viable means of heating one's home.[12]

12 Polling by Worcester Bosch

POLICY PILLAR	DETAILS
3 EMPOWER THE SUPPLY CHAIN FOR NATIONAL ROLLOUT	Government and businesses must work together to improve the number of skilled workers to carry out the work required on a mass scale. We welcome the Government's proposals to support colleges and accreditation providers in equipping tradespeople with the skills and expertise needed to futureproof homes with energy saving measures. Specifically, we call on businesses and government to: • Work together to ensure the next generation of skilled workers is trained and ready to meet the growing demand for energy efficiency measures • Take a holistic approach to scaling the supply of materials and equipment required to sustain a national energy efficiency programme, similar to the approach taken for critical minerals • Establish local area energy planning to create scale and local supply chain stimulation, with a particular focus on prioritising the social housing sector at the local level to guarantee localised scale • Introduce trusted skills kite marks to and incorporate energy efficiency as a mandatory component for all relevant qualifications in order to build consumer confidence in tradespeople's capabilities.
4 ACCESSIBLE FINANCE	The financial services industry would like to do more to provide the funding products and options for homeowners to invest in energy efficiency. There is a real desire to work in collaboration with Government and regulators to review the lending environment and look to see how more products can be released, responsibly, onto the market as well as exploring different ways to pay back financing options, whether that be at point of sale, or over a longer period of time, depending on circumstances. These measures would be led by the private sector, but in a similar model as 'Help to Buy', there is a role for the Government to support the mass roll out of energy efficient lending products over the long-term.
5 A REVIEW OF STAMP DUTY	The Coalition is reiterating its call on the Government to review the concept of the 'Energy Saving Stamp Duty Rebate'. As suggested by UK Green Building Council and the Coalition over the last few years, this policy would leverage the 'trigger point' of a house sale to provide a window of opportunity for the owner to upgrade their home, which if successful would be rewarded via a stamp duty rebate and cheaper mortgage rates. This policy option is complex, and would need to balance listed homes, and take account of homeowners who are not directly affected by stamp duty – but in order to see meaningful change and momentum in energy efficiency, a holistic and long-term approach is needed. Working in combination with the above policies, the Coalition would encourage the Government, in collaboration with stakeholders, to review stamp duty and other forms of homeowner taxation over the coming years to see what more can be done to incentivise and reward homeowners and landlords who invest in energy efficiency measures using the existing taxation systems in place.

YEAR IN REVIEW

Lloyd Cochrane, NatWest Head of Mortgages, Proposition and Experience attends Net Zero Homes at No. 10 Downing Street, 19 January 2023.

Climate Change Committee

The Coalition was represented by Marcos Navarro, Director of Sustainability, Real Estate and Housing at the Climate Change Committee's Skills Roundtable, 22nd February 2023

BEIS workshop on energy challenges for retail sector, 2 February 2023

Department for Energy Security & Net Zero

WESTMINSTER ENERGY ENVIRONMENT & TRANSPORT FORUM

The Coalition was represented by Katherine Annand, Climate Lead, Retail Banking, NatWest, at the Westminster Energy, Environment and Transport Forum, 12 June 2023

Fuel Poverty and Energy Efficiency APPG Policy Dinner, 21 June, House of Commons – hosted by Alan Whitehead MP and Adam Scorer, CEO of NEA

Policy Roundtable with Greater London Authority, 3 March 2023 – chaired by Shirley Rodrigues, Deputy Mayor, Environment and Energy

Environment APPG Policy Dinner, 15 May 2023, House of Commons – hosted by Selaine Saxby MP

Sustainable Homes 2023

The Coalition was represented by Zoe Guijarro, Principal Policy Manager, Net Zero Homes, Citizen's Advice, at the National Housing Federation's Sustainable Homes Summit, 16 May 2023

ACKNOWLEDGMENTS

The Committee on Climate Change
National Energy Action
Energy Systems Catapult
Tony Blair Institute for Global Change
The Green Finance Institute
Challenging Ideas
The Construction Leadership Council
Shelter
UK Green Building Council
National Energy Action
The Greater Manchester Combined Authority
The Greater London Authority
The West Midlands Combined Authority
Glasgow City Council
RenewableUK
Energy UK
Quidos
E3G
IPPR
National Housing Federation
Environment APPG
Fuel Poverty and Energy Efficiency APPG
Places for People
Great Places Housing Group
Salix Homes
University of Warwick
Willmott Dixon

SPECIAL THANKS TO THOSE WHO MADE OUR HOME IMPROVEMENT PILOT PROGRAMME A REALITY

Katherine Annand, NatWest
Chris O'Brien, NatWest
Alicia Mountain, NatWest
Philip Salaman, Quidos
Catherine Garrido, Quidos
David Boyton, British Gas
Ian Mather, British Gas
Rajiv Pillai, British Gas
Nicola Fisher, Worcester Bosch

Note that only the policy recommendations from pages 22–23 represent the view of the entire Sustainable Homes and Buildings Coalition. Recommendations on other pages only represent the view of specific members of the Coalition.