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WARMER & GREENER:

A GUIDE TO THE FUTURE OF DOMESTIC ENERGY EFFICIENCY POLICY

“This report provides an extremely useful guide to the future of domestic energy efficiency policy. It could not come at a better time.”

Peter Aldous MP and Dr Alan Whitehead MP, April 2016

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FOREWORD

Improving the energy efficiency of the UK's domestic properties is essential to both tackle fuel poverty and achieve the UK's climate change objectives. Increasing the efficiency of homes offers a highly cost-effective route to engaging with the three elements of the energy trilemma: decarbonising energy systems, ensuring security of energy supply and ensuring energy is affordable. There are strong links between the efficiency of domestic buildings and their occupants' health and wellbeing. Substantial economic benefits would also be unlocked by major progress in this area.

Recent changes in policy have led to accusations of a vacuum in environmental policy in the UK. The withdrawal of funding from the Government's 'flagship' energy efficiency policy, the Green Deal, the planned changes to the Energy Company Obligation, and the abandonment of the zero carbon homes standards, mean there is a particularly acute policy void in the area of domestic energy efficiency. This report is therefore very timely in assessing future strategies for improving domestic energy efficiency.

Bringing about widespread improvements to the UK's leaky housing stock will not be an easy task. However, it is a challenge which can be met through effective work across the four areas discussed in this report: regulation, financial mechanisms, advice and information, and developing the industry. This will require action from central government but will also entail a significant role for other key stakeholders including local authorities, third sector organisations and industry.

The Westminster Sustainable Business Forum has produced *Warmer & Greener: A guide to the future of domestic energy efficiency policy* to follow its previous report *Building Efficiency: Reducing energy demand in the commercial sector*. This report is the culmination of a nine-month research process which sought to engage with the widest possible range of stakeholders in a politically neutral fashion. Having reached the end of this process *Warmer & Greener* now provides an evidence-based, authoritative signpost for the future of domestic energy efficiency. This report will inform the learning process from past energy efficiency initiatives and make a substantial contribution to future policy development in this area. It is our hope that the recommendations in this report are taken up by the Government and the other stakeholders to whom they are addressed.

We would like to extend a thank you to everyone who gave their time and expertise to this inquiry. We would like to especially thank the steering group for their valuable contributions. We are very grateful to ADEY and the British Board of Agrément for generously sponsoring the inquiry and to Claudia Jaksch and Mitya Pearson for compiling this report.

Dr Alan Whitehead MP
Inquiry Co-Chair

Peter Aldous MP
Inquiry Co-Chair

EXECUTIVE SUMMARY

The Case for Improving Domestic Energy Efficiency

Improving domestic energy efficiency is essential to tackle fuel poverty and meet the UK's legally binding target to reduce greenhouse gas emissions by at least 80 per cent from 1990 levels by 2050. In addition to helping to decarbonise the energy system, domestic energy efficiency offers a highly cost-effective route to engage with the other elements of the UK's energy policy trilemma: ensuring security of energy supply and ensuring energy is affordable.

There are strong links between the efficiency of domestic buildings and their occupants' health and wellbeing. Increasing the efficiency of the UK's housing stock would therefore lower social care costs and reduce the burden on the National Health Service. Large scale energy efficiency programmes would also unlock substantial economic benefits including boosting economic growth, creating jobs and increasing the ability of individuals to contribute to society.

Defining the Problem

There are approximately 4.5 million fuel poor households in the UK. The UK Government's fuel poverty strategy for England sets a target to bring as many fuel poor homes in England as is reasonably practicable up to a minimum Energy Performance Certificate (EPC) rating of C by 2030. However, this report argues that current policies will be insufficient to engage with this target and tackle fuel poverty. This report has also identified a clear shortfall between the Government's targets on greenhouse gas emissions and the current policy mix. It therefore seeks to engage with the question of how domestic energy efficiency can be improved to address these policy gaps.

Average efficiency ratings and the proportion of fuel poor households varies between different housing types and each sector faces particular challenges to improve its energy efficiency. Additionally, some types of energy efficiency measures have been installed in large numbers. Other types of measures have only been rolled out on a very limited scale, for example there is considerable remaining potential to deliver solid wall insulation. Moreover, current and past supplier obligation schemes have primarily incentivised the delivery of measures at the lowest possible cost. As a consequence the schemes have tended to under-deliver to households which are more expensive to treat but are often most in need, such as deep rural properties.

Regulation

This report finds that there is a strong case for the use of smart regulation to improve the standard of homes currently being built and drive up the efficiency of existing homes. For newly built properties, regulation is necessary to prevent homes being constructed which will have to be retrofitted at a later date. The Government should therefore reinstate a long term mandatory zero carbon standard for newly built homes.

Recommendation 1

The Government should reinstate a long term, mandatory zero carbon standard for newly built homes.

The report lauds the introduction of minimum energy efficiency standards for the private rented sector. However, its findings reveal a number of problems with these minimum standards which threaten to undermine their impact and need to be addressed. The current standards are linked to the Green Deal which is no longer funded by government and could therefore make them unenforceable. Houses in Multiple Occupation that are let on a room-by-

room basis are effectively exempt from the minimum energy efficiency standards. There is also a very high level of noncompliance with requirements to issue EPCs at the point of letting and the vast majority of landlords can be assumed to be unaware of the new minimum energy efficiency standards.

Energy efficiency in the private rented sector could also be improved by local authorities using the Housing Health and Safety Rating System more widely and by combining the existing annual gas safety checks with evaluations of the efficiency of a heating system. The latter point relates to the risk of a heating system becoming less efficient over time.

In the long term, the minimum efficiency standards for private rented sector properties need to be increased beyond an EPC Band E. This could be done progressively over time but should include a final, long term target. For example by demanding a higher EPC Band every 5 years, with the date private rented properties are expected to be at Band A set out far in advance. Additionally, this report makes the case for requiring the advertising of rent prices to include an estimate of expected energy costs calculated from the costs displayed on EPCs. This initiative would incentivise landlords to retrofit their properties.

Recommendation 2

The minimum energy efficiency standards need to be strengthened to ensure that they have a meaningful impact. The problems associated with the Green Deal, Houses in Multiple Occupation and landlords' awareness of the regulations need to be addressed.

Recommendation 3

In the long term, the minimum energy efficiency standards for private rented sector properties need to be increased beyond an EPC E rating.

Recommendation 4

The Government should mandate that advertising of private rented accommodation includes a figure for monthly expected energy costs calculated from the EPC for that property.

The report argues for the extension of minimum energy efficiency standards to the owner-occupied sector. These efficiency standards should increase over time and be mandated at the point of sale of a property. This would tie in with existing regulations and could be complemented by introducing consequential improvements. Consequential improvements mean that when householders carry out larger refurbishment projects they also have to make energy-saving improvements in other areas of the property. Furthermore, the report argues that there is a need to introduce a new decent homes standard with a greater focus on energy efficiency to drive consistent improvement across the social housing sector.

Recommendation 5

The Government should introduce minimum energy efficiency standards for the sale of properties, which are increased progressively over time.

Recommendation 6

A new decent homes standard should be launched in the social housing sector with a greater focus on energy efficiency.

Financial Mechanisms

The current supplier obligation, known as the Energy Company Obligation 2 (ECO2) will come to an end in March 2017 and is set to be replaced by a new 5 year scheme which will focus on tackling fuel poverty. This report finds that there are fundamental problems with the idea of focusing a supplier obligation on fuel poverty. It assesses some of these problems and makes suggestions to mitigate some of the potential issues with the next phase of the Energy Company Obligation (ECO). It argues that the system of delivering ECO needs to be simplified by re-introducing deemed scores and reducing the overall administration involved in the scheme. To effectively tackle fuel poverty it will also be necessary to support ECO with a tax-payer funded scheme administered by local actors. In the longer term there are significant questions about how best to use a supplier obligation scheme. This may involve not focusing future obligations solely or predominantly on fuel poverty, phasing obligations out or retaining the same funding source of energy bills but placing responsibility for delivery in the hands of local actors.

Recommendation 7

The next phase of ECO should be based on a system of deemed scores and the Government should aim to reduce the overall administrative burden imposed on those involved in its delivery.

Recommendation 8

The next phase of ECO should be supported by a tax-payer funded fuel poverty scheme administered by local actors.

Despite the problems with the Green Deal, this report argues that loan schemes could still have an important role to play in supporting the improvement of the UK's housing stock. Recent research shows that there is considerable potential to use mortgage schemes to both finance the installation of energy efficiency measures and help increase demand for more efficient properties. The Government should work to persuade lenders to factor in an accurate assessment of energy costs on a voluntary basis or make minor adjustments to the Mortgage Market Review legislation to this effect.

Recommendation 9

Mortgage lenders should include more accurate calculations of energy costs in their mortgage affordability assessments. This can be achieved either on a voluntary basis or through changes to the Mortgage Market Review. In tandem with changes to mortgage affordability assessments, lenders should provide mortgage extensions to finance energy efficiency measures.

This report urges the Government to draw lessons from the failure of the Green Deal and follow the model of 'soft loans' whereby public money is used to subsidise the cost of borrowing to make it more attractive. The report also strongly advises against the use of short term grant schemes like the Green Deal Home Improvement Fund, which tend to create a cycle of boom and bust. Future grant schemes need to be based on a sustainable funding model to provide certainty and long term sources of demand for the energy efficiency industry.

Warmer & Greener makes a strong case for the use of tax incentive schemes to encourage energy efficiency improvements as they provide a long term, structural source of demand that the market can deliver against. In the light of the considerable challenges associated with creating a council tax incentive scheme, this report favours a stamp duty incentive scheme to support the uptake of energy efficiency measures in the domestic sector. The 2015 Autumn

Statement announced a 3 per cent surcharge on stamp duty rates for purchases of buy-to-let properties and second homes as of April 2016. A rebate on this could be used to encourage efficiency improvements, either as an interim measure before a variable rate is rolled out to all properties or as part of a wider stamp duty incentive project.

Recommendation 10

The Government should introduce a stamp duty incentive to encourage the uptake of energy efficiency measures in the domestic sector. A rebate on the surcharge on buy-to-let properties and second homes could be included within this, either as an interim measure or as part of a wider strategy.

Advice and Information

This report finds that advice and information are an important part of increasing domestic energy efficiency. Advice and information can be used to encourage people to take up measures, ensure that these are the right measures and maximise their effectiveness once installed. This report criticises the promotion of energy efficiency improvements in the UK to date which has generally had a narrow focus on energy bills savings. In the future, the promotion of efficiency measures should also refer to the potential for them to make homes warmer, healthier and more comfortable places to live. The report also argues that advice and information needs to feed into a subtle process of social norming to make people more accustomed to energy efficiency measures. One way of achieving this is through greater use of retrofitted show homes.

Recommendation 11

Government and commercial campaigns promoting energy efficiency measures should emphasise their numerous benefits and not focus narrowly on bill savings.

Recommendation 12

Local authorities should work with relevant third and private sector groups to showcase retrofitted homes in their area.

The report makes a strong case for a 'whole house approach' to energy efficiency improvements, which sets out how people can get to a very high standard of efficiency in the long term. The Government should therefore look to provide whole house roadmaps for energy efficiency improvements in every domestic property. This would enable people to get an overall view of the level of improvements needed in their property and the potential options available. Energy efficiency installations also need to be supported with information on how measures work as leaving households without any advice can significantly reduce their impact. This should be enforced as part of the quality assurance of installers' work.

Recommendation 13

Support for the end user to understand energy efficiency measures installed in their home should be robustly enforced as part of the quality assurance of installers' work.

Developing the Energy Efficiency Industry

To date, the overwhelming majority of demand for energy efficiency measures in the UK has come from government schemes, particularly the series of supplier obligation schemes which have been in effect since 1994. There is a need for much wider commercial delivery of energy efficiency improvements. This report finds that the Government needs to work in a way which is more supportive of the energy efficiency industry by providing a greater degree of consistency in policy. Going forward, the exact details of the next phase of ECO will need to be

set out as soon as possible and the Government needs to manage the transition between schemes to avoid the breaks in demand which have been a feature of changeovers between past supplier obligation schemes.

Recommendation 14

The details of the next phase of ECO need to be set out as soon as possible to provide clarity to suppliers and their supply chain. The scheme should also remain consistent once it is implemented to avoid creating uncertainty.

Recommendation 15

The Government needs to manage the transition to the next phase of ECO to avoid the breaks in demand which have been a feature of changeovers between past supplier obligation schemes.

Recommendation 16

Future domestic energy efficiency policy should aim to provide a much greater degree of certainty to industry than has been achieved in recent years.

The report also showcases a particularly good model for the development of the deep retrofit industry in the UK: the Dutch Energiesprong scheme. This offers the chance for a step change in the market, with the potential for whole house retrofits to be delivered commercially on a mass scale. There are financial, regulatory and practical barriers to its implementation in the UK but these are not insurmountable. The Government should therefore look to support the development of the Energiesprong UK group, including some initial, small-scale funding for the project, in recognition of the long term potential of the scheme.

Recommendation 17

The Government should engage with Energiesprong UK to reduce barriers to its development and provide some initial, small-scale funding to the project.

1 INTRODUCTION

Increasing the energy efficiency of domestic buildings is absolutely essential for the UK to tackle fuel poverty and meet its commitment to reduce its greenhouse gas emissions by at least 80 per cent by 2050, relative to 1990 levels.[1] Achieving significant improvements in the energy efficiency of the UK's housing stock has the potential to contribute substantially to the three challenges which make up the energy trilemma. This would not only help to decarbonise the energy system but also help to ensure security of energy supply and that energy is affordable.[2] Making improvements in this area could dramatically enhance peoples' health and wellbeing, prolonging lives and reducing the burden on the National Health Service (NHS). Additionally, achieving widespread improvements in the efficiency of domestic buildings promises to unlock substantial economic benefits including creating jobs, boosting economic growth and increasing the ability of individuals to contribute to society.

The Association for the Conservation of Energy (ACE) have found that the UK's housing stock is one of the least energy efficient in Europe.[3] Recent policy changes such as the withdrawal of funding from the Green Deal have put this issue into sharp focus. There have been problems with past policies in this area and there remains a daunting challenge ahead to make substantial efficiency improvements across the UK housing stock. It will be demonstrated in this report, however, that domestic energy efficiency policy in the UK has achieved some significant results. Therefore, there is a need to both learn from previous problems and build on the progress which has been made in this area. This report helps to inform this process and provides ideas on how future domestic energy efficiency policy could and should develop.

Warmer & Greener explores the importance of domestic energy efficiency and sets out the case for making improvements in this area. This report then examines the impact of government policy to date and assesses some of the key challenges which future policy will need to engage with. The remainder of the report looks at four distinct but interlinked topics: regulation, financial mechanisms, advice and information, and developing the energy efficiency industry. Each chapter will discuss strategies for development in each of these areas and make recommendations for potential policies and initiatives which could be utilised to improve domestic energy efficiency. These four chapters are also each supported by a case study.

Domestic energy efficiency is an issue which is influenced by numerous stakeholders including central and local government, industry and many third sector organisations. It is also a policy area which stretches across numerous government departments including the Department of Energy and Climate (DECC), the Department for Communities and Local Government (DCLG) and HM Treasury. At different points, the discussion and recommendations in this report therefore relate to some or all of these groups. Additionally, many aspects of domestic energy efficiency are devolved issues and, as will be noted, different parts of the UK have followed different strategies in this area.[4] The focus of this report is predominantly on the operations of the UK Government and the discussions and recommendations will therefore at times only be relevant to certain parts of the UK. Ensuring that the right 'policy mix' is in place (meaning different strands of government policy are designed in a joined-up fashion) is one of the central challenges of achieving significant improvements in domestic energy efficiency.[5] This report makes a series of recommendations and provides some signposts as to how they could

[1] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[2] World Energy Council (2015) 'World Energy Trilemma'.
[3] Association for the Conservation of Energy & Energy Bill Revolution (2015) 'Fact-file: The Cold Man of Europe'.
[4] DECC (2012) 'The Energy Efficiency Strategy - The Energy Efficiency Opportunity in the UK'.
[5] Jan Rosenow, Tina Fawcett, Nick Eyre & Vlasis Oikonomou (2016) 'Energy efficiency and the policy mix'.

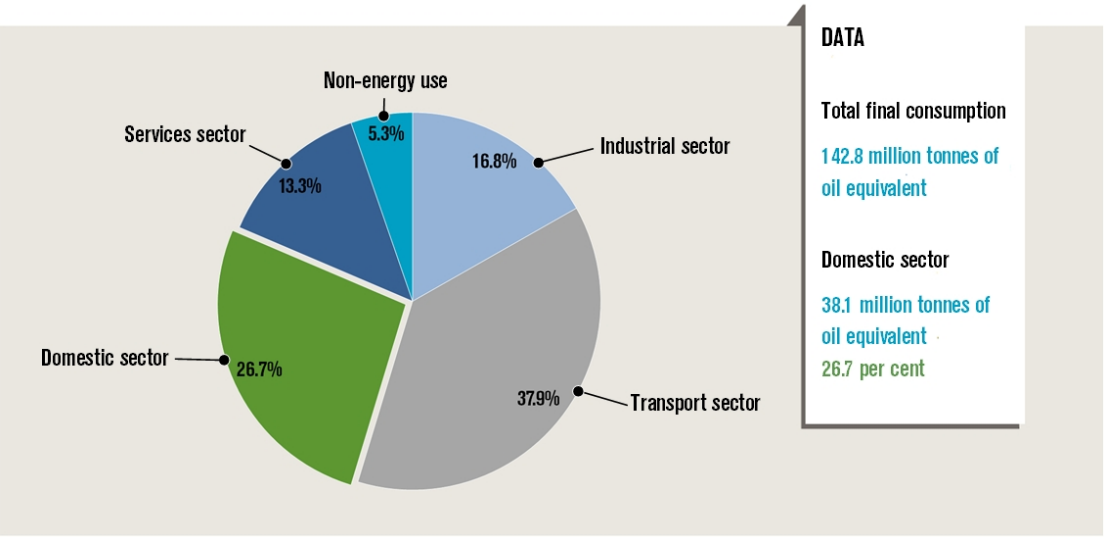
be coordinated. However, they are designed as a series of standalone recommendations which would require further assessment as to their suitability as a package of reforms.

Some key themes emerged in the process of completing this inquiry and are reflected in the content of this report. Firstly, the need to try and involve local agents such as local authorities, community groups and social housing providers as much as possible in schemes to improve energy efficiency, particularly when these are focused on tackling fuel poverty. Secondly, government policy should aim to support the energy efficiency industry to grow and achieve a greater degree of self-sufficiency. Thirdly, where financial incentives are used, they need to provide long term, consistent and sustainable sources of demand for energy efficiency measures. Schemes which create short term bursts of demand are much less useful. Fourthly, initiatives focused on energy efficiency need to be set out far in advance of their implementation and remain consistent to allow businesses to plan for them and avoid creating uncertainty. Finally, in the main, policy should not be designed to push the adoption of specific measures. Rather, it should incentivise overall efficiency improvements or overall reductions in energy use. This allows for bespoke solutions to be applied to a property's specific needs and encourages industry to develop innovative solutions to deliver improvements.

2 THE CASE FOR IMPROVING DOMESTIC ENERGY EFFICIENCY

Both in the UK and internationally, energy policy is often conceived of as a trilemma of three broad aims: decarbonising energy systems, maintaining a secure supply of energy and ensuring energy is affordable.[6] Reconciling these often conflicting aims is one of the major challenges faced by policy-makers across the world. As shown in Figure 1, the domestic sector accounted for 26.7 per cent of final energy consumption in the UK in 2014; domestic energy efficiency therefore has an important role to play in achieving these three objectives. This chapter will set out why this is the case and provide evidence of the additional potential benefits which flow from improving domestic energy efficiency.

Figure 1: Final Energy Consumption in the UK (2014)



Source: DECC (2015) 'Digest of United Kingdom Energy Statistics 2015'

[6] DECC (2014) 'Delivering UK Energy Investment'; World Energy Council (2015) 'World Energy Trilemma'.

2.1 Energy Trilemma

2.1.1 Decarbonise Energy Systems

In addition to European Union (EU) environmental targets and the Government's plan to enshrine in law a zero carbon emissions target, the 2008 Climate Change Act commits the UK to cutting greenhouse gas emissions by at least 80 per cent by 2050 against 1990 levels.[7] Some sectors such as transport are less able to achieve these carbon reductions cost-effectively and it will not be possible to reach the overall 2050 target by each sector making 80 per cent savings.[8] Buildings accounted for 37 per cent of total UK greenhouse gas emissions in 2013 and 34 per cent in 2014.[9] Around two-thirds of building emissions come from residential buildings and the UK's housing stock is one of the least energy efficient in Europe.[10] By 2050 the emissions footprint of all buildings in the UK will need to be almost zero.[11] Improving the efficiency of domestic properties could provide some of the most cost-effective ways to reduce greenhouse gas emissions.[12] Energy efficiency improvements in domestic buildings are therefore an integral part of the climate change mitigation scenarios set out by the International Energy Agency, the Intergovernmental Panel on Climate Change and the UK Committee on Climate Change.[13]

2.1.2 Ensure Security of Energy Supply

The UK has been a net importer of energy since 2004 which impacts upon its economy, security of supply and foreign policy. In 2014, 46 per cent of energy used in the UK was imported and, without significant intervention, dependency on energy imports is projected to rise.[14] The more the UK relies upon importing its energy from other countries the more exposed it is to external price shocks, the less it is able to guarantee constant energy supply for its citizens and, arguably, the greater the constraints are on its diplomatic relations.

More efficient homes require less energy to provide occupants with what they need in terms of thermal comfort and energy using equipment. This helps to improve security of supply by reducing the amount of energy required.[15] For example, it is estimated that a programme to insulate all homes in the UK to Energy Performance Certificate (EPC) Band C by 2035 would result in a 26 per cent reduction in imports of natural gas in 2030, worth £2.7bn in that year.[16]

2.1.3 Ensure Energy is Affordable

There are two distinct aspects to the question of how energy efficiency can improve the affordability of energy. Firstly, for households which are fuel poor or low income. Secondly, for households whose income is sufficiently high to mean that they are not in fuel poverty or exposed to the risk of falling into fuel poverty.

Fuel Poor and Low Income Households - In England a household is officially classified as fuel poor if they have required fuel costs that are above average (the national median level) and if they were to spend that amount on fuel, they would be left with a residual income below the official poverty line (60 per cent of median income).[17] In Scotland, Wales and Northern Ireland, a household is defined as fuel poor if it needs to spend over 10 per cent of its income

7 The Guardian, 'Zero carbon emissions target to be enshrined in UK law' (March 2016) http://www.theguardian.com/environment/2016/mar/14/zero-carbon-emissionstargetenshrined-uk-law. Accessed 23rd March 2016; UK Government, 2008, Climate Change Act, London, The Stationery Office.
8 Catrin Maby & Alice Owen (2015) 'Installer Power'.
9 Committee on Climate Change (2014) 'Meeting Carbon Budgets - 2014 Progress Report to Parliament'; Committee on Climate Change (2015) 'Factsheet: Buildings'.
10 Committee on Climate Change (2015) 'Factsheet: Buildings'; Committee on Climate Change (2015) 'Meeting Carbon Budgets - Progress in reducing the UK's emissions'; Association for the Conservation of Energy & Energy Bill Revolution (2015) 'Fact-file: The Cold Man of Europe'.
11 DECC (2011) 'The Carbon Plan: Delivering our low carbon future'.
12 Policy Exchange (2013) 'Smarter, Greener, Cheaper - Joining up domestic energy efficiency policy'.
13 Jan Rosenow & Richard Sagar (2015) 'After the Green Deal: Empowering people and places to improve their homes'.
14 DECC (2015) 'UK Energy in Brief 2015'; Catrin Maby & Alice Owen (2015) 'Installer Power'.
15 Catrin Maby & Alice Owen (2015) 'Installer Power'.
16 Verco & Cambridge Econometrics (2014) 'Building the Future: The economic and fiscal impacts of making homes energy efficient'.
17 DECC (2015) 'Annual Fuel Poverty Statistics Report, 2015'.

on keeping its home at a reasonable temperature.[18] Fuel poverty affects around 4.5 million households across the UK.[19] Fuel poverty is, however, often understood in broader terms as energy vulnerability which includes households that for reasons of age, health and low income are exposed to the risk of fuel poverty and unable to keep their homes warm at an affordable cost.[20] As those affected by fuel poverty often under-heat their homes it has a significant impact on people's health and overall wellbeing.[21] Around 60 per cent of fuel poor households live in very inefficient properties (EPC Band E, F or G).[22] Energy efficiency improvements can lift households out of fuel poverty by reducing the amount of energy they need to pay for to maintain a warm home.

There is an undeniable trade-off between reducing fuel poverty and reducing carbon emissions. Supplier obligation schemes in the UK have demonstrated that it is often costly and challenging to identify and treat fuel poor households. Retrofitting fuel poor homes specifically is therefore a less cost-effective way to reduce carbon emissions than improving energy efficiency indiscriminately across the housing stock.[23] The under-heating which flows from people being unable to afford to heat to their homes also means that often improving the efficiency of a fuel poor house will not necessarily lead to reductions in energy use by its occupants.

Nonetheless it is still possible in some cases to retrofit fuel poor households and reduce the occupants' energy use, thereby helping them to heat their homes affordably and reduce carbon emissions. On the national level, making improvements across the UK's housing stock will simultaneously tackle fuel poverty and reduce overall energy demand in the UK. Additionally, the Government is committed to reducing and eradicating fuel poverty and the most viable alternative strategy to pursue this objective would be through income and price support schemes such as the Winter Fuel Payment, Cold Weather Payment, and Warm Homes Discount. These types of schemes make no contribution to carbon emission reductions and do not address fuel poverty in the long term.[24]

Able-to-Pay Households - There is an additional way in which improving domestic energy efficiency helps people to afford their energy bills. This is through helping those that are not fuel poor or at immediate risk of fuel poverty to reduce the amount of energy they need to pay for to heat their homes. The major advantage of improving building efficiency to cut energy bills over strategies such as price freezes or income support is that it also cuts carbon emissions and leaves a long term physical legacy. Additionally, improving domestic energy efficiency protects customers against future price volatility. This is a particularly pertinent issue due to the potential for future increases in energy bills as a result of the initial costs of supporting a switch to renewable sources of power generation and the increasing scarcity of fossil fuels.[25]

2.2 Additional Benefits

2.2.1 Health and Wellbeing Benefits

By increasing the warmth and comfort of homes, energy efficiency improvements can enhance the health and wellbeing of their occupants and thereby lower social care costs and lessen the

[18] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'. A reasonable temperature is usually defined as 21°C for the main living area and 18°C for other occupied rooms (DECC 2015 'Annual Fuel Poverty Statistics Report, 2015').
[19] DECC (2015) 'Annual Fuel Poverty Statistics Report, 2015'.
[20] National Energy Action & The Children's Society (2015) 'Making a house a home: Providing affordable warmth solutions for children and families living in fuel poverty'.
[21] Age UK (2014) 'Reducing fuel poverty - a scourge for older people'.
[22] Policy Exchange (2015) 'Warmer Homes - Improving fuel poverty and energy efficiency policy in the UK'.
[23] Policy Exchange (2013) 'Smarter, Greener, Cheaper - Joining up domestic energy efficiency policy'.
[24] Policy Exchange (2015) 'Warmer Homes - Improving fuel poverty and energy efficiency policy in the UK'.
[25] Carbon Connect (2013) 'Future Electricity Series Part 1: Power from Fossil Fuels'; Carbon Connect (2013) 'Future Electricity Series Part 2: Power from Renewables'.

burden on the NHS.[26] Many health conditions are caused or exacerbated by cold homes and this can be a particularly acute problem for older and disabled people.[27]

Children and young people living in cold homes are more likely to suffer from respiratory and mental health problems. Cold homes also have an adverse effect on the educational attainment of young people and increase the risk of social isolation.[28] Overall, cold housing costs the NHS in England an estimated £1.36 billion per annum and contributes to the 'excess winter deaths' which take place every year in the UK.[29] It is estimated that 43,900 'excess winter deaths' occurred in England and Wales in the 2014 to 2015 period.[30]

2.2.2 Economic Benefits

The health benefits resulting from energy efficiency improvements have additional effects in terms of reducing sickness absences and increasing the ability of individuals to contribute to society and the economy.[31] Overall, there are huge potential economic benefits of domestic energy efficiency schemes. Verco and Cambridge Econometrics modelled a hypothetical programme in which low income households are given measures to bring them up to EPC Band C by 2025 and all other households are offered 0 per cent interest loans to improve them to an equivalent EPC standard by 2035. This analysis suggested that the potential benefits of such a programme would include:

- £3.20 returned through increased GDP per £1 invested by government;
- 0.6 per cent relative GDP improvement by 2030;
- £1.27 in tax revenues per £1 of government investment, through increased economic activity, meaning that the scheme would pay for itself by 2024 and generate net revenue for government thereafter;
- Increased employment by up to 108,000 net jobs per annum over the period 2020-2030, spread across every region of the UK;
- £8.61 billion per annum in total energy bill savings across the housing stock.[32]

Frontier Economics conducted an analysis based on the Government's own impact assessment of the Green Deal and the supplier obligation known as the Energy Company Obligation (ECO). The impact assessment suggests that a major energy efficiency programme in domestic and non-domestic buildings could deliver £8.7 billion of net benefits. This is comparable to benefits delivered by the first phase of High Speed 2, Crossrail and the smart meter roll out.[33] Other studies support the idea that if the large scale take-up of energy efficiency measures is successfully encouraged, there are substantial economic benefits to be unlocked.[34] Because of the economic gains and numerous other benefits a strong case has been made by a number of groups that the energy efficiency of buildings should be considered a national infrastructure priority.[35]

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[26] Verco & Cambridge Econometrics (2014) 'Building the Future: The economic and fiscal impacts of making homes energy efficient'.
[27] Verco & Cambridge Econometrics (2014) 'Building the Future: The economic and fiscal impacts of making homes energy efficient'.
[28] Marmot Review (2011) 'The Health Impacts of Cold Homes and Fuel Poverty'; National Energy Action & The Children's Society (2015) 'Making a house a home: Providing affordable warmth solutions for children and families living in fuel poverty'.
[29] Age UK cited in Policy Exchange (2015) 'Warmer Homes - Improving fuel poverty and energy efficiency policy in the UK'.
[30] Office for National Statistics, 'Excess Winter Mortality in England and Wales: 2014/15 (Provisional) and 2013/14 (Final)' (2015) http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/excesswintermortalityinenglandandwales/201415provisionaland20134final. Accessed 3rd March 2016.
[31] Public Health England & UCL Institute of Health Equity (2014) 'Local action on health inequalities: Fuel poverty and cold home-related health problems'; Energy Saving Trust (2015) 'Capturing the "multiple benefits" of energy efficiency in practice: the UK example'.
[32] Verco & Cambridge Econometrics (2014) 'Building the Future: The economic and fiscal impacts of making homes energy efficient'.
[33] Frontier Economics (2015) 'Energy efficiency: An infrastructure priority'.
[34] International Energy Agency (2014) 'Capturing the Multiple Benefits of Energy Efficiency'; Institute for Public Policy Research (2014) 'Up Against the (Solid) Wall'; CBI (2013) 'Shining a light - Uncovering the business energy efficiency opportunity'.
[35] BBC News, 'Tackle cold homes, ministers told' (February 2016) http://www.bbc.co.uk/news/business-35459447. Accessed 1st March 2016.

2.3 Energy Efficiency Works

Policy developments such as the ending of funding for the Green Deal have led to extensive criticism of UK energy efficiency policy.[36] As will be discussed later in this report, there have been problems with previous energy efficiency schemes and considerable work is required to bring the UK's housing stock in line with the standard needed to meet its carbon emissions targets and tackle fuel poverty. However, the final reason for focusing government attention and resources on domestic energy efficiency schemes is that they have already delivered results and there is therefore good reason to believe they can continue to do so in the future.

The supplier obligation scheme known as the Energy Efficiency Commitment (EEC) which ran between 2002 and 2008 is estimated to have delivered 192 terawatt hours of lifetime savings which is the equivalent of reducing the UK's total annual energy demand by 1 per cent for 15 years or turning Drax power station off for 7 years.[37] In total between 1994 and 2015, supplier obligation schemes delivered 2.5 million gigawatt hours of lifetime energy savings.[38] Between 2000 and 2014, domestic energy use in the UK decreased by 19 per cent, despite an increase of 12 per cent in the number of households and a 9.7 per cent increase in the population during the same period.[39] Changes in consumption in this period have been driven by a range of factors but evidence suggests that energy efficiency schemes have made a significant contribution towards them.[40]

[36] Business Green, 'Angela Eagle: Green energy cuts 'make absolutely no sense'' (September 2015) http://www.businessgreen.com/bg/news/2427858/angela-eagle-green-energy-cuts-make-absolutely-no-sense. Accessed 3rd March 2016; Business Green, '2016 will be a barren year for energy efficiency' (September 2015) http://www.businessgreen.com/bg/opinion/2425277/2016-will-be-a-barren-year-for-energy-efficiency. Accessed 3rd March 2016.

[37] Peter Mallaburn & Ian Hamilton, 'UK residential energy efficiency policy: taking stock' (October 2015) https://blogs.ucl.ac.uk/future-energy/2015/10/19/uk-residential-energy-efficiency-policy-taking-stock/. Accessed 4th February 2016.

[38] Ofgem (2015) 'Written evidence submitted by Ofgem to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'.

[39] DECC (2015) 'Energy Consumption in the UK (2015) - Chapter 3: Domestic energy consumption in the UK between 1970 and 2014'.

[40] Centre for Economic and Business Research (2011) 'British Gas Home Energy Report 2011: An assessment of the drivers of domestic natural gas consumption'; The Centre on Innovation and Energy Demand, SPRU, University of Sussex (2015) 'Written evidence submitted by the Centre on Innovation and Energy Demand, SPRU, University of Sussex to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'.

3 DEFINING THE PROBLEM

As has been outlined in Chapter 2, there are a number of wide-ranging benefits which can be realised by improving the efficiency of the UK's domestic building stock. The Government should seek to achieve as many of these as possible, however, the two principal aims of domestic energy efficiency policy should be reducing fuel poverty and carbon emissions. ACE have compared the UK's performance against a range of indicators with countries which have comparable levels of prosperity and heating needs. ACE concluded that the UK has among the highest rates of fuel poverty and one of the most energy inefficient housing stocks in Europe. The UK ranked fourteenth out of sixteen countries on fuel poverty indicators and last on the affordability of space heating. In terms of energy efficiency, out of eleven countries for which data was available, the UK's walls were ranked seventh, its roofs were ranked eighth, its floors were ranked tenth and its windows were ranked eleventh.[41]

The 2011 Carbon Plan states that if the UK is to cut its greenhouse gas emissions by 80 per cent by 2050 'energy efficiency will have to increase dramatically across all sectors'.[42] In 2012 it was estimated that the scale of this challenge was such that to meet the 2050 target, one building would need to be retrofitted every minute for the following 40 years.[43] The transition from the supplier obligation schemes known as the Carbon Emissions Reduction Target (CERT) and the Community Energy Saving Programme (CESP) to ECO in January 2013 involved a reduction in the number of efficiency measures delivered. Additionally, the Green Deal saw an extremely low take-up of energy efficiency measures. [44] It is therefore clear that the UK's domestic properties are not yet on course to reach the levels of energy efficiency required to meet the UK's emissions targets.

There are approximately 4.5 million fuel poor households in the UK, equivalent to 17 per cent of all UK households. Fuel poverty is a partially devolved matter and each separate administration has its own targets.[45] The UK Government's fuel poverty strategy for England sets a target for as many fuel poor homes in England as is reasonably practicable to have a minimum EPC standard of C by 2030.[46] There are approximately 2.35 million households in England currently in fuel poverty and less than 5 per cent of these properties have an energy efficiency rating of Band C or above.[47] Even before the reductions to ECO announced in November 2015, research had suggested that current investment is insufficient to substantially engage with the 2030 target.[48] Fuel poverty is even more challenging than might first appear as many households on low incomes may fall into fuel poverty due to changes in circumstance. There are an additional 3.4 million households which are vulnerable to falling into fuel poverty.[49]

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[41] Association for the Conservation of Energy & Energy Bill Revolution (2015) 'Fact-file: The Cold Man of Europe'.
[42] DECC (2011) 'The Carbon Plan: Delivering our low carbon future'.
[43] Tim Dixon & Judith Britnell, 'UK energy, water and waste roadmaps to 2050: A synthesis of drivers, technologies, targets and policies' (2012) http://www.retrofit2050.org.uk/sites/default/files/resources/2050_Roadmaps.pdf. Accessed 20th February 2016.
[44] Jan Rosenow & Nick Eyre (2014) 'Residential energy efficiency programmes in the UK: a roadmap for recovery - Paper presented at the 10th BIEE Academic Conference'.
[45] DECC (2015) 'Annual Fuel Poverty Statistics Report, 2015'.
[46] DECC (2015) 'Written statement to Parliament - Fuel poverty strategy for England'.
[47] National Energy Action & Citizens Advice (2015) 'UK Fuel Poverty Monitor 2014-2015'.
[48] 'Lord Deben, Chair, Committee on Climate Change letter to the Rt. Hon. Amber Rudd MP' (7 October 2014) https://documents.theccc.org.uk/wp-content/uploads/2014/10/CCC-FP-letter-final-revised5.pdf. Accessed 8th March 2016.
[49] UK Green Building Council (2015) 'Written evidence submitted by the UK Green Building Council to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'.

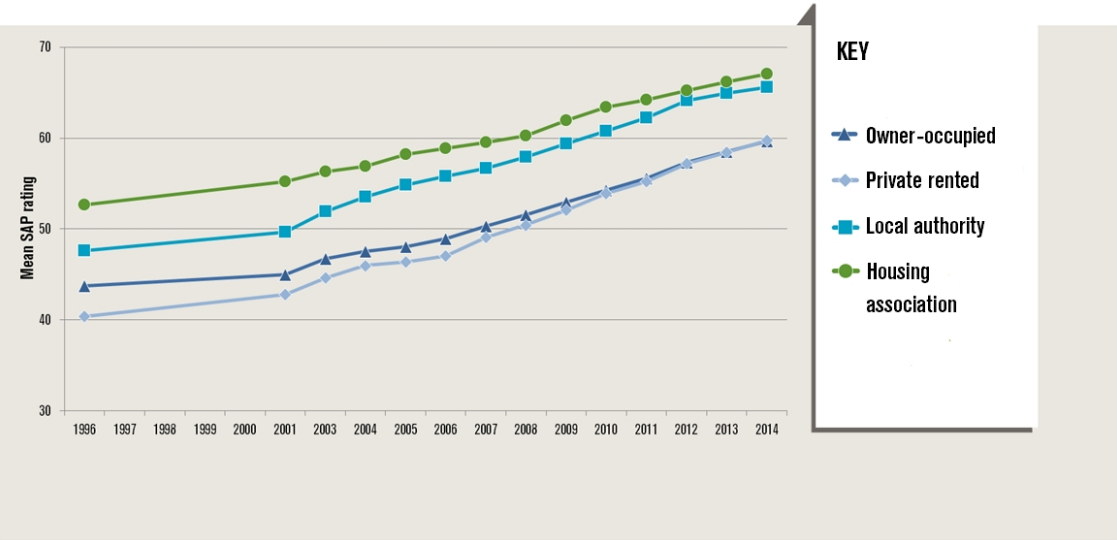
This inquiry found that there is a clear shortfall between the Government's targets on emissions and fuel poverty and the current policy mix. This report therefore seeks to engage with the question of how domestic energy efficiency can be improved to address this gap and realise the additional potential benefits which have been outlined.

Despite the ongoing challenges, significant improvements have been made in the area of domestic energy efficiency. In 2014 the average SAP rating of English dwellings was 61 points, rising from 45 points in 1996.[50] It should therefore be recognised that energy efficiency policy needs to build on the current situation rather than start from nothing. The challenges associated with this development can be classified in two different ways: housing sectors and types of efficiency measures.

3.1 Housing Sectors

As shown in Figures 2 and 3, there are differences between the average efficiency ratings of different housing sectors and variations in the proportion of fuel poor households within different housing sectors.

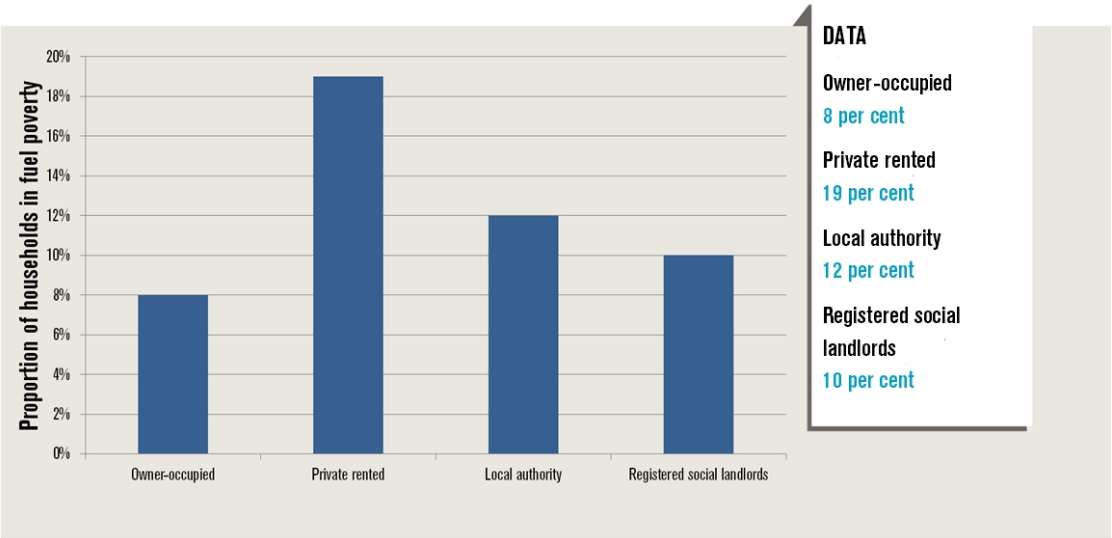
Figure 2 - Mean SAP Rating, by Tenure, 1996 to 2014 (England)



Source: DCLG (2016) 'English housing survey 2014 to 2015: headline report'

[50] DCLG (2016) 'English housing survey 2014 to 2015: headline report'; SAP, or Standard Assessment Procedure, is the methodology used by the Government to assess and compare the energy and environmental performance of dwellings. Its purpose is to provide accurate and reliable assessments of dwelling energy performances that are needed to underpin energy and environmental policy initiatives.

Figure 3 - Fuel Poverty by Tenure (England), 2013



Source: DECC (2015) 'Annual fuel poverty statistics report, 2015' & DECC (2015) 'Fuel poverty detailed tables: 2013'

3.1.1 Private Rented Sector

The private rented sector is the fastest growing sector; there were 2.3 million households privately renting in the UK in 2001, this rose to 5.4 million in 2014 and it is estimated that this could be 7.2 million by 2025.[51] In 2014 there were estimated to be 23.4 million dwellings in England and the private rented sector accounted for 19.6 per cent of these.[52] Approximately 7.5 per cent of private rented properties in England are rated at the very low efficiency rating of EPC Band F or G, which is a higher proportion than in any other tenure type.[53] Around 19 per cent of households in the private rented sector are fuel poor which, as shown in Figure 3, is also a higher share than in any other tenure type.[54] As with much of the commercial building sector, there is a problem with split incentives in the private rented sector whereby the landlord who owns a property is in charge of making renovations but it is the tenant who would benefit from retrofits.[55]

3.1.2 Social Housing

Between local authority and housing association properties, social housing represents 17.3 per cent of dwellings in England.[56] Only 1.3 per cent of local authority owned homes in England are rated EPC Band F or G and only 1.6 per cent of housing association homes in England are rated either F or G.[57] Their efficiency is in part due to the impact of policies such as the decent homes standard.[58] The decent homes standard committed the Government to bringing all social sector housing in England up to a prescribed standard by 2010. The criteria for this was that it met the statutory minimum standard for housing, was in a reasonable state of repair, had reasonably modern facilities and services and provided a reasonable degree of thermal comfort.[59] The fact that social housing providers have accepted moral obligations to their tenants and are often in a position to make long term investment decisions at scale which are more difficult in other housing sectors has also contributed to the improvements made in this

[51] IPPR North (2014) 'Back to Rising Damp'; PwC (2015) 'UK housing market outlook: the continuing rise of Generation Rent'.
[52] DCLG (2016) 'English housing survey 2014 to 2015: headline report'.
[53] DCLG (2016) 'English housing survey 2014 to 2015: headline report - Annex Table 2.6'.
[54] DECC (2015) 'Annual Fuel Poverty Statistics Report, 2015'.
[55] Westminster Sustainable Business Forum (2013) 'Building Efficiency: Reducing energy demand in the commercial sector'.
[56] DCLG (2016) 'English housing survey 2014 to 2015: headline report'
[57] DCLG (2016) 'English housing survey 2014 to 2015: headline report - Annex Table 2.6'
[58] Brenda Boardman (2012) 'Achieving Zero'.
[59] Communities and Local Government Committee (2010) 'Beyond Decent Homes'; Centre for Sustainable Energy (2011) 'Costing an enhanced decent homes standard'.

sector.[60] However, as Figure 3 shows, around 1 in 10 households in social housing are in fuel poverty and there remains considerable potential to improve the efficiency of the social housing stock.

3.1.3 Owner-Occupied Sector

Six per cent of homes in the owner-occupied sector are rated F or G and, as Figure 2 demonstrates, the average efficiency of owner-occupied homes is similar to that of the private rented sector and remains significantly behind the social housing sector.[61] As Figure 3 shows, the owner-occupied sector has the lowest proportion of households in fuel poverty in England but because it is the largest housing type, representing 63.1 per cent of English dwellings, around half of fuel poor households are in owner-occupied properties.[62] Within the owner-occupied sector the challenge may be divided into two areas: low income households and households who have sufficient income to enable them to pay for improvements themselves. For those households in a low income bracket, policy needs to support upgrades to the efficiency of their homes to lift them out of fuel poverty or reduce the risk of them falling into fuel poverty. This will often require payment for upgrades or significant subsidy. In the able-to-pay bracket, policy should focus on encouraging households to take up measures with as little financial support from government as possible. One of the main barriers to this is energy efficiency's lack of salience among individuals and households.[63]

3.1.4 New Build

The final area to consider is the housing which is yet to be built. In the case of assets with short shelf lives, such as electrical appliances, it has been possible to engineer widespread improvements through the introduction of minimum standards for new products.[64] The slow rate of replacement of houses means that it is not as simple to improve the efficiency of homes. It is estimated that approximately 85 per cent of the UK's housing stock will still be standing in 2050.[65]

Nonetheless, it is absolutely essential for the UK to improve the efficiency standards of new properties if it is to meet its 2050 carbon emissions target. It is considerably more cost-effective to make new houses more energy efficient than it is to retrofit existing buildings. The Committee on Climate Change have warned that in order to meet its carbon budgets, the UK may even have to retrofit buildings which are currently under construction.[66] This is problematic not just due to the additional cost this involves but also because the challenge of bringing the existing housing stock up to the required standard is large enough without increasing it year on year by building more homes which require renovation.

3.2 Types of Measures

In the UK, some types of energy efficiency measures have been installed in large numbers, while others have only been rolled out on a limited scale. This has important implications for future energy efficiency policies, implying that they cannot just continue in the same fashion.

3.2.1 Insulation

This inquiry found that past and ongoing government policies have been particularly successful at encouraging the installation of both cavity wall and loft insulation. This is largely because the main policy instruments which have been used are the supplier obligation schemes; these have focused on the 'low hanging fruit' of measures which are easiest and

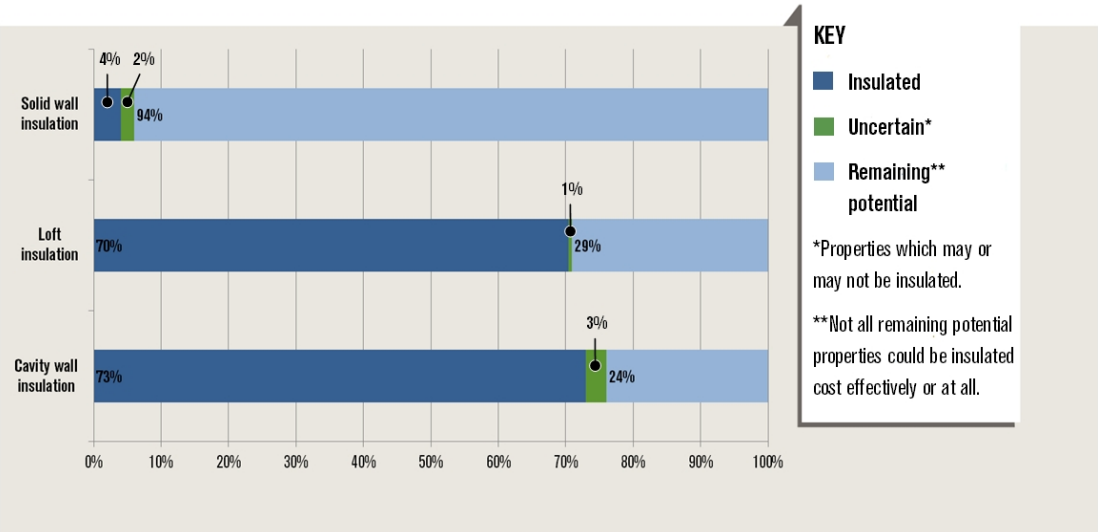
[60] Brenda Boardman (2012) 'Achieving Zero'.
[61] DCLG (2016) 'English housing survey 2014 to 2015: headline report - Annex Table 2.6'.
[62] DCLG (2016) 'English housing survey 2014 to 2015: headline report'; Policy Exchange (2015) 'Warmer Homes - Improving fuel poverty and energy efficiency policy in the UK'.
[63] Behaviour Change (2011) 'Green Deal Consumer Carriers' (Unpublished).
[64] DECC (2014) 'Energy efficient products - helping us cut energy use'.
[65] Gavin Killip (2008) 'Transforming the UK's Existing Housing Stock'.
[66] The Guardian, 'New houses will have to be retrofitted, UK climate watchdog warns' (November 2015) http://www.theguardian.com/environment/2015/nov/26/new-homes-could-breach-uk-carbon-budgets. Accessed 9th March 2016.

cheapest to deliver.[67] It is estimated that at the end of June 2015 there were 16.8 million insulated lofts in Great Britain (where insulated is defined as lofts with 125mm or more of insulation). There remain 7 million uninsulated lofts which accounts for 29 per cent of homes with lofts. Of these, 1.7 million are considered to be hard, costly or impossible to insulate.[68]

Homes which are built with walls using two skins of bricks with a cavity in between can have this gap insulated.[69] It is estimated that at the end of June 2015, 14.3 million homes in Great Britain had cavity wall insulation (73 per cent of properties with a cavity wall), and there were 4.7 million cavity wall properties which could benefit from some cavity wall insulation. Of these 4.7 million properties, 1.4 million are considered to have limited potential and 3.3 million are totally uninsulated (2.9 million of the 3.3 million uninsulated properties are considered hard to treat). There are therefore 0.4 million easy to treat, standard cavities left to insulate.[70]

Homes which are built with solid walls without a cavity cannot be insulated in this way; most of these were built before 1919 and some of them are 'system built' homes built between the 1920s and 1970s.[71] These types of buildings need to be insulated through fixing insulation to the wall either on the interior or exterior of the wall.[72] This method of insulation is considerably more labour-intensive and expensive than most other energy efficiency measures.[73]

Figure 4 - Remaining Potential to Insulate the Housing Stock in Great Britain, June 2015



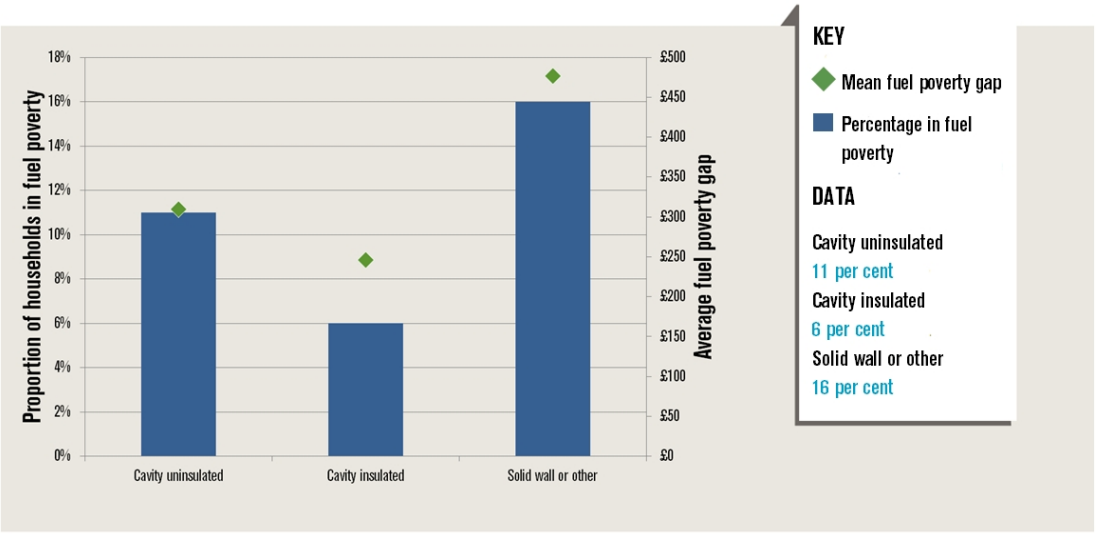
Source: DECC (2015) 'Domestic Green Deal, Energy Company Obligation and Insulation Levels in Great Britain, Detailed report to June 2015'

It is estimated that at the end of June 2015, 338,000 homes in Great Britain had solid wall insulation which equates to around 4 per cent of properties with solid walls. This leaves around 7.5 million uninsulated solid walls in Great Britain, with the caveat that it is not yet known exactly how many solid walls will be too costly or difficult to treat. Figure 4 demonstrates that the remaining potential to insulate the housing stock is overwhelmingly concentrated in solid wall properties.[74] The relatively low numbers of insulated solid walls is

[67] House of Commons Library (2015) 'ECO, the Energy Company Obligation'.
[68] DECC (2015) 'Domestic Green Deal, Energy Company Obligation and Insulation Levels in Great Britain, Detailed report to June 2015'.
[69] Energy Saving Trust (2006) 'Domestic energy primer - an introduction to energy efficiency in existing homes'.
[70] DECC (2015) 'Domestic Green Deal, Energy Company Obligation and Insulation Levels in Great Britain, Detailed report to June 2015'.
[71] Chief Construction Adviser Peter Hansford (2015) 'Solid Wall Insulation - Unlocking Demand and Driving Up Standards'.
[72] Energy Saving Trust (2006) 'Domestic energy primer - an introduction to energy efficiency in existing homes'.
[73] IPPR (2014) 'Up Against the Solid Wall'.
[74] DECC (2015) 'Domestic Green Deal, Energy Company Obligation and Insulation Levels in Great Britain, Detailed report to June 2015'.

particularly problematic because, as shown in Figure 5, solid wall properties have a considerably higher proportion of fuel poor households than cavity wall properties. They also have a larger average fuel poverty gap which is 'the amount by which the assessed energy needs of fuel poor households exceed the threshold for reasonable costs'.[75] The level of solid wall insulation is behind the Committee on Climate Change's indicator trajectory for meeting the UK's emission targets.[76] There is therefore an urgent need for future policy to address this shortfall.

Figure 5 - Fuel Poverty by Wall Type (England), 2013



Source: DECC (2015) 'Annual fuel poverty statistics report, 2015' & DECC (2015) 'Fuel poverty detailed tables: 2013'

3.2.2 Moving Away from a Measures-Based Approach

There are numerous potential additional measures which can be used to improve the efficiency of domestic buildings. These include measures which enable householders to use energy more efficiently such as heating controls, smart meters and more efficient appliances, installations such as double glazing and efficient boilers, and more technical solutions such as magnetic filters for heating systems or water softeners. Depending on the nature of a property, varying combinations of these measures will be needed to deliver on fuel poverty and carbon reduction objectives in addition to low carbon heat sources and on-site generation of electricity. With the exception of the particular challenges associated with solid wall properties, this inquiry has heard of the need to move away from a focus on specific efficiency measures. This should be replaced by an outcomes-based approach which seeks to reward the end goal of improved energy efficiency without mandating how this is achieved, encouraging bespoke solutions for different properties which combine a number of measures.[77]

3.3 Two Further Challenges

Firstly, principally because of the degree to which supplier obligation schemes have incentivised the delivery of measures at the lowest possible cost, there has been a consistent under-delivery of efficiency measures in rural areas. CERT and CESP almost completely bypassed rural areas; ECO provided a rural safeguard which has brought some results but there are still problems with the support being provided to fuel poor and vulnerable households in rural areas.[78] This highlights the fact that some fuel poor households will be

[75] Policy Exchange (2015) 'Warmer Homes Improving fuel poverty and energy efficiency policy in the UK'.
[76] Committee on Climate Change (2015) 'Meeting Carbon Budgets - Progress in reducing the UK's emissions 2015 Report to Parliament'.
[77] National Energy Foundation & Energy Efficiency Partnership for Buildings (2014) 'Breaking Barriers'.
[78] Calor Gas Ltd (2015) 'Written evidence submitted by Calor Gas Ltd to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'; DECC (2014) 'News Story - Energy efficiency in rural homes increases by almost 3000% in six months'.

more challenging than others to bring up to an EPC Band C and out of fuel poverty. For example it is generally much more expensive and practically difficult to treat a property with solid walls in a rural area than it is to treat a property with cavity walls in an urban area. Often the properties which are more expensive to treat will also be those whose occupants have larger fuel poverty gaps.

Secondly, energy efficiency policy in the UK has generally focused more on heating.[79] As greater improvements are made in this area, electricity use will become the source of a greater proportion of the carbon emissions and energy costs associated with an individual household. Policy should therefore reflect this and seek to address electricity as well as heating.

[79] Demand (2015) 'What Energy Uses Matter? Fuel poverty Beyond Heating'.

4 REGULATION

This chapter will examine how regulation could be used to drive improvements in domestic building efficiency in the areas of newly built homes, the private rented sector, owner-occupied properties and social housing.

4.1 New Build

4.1.1 The Code for Sustainable Homes

The Code for Sustainable Homes was launched in 2006. The code set out six different levels of sustainability for new buildings which local authorities could enforce if the code was integrated within their planning policies.[80] Following the culmination of the Government's Housing Standards Review in March 2015, the code was withdrawn meaning local authorities should no longer require it as a planning condition for new developments.[81]

4.1.2 Zero Carbon Homes Standards

The Labour Government's 2007 'Building a greener future: policy statement' confirmed all new homes would be zero carbon by 2016 and set out how this was to be realised through staged improvements in Building Regulations. In the 2011 Budget it was announced that unregulated carbon (associated with cooking, appliances and plug loads) was being excluded from the target and the changes made to Building Regulations in 2013 were not in line with the improvement required to stay on track for the 2016 target. In July 2015, the Government announced that it did not intend to proceed with the zero carbon standards for new homes.[82]

4.1.3 The Future of New Build

The European Energy Performance of Buildings Directive requires all member states to ensure that all new buildings are 'nearly zero-energy' by 2020.[83] The way in which member states define 'nearly zero-energy' is subject to a cost-effectiveness test and it is unlikely that the current Building Regulations will have to be significantly overhauled for the UK to comply.[84] However, there is evidence that building regulations for newly built properties do lead to increases in energy efficiency and there is a strong case for the UK acting independently to increase the standards expected of newly built homes.[85]

The zero carbon homes plan was, in some ways, an excellent example of how to implement regulation in this area. It set out a long term target which gave the building industry time to plan for the new requirement and therefore provided a high degree of policy certainty to the construction industry, which is essential for planning, investment and innovation.[86] This has been significantly undermined by the decision to withdraw the regulation only months before it was due to enter the enforcement stage.[87] It is clearly unsustainable and deeply problematic to add homes which need to be retrofitted to the UK's already leaky housing stock.[88] There is therefore a need to provide certainty to the construction industry by setting a long term target for the energy efficiency of newly constructed homes. This inquiry heard that regulation is necessary to force those that are currently uninterested in improving the efficiency of the

[80] DCLG (2006) 'Code for Sustainable Homes'.
[81] Building.co.uk, 'Code for Sustainable Homes scrapped' (March 2015) http://www.building.co.uk/code-for-sustainable-homes-scrapped/5074697.article. Accessed 4th March 2016.
[82] UK Green Building Council (2015) 'UK Green Building Council Briefing: Zero Carbon New Buildings Policy'.
[83] Official Journal of the European Union (2010) 'Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings'.
[84] UK Green Building Council (2015) 'UK Green Building Council Briefing: Zero Carbon New Buildings Policy'.
[85] UK Energy Research Centre (2015) 'Energy Efficiency Evaluation: The evidence for real energy savings from energy efficiency programmes in the household sector'.
[86] Gilli Hobbs in Westminster Sustainable Business Forum (2015) 'Building Better - Recommendations for a more sustainable UK construction sector'.
[87] UK Green Building Council (2015) 'UK Green Building Council Briefing: Zero Carbon New Buildings Policy'.
[88] Association for the Conservation of Energy & Energy Bill Revolution (2015) 'Fact-file: The Cold Man of Europe'.

homes they are building to make improvements and to reassure those that are interested in building to a higher standard that they will not lose a competitive advantage by doing so.

The Government have made it clear that they wish to build a million new homes by 2020.[89] As has been outlined, part of this strategy has involved the removal and modification of regulations relating to the efficiency of houses. This has led to debate over how much of a burden sustainability requirements impose on house builders and how far it is possible to reconcile the challenge of providing affordable housing with meeting emissions targets.

Clearly, building to a higher efficiency standard carries an added cost for house builders. However, analysis by the Zero Carbon Hub suggested that the additional cost of building to the zero carbon standards had roughly halved between 2011 and 2014. It was also expected that the relative costs of meeting the regulation would have continued to decrease between 2014 and 2020.[90] Therefore the extent to which the standard would have significantly limited housing supply or the growth of the construction sector is questionable. The additional costs of building to a higher standard can also potentially be recouped in energy bill savings and are generally lower than retrofitting the property at a later date.[91] Ultimately, the quicker a mandated standard is introduced, the quicker the construction industry will innovate to further reduce the cost of providing zero carbon homes.

To meet its carbon emissions targets the UK also needs to make significant changes in the way it heats domestic and non-domestic buildings and new build properties represent an important opportunity in this area. Reinstating a zero carbon target for new build properties would therefore be helpful for the UK's objectives in the area of heat.[92] There were criticisms of the details of the zero carbon homes standards such as the exclusion of unregulated energy use, an over-reliance on offsetting emissions instead of making the building fabric more efficient and the complexity of the allowable solutions mechanism.[93] The ending of zero carbon homes is therefore a chance to provide more robust regulations for new build properties which counter some of the problems of the previous scheme. Future strategies for improving the efficiency standards of newly built properties must also account for the difference between the designed and actual efficiency performance of a building, as has been done in Sweden.

Recommendation 1

The Government should reinstate a long term, mandatory zero carbon standard for newly built homes.

4.2 Private Rented Sector

4.2.1 Minimum Energy Efficiency Standards

The Government has introduced minimum energy efficiency standards for the private rented sector in England and Wales. With some exceptions, from April 2018, properties which are given new leases or extensions of leases must have an EPC rating of E or higher.[94] Like the zero carbon homes standards, the minimum energy efficiency standards are an excellent example of regulation in that they set out a clear long term target allowing landlords to comply in the way that suits them best. However, this inquiry heard that there are a number of problems with these standards which threaten to undermine their impact.

[89] BBC News, '"Million" new homes aim declared by minister Brandon Lewis' (September 2015) http://www.bbc.co.uk/news/uk-england-34209027. Accessed 10th February 2016.
[90] Zero Carbon Hub (2014) 'Cost Analysis: Meeting the Zero Carbon Standard'.
[91] UK Green Building Council (2015) 'UK Green Building Council Briefing: Zero Carbon New Buildings Policy'.
[92] Carbon Connect (2015) 'Future Heat Series Part 2 - Policy for Heat: Transforming the System'.
[93] Passive House Plus, 'Could the death of zero carbon help passive house bloom?' http://passivehouseplus.ie/magazine/insight/could-the-death-of-zero-carbon-help-passive-house-bloom.html. Accessed 4th March 2016; Allowable solutions was part of the zero carbon standards and allowed the carbon emissions which could not be cost-effectively off-set in the construction of new buildings to be off-set by the installations of other measures off-site.
[94] DECC (2015) 'Domestic Stakeholder briefing - Private Rented Sector Energy Efficiency'.

Firstly, the regulations are heavily tied to the Green Deal. Landlords are only expected to get to Band E through improvements which can be funded and financed by the Green Deal or other means such as ECO.[95] As it is unlikely that landlords will be able to access sufficient support through ECO or other sources, the ending of the Green Deal means that the majority of landlords with properties rated F or G will not have to comply with the regulations.

Secondly, unlike the rest of the private rented sector, Houses in Multiple Occupation (HMOs) that are let on a room-by-room basis do not require EPCs to be issued when they are rented out. Therefore, the minimum energy efficiency standards exclude HMOs that are let on a room-by-room basis.[96]

Finally, the standards are linked to EPCs and evidence suggests that there is a very high level of noncompliance in the private rented sector regarding the requirements for EPCs to be issued at the point of letting.[97] Additionally, a Shelter and British Gas report found that 71 per cent of landlords surveyed were unaware of new minimum energy efficiency standards.[98]

Prior to the announcement of the end of the Green Deal, the Government's own impact assessment of the regulations estimated that only 44 per cent of domestic F and G rated private rented properties would be improved to EPC rating E.[99] Because of the problems outlined with the minimum efficiency standards even this looks optimistic. It should be recognised that landlords do not have infinite access to capital and are often individuals who have inherited or bought a single additional property. However, it is a robust principle that if landlords are profiting from their property they should be expected to bring it up to minimum standards of performance. Regulation is the most viable way to overcome the split incentives phenomenon which exists in the private rented sector. Urgent action is therefore needed to ensure that the minimum energy efficiency standards have a meaningful impact.

The Government are currently considering how to ensure that the minimum energy efficiency standards continue to be enforceable in light of the ending of the Green Deal.[100] This could be done by providing a new financing mechanism to fill the Green Deal's central place in the regulations. Alternatively, the regulations could be amended to no longer rely on the Green Deal so that landlords must bring their properties up to E standard irrespective of government finance. The potentially punitive impact of this could be mitigated by either putting a limit on the cost of measures which landlords are expected to carry out or only asking landlords to install measures which pay for themselves within a set number of years.

HMOs need to be required to have an EPC rating of E or above and this could be achieved through two steps. Firstly, require landlords to provide an EPC to prospective tenants whenever a unit in an HMO is rented out. Secondly, set a minimum energy efficiency standard of E as a condition of HMO licensing.

The Government should also raise awareness among landlords of the requirement to issue an EPC when a property is rented as well as the minimum energy efficiency standards.

[95] Energy Act 2011 '2011 c. 16 Part 1 Chapter 2 Domestic energy efficiency regulations Section 43'.
[96] Future Climate & the Centre for Urban Research and Energy at the University of Manchester (2014) 'Housing in Multiple Occupancy: Energy Issues and Policy'.
[97] Future Climate & the Centre for Urban Research and Energy at the University of Manchester (2014) 'Housing in Multiple Occupancy: Energy Issues and Policy'.
[98] Shelter & British Gas (2016) 'Research Report - Survey of Private Landlords'.
[99] DECC (2014) 'Consultation Stage Impact Assessment for the Private Rented Sector Regulations'.
[100] DECC (2016) 'Oral evidence given by Lord Bourne of Aberystwyth, Parliamentary Under Secretary of State, and Ben Golding, Head of Strategy and Finance Team, Home Energy, Department of Energy and Climate Change to the Energy and Climate Change Committee home energy efficiency and demand reduction inquiry'.

Recommendation 2

The minimum energy efficiency standards need to be strengthened to ensure that they have a meaningful impact. The problems associated with the Green Deal, Houses in Multiple Occupation and landlords' awareness of the regulations need to be addressed.

In the long term, the minimum efficiency standards for this large and growing sector will need to increase beyond an EPC E rating. This could be done progressively over time but should include a final, long term target to help landlords to make long term investment decisions on their properties. For example by demanding a higher EPC Band every 5 years, with the date private rented properties are expected to be at Band A set out far in advance. Arguably, some financial support would be necessary to help landlords achieve these higher levels of energy efficiency.

Recommendation 3

In the long term, the minimum energy efficiency standards for private rented sector properties need to be increased beyond an EPC E rating.

4.2.2 Additional Tools

There are some additional tools which could be utilised to drive improvements in the private rented sector. Firstly, the Housing Health and Safety Rating System (HHSRS), which came into force through the 2004 Housing Act, enables local authorities to serve an Improvement Notice to private landlords if they discover Category 1 or 2 hazards, which can include excess cold, within one of their properties.[101] The HHSRS is an imperfect tool for forcing improvements in energy efficiency among landlords. Proactively enforcing the HHSRS is costly to local authorities. Landlords also do not have to respond by improving the efficiency of a building and could, for example, buy an electric heater. Nonetheless, local authorities should utilise the HHSRS to encourage landlords to improve the efficiency of their properties.

Secondly, there are legal requirements for private rented properties to have a gas safety check every 12 months. This inquiry found that this check could be modified to incorporate an annual inhibitor level test which assesses the efficiency of a property's heating system. This would be useful because even when a new boiler is fitted the efficiency of a heating system can decrease dramatically over time.[102]

Gas safety checks also apply to social housing so annual inhibitor level testing could be extended to this sector too. They would be more challenging to introduce to the owner-occupied sector which does not have mandatory gas safety checks. However, introducing requirements mandating best practice steps are taken to maintain the safety and efficiency of heating systems when boilers are installed in conjunction with subsequent annual system and water tests could drive significant improvements in this sector.

4.2.3 Expected Energy Costs

Aside from responding to direct regulatory requirements, arguably the most likely factor to encourage landlords to make efficiency improvements to their properties will be if it impacts upon the rent they can charge. This could be achieved by forcing the advertising of monthly or yearly rent prices to be accompanied by an estimate of expected energy costs, calculated from the figures displayed on EPCs.[103] Potential tenants would see an overall cost and it would not matter to them what proportion of this came from rent and what proportion came from utility

[101] House of Commons Library (2015) 'Housing Health and Safety Rating System (HHSRS)'; Eaga Charitable Trust (2011) 'Tackling fuel poverty in the private rented sector using the Housing Health and Safety Rating System (HHSRS)'.

[102] This is particularly important because heating alone accounts for approximately 60 per cent of household energy costs (Energy Savings Trust Website, Accessed 1st April 2016).

[103] DCLG (2009) 'Energy Performance Certificate (EPC)' https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/49997/1790388.pdf. Accessed 7th March 2016.

bills. Landlords with more efficient properties would therefore be able to charge more rent. Alternatively, it could be demanded that a combined cost of rent and expected energy costs is displayed as a larger figure than the monthly rent figure.

Recommendation 4

The Government should mandate that advertising of private rented accommodation includes a figure for monthly expected energy costs calculated from the EPC for that property.

4.3 Owner-Occupied Sector

4.3.1 Minimum Energy Efficiency Standards

Energy efficiency is often seen in terms of 'drivers and barriers' whereby households are motivated to renovate by drivers such as saving money and improving thermal comfort, but are prevented from doing so by a series of barriers.[104] This approach assumes that the goal of energy efficiency policy is simply to remove these barriers, for example through providing cheap loans. However, further regard needs to be paid to how efficiency improvements can be linked to trigger points when occupants, particularly those who own their own home and therefore make renovation decisions, are more open to energy efficiency renovations.[105]

Minimum energy efficiency standards could be extended to cover the owner-occupied sector. Whilst the fastest driver of action would be to mandate increasingly higher EPC ratings for all homes, this would be very intrusive on individuals' lives and take considerable resources to enforce.[106] A more feasible approach would be to mandate minimum standards, with an increasing rating over time, at the point of sale of a property. This method would mean a slower rate of change than blanket regulation but would tie in with existing regulations demanding an EPC is issued when a property is sold.[107]

The regulations could commence from the second sale of the property after the date the regulations come into force. Under this system anyone buying a house would be given the EPC rating of a property before purchase and would know the standard they needed to bring it up to in the future in order to sell it. This would mean no homeowner would unexpectedly find their property was extremely inefficient and be unable to sell it without investing large sums of money. This would be particularly effective as it ties in with people moving home, which is a commonly identified trigger point for efficiency improvements and general renovations.[108] Financial mechanisms could be coordinated with minimum efficiency standards to provide an incentive for early adoption of efficiency improvements.

Recommendation 5

The Government should introduce minimum energy efficiency standards for the sale of properties, which are increased progressively over time.

4.3.2 Consequential Improvements

Another trigger-points approach, which could complement regulations at the point of sale, is consequential improvements whereby building owners carrying out large refurbishment projects have to make energy-saving improvements in other areas of the property.[109] The main

[104] The Tyndall Centre for Climate Change Research (2015) 'Written evidence submitted by the Tyndall Centre for Climate Change Research to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'.
[105] UK Energy Research Centre (2013) 'Understanding Homeowners' Renovation Decisions: Findings of the VERD Project'; Energy Savings Trust (2011) 'Trigger points: a convenient truth'.
[106] Brenda Boardman (2012) 'Achieving Zero'.
[107] Brenda Boardman (2012) 'Achieving Zero'; DCLG (2014) 'Improving the energy efficiency of our buildings'.
[108] Charlie Wilson, Lucy Crane & Georgios Chryssochoidis (2015) 'Why do homeowners renovate energy efficiently? Contrasting perspectives and implications for policy'.
[109] Energy Savings Trust (2011) 'Trigger points: a convenient truth'.

reasoning behind consequential improvements is to ensure that new additions to a building do not increase that building's overall energy consumption or carbon emissions. They also join-up the installation of energy efficiency measures with other renovations, potentially reducing hassle and cost for the householder.[110] Consequential improvements were implemented in 2014 in Wales; they have been placed in draft Building Regulations for the residential sector in England three times and removed each time, most recently in 2012.[111]

Consequential improvements have to be carefully designed to avoid problems such as placing onerous demands on individuals every time they improve their home and deterring people from making energy efficiency improvements in the first place. Ideally they also need to be complimented by some sort of financial support mechanism such as a loan scheme to protect households from high upfront costs. However, this inquiry heard that consequential improvements do have considerable potential to drive improvements in the energy efficiency of the UK's domestic buildings. The impact of consequential improvements in Wales should therefore be monitored closely to assess how best they could be used elsewhere to improve the efficiency of houses.

4.4 Social Housing

In part because of the decent homes standard, the social housing stock has seen the most significant improvements in energy efficiency and many social housing providers have committed to ambitious voluntary targets on energy efficiency. However, significant further improvements are required to tackle fuel poverty and achieve the UK's climate change objectives. There is therefore a need for a new decent homes standard with a greater focus on energy efficiency to drive consistent improvement across the sector.[112] This could be monitored by the social housing regulator but would need to include financial support for housing providers which could come from a mixture of targeted ECO funding, general taxation and innovative solutions such as developing the Energiesprong scheme, which is explained in Chapter 7.

Recommendation 6

A new decent homes standard should be launched in the social housing sector with a greater focus on energy efficiency.

[110] Brenda Boardman (2012) 'Achieving Zero'.

[111] NBS, 'Building Regulations and Approved Documents 2014 Summary of Changes' (2014) https://www.thenbs.com/knowledge/building-regulations-and-approved-documents-2014-summary-of-changes. Accessed 8th March 2016; Brenda Boardman (2012) 'Achieving Zero'; DCLG (2012) 'Written statement to Parliament: Minor consequential improvements'.

[112] Communities and Local Government Committee (2010) 'Beyond Decent Homes'; Centre for Sustainable Energy (2011) 'Costing an enhanced decent homes standard'; Brenda Boardman (2012) 'Achieving Zero'.

Case Study: Swedish Building Regulations

The History of Swedish Building Regulations

Sweden has a long-standing history of embedding energy efficiency requirements within building regulations, with the first requirements implemented in 1946. In 1978, in the aftermath of the oil crisis, the Swedish government introduced new energy efficiency standards for buildings, which included mandatory triple glazing and ambitious targets for U-values and air tightness. Analysis conducted subsequent to the reforms suggested that the inclusion of these targets raised the costs of housebuilding by only around 1 per cent in real terms, debunking the prior warnings of prohibitive increases in costs. [113]

The Regulatory Landscape in Sweden

In 2012, the Swedish National Board of Housing, Building and Planning, Boverket, introduced new energy efficiency regulations in the building code. The building code stipulates mandatory energy performance requirements for buildings depending on their use, end-use heating system and climate zones. Buildings are categorised as residential or non-residential and electric or non-electric heated for three defined climate zones.[114] Requirements from the building code also apply to the refurbishment of existing buildings provided that these are proportional to the extent of the refurbishment and compatible with the characteristics of the building.[115] A passive house criteria has been developed for high energy standard buildings.[116]

Worldwide, Sweden has traditionally had the most stringent requirements in terms of overall U-value for building fabric.[117] The 2012 building code mandated that the average U-value for the entire building envelope must not exceed 0.40 W/m^2 K.[118] Swedish regulations have generally followed a model of having requirements for specific aspects of a building, such as the efficiency of installed products, which are complemented by rules on the overall energy performance and consumption for the building.[119]

The Swedish regulations for the energy performance of buildings focus heavily on energy use during the occupancy stage of the dwelling. They include the energy used for space heating, water heating and electricity for ventilation and pumps but exclude electricity used for appliances and lighting. As compliance is measured on the basis of actual performance, buildings typically have to be built to even stricter requirements in order to ensure they meet the requirements of the building code during the occupancy stage.[120]

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[113] Association for the Conservation of Energy (2001) 'Building in Ignorance - Demolishing complacency: improving the energy performance of 21st century homes'; Global Building Performance Network, 'Sweden' http://www.gbpn.org/databases-tools/bc-detail-pages/sweden#General. Accessed 20th March 2016.

[114] Ambrose Dodoo & Leif Gustavsson (2014) 'Effect of Energy Efficiency Requirements for Residential Buildings in Sweden on Lifecycle Primary Energy Use'.

[115] PRC Bouwcentrum International, Delft University of Technology, 'The lead market initiative and sustainable construction: Lot 1, Screening of national Building regulations, Sweden - Country Report' (2013) http://ec.europa.eu/DocsRoom/documents/5108/attachments/1/translations/en/renditions/native. Accessed 20th March 2016.

[116] Ambrose Dodoo & Leif Gustavsson (2014) 'Effect of Energy Efficiency Requirements for Residential Buildings in Sweden on Lifecycle Primary Energy Use'; Passive House refers to a rigorous, voluntary standard for energy efficiency in a building, reducing its ecological footprint. It results in ultra-low energy buildings that require little energy for space heating or cooling.

[117] U-values measure the effectiveness of insulation of a material and are expressed in watts per metres squared kelvin (W/m2 K). The lower the U-value, the better the material performs as a heat insulator.

[118] International Energy Agency (2008) 'Energy efficiency requirements in building codes, energy efficiency policies for new buildings'; Ambrose Dodoo & Leif Gustavsson (2014) 'Effect of Energy Efficiency Requirements for Residential Buildings in Sweden on Lifecycle Primary Energy Use'; W/m2 K is a way of expressing thermal transmittance or U-value, it refers to watts per metres squared kelvin.

[119] International Energy Agency (2008) 'Energy efficiency requirements in building codes, energy efficiency policies for new buildings'.

[120] Ambrose Dodoo & Leif Gustavsson (2014) 'Effect of Energy Efficiency Requirements for Residential Buildings in Sweden on Lifecycle Primary Energy Use'; International Energy Agency (2008) 'Energy efficiency requirements in building codes, energy efficiency policies for new buildings'.

5 FINANCIAL MECHANISMS

This chapter considers how financial mechanisms could be used to improve the efficiency of the UK's domestic buildings. It will provide some reflection on how they have been used to date and discuss strategies for future development in this area.

5.1 Supplier Obligation Schemes & the Future of the Energy Company Obligation

The 2012 European Energy Efficiency Directive requires all member states to introduce a scheme obliging energy companies to deliver yearly energy savings at a level of 1.5 per cent of their annual sales. However, there are a number of alternative policies which member states are allowed to implement to reduce energy consumption instead of a supplier obligation.[121] 16 out of 28 Member States have opted to implement energy efficiency obligations and together these schemes deliver about a third of the total savings across the EU.[122]

Supplier obligation schemes have been the main policy instrument used to improve domestic energy efficiency in the UK. In simple terms, these schemes require obligated energy companies to heavily or fully subsidise the installation of energy efficiency measures in people's homes. Energy suppliers then pass the costs on to consumers' energy bills. Overall, these schemes have delivered a large number of efficiency measures and considerable energy savings; the obligation costs have been dwarfed by the benefits achieved through more efficient homes, resulting in lower average fuel bills than would have been the case without the obligations.[123] They have generally increased in complexity over time and, prior to the reductions which were made in the transition from CERT and CESP to ECO, had become increasingly more ambitious in their targets.[124]

[121] Official Journal of the European Union (2012) Directive 2012/27/EU of the European Parliament and of the Council, Official Journal of the European Union, 2012.
[122] Tina Fawcett & Jan Rosenow (2016) 'The Member States' plans and achievements towards the implementation of Article 7 of the Energy Efficiency Directive'.
[123] Centre for Sustainable Energy (2014) 'Beyond the ECO'.
[124] Jan Rosenow (2012) 'Analysis of the history of environmental Supplier Obligations'; Jan Rosenow & Nick Eyre (2014) 'Residential energy efficiency programmes in the UK: a roadmap for recovery'.

Box 1: Supplier Obligation Schemes in the UK[125]

1994 – 2002: Energy Efficiency Standards of Performance (EESoP 1 – 3), developed and managed by Ofgem (and its precursor Offer) and the Energy Saving Trust, it evolved from having targets set for electricity suppliers only to also set targets for gas suppliers. The majority of measures in EESoP1 and around two-thirds of supplier expenditure in EESoP2 and EESoP3 focused on disadvantaged customers.

2002 – 2005: Energy Efficiency Commitment 1 (EEC1), built on the basic methodology of EESoP, it set each supplier a target to save energy based on the number of domestic customers they supplied.

2005 – 2008: Energy Efficiency Commitment 2 (EEC2), targets were more than double those in EEC1, EEC2 required at least 50 per cent of the target to be met through provisions to consumers in receipt of certain income-related benefits and tax credits.

2008 – 2012: Carbon Emissions Reduction Target (CERT) required gas and electricity suppliers to achieve targets for reducing carbon emissions within domestic properties. The Gas and Electricity (Carbon Emissions Reduction) Order required energy companies to achieve an overall target of 293 million lifetime tonnes of carbon dioxide (Mt CO_2) by 31 December 2012.

2009 – 2012: Community Energy Saving Programme (CESP), part of the Government's Home Energy Saving Programme, promoting a 'whole house' approach. It aimed to treat as many properties as possible in defined geographical areas; Energy companies were required to achieve an overall target of 19.25 Mt CO_2 by 31 December 2012.

2013 – 2015: Energy Company Obligation 1 (ECO1), this scheme was made up of three parts, namely the Carbon Emissions Reduction Obligation (CERO), Carbon Saving Communities Obligation (CSCO), and Home Heating Cost Reduction Obligation (HHCRO):

- *Carbon Emissions Reduction Obligation*: obligated suppliers to promote 'primary measures', including roof and wall insulation and connections to district heating systems, focusing on hard-to-treat homes and expensive measures.
- *Carbon Saving Community Obligation*: obligated suppliers to promote insulation measures and connections to district heating systems in areas of low income; a sub-obligation required that at least 15 per cent of a supplier's CSCO had to be achieved by promoting measures to low-income households in rural areas or deprived rural areas.
- *Home Heating Cost Reduction Obligation*: obligated suppliers to promote measures which improved the ability of low income and vulnerable households (the 'affordable warmth group') to heat their homes e.g. the replacement or repair of a boiler.

April 2015: Energy Company Obligation 2 (ECO2) extended the lifetime of ECO1 until 2017.

5.1.1 Tackling Fuel Poverty

The current supplier obligation ECO2 will come to an end in March 2017; it is planned to be replaced with a new scheme which will focus upon tackling fuel poverty and run for 5 years.

[125] Ofgem, 'Previous energy efficiency schemes' https://www.ofgem.gov.uk/environmental-programmes/energy-company-obligation-eco/previous-energy-efficiency-schemes. Accessed 5th March 2016; The Green Construction Board (2014) 'Valuation and Demand Working Group Project – Evaluating the Effectiveness of Energy Efficiency Policies in the Domestic Real Estate Sector'; The supplier obligation schemes outlined, such as ECO, have generally only focused on Great Britain and Northern Ireland have had their own supplier obligation schemes.

This will have funding worth '£640 million per year, rising with inflation' that will 'upgrade the energy efficiency of over 200,000 homes per year, saving those homes up to £300 off their annual energy bill [...]'.[126] This will differ from previous schemes as it will most likely have a much greater focus on fuel poverty. Supplier obligation schemes are generally regressive because the costs of delivering the scheme are passed on to all consumers of obligated energy suppliers through their energy bills, including those on low incomes and in fuel poverty, with only some consumers seeing the benefits of energy efficiency upgrades.[127]

This inquiry found that there is therefore a strong moral case for ensuring that funds from ECO do reach low income households to mitigate the regressive nature of supplier obligations schemes. However, the Energy and Climate Change Committee have recommended that 'DECC reconsiders its decision to use a supplier obligation to tackle fuel poverty'.[128] This inquiry also found that there are serious and fundamental problems with the idea of focusing ECO predominantly or solely on fuel poverty. The following section assesses these problems and makes some suggestions for mitigating them if the next phase of ECO is focused on tackling fuel poverty.

5.1.2 Potential Problems with Tackling Fuel Poverty through ECO

Firstly, greater targeting of supplier obligations at fuel poor or low income households increases the costs associated with delivering the schemes. This is because suppliers need to locate these households and these households generally require a higher degree of subsidy for measures. The costs of delivering energy efficiency policies are passed on to consumers' energy bills. Therefore those consumers that have their homes improved can benefit from an overall reduction in bills but those who do not receive improvements experience bill increases.[129] As the costs of delivery also increase the energy bills of those who are on low incomes, there is a danger of aggravating fuel poverty through this mechanism.[130]

Secondly, the successes of supplier obligations have generally been in delivering a large number of cheaper measures and suppliers aim to deliver their obligations at the least cost, seeking out the easiest and cheapest efficiency improvements.[131] Focusing ECO on the fuel poor, for whom it is often more expensive to provide measures, therefore runs counter to the usual mechanics of supplier obligations.[132]

Thirdly, as has been shown, not all fuel poor households are identical and some are much more difficult and expensive to reach and treat than others. The homes which are more expensive and difficult to reach and treat will often be the ones with the largest fuel poverty gap. This inquiry has heard that it would be more appropriate to deliver improvements to these types of households through a scheme funded by general taxation and delivered by agents such as local authorities. However, if the next phase of ECO is focused on fuel poverty and it is the predominant or sole instrument for delivering efficiency improvements to fuel poor homes it should include safeguards to ensure energy companies deliver improvements to properties which are more expensive and difficult to reach and treat. This inquiry found that not doing so would mean that the scheme would mainly provide support for those sectors of the fuel poor that past supplier obligations have tilted towards such as those in denser urban locations requiring cheaper insulation measures.

Specifically, there should be targets for treating deep rural properties (as opposed to those in small or medium size settlements). They are more expensive to reach and are generally off the

[126] HM Treasury (2015) 'Spending Review and Autumn Statement 2015'.
[127] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[128] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[129] Jan Rosenow, Reg Platt & Brooke Flanagan (2013) 'Fuel poverty and energy efficiency obligations – A critical assessment of the supplier obligation in the UK'.
[130] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[131] Jan Rosenow, Reg Platt & Brooke Flanagan (2013) 'Fuel poverty and energy efficiency obligations – A critical assessment of the supplier obligation in the UK'.
[132] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.

mains gas grid and therefore more likely to be in fuel poverty.[133] Targets for solid wall insulation would also be necessary in recognition of the high proportion of households in solid wall properties which are in fuel poverty and the comparatively low level of installations of this type of measure to date.[134] This would need to be balanced against what it is possible to deliver within the yearly £640 million funding envelope and the yearly 200,000 homes target.[135]

Fourthly, as indicated above, it is costly and difficult for ECO installers to identify who falls under the fuel poor bracket as they are not well placed to identify these groups.[136] The limited access energy companies and their installers have to data which can help identify eligible fuel poor households is a potential impediment to the running of the scheme which the Government needs to help with.[137] This should emulate the Warm Homes Discount scheme, which involves coordination between DECC, Ofgem, the Department of Work and Pensions and energy companies to identify those eligible for a rebate on energy bills.[138] The Government are currently exploring how far they are able to use data to help energy suppliers identify fuel poor households and should look to support them in this area as far as is practically and legally possible.[139]

Additionally, local agents such as housing associations, GPs, community groups and, in particular, local authorities are much better placed to identify those most in need of support in their respective area than energy companies or their installers.[140] If ECO is focused more on fuel poverty in the future there needs to be greater cooperative working between energy companies, ECO installers and local agents than in previous schemes.

Lastly, how best to define fuel poverty is a topic of some debate and there are different definitions operating in different parts of Britain.[141] How tightly to define eligibility for a fuel poverty focused ECO is one of the major questions for the future scheme. There is a strong argument for focusing limited funds on those who are within the fuel poverty criteria and most clearly in need. However, fuel poverty is a dynamic issue with people often moving in and out of the exact criteria. People will also often move home meaning that, theoretically, a household which is just above the fuel poverty line might move out of an inefficient home and be replaced by a household which does fall under the fuel poverty line.[142] This inquiry heard that a comprehensive fuel poverty strategy therefore requires engagement not just with those that fall exactly in the fuel poor definition but those that are vulnerable to falling into it. Additionally, a supplier obligation scheme focused purely on those who are within the exact definition of fuel poverty could mean that there would be many people on low incomes, living in inefficient properties that pay for the scheme but are not able to benefit from it.

5.1.3 General Administration of ECO

This inquiry heard that ECO has imposed excessive administrative burdens on energy companies and the suppliers who generally deliver the measures for them. Previous supplier obligation schemes used a system of deemed scores which meant that the measures energy companies installed to meet their overall energy saving targets had expected and pre-calculated energy savings attached to them based on the type of measure and property type.[143]

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[133] Calor Gas (2015) 'Written evidence submitted by Calor Gas to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'; Centre for Sustainable Energy & Eaga (2008) 'Quantifying rural fuel poverty'.
[134] IPPR (2014) 'Up Against the Solid Wall'.
[135] Another area which has been traditionally under-funded by supplier obligation schemes is the private rented sector. This is an issue which the next phase of ECO may need to be designed to address.
[136] Centre for Sustainable Energy (2015) 'Beyond the ECO – and beyond'.
[137] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[138] House of Commons Library (2016) 'The Warm Home Discount Scheme'.
[139] DECC (2016) 'Oral evidence given by Lord Bourne of Aberystwyth, Parliamentary Under Secretary of State, and Ben Golding, Head of Strategy and Finance Team, Home Energy, Department of Energy and Climate Change to the Energy and Climate Change Committee home energy efficiency and demand reduction inquiry'.
[140] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[141] Centre for Analysis of Social Exclusion (2011) 'Fuel Poverty: the problem and its measurement'; DECC (2015) 'Annual Fuel Poverty Statistics Report, 2015'.
[142] Age UK (2014) 'Reducing fuel poverty – a scourge for older people'.
[143] Centre for Sustainable Energy (2015) 'Beyond the ECO'.

In the transition to ECO this changed to a system based on more specific information.[144] There are advantages to this in that households get more accurate advice on the energy options for their home, although the savings are still modelled and predicted and do not necessarily represent actual savings.[145] However, moving away from deemed scores has increased the suppliers' cost of delivering the obligation and made it more difficult to articulate a clear funding offer to households.[146] The future ECO scheme should therefore be run on a deemed scores system.[147] This will need to be monitored to guard against fraud and ensure that as far as possible these deemed scores correspond to reality.[148] In addition, this inquiry heard that the sheer amount of paperwork involved in the administration of ECO has imposed a substantial burden on energy suppliers and the installers, local authorities and third sector organisations which have been involved in delivering the scheme. It is important that the scheme protects against fraud but the Government should look to improve ECO by, as far as possible, reducing the administration involved in the delivery of it.

Recommendation 7

The next phase of ECO should be based on a system of deemed scores and the Government should aim to reduce the overall administrative burden imposed on those involved in its delivery.

5.1.4 The Need for Additional Support

In his submission of oral evidence to the Energy and Climate Change Committee, the Parliamentary Under-Secretary of State for Energy and Climate Change, Lord Bourne stated that the Government is 'hoping to link ECO much more specifically to fuel poverty, so that we ultimately have just one measure on ECO, which is a fuel poverty measure'.[149] As has been shown, there are some serious concerns about the appropriateness of ECO to deliver in this area. Even more fundamentally, campaigners have expressed concern that the expected funding for the next phase of ECO will not be enough to truly engage with the problem of fuel poverty.[150] The £640-million-a-year figure amounts to a reduction in annual spending of over £300 million compared to the estimated annual average delivery costs of ECO between January 2013 and March 2015.[151] The Committee on Climate Change have stated that £1.2bn per annum is required to meet the Government's fuel poverty target for England and the stipulated future ECO funding stream clearly falls well short of this.[152]

This gap in provision needs to be addressed. In the medium term, the next phase of ECO should be supplemented with funding from general taxation. The Scottish Government's 'Home Energy Efficiency Programmes for Scotland' includes an area-based scheme which allocates public funding to local authorities to deliver fuel poverty improvements which complement ECO.[153] This system should be replicated in England with public funding being provided to relevant local actors, such as local authorities and community groups, as it would mitigate both the shortfall in funding and the delivery issues associated with energy companies trying to administer a fuel poverty scheme. This could potentially focus on more expensive installations.

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[144] Energy Saving Trust & Regen SW (2011) 'Energy Company Obligation'.
[145] Centre for Sustainable Energy (2015) 'Beyond the ECO'.
[146] CBI (2015) 'The future of the Energy Company Obligation'.
[147] Association for the Conservation of Energy (2015) 'Delivering the best deal for energy consumers'.
[148] The Resourcematics Ltd (2015) 'Written evidence submitted by the Resourcematics Ltd to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'.
[149] DECC (2016) 'Oral evidence given by Lord Bourne of Aberystwyth, Parliamentary Under Secretary of State, and Ben Golding, Head of Strategy and Finance Team, Home Energy, Department of Energy and Climate Change to the Energy and Climate Change Committee home energy efficiency and demand reduction inquiry'.
[150] National Energy Action (2016) 'Written evidence submitted by National Energy Action to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'.
[151] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[152] 'Lord Deben, Chair, Committee on Climate Change letter to the Rt. Hon. Amber Rudd MP' (7 October 2014) https://documents.theccc.org.uk/wp-content/uploads/2014/10/CCC-FP-letter-final-revised5.pdf. Accessed 8th March 2016.
[153] Energy Action Scotland, 'Home Energy Efficiency Programmes for Scotland (HEEPS)' http://www.eas.org.uk/page.php?id=3206. Accessed 20th March 2016.

Such a disbursal is justified both by the numerous benefits which can be realised through investment in this area and by the difficulty of meeting the Government's stated fuel poverty target without it. Additionally, significant investment is currently made every year in financial support for the fuel poor to pay their bills which never engages with the long term causes of fuel poverty and some of this could be re-orientated towards schemes to improve the efficiency of fuel poor homes.[154]

Depending upon the impact of the next phase of ECO there are questions about how best to use a supplier obligation scheme in the long term. This inquiry heard that the best plan may be to tackle fuel poverty with a tax-payer funded and locally delivered scheme. Supplier obligations could then be phased out or continued without a sole focus on fuel poverty. Alternatively, there may be potential in a scheme which retains the same funding mechanism through energy bills but places the responsibility for delivery in the hands of local actors.

Recommendation 8

The next phase of ECO should be supported by a tax-payer funded fuel poverty scheme administered by local actors.

5.2 Loan Schemes

Finance in the form of loans is generally only an enabler of the take-up of energy efficiency measures rather than something which can create demand itself. Nonetheless, loans have a potentially highly important role in supporting the improvement of the UK's housing stock through removing prohibitive upfront costs of measures and allowing households to pay for installations through savings on their energy bills. Particularly if regulations demanding minimum efficiency standards for properties are strengthened and developed in the future.

The Green Deal was introduced in 2013 as a 'flagship piece of legislation, which [would] deliver energy efficiency to homes and buildings across the land'.[155] By issuing loans to fund measures, the scheme created a new financing mechanism to allow households to carry out energy efficiency improvements at little or no upfront cost. The expected monthly financial savings of any energy efficiency measures taken under a Green Deal had to be equal to or greater than the costs of the loan provided to fund the measures. This was known as the 'Golden Rule' and was central to the Green Deal 'pay-as-you-save' principle. However, the Government withdrew funding from the scheme in 2015.[156] The policy was clearly a failure as there were initial hopes that the scheme would facilitate the improvement of 14 million homes by 2020 but in November 2015 there were only 14,799 Green Deal Plans in unique properties in the UK.[157] The demise of the Green Deal has left significant space for development in this area.

5.2.1 Green Mortgages

There is considerable potential to use mortgage schemes to both finance the installation of energy efficiency measures and help increase demand for more efficient properties. This type of finance mechanism is generally referred to as a green mortgage. On a small scale, the Ecology Building Society offers 'mortgages for properties and projects that respect the environment'.[158] Further to this, a proposal which has been researched and recommended by groups including the UK Green Building Council, BRE, the Wales Low Zero Carbon Hub and

[154] Policy Exchange (2015) 'Warmer Homes - Improving fuel poverty and energy efficiency policy in the UK'; This process would obviously have to be managed very carefully to avoid punitive impacts.
[155] The House of Commons Library (2014) 'The Green Deal'.
[156] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[157] DECC (2011) 'Greg Barker speech: Green Deal and Big Society event'; DECC (2016) 'Household Energy Efficiency National Statistics, headline release' cited in House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[158] Ecology Building Society, 'About Us' http://www.ecology.co.uk/about/. Accessed 15th March 2016.

Policy Exchange involves making changes to residential mortgage products in order to stimulate and finance investments in energy efficiency.[159]

The Mortgage Market Review (MMR), initiated in the wake of the financial crisis in 2008, obliges high-street lenders to look more closely at the outgoings of prospective borrowers in mortgage affordability calculations.[160] At present, however, MMR legislation is not prescriptive about how energy bills are accounted for. Mortgage providers do not account for energy costs in a detailed way within these calculations and include energy bills by taking the national average rather than looking at the EPC rating and property type. This is despite energy costs being one of the largest parts of household expenditure - estimated to be 6 per cent of the average household budget - and information on a property's efficiency and likely energy costs being available at the point of sale through the EPC.[161]

Fuel costs usually vary by a large degree between different households. For example, it is estimated that owners of a property with a SAP score of 80 are likely to have energy bills that are £1,000 lower per year than owners of a property with a SAP score of 40.[162] It is therefore possible that in the absence of a sophisticated measure of energy efficiency, mortgage providers are over and under-lending on individual mortgages to the tune thousands of pounds on individual properties and millions or even billions across their portfolios. Lenders are also substantially increasing the risk associated with their mortgages by not accurately accounting for energy costs.[163]

Mortgage providers should implement a detailed assessment of energy efficiency into their lending practices.[164] The Government therefore needs to either persuade lenders to do this on a voluntary basis or make minor amendments to the MMR legislation, requiring lenders to factor in an accurate evaluation of energy costs. This would allow purchasers of more efficient homes to borrow a greater amount on a mortgage, thereby encouraging buyers to purchase more efficient properties which would in turn impact on house prices. It is likely that this would incentivise households to increase the efficiency of their home prior to selling it in order to make it more attractive.[165]

The financing mechanism within this scheme would come through an additional element whereby mortgage extensions are offered to fund efficiency improvements. The only product of this type is currently offered by Nationwide and is summarised at the end of this chapter. These products could proliferate though as energy costs become a more central part of the mortgage lending process and provide an extremely low-cost way of households financing energy efficiency investments.[166] Additionally, the Government could consider providing some additional subsidy to these arrangements, either through public funds or coordination with ECO, to incentivise the take-up of more expensive measures.[167]

Recommendation 9

Mortgage lenders should include more accurate calculations of energy costs in their mortgage affordability assessments. This can be achieved either on a voluntary basis or through changes to the Mortgage Market Review. In tandem with changes to mortgage affordability assessments, lenders should provide mortgage extensions to finance energy efficiency measures.

[159] UK Green Building Council & UCL (2015) 'The role of energy bill modelling in mortgage affordability calculations'; Policy Exchange (2016) 'Efficient Energy Policy'.
[160] Romans Mortgage Service, 'Mortgage Market Review Fact Sheet' http://www.romans.co.uk/media/30664/MMR_FactSheet_V02.pdf. Accessed 15th March 2016.
[161] Policy Exchange (2016) 'Efficient Energy Policy'.
[162] Wales Low Zero Carbon Hub cited in Policy Exchange (2016) 'Efficient Energy Policy'.
[163] UK Green Building Council & UCL (2015) 'The role of energy bill modelling in mortgage affordability calculations'.
[164] UK Green Building Council & UCL (2015) 'The role of energy bill modelling in mortgage affordability calculations'.
[165] Policy Exchange (2016) 'Efficient Energy Policy'.
[166] Policy Exchange (2016) 'Efficient Energy Policy'.
[167] Dr Alan Whitehead MP (2012) 'Hard to treat homes and ECO mortgages' (Unpublished).

5.2.2 Additional Loan Schemes

Future domestic energy efficiency policy needs to learn from the experience of the Green Deal. This inquiry heard that the one lesson which should not be drawn from it is that there is no future for pay-as-you-save loan schemes in the UK. The widespread uptake of efficiency measures which has been enabled in Germany by their Kreditanstalt für Wiederaufbau (KfW) lending scheme demonstrates the considerable potential for loans to help improve the UK's housing stock.[168] Green mortgages provide an excellent opportunity to support those who are able to get mortgages or already have one. However, this will not work for everyone and there will need to be a range of financial options available to other types of households, potentially administered by either commercial banks or local authorities.

The Government needs to support the development of additional finance options and this inquiry found that three lessons from the Green Deal in particular should guide policy in this area. Firstly, the long payback period combined with the interest rate of approximately 8-10 per cent was one of the barriers to people taking up Green Deal loans.[169] The KfW scheme is an example of a 'soft loan' whereby public money is used to subsidise the cost of borrowing to make it more attractive and future schemes in the UK should follow this model.[170] Secondly, the Green Deal has been criticised for being too complex and confusing for households. Future finance schemes should aim to provide a clear offer to consumers.[171] Thirdly, the Green Deal was promoted with a narrow focus on bill savings. Future loan schemes therefore need to emphasise the additional benefits of energy efficiency measures such as increased comfort and health benefits.[172]

5.3 Grant Schemes

Publicly funded grants which subsidise or pay for energy efficiency measures can directly target gaps in the take-up of efficiency measures and send a clear message to market participants about government priorities. However, they only ever offer immediate solutions to particular needs and therefore generally do not to have a long term market impact on their own.[173] Box 2 summarises some of the main energy efficiency grant schemes which have been used in the UK to date. It has been argued that publicly funded grant schemes are necessary for fuel poor and low income households living in inefficient properties. There is potential for grant schemes to also successfully drive the take-up of efficiency measures among households which are not in a low income bracket, however, one recent example demonstrates how this can be problematic.

[168] Mark Schröder, Paul Ekins, Anne Power, Monika Zulauf & Robert Lowe (2011) 'The KfW Experience in the Reduction of Energy Use in and CO2 Emissions from Buildings''; International Energy Agency (2012) 'Mobilising investment in energy efficiency'.
[169] UK Green Building Council (2014) 'Green Deal Finance: Examining the Green Deal interest rate as a barrier to take-up'.
[170] Adrien Bullier and Christophe Milin (2013) 'Alternative financing schemes for energy efficiency in buildings'.
[171] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[172] Jan Rosenow & Richard Sagar (2015) 'After the Green Deal: Empowering people and places to improve their homes'.
[173] International Energy Agency (2007) 'Financing Energy Efficient Homes'.

Box 2 – Grant Schemes in the UK

1991 – 2000: The Home Energy Efficiency Scheme (HEES) provided grants to cover the cost of installing insulation and other energy efficiency measures in low income homes.

1996 – 2002: The HECAction Programme was linked to the Home Energy Conservation Act and aimed to assist energy conservation authorities in setting up local energy efficiency initiatives for housing and support effective partnerships.

2000 – 2013: The Warm Front scheme aimed to address fuel poverty by providing energy efficient heating and insulation to households in receipt of certain benefits. Properties also had to be poorly insulated and/or not have a working central heating system to be eligible under the scheme.

2010: Under the Boiler Scrappage Scheme, householders in England with G-rated boilers could apply for a voucher entitling them to £400 off the price of a new A-rated boiler or a renewable heating system, such as a biomass boiler or a heat pump.

2014 – 2015: The Green Deal Home Improvement Fund allowed homeowners to claim vouchers against the cost of installing certain Green Deal measures that would not be viable without additional support.

Since 2015: The grant scheme Warmer Homes Scotland is part of the Home Energy Efficiency Programmes for Scotland (HEEPS). It is an initiative, which was launched by the Scottish Government aimed at fuel poverty. Replacing the Energy Assistance Scheme, Warmer Homes Scotland will run for up to 7 years and will be worth up to £224 million. The scheme offers low-income homeowners or tenants of private sector landlords funding for certain energy efficiency measures. Customer contributions might be required for more expensive improvements.

Since 2016: The London Boiler Cashback Scheme offers homeowners and private landlords in London £400 cashback to replace inefficient boilers.

The Green Deal Home Improvement Fund, which offered householders in England and Wales thousands of pounds towards the cost of energy efficiency improvements, was launched three times between 2014 and 2015.[174] Whilst there was a very high level of demand for the scheme it created dramatic cycles of boom and bust. Future grant schemes therefore need to be based on a sustainable funding model which helps to provide certainty and long term sources of demand for the energy efficiency industry. One potentially fruitful use of grants in the able-to-pay sector is demonstrated by the KfW scheme. KfW provides subsidies which increase with the level of ambition of an efficiency upgrade, to incentivise 'deep' retrofits that include more expensive measures and bring a house up to a very high standard of efficiency.[175]

5.4 Tax Incentives

Tax incentives could be a highly useful tool to encourage energy efficiency improvements. One of the main advantages of these mechanisms is that they can provide long term, structural

[174] DECC (March 2015) 'Press Release - £70 million for home energy efficiency through the Green Deal Home Improvement Fund Release 3'; The Guardian 'Government kills off flagship green deal for home insulation' (2015) http://www.theguardian.com/environment/2015/jul/23/uk-ceases-financing-of-green-deal. Accessed 16th March 2016.
[175] Mark Schröder, Paul Ekins, Anne Power, Monika Zulauf & Robert Lowe (2011) 'The KfW Experience in the Reduction of Energy Use in and CO2 Emissions from Buildings'.

pulls on demand that the market can deliver against. They can be used as standalone policies or in conjunction with other approaches, for example coordinated with minimum building standards as a reward for early adoption of efficiency improvements. Up until April 2015, the Landlord's Energy Saving Allowance allowed landlords to claim up to £1,500 against their tax bill every year for the cost of buying and installing energy saving products.[176] The major tax-related incentive focused on domestic energy efficiency currently in place is a reduction in VAT to 5 per cent on some commercially installed domestic energy saving materials. This regulation has been challenged by the European Court of Justice and it remains unclear whether the UK will be able to uphold the favourable taxation of energy saving materials.[177] There is therefore considerable scope to develop this area of policy.

5.4.1 Council Tax Incentives

Council tax incentive schemes have been deployed by a number of local authorities in the past and have sometimes been run in collaboration with energy companies as part of supplier obligation schemes. These appear to have achieved results in terms of generating interest and leading to increased installations of efficiency measures.[178] Set by local authorities to support local services, council tax is set at a band ranging from A to H based on a property's valuation.[179] There are two ways of designing an incentive scheme related to council tax: either through a rebate or discount for efficiency measures installed in a property or variable rates which reward or penalise properties based on their efficiency.[180]

Rebates have been the focus of trials in this area thus far. However, the major drawback of this approach is that in the absence of private sector or central government support it would mean cutting a source of revenue for local authorities, which are already facing significant budgetary constraints. A variable rate could theoretically be designed to be cost-neutral for councils but this would necessitate the gathering of information on the efficiency of affected properties.[181] Additionally, it would require safeguards to prevent punitive impacts and entail amending the current system of council tax bands.[182] The most viable route to implementing such an incentive would be for councils to use appropriate local property data to establish a baseline of efficiency. Households could then be given a percentage increase or reduction in their council tax based on whether they are above or below it.[183] Council tax incentives both in the form of rebates and varied rates could therefore have a significant impact on domestic energy efficiency but there are considerable challenges to overcome to achieve this.

5.4.2 Stamp Duty Land Tax Incentives

Stamp duty land tax is levied on the purchase of properties in the UK and is calculated based on the value of the property in question. Like council tax, a stamp duty incentive scheme could be fiscally neutral, based on a variable rate rewarding efficient properties and penalising inefficient ones.[184] This could include rebates for homeowners who install recommended energy efficiency measures within a limited time of moving into a new property. The calculations for what is an efficient property could also be based on a baseline which is then raised over time to drive further improvements.[185]

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[176] HM Revenue and Customs (2015) 'PIM2072 - Deductions: General rules: Main types of expenses: Landlord's Energy Savings Allowance (LESA)' http://www.hmrc.gov.uk/manuals/pimmanual/pim2072.htm. Accessed 15th March 2016.
[177] HM Revenue and Customs (2015) 'VAT: Changes to the reduced rate of VAT for Energy Saving Materials'.
[178] Policy Studies Institute (2006) 'A Green Living Initiative'; Green Fiscal Commission (2010) 'Achieving Fairness in Carbon Emissions Reduction'.
[179] Energy Saving Trust (2005) 'How can whole house fiscal measures encourage consumers to improve the energy efficiency of their homes?'.
[180] Energy Saving Trust (2005) 'How can whole house fiscal measures encourage consumers to improve the energy efficiency of their homes?'; UK Green Building Council (2013) 'Retrofit Incentives: Boosting take-up of energy efficiency measures in domestic properties'.
[181] UK Green Building Council (2013) 'Retrofit Incentives: Boosting take-up of energy efficiency measures in domestic properties'; Local Government Association (2014) 'Under pressure - How councils are planning for future cuts'.
[182] Brenda Boardman (2012) 'Achieving Zero'.
[183] UK Green Building Council (2013) 'Retrofit Incentives: Boosting take-up of energy efficiency measures in domestic properties'.
[184] Policy Exchange (2016) 'Efficient Energy Policy'.
[185] UK Green Building Council (2013) 'Retrofit Incentives: Boosting take-up of energy efficiency measures in domestic properties'.

Unlike council tax incentives this does not require additional information gathering on the efficiency of properties as EPCs are already issued at the point of sale.[186] Additionally, stamp duty incentives tie in with the sale of a property which is a point when people are more open to undertaking renovations.[187] It can be expected that an incentive based on stamp duty would influence property prices in the long run. There are potential issues relating to how percentage calculations would provide varying incentives and punishments to those living in properties of different values. The scheme would also only affect properties which are worth £125,000 or more as those below this threshold are not subject to the tax.[188]

Nonetheless, this initiative could have a significant impact in the area of domestic energy efficiency, evident in the 850,000 properties which incurred stamp duty in 2014, and it could be implemented relatively straightforwardly.[189] The Government should therefore link stamp duty to the efficiency of properties. Additionally, the 2015 Autumn Statement announced a 3 per cent surcharge on stamp duty rates for purchases of buy-to-let properties and second homes as of April 2016.[190] A rebate on this could be used to encourage efficiency improvements, either as an interim measure before a variable rate is rolled out to all properties or as part of a wider stamp duty incentive scheme.

Recommendation 10

The Government should introduce a stamp duty incentive to encourage the uptake of energy efficiency measures in the domestic sector. A rebate on the surcharge on buy-to-let properties and second homes could be included within this, either as an interim measure or as part of a wider strategy.

5.5 Additional Energy Efficiency Finance Schemes

There are some additional financial schemes which may have a future role to play in improving domestic energy efficiency in the UK. Firstly, the Renewable Heat Initiative (RHI) which was introduced to the non-domestic sector in 2011 and to the domestic sector in April 2014. The RHI provides financial support to the owners of domestic renewable heating systems for seven years in the form of quarterly cash payments.[191] The main aim of the RHI is to incentivise and deploy low carbon heat, however, it is also designed to support the uptake of energy efficiency technologies. One of the key challenges that the RHI faces in driving the uptake of specific technologies, such as heat pumps, is its close link with the energy performance of buildings. Uncertainty around energy efficiency policy is jeopardising a more integrated approach of heat and energy efficiency policy.[192]

Secondly, a Feed in Tariff (FiT) to cover energy efficiency. To date FiTs in the UK have been used to support small-scale renewable and low carbon electricity generation technologies by providing households with subsidy payments for the electricity they generate. A FiT for energy efficiency would offer a fixed price subsidy to households for each unit of energy saved by being more efficient (so-called 'negawatts').[193] Investment in negawatts is cheaper than the generation of additional capacity and could be delivered quickly.[194] This idea has a lot of merit, however, it is difficult to see how this would be implemented as DECC are currently not in the financial position to offer the subsidies required.[195]

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[186] UK Green Building Council (2013) 'Retrofit Incentives: Boosting take-up of energy efficiency measures in domestic properties'.
[187] Charlie Wilson, Lucy Crane & Georgios Chryssochoidis (2015) 'Why do homeowners renovate energy efficiently? Contrasting perspectives and implications for policy'
[188] Policy Exchange (2016) 'Efficient Energy Policy'.
[189] Policy Exchange (2016) 'Efficient Energy Policy'.
[190] HM Treasury (2015) 'Spending review and autumn statement 2015'.
[191] Carbon Connect (2015) 'Future Heat Series Part 2 – Policy for Heat: Transforming the System'; Ofgem, 'About the Domestic RHI' https://www.ofgem.gov.uk/environmental-programmes/domestic-renewable-heat-incentive-domestic-rhi/about-domestic-rhi. Accessed 15th February 2016.
[192] Carbon Connect, Future Heat Series Part 2 – Policy for Heat: Transforming the System, 2015.
[193] Nick Eyre (2013) 'Feed-in Tariffs: the energy saving option'.
[194] Green Alliance (2015) 'Getting more from less: realising the potential of negawatts in the UK electricity market'; Nick Eyre (2013) 'Feed-in Tariffs: the energy saving option'.
[195] Policy Exchange (2016) 'Efficient Energy Policy'.

Thirdly, a demand reduction obligation which would oblige energy suppliers to reduce their customers' energy consumption over time. This proposal would require no public expenditure. However, it would be likely to be incredibly difficult to measure, would push suppliers to adopt cheap measures covering lots of people and potentially lead to suppliers chasing customers who consume less energy.[196]

Finally, energy efficiency improvements could also be funded through a third party providing the finance for efficiency measures and receiving the income stream from energy savings. The difficulties in this lie with the return on investments not coming through an increase in revenue but through non-expenses. The concept is therefore different from most other types of investment. The high cost and long payback of efficiency measures further undermine the attractiveness of these types of projects.[197]

[196] Policy Exchange (2016) 'Efficient Energy Policy'.
[197] Adrien Bullier and Christophe Milin (2013) 'Alternative financing schemes for energy efficiency in buildings'.

Case Study: Nationwide Green Additional Borrowing

Since 2013 the Nationwide Building Society has offered a borrowing product available to customers aiming to increase the energy efficiency of their home, called the Green Additional Borrowing Service. Homeowners with an existing Nationwide mortgage can get additional funding at rates starting at 2.29 per cent in order to fund certain non-structural, energy efficiency measures between £5,000 and £20,000 up to a maximum loan-to-value ratio of 85 per cent. Eligible measures include:

- Air source heat pumps
- Biomass
- Cavity wall insulation
- Double glazing
- Draught proofing
- Floor insulation
- Ground source heat pumps
- Heating controls
- Loft insulation
- Rated boiler installation
- Small-scale hydro
- Small-scale wind turbine
- Solar PV
- Solar water heating
- Solid wall insulation
- Tanks and pipe insulation[198]

With the introduction of the scheme, Nationwide sought to provide an alternative to the Green Deal for funding larger home improvements and enable householders to finance measures that did not fulfil the Green Deal requirements.[199]

Further, the Nationwide Building Society embarked on a research project in December 2015 to explore what influence lending practices can have on energy efficiency-related property choices and how mortgage affordability calculations can better reflect individual building performance.[200] There is an opportunity because of the current low base rate conditions to make green add-ons to mortgages by private lenders a financing route similar to the KfW loan schemes. However, this can be done through market forces without the need for government to provide subsidies to enable low interest rates.[201]

The research project is yet to clarify whether the data sets available will be robust enough for mortgage lenders to interpret the energy costs of a property for their mortgage calculations and whether the sums will be substantial enough to incentivise homeowners to make energy efficiency improvements. Further, the level of complexity of these calculations will determine whether this approach is feasible as mortgage lenders will need a simple structure to realise energy cost-related mortgage variations. A clear benefit of such green mortgage programmes would be that a new and far-reaching platform for the marketing of energy efficiency and finance products for energy efficiency would be established with high-street banks advertising these products. The impact of wider advertisement – theoretically in all shop windows of high-street bank branches – would resemble the successful marketing structure of KfW programmes in Germany.

[198] Nationwide, 'Nationwide launches Green Additional Borrowing' (2013) http://www.nationwide.co.uk/about/media-centre-and-specialist-areas/media-centre/press-releases/archive/2013/2/nationwide-launches-green-additional-borrowing. Accessed 25th February 2016.

[199] Nationwide, 'Nationwide launches Green Additional Borrowing' (2013) http://www.nationwide.co.uk/about/media-centre-and-specialist-areas/media-centre/press-releases/archive/2013/2/nationwide-launches-green-additional-borrowing. Accessed 25th February 2016.

[200] Nationwide partnered with the Principality Building Society, Zero Carbon Hub, Constructing Excellence in Wales, BRE, Energy Saving Trust, Arup and University College London on the LENDERs project.

[201] BRE, 'Press release: BRE conducts study on green mortgage lending' (2015) https://www.bre.co.uk/news/BRE-conducts-study-on-green-mortgage-lending---1123.html. Accessed 25th February 2016.

6 ADVICE AND INFORMATION

Advice and information are an important part of increasing domestic energy efficiency. They are needed to encourage people to take up measures, to ensure that these are the right measures for a particular home and to maximise their effectiveness once installed. Promoting the benefits of energy efficiency is vital to developing the social norms which will encourage people to adopt energy efficiency measures. Increasing people's awareness of home energy use can also help to nudge them into using energy more efficiently through behaviour change. In the UK advice and information on energy efficiency come from a range of diverse sources, the main ones are summarised in Box 3.

There are problems with all of the sources of information summarised in Box 3. EPCs are able to provide an indication of a building's performance but there are issues with their accuracy and they do not equip householders with in-depth or bespoke advice on the measures they should install. For obvious reasons, organisations which have a financial interest in pushing particular measures are not best placed to offer impartial advice on energy efficiency and problems with quality and fraud have led to distrust of installers.[202] Trust in energy companies is also low among consumers compared to other sectors.[203] Funding constraints mean that there are clear limitations to how bespoke and detailed the advice is that the Energy Saving Trust, local authorities and third sector organisations are able to provide. Finally, the low level of demand for energy efficiency measures limits the number of people who are prepared to pay for the more bespoke and detailed advice offered by some companies.

Advice and information relating to energy efficiency should be made available to the maximum number of people as is achievable and, as far as possible, aim to be impartial, trustworthy, accurate and bespoke. This chapter examines some potential strategies for achieving this objective and using advice and information to increase the energy efficiency of domestic buildings.

[202] Energy Savings Trust, 'Bonfield Review: the future of energy saving advice' (2015) http://www.energysavingtrust.org.uk/blog/2015/12/bonfield-review-future-energy-saving-advice. Accessed 6th March 2016.
[203] Citizens Advice Bureau (2015) 'Trust in the Energy Sector and Billing'.

Box 3 - Sources of Energy Efficiency Advice in the UK

Energy Performance Certificates - Since 2008, Energy Performance Certificates (EPCs) have been a mandatory requirement for all dwellings sold or rented in England and Wales. They can be obtained by anyone at prices ranging between approximately £35 to £120. The certificate provides information including a score of the home's performance, the rating this corresponds to (ranging from A-G), a list of the measures currently installed and some recommended measures to improve performance.

Energy Saving Trust - The Energy Saving Trust delivers a telephone and email-based Energy Saving Advice Service in England and Wales. It also undertakes other research and awareness-raising work for the Government and the private sector on a project-by-project basis. The Energy Saving Trust is the principal delivery partner of the Scottish Government for home energy efficiency, running local and national advice services. The Energy Saving Trust is involved in providing content and information for the Northern Ireland Sustainable Energy Programme.

Local Government - Local government services vary across different local areas and are generally provided through mediums such as online information, telephone advice and home visits. They are heavily constrained by funding.

Third Sector Organisations - Some charitable and community organisations provide services through mediums such as online information, telephone advice and home visits. They are heavily constrained by funding.

Energy Companies - The Smart Metering Installation Code of Practice requires energy suppliers to provide efficiency advice when they install smart meters. Energy suppliers are also required to provide some general energy saving advice. Most do this in-house but some of the smaller companies outsource this to bespoke advice providers.

Citizens Advice - Citizens Advice provides guidance on dealing with fuel debt along with general advice on energy. This includes advice on switching supplier as well as information on support to fund measures to reduce energy consumption, such as boilers and insulation.

Installers - Installers of energy efficiency measures will generally provide advice to customers but this can be tilted towards the type of measure they wish to sell.

DIY Sheds and Retailers - The large DIY chains provide energy saving advice online and in store to support the products that they sell.

Dedicated Assessment Companies - Some companies are paid by individuals to provide an assessment of a property's efficiency and how to improve it. These are generally more sophisticated and bespoke than EPCs or any other potential sources of advice.

6.1 Engaging People in the Benefits of Energy Efficiency

This inquiry heard that the promotion of energy efficiency measures in the UK has generally focused on the financial savings which households can make through reduced energy bills. Lowering energy costs is an important concern for households but it is likely to only be one of

a complex mix of factors affecting whether or not they retrofit their home.[204] The payback period on measures is generally a matter of years and, more fundamentally, human behaviour rarely conforms to strict economic rationality.[205] Arguably, a more powerful influence is the potential for renovations to make homes warmer, healthier and more comfortable places to live.[206] When individuals make a decision to invest in a new car the potential savings from reduced maintenance costs and better fuel economy are generally only a small part of a range of influences on their decision.[207] Energy efficiency measures should be thought of in a similar fashion: bringing a range of benefits of which reduced energy costs is only one. Campaigns, either government or industry led, which aim to promote the benefits of energy efficiency measures therefore need to emphasise the potential for increased comfort and improved health and not have a narrow focus on bill savings.

Recommendation 11

Government and commercial campaigns promoting energy efficiency measures should emphasise their numerous benefits and not focus narrowly on bill savings.

6.2 Social Norms

This inquiry heard that advice and information should feed into a subtle process of social norms whereby energy efficiency renovations become more familiar to individuals who are then influenced to make renovations. Social norms, meaning what other households are doing and thinking about renovating, play a significant role in householders' decisions over whether to make renovations of any kind and also have an influence on the take-up of energy efficiency measures.[208] All energy efficiency policies should help to influence these social norms to a degree as people become more accustomed to energy efficiency measures and come to expect their homes to be more energy efficient. However, advice and information about energy efficiency installations can be particularly useful in this area and one specific type of advice scheme has significant potential in this area: show homes.

Bristol Green Doors is an organisation which runs educational events to showcase retrofitted homes and encourage networking between individuals who have undertaken energy efficiency refurbishments and those who are interested in installing them in their home.[209] An initial impact assessment of the Bristol Green Doors project suggested that it raised the intentions of those involved to complete low-cost measures and raised their aspirations to complete high cost measures.[210] The project is summarised at the end of this chapter but it is an excellent example of the use of very limited resources to provide relevant information about renovation to the public.[211] Show homes have been used in other areas of the UK to varying degrees but they could be rolled out more extensively, at very low cost, through collaborations between local authorities, relevant third sector organisations and companies involved in retrofit.

Recommendation 12

Local authorities should work with relevant third and private sector groups to showcase retrofitted homes in their area.

Both the development of more compelling arguments for the benefits of energy efficiency measures and the influencing of social norms around energy efficiency would principally have

[204] UKERC (2013) 'Understanding Homeowners' Renovation Decisions: Findings of the VERD Project'
[205] Kirsten Gram-Hanssen (2010) 'Residential heat comfort practices: understanding users'; Harold Wilhite (2008) 'New thinking on the agentive relationship between end-use technologies and energy-using practices'.
[206] UKERC (2013) 'Understanding Homeowners' Renovation Decisions: Findings of the VERD Project'; Stefan Bouzarovski & Saska Petrova (2015) 'A global perspective on domestic energy deprivation: Overcoming the energy poverty–fuel poverty binary'; Sustainable Homes (2015) 'National Energy Study 2'.
[207] Deloitte (2014) 'Driving through the consumer's mind: Steps in the buying process'.
[208] UKERC (2013) 'Understanding Homeowners' Renovation Decisions: Findings of the VERD Project'.
[209] Bristol Green Doors, 'About Us' http://www.bristolgreendoors.org/about-us. Accessed 9th March 2016.
[210] Matthew Cole (2011) 'The Economic Impact of Bristol Green Doors: Interim Report'.
[211] Tina Fawcett, Gavin Killip & Katy Janda (2013) 'Building Expertise: Identifying policy gaps and new ideas in housing eco-renovation in the UK and France'.

an impact in the owner-occupied sector where the householders are free to renovate. However, it should also have additional effects in the social housing and private rented sectors as more individuals come to be familiar with efficiency measures and expect homes to be energy efficient.

6.3 Advice on Energy Efficiency Measures

Once householders are interested in undertaking renovations to improve their home's energy efficiency they need to be able to access accurate, trustworthy and bespoke advice on what measures to implement. This will give them the confidence to invest, ensure the measures that they implement are the most suitable for their particular domestic situation and minimise the risk of negative side-effects such as damp. All of the sources of information outlined in Box 3 may be able to help with this, however, as mentioned above, there are obvious weaknesses and limitations to all of them.

The most useful advice on improvements to the energy efficiency of domestic properties would involve a 'whole house approach' which sets out how people can get to a very high standard of efficiency in the long term.[212] Ideally, this would entail providing every home in the UK with a tailored roadmap for how it needs to change to contribute to meeting the UK's carbon emissions and fuel poverty targets. If the regulatory approach outlined in Chapter 4 is followed, whereby efficiency standards for domestic properties are increased as it gets closer to 2050, roadmaps could also be aligned with this. This would enable people to get an overall view of the level of improvements needed in their property and the potential options available which could either be implemented in a whole house renovation or, more likely, piece-by-piece over time.[213] These plans would be of limited use without additional schemes driving demand for energy efficiency measures but could provide support for a broader energy efficiency strategy and a reference point for policy makers and businesses.

To a certain extent this approach has been adopted in other countries. In Austria, energy audits for households have been a feature of energy policy since the 1990s.[214] These have been delivered on a regional basis either on the phone, in an energy advice office or in an individual's home.[215] Financial support for energy efficiency measures is generally combined with advice on additional ways to save energy.[216] Since March 2015 energy advisors in Germany have been receiving subsidies of up to 60 per cent for consultations of properties. These are meant to provide plans for either high efficiency standards or reduced customised targets with a map to achieve this either through one-off or step-by-step renovations.[217]

6.4 Trigger Points

Advice and information on energy efficiency will have the greatest impact if they are targeted at trigger points when people are more open to retrofitting their homes such as when they are already planning general renovations.[218] This is an important, ongoing challenge for all groups involved in energy efficiency advice to engage with but arguably those involved in the retrofitting and general maintenance of homes are best placed to deliver in this area. Builders are directly involved in renovations, often with a lot of influence over individuals' decisions on

[212] Mark Schröder, Paul Ekins, Anne Power, Monika Zulauf & Robert Lowe (2011) 'The KfW Experience in the Reduction of Energy Use in and Co2 Emissions from Buildings: Operation, Impacts and Lessons for the UK'.
[213] Mark Schröder, Paul Ekins, Anne Power, Monika Zulauf & Robert Lowe (2011) 'The KfW Experience in the Reduction of Energy Use in and Co2 Emissions from Buildings: Operation, Impacts and Lessons for the UK'.
[214] Austrian Energy Agency (2015) 'Energy efficiency trends and policies in Austria'.
[215] SErENADE (2007) 'Energy advice in Europe 2007'.
[216] OÖ Energiesparverband (2001) 'The Sustainable Buildings Programme in Upper Austria'.
[217] Federal Ministry for Economic Affairs and Energy, 'On-Site Energy Consulting: Sound advice for the best-possible modernisation' (2014) http://www.bmwi.de/English/Redaktion/Pdf/factsheet-04-energieberatung,property=pdf,bereich=bmwi2012,sprache=en,rwb=true.pdf. Accessed 9th March 2016.
[218] UKERC (2013) 'Understanding Homeowners' Renovation Decisions: Findings of the VERD Project'.

their homes.[219] Installers of efficiency measures also have direct access to households and will often be influential sources of advice for people on their homes.[220]

These stakeholders therefore have a great opportunity to convince people to upgrade the efficiency of their homes and guide them on how best to do it. They are able to provide bespoke advice to households and, particularly if they are local tradespeople who have worked on peoples' homes on a repeat basis, they will often be asked for advice. General builders will usually not have the expertise to provide in-depth advice on energy efficiency and even those whose main business is retrofitting homes will often specialise in one type of measure and consequently also suffer from a lack of impartiality. This would be mitigated, however, if whole house plans were in place to provide accurate and impartial information.

6.5 Maximising the Impact of Energy Efficiency Installations

The installation of energy efficiency measures needs to be supported with information on how they work as leaving households without any advice can significantly reduce their impact.[221] This is because some measures such as heating controls require interaction with end users for them to have an impact and some measures such as insulation can result in individuals 'comfort-taking' by using the same amount of energy but living in a warmer home.[222] The focus of this report is not on quality assurance, however, responsibility for ensuring individuals are sufficiently informed about the measures in their homes should lie with installers. It is therefore necessary that installers are forced to deliver on this, either through quality checks or developing a mechanism which rewards installers for actual energy savings. The latter idea is explored later in this report through the Energiesprong scheme.

Recommendation 13

Support for the end user to understand energy efficiency measures installed in their home should be robustly enforced as part of the quality assurance of installers' work.

6.6 Behavioural Energy Programmes and Smart Meters

Behavioural energy programmes, which encourage people to use energy more efficiently in their homes without installing measures, potentially offer some of the most cost-effective reductions in emissions available. Such initiatives aim to change how people use energy, for example, through encouraging people to turn off the heating when they leave home.[223] Advice can have a big impact on people's behaviour and the most recent Energy Saving Trust evaluations show that 64 per cent of householders take action after receiving energy saving advice.[224] A major challenge for all of the groups mentioned in Box 3 is therefore to try and provide the advice and nudges to people that will lead to reduced energy use and carbon savings.

The smart meter roll out, which is intended to equip all households in Great Britain with electricity and gas meters that are able to transmit data about energy use to suppliers electronically without the need for manual readings, has considerable potential to encourage people to use energy more efficiently.[225] However, much like energy efficiency measures generally, installing smart meters without advising people on how to use them will significantly limit their impact. A potential risk with the smart meter roll out, which is estimated to cost £11 billion, is that if individuals fail to engage with the technology and

[219] Catrin Maby & Alice Owen (2015) 'Installer Power'.
[220] Alice Owen, Gordon Mitchell & Rachael Unsworth (2013) 'Reducing carbon, tackling fuel poverty: adoption and performance of air-source heat pumps in East Yorkshire, UK'.
[221] Christine Liddell (2015) 'Human factors in energy efficient housing'; Saska Petrova (2014) 'CHARISMA workshop report: Community retrofit for housing professionals' http://urban-energy.org/2014/10/21/charisma-workshop-report-community-retrofit-for-housing-professionals/. Accessed 5th April 2016.
[222] Policy Exchange (2013) 'Smarter, Greener, Cheaper - Joining up domestic energy efficiency policy'.
[223] Policy Exchange (2013) 'Smarter, Greener, Cheaper - Joining up domestic energy efficiency policy'.
[224] Energy Saving Trust (2016) 'Energy Saving Trust submission to Energy and Climate Change Committee Setting the fifth carbon budget inquiry'.
[225] Policy Exchange (2013) 'Smarter, Greener, Cheaper Joining up domestic energy efficiency policy'.

monitor their energy use, it will be a considerable waste of money.[226] The roll out must therefore continue to be combined with information on how they work, advice on how to use energy efficiently and effective techniques for engaging the consumer with the smart meter technology on an ongoing basis.[227]

[226] Policy Exchange (2013) 'Smarter, Greener, Cheaper - Joining up domestic energy efficiency policy'; Institute of Directors (2015) 'Smart Meters – a very dicey investment'.
[227] This inquiry has also heard that the smart meter roll out may make it more difficult for researchers to monitor overall energy use in the future if the data becomes private. This should be examined by the Government as it could make it much more difficult to assess the effectiveness of policy in this area.

Case Study: Bristol Green Doors

The Initiative

Bristol Green Doors is a Bristol-based social enterprise that organises educational events to 'inspire, encourage and enable domestic green refurbishment'.[228] During 'Green Doors' events, which have attracted a few hundred visitors each year since the inception of the programme in 2010, households which have undertaken retrofits open their homes to the wider public. Inspired by open-house schemes used to raise the profile of contemporary and historic architecture, the low carbon open homes events organised by Bristol Green Doors have the following aims:

- Showcasing good practice of green refurbishment;
- Increasing the take-up of green refurbishment;
- Supporting the development of the retrofit supply chain;
- Showcasing and embedding local sustainability;
- Facilitating community activity;
- Serving as a pilot for other cities to replicate.[229]

Impact of the Programme

Evaluation of the programme has shown that Bristol Green Doors has had a significant impact on participant's awareness of energy use and efficiency upgrades through the direct contact with homeowners and the ability to witness improvements and their results first-hand.[230] Programmes like Bristol Green Doors can play a very important role in helping to overcome some of the non-financial obstacles to making energy efficiency improvements to the home. Moreover, when people carried out measures after Bristol Green Doors events they generally opted to contract local independent traders to carry out the work.[231]

Future Potential

There has been some wider interest in the concept behind Bristol Green Doors and several local schemes as well as one nation-wide network – the so-called Superhomes initiative – have since tried to emulate the model. These type of schemes could be rolled out more widely across the UK to increase awareness of energy efficiency.[232]

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[228] Bristol Green Doors, 'About Us' http://www.bristolgreendoors.org/about-us. Accessed 9th March 2016.

[229] Matthew Cole (2011) 'The Economic Impact of Bristol Green Doors: Interim Report'; The Guardian, 'Kate Watson's innovation: Bristol Green Doors weekend' (2010) http://www.theguardian.com/environment/2010/sep/05/lucy-siegle-innovator-kate-watson-bristol-green-doors. Accessed 20th March 2016.

[230] Matthew Cole (2011) 'The economic impact of Bristol Green Doors: Interim Report'.

[231] Matthew Cole (2011) 'The Economic Impact of Bristol Green Doors: Interim Report'; Tina Fawcett, Gavin Killip & Katy Janda (2013) 'Building Expertise: Identifying policy gaps and new ideas in housing eco-renovation in the UK and France'.

[232] Tina Fawcett, Gavin Killip & Katy Janda (2013) 'Building Expertise: Identifying policy gaps and new ideas in housing eco-renovation in the UK and France'; National Energy Foundation, 'SuperHomes' http://www.superhomes.org.uk/. Accessed 20th March 2016.

7 DEVELOPING THE ENERGY EFFICIENCY INDUSTRY

This chapter will assess how policy could be more supportive of the energy efficiency industry. It will also examine the Energiesprong scheme, which has particular potential to increase the commercial delivery of efficiency measures.

The overwhelming majority of demand for most energy efficiency measures in the UK has come from government schemes, particularly the series of supplier obligation schemes which have been in effect since 1994.[233] These schemes have been very successful in delivering a large number of certain types of measures, however, much of the energy efficiency industry is hugely reliant on subsidy-based schemes. The industry has thus far been unable to generate the level of organic demand for efficiency measures which would be required to place the UK on course to meet its carbon emissions targets.

Most fundamentally this is because government and industry have failed to convince most people of the case for investing in energy efficiency improvements in their homes.[234] Additionally, inconsistent government policy has severely undermined the industry's confidence and ability to plan.[235] The ultimate aim should be to develop a vibrant industry which drives demand among able-to-pay households on a mass scale through its own promotional activity. This should incentivise new entrants into the market, including those involved in general maintenance of homes and thereby help to remove the artificial distinction between energy efficiency improvements and other types of renovation activity.[236]

7.1 Policy Certainty

There have been a number of changes in policy relating to energy efficiency in recent years. In 2014, the energy savings targets for ECO were revised down by approximately 25 per cent and there was a significant re-orientation away from the original focus on more expensive measures.[237] In April 2015 the Landlord's Energy Savings Allowance ended.[238] The Code for Sustainable Homes and zero carbon homes standards were discontinued in March 2015 and July 2015 respectively.[239] In July 2015 the Government announced that it would no longer fund the Green Deal which may also have the effect of undermining the minimum energy efficiency standards in the private rented sector.[240]

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[233] Jan Rosenow (2012) 'Energy Savings Obligations in the UK – a history of change'; Jan Rosenow (2012) 'Analysis of the history of environmental Supplier Obligations'.
[234] Behaviour Change (2011) 'Green Deal Consumer Carriers' (Unpublished).
[235] House of Commons Energy and Climate Change Committee (2016) 'Investor confidence in the UK energy sector'.
[236] The Tyndall Centre for Climate Change Research (2015) 'Written evidence submitted by the Tyndall Centre for Climate Change Research to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'.
[237] Ricardo Energy & Environment (2015) 'Energy Efficiency trends and policies in the United Kingdom'.
[238] This is Money, 'The landlord's guide to energy saving: Use our interactive house to see how you could reduce gas and electricity bills' (2015) http://www.thisismoney.co.uk/money/buytolet/article-2996968/The-landlord-guide-energy-saving.html. Accessed 9th March 2016.
[239] The Guardian, 'UK scraps zero carbon homes plan' (2015) http://www.theguardian.com/environment/2015/jul/10/uk-scraps-zero-carbon-home-target. Accessed 9th March 2016; Building.co.uk, 'Code for Sustainable Homes scrapped' (2015) http://www.building.co.uk/code-for-sustainable-homes-scrapped/5074697.article. Accessed 9th March 2016.
[240] Ricardo Energy & Environment (2015) 'Energy Efficiency trends and policies in the United Kingdom'; IPPR (2014) 'Up Against the Solid Wall'.

This has created a series of problems. Firstly, this inquiry has heard how the withdrawal of demand and funding has significantly damaged the energy efficiency industry, causing job losses and firms to go out of business. Secondly, cancelling sources of expected future demand has undermined the ability of the industry to plan. All businesses require a degree of certainty about what the future of relevant government policy will be to effectively operate in the short term and plan for the medium and long term future. This is particularly true for an industry which is so heavily reliant on government schemes. The lack of certainty and consistency in this area undermines the confidence of the energy efficiency industry to invest in training, research, product development and marketing. These are all the things which are essential to improve the quality of efficiency measures, drive down their costs through innovation and generate demand for energy efficiency improvements. Finally, recent changes are likely to have an additional impact as firms will become suspicious of future government schemes and reluctant to engage with them.

7.1.1 Supplier Obligation Schemes: Feast or Famine

There are particular issues associated with the consistency of supplier obligation schemes. Commissioning timetables and late decisions about transitional arrangements between schemes have led to supply chain complaints about sudden peaks and troughs in demand, often referred to as 'feast or famine'.[241] For example, there was a slowdown in the number of measures installed when CERT and CESP ended in 2012 and ECO began in 2013. During the last years of CERT and CESP more than 45,000 cavity walls, almost 70,000 lofts and about 4,000 solid walls were insulated per month. In the early months of ECO about 18,000 cavity walls, about 11,000 lofts and about 3,000 solid walls were insulated per month.[242]

Stop-start obligation schemes have forced installation companies and their wider supply chain to reduce jobs and scale down their operations at short notice.[243] Many companies have struggled to manage these two extremes and have steadily lost confidence in the opportunities being created by the obligations.[244] A particularly problematic change was the re-orientation of ECO. Responding to public pressure, the Government announced a package of measures in December 2013 aimed at cutting domestic energy bills. These included changes to ECO, which had been launched in January 2013, equating to a yearly reduction of approximately £400 million spent on residential energy efficiency improvements and installers being allowed to achieve their objectives through low-cost efficiency measures instead of expensive measures. As part of these changes, the original ambition for 100,000 solid walls to be insulated each year was cut to 23,500.[245]

The change to ECO was damaging because it meant significantly altering a policy which had been scheduled to run until March 2015.[246] This undermined the stability of the environment energy efficiency companies were operating in, withdrawing a significant amount of expected business and creating considerable uncertainty. The changes to the scheme were announced in December 2013 but required Parliament to pass amending legislation that did not come into force until late 2014. During this period suppliers were unsure about which measures they should commission to meet their obligations which introduced further uncertainty into the wider supply chain.[247] The reduced target for solid wall insulation also meant that businesses which had prepared for large scale delivery of this type of measure, for example through investing in training, found that they had wasted considerable resources.

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[241] Centre for Sustainable Energy (2014) 'Beyond the ECO'.
[242] Jan Rosenow & Nick Eyre (2014) 'Residential energy efficiency programmes in the UK: a roadmap for recovery'.
[243] Citizens Advice & Association for the Conservation of Energy (2015) 'Closer to home Developing a framework for greater locally led delivery of energy efficiency and fuel poverty services'.
[244] Centre for Sustainable Energy (2014) 'Beyond the ECO'.
[245] IPPR (2014) 'Up Against the Solid Wall'.
[246] Ofgem 'Energy Company Obligation (ECO)' https://www.ofgem.gov.uk/environmental-programmes/energy-company-obligation-eco. Accessed 9th March 2016.
[247] Ofgem (2015) 'Written evidence submitted by Ofgem to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'.

The current supplier obligation period, known as ECO2, launched on 1 April 2015 and will run until March 2017.[248] The Government have announced a third phase of ECO which will differ in size and scope from the current scheme.[249] The exact details of this plan need to be set out as soon as possible to provide clarity to energy companies and their supply chain. Excluding exceptional circumstances the scheme needs to remain consistent to avoid creating further uncertainty. There is currently planned to be a transitional year between 2017 and 2018 before the start of the new ECO scheme.[250] It is important that the Government manages this transition to incentivise energy companies to deliver efficiency improvements consistently in the coming years and avoid the breaks in demand which have been a feature of changeovers between past supplier obligation schemes.

Recommendation 14

The details of the next phase of ECO need to be set out as soon as possible to provide clarity to suppliers and their supply chain. The scheme should also remain consistent once it is implemented to avoid creating uncertainty.

Recommendation 15

The Government needs to manage the transition to the next phase of ECO to avoid the breaks in demand which have been a feature of changeovers between past supplier obligation schemes.

7.1.2 Best Practice in Energy Efficiency Policy

It is clear that in recent years financial incentives and regulations relating to domestic energy efficiency have not been used in a way which is sufficiently supportive of the energy efficiency industry. Short term financial measures such as the Green Deal Home Improvement Fund do not provide a platform for industry to develop a coherent and long term plan to market their products.[251] Structural measures, such as a change in stamp duty, which provide long term sustainable sources of demand for energy efficiency measures are far more helpful in supporting the private sector. As has been shown, regulations need to be set out as far in advance as possible and not be abandoned or changed significantly unless absolutely necessary. Ultimately, future government energy efficiency schemes should be aiming to provide a much greater degree of certainty to industry than has been achieved in recent years. This does not require schemes to be entirely inflexible, for example the German KfW scheme has been reviewed each year with the aim of finding improvements which can be made gradually.[252] Recent changes in policy may mean that businesses are reluctant to engage with future energy efficiency schemes. It could therefore even be necessary for the Government to provide a guarantee against lost earnings to overcome this, in a similar way that Contracts for Difference provide guarantees to investors in renewable energy.[253]

Recommendation 16

Future domestic energy efficiency policy should aim to provide a much greater degree of certainty to industry than has been achieved in recent years.

7.2 Energiesprong

One avenue which has particular potential for developing the energy efficiency industry is the Dutch Energiesprong scheme. The nature of the Energiesprong approach is summarised at the

[248] Ofgem 'Energy Company Obligation (ECO)' https://www.ofgem.gov.uk/environmental-programmes/energy-company-obligation-eco. Accessed 9th March 2016.
[249] House of Commons Library (2015) 'ECO, the Energy Company Obligation'.
[250] House of Commons Energy and Climate Change Committee (2016) 'Home energy efficiency and demand reduction'.
[251] UKERC (2015) 'Written evidence submitted by UKERC to Energy and Climate Change Committee Home energy efficiency and demand reduction inquiry'.
[252] KfW Bankengruppe (2014) 'Monitoring der KfW-Programme'; Deutscher Bundestag, 'Antwort der Bundesregierung auf die kleine Anfrage der Abgeordneten Dr. Julia Verlinden' (2014) Christian Kühn (Tübingen), Oliver Krischer, weiterer Abgeordneter und der Fraktion, BÜNDNIS 90/DIE GRÜNEN, Drucksache 18/1563 http://dip21.bundestag.de/dip21/btd/18/019/1801911.pdf. Accessed 10th March 2016.
[253] Policy Exchange (2013) 'Going, Going, Gone: The role of auctions and competition in renewable electricity support'.

end of this chapter, however, the basic premise is that performance-warranted whole house retrofits are delivered commercially on a wide scale in one renovation.[254]

In the Netherlands, Energiesprong has initially focused on the social housing sector to achieve an early market on the basis of a long term asset management approach. This is because Energiesprong schemes can offer an energy performance contract which means that the retrofit installer is responsible for maintenance problems if they arise after the renovation for an agreed thirty or forty year performance warranty period. This effectively outsources social housing providers' maintenance responsibilities for decades and makes it an attractive investment. By introducing an energy plan Energiesprong also allows providers to generate revenue from tenants while not imposing any extra cost upon them and to simultaneously make dramatic improvements to tenants' homes.[255]

The scale on offer via social housing is what attracts the contracted firms as they are potentially able to secure deals for thousands of housing units. Delivering these retrofits at scale in the social housing sector in the Netherlands has already led to significant cost reductions through trial and innovation. It is hoped that eventually they can be produced at a cost which is attractive for owner-occupiers and the private rented sector. The lack of a split incentive phenomenon in the case of owner-occupiers means that in this sector an Energiesprong scheme does not entail an energy plan but households make an investment in return for an improved home and reduced energy bills. Energiesprong UK aims to follow a similar model in the UK as in the Netherlands, dealing with social housing first before branching out to the owner-occupied and private rented sectors once cost has come down.

7.2.1 Benefits and Opportunities

The Energiesprong scheme offers a number of potential benefits and opportunities for the domestic energy efficiency landscape in the UK. Firstly, the installations do not rely on government funding or a levy on energy bills as Energiesprong UK works as a coordinator for a commercial deal between customers and suppliers. Secondly, the potential scale of the operations provides a strong signal to industry of significant future demand, encouraging new entrants into the retrofit market and incentivising existing firms to invest in training and innovation. Thirdly, a central element of Energiesprong refurbishments is that they are completed within a short period, generally ten days, and the occupants continue living within the property while they are occurring. Fourthly, the Energiesprong scheme is commissioned in an outcomes-based fashion. Installers are contracted on the basis that they guarantee the zero energy end goal, rather than deliver an individual measure. This encourages innovation to deliver this end goal at the lowest possible cost. It also circumvents many of the issues around quality assurance which have been experienced in the UK as there is no need to check individual measures and installers know they have to deliver on the one test of zero energy otherwise they will be penalised. Finally, Energiesprong renovations generally involve external insulation, which often improves the appearance of a dwelling and can also include kitchen and bathroom renovations. This provides visible benefits to households which measures such as loft insulation do not.

7.2.2 Challenges of Developing Energiesprong in the UK

While Energiesprong UK is being supported by a group of leading housing providers, construction companies, trade bodies and expert partners it faces a series of challenges to successfully transfer the Dutch business model to the UK.[256] The social housing sector is currently experiencing considerable financial constraints, particularly with cuts to social

[254] Architects Journal, 'Can Dutch deal succeed where the Green Deal failed?' (2015) http://www.architectsjournal.co.uk/home/can-dutch-deal-succeed-where-the-green-deal-failed/8689061.article. Accessed 9th March 2016.

[255] The 'energy plan' is a fixed annual allowance for residents' electricity, hot water and space heating requirements which is similar to a mobile phone bundle, it is a fixed monthly cost which replaces the previous combined utility bills (other than the standing charge).

[256] Energiesprong UK (2016) 'Briefing'.

housing rents announced in the July 2015 Budget.[257] This inquiry found that social housing providers in the Netherlands are generally able to borrow money at a cheaper rate than their counterparts in the UK. These factors, in addition to the extension of Right to Buy, have created some potential barriers to social housing providers making the type of long term investment decisions involved in Energiesprong.[258]

There are also some practical challenges to developing Energiesprong in the UK. Energiesprong will need to ensure that changes to the exterior of buildings often included in the schemes are not prohibited by planning laws. There is a need to develop a usable contract between social housing providers and their tenants which will become the energy plan. Successful implementation of long term performance-warranted net-zero energy refurbishments will also require a radically different approach in the construction sector and their supply chain. Finally, the Netherlands has a system of net metering which allows any energy generated to be exchanged with the national grid at no transaction cost, which is what the net-zero energy system is based on.[259] It will therefore be necessary to find an adapted solution in the UK, possibly based on FiTs and most likely including energy storage.

7.2.3 Enabling Energiesprong to Develop in the UK

None of these barriers are insurmountable, however, and the huge potential benefits should entice both local and central government to support the development of Energiesprong in the UK. The European Commission recently announced €3.6 million of Horizon 2020 grant funding to help roll out the scheme outside of the Netherlands.[260] The Government should look to augment this by providing additional yearly funding to the project in the UK in recognition of the practical challenges involved in developing the scheme and the long term potential for the scheme to not only become self-sufficient but to deliver retrofits on a mass scale. This inquiry heard that up to £1 million a year for a maximum of 5 years would be appropriate to enable Energiesprong UK to start to deliver substantial numbers of renovations. Further to this, national and local government should look to engage with the Energiesprong project to remove and mitigate any planning, regulatory and financial barriers to its development. Local authorities and local enterprise partnerships should also support early demonstration projects.

Recommendation 17

The Government should engage with Energiesprong UK to reduce barriers to its development and provide some initial, small-scale funding to the project.

[257] Inside Housing, 'Osborne rips up settlement and cuts rents by 1% a year' (2015) http://www.insidehousing.co.uk/osborne-rips-up-settlement-and-cuts-rents-by-1-a-year/7010686.article. Accessed 9th March 2016.
[258] House of Commons Library (2015) 'Extending the Right to Buy (England)'.
[259] Energy World, 'When your target is net zero, everything becomes simple' (2015) http://www.energiesprong.eu/wp-content/uploads/2016/02/Energy-World-Energiesprong-Oct-15.pdf. Accessed 9th March 2016.
[260] National Energy Foundation, 'Dutch Energiesprong housing innovation to come to the UK' (2016) http://www.nef.org.uk/about-us/press-releases/dutch-energiesprong-housing-innovation-to-come-to-the-uk. Accessed 9th March 2016.

Case Study: Energiesprong

The Project

In 2010 an independent team of people was created by the Dutch Government to look at how the Netherlands could meet its carbon emissions targets. Among the ideas which came from this group was a plan for domestic energy efficiency which became known as Stroomversnelling and developed into the Energiesprong concept (meaning energy leap). The Energiesprong project aims to create a step change in the energy efficiency market and offer whole house retrofits to net-zero energy levels.[261] The initial focus of the approach has been in the social housing sector where it has four essential elements: an energy performance guarantee by the contractor, a ten day delivery timetable, investment that is financed by energy cost savings and a guarantee that the refurbishment package improves residents' quality of life and the appearance of the house.[262] It can also work in modified forms for the private rented and owner-occupied sectors, though is much less viable while the upfront costs are still high.

For social housing, Energiesprong offers net-zero energy retrofits, with thirty or forty year performance and maintenance guarantees. This is paid for upfront by social housing providers who then recoup the money through energy plans which tenants pay on a monthly basis instead of energy bills.[263] Energy plans are similar to mobile phone contracts as residents are provided with an allowance of energy but have to pay for excess use. The renovations generally include:

- Solar PV built into thermally insulated roof cassette (manufactured offsite);
- New thermally-efficient wall envelope insulation panel system (manufactured offsite);
- Air-source heat pump and heating system (or ground source where appropriate);
- Removal of gas to create an electricity-only property;
- New low-maintenance glass panelled wall kitchen & bathroom (manufactured offsite);
- Electric induction cooker and shower (A+++ rated appliance).[264]

Success so Far

In the Netherlands the programme has already delivered over 600 refurbishments and 111,000 are planned as part of a volume deal between housing associations and industry.[265] The initial cost was around €130,000 per unit; this has already come down to approximately €55,000 - €60,000 per unit and is expected to continue to fall.[266] Energiesprong UK is now established as a not-for-profit organisation and is in the process of being set up in France. There are also groups in preliminary stages in Luxemburg, Germany and Italy. In the Netherlands various building types have been successfully prototyped; for the initial demonstrations terraced houses where chosen, followed by medium rise apartment blocks and a tower block.

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[261] Energy Post, 'Zero energy at zero cost: industrialising the building sector' (2014) http://www.energypost.eu/zero-energy-zero-cost-industrialising-building-sector/. Accessed 9th March 2016; Green Building Council, 'Keep calm and learn Dutch: Energiesprong the future of sustainable homes?' (2014) http://www.ukgbc.org/resources/blog/keep-calm-and-learn-dutch-energiesprong-future-sustainable-homes. Accessed 9th March 2016.

[262] Green Building Council, 'Keep calm and learn Dutch: Energiesprong the future of sustainable homes?' (2014) http://www.ukgbc.org/resources/blog/keep-calm-and-learn-dutch-energiesprong-future-sustainable-homes. Accessed 9th March 2016.

[263] The Housing Forum (2015) 'The future of investment in housing assets: flexibility not prescription'.

[264] The Housing Forum (2015) 'The future of investment in housing assets: flexibility not prescription'.

[265] National Energy Foundation, 'Dutch Energiesprong housing innovation to come to the UK' (2016) http://www.nef.org.uk/about-us/press-releases/dutch-energiesprong-housing-innovation-to-come-to-the-uk. Accessed 9th March 2016.

[266] Green Building Council, 'Keep calm and learn Dutch: Energiesprong the future of sustainable homes?' (2014) http://www.ukgbc.org/resources/blog/keep-calm-and-learn-dutch-energiesprong-future-sustainable-homes. Accessed 9th March 2016; BdOnline, 'Dutch version of Green Deal set for UK launch in summer' (2016) http://www.bdonline.co.uk/dutch-version-of-green-deal-set-for-uk-launch-in-summer/5079920.article. Accessed 9th March 2016.

METHODOLOGY AND STEERING GROUP

Methodology

The inquiry was initiated in July 2015 after a period of initial scoping with the Westminster Sustainable Business Forum's (WSBF) Advisory Board, discussions with WSBF members and desk-based research.

The findings and policy recommendations in this report are based on a review of pertinent literature and evidence collected through in-depth interviews and written submissions from industry leaders, central and local government representatives, consultants, academics and third sector professionals. The end report and its conclusions are the sole responsibility of the authors.

Four steering group sessions were held between October 2015 and March 2016 to scrutinise the issues raised by the research, led by the inquiry co-chairs Peter Aldous MP and Dr Alan Whitehead MP.

Steering Group Members

Haimish Mead	ADEY
Claire Curtis-Thomas	The British Board of Agrément
Phil Summerton	Cambridge Econometrics
Indra Thillainathan	The Committee on Climate Change
Chris Bielby	SGN, GISG, GST
Professor Paul Ekins	UCL Energy Institute
Dr Nick Eyre	UK Energy Research Centre
Wei Yang	Wei Yang & Partners
David Adams	Willmott Dixon

CONTRIBUTORS

Dr Neil Watson	ADEY
Tom Wright	Age UK & Fuel Poverty Advisory Group
Gearóid Lane	AgilityECO
Andrew Warren	Association for the Conservation of Energy
Jenny Holland	Association for the Conservation of Energy
David Hall	Behaviour Change
Kate Watson	Bristol City Council
Chris Vinson	British Gas
Angela Murphy	Camden Council
Catrin Maby	Cardiff University & Rickaby Thompson Associates
David Pierpoint	Centre of Refurbishment Excellence
Shea Jones	Community Housing Cymru Group
Ben Golding	Department of Energy and Climate Change
Neil Witney	Department of Energy and Climate Change
James Davis	Department of Energy and Climate Change
Dan Donaldson	Department of Energy and Climate Change
Patrick New	Ecotricity
John Mason	EDF Energy
Craig Owen	EDF Energy
Dene Carvell FCIOB	EMH Homes
Arno Schmickler	Energiesprong UK
Isaac Occhipinti	Energy and Utilities Alliance
Graeme Reeves	Energy and Utilities Alliance
Joseph Cosier	Energy Saving Trust
David Weatherall	Energy Saving Trust
Alexandra Belias	Energy UK
Dan Alchin	Energy UK
Ian Savage	University of Exeter
Ethan Spibey	GK Strategy
Sadhbh Ní Hógáin	Haringey Council
Joe Baker	Haringey Council
John Kolm-Murray	Islington Council
Nigel Banks	Keepmoat
Prof. Dr Rainer Durth	KfW
Steven Heath	Knauf Insulation
Alex Germanis	Leapfrog
Robert Curtis	Leeds City Council
Zoë Dunn	London Borough of Waltham Forest

Mark Fishpool	Middlesbrough Environment City
Peter Smith	National Energy Action
Chloe McLaren Webb	National Housing Federation
Richard Lambert	National Landlords Association
Russell Smith	Parity Projects
Jon Bootland	Passivhaus Trust
Jan Rosenow	Regulatory Assistance Project and Centre on Innovation and Energy Demand, University of Sussex
Peter Rickaby	Rickaby Thompson Associates
Jade Lewis	Saint-Gobain
Claire Doherty	Scottish Power
Liz Warren	SE2
Mathew Quinn	SSE
Stephen Millward	SSE
John Stapleton	Sustainable Homes
Neil May	Sustainable Traditional Buildings Alliance
Daniel White	The Behaviouralist
Giles Willson	The Glass and Glazing Federation
Charlie Wilson	Tyndall Centre for Climate Change Research
Andrew Smith	University College London
Gill Owen	University College London
Neil Simcock	University of Manchester
Harriet Thomson	University of Manchester
Nora Mzavanadze	University of Manchester
Saska Petrova	University of Manchester
Stefan Bouzarovski	University of Manchester
Brenda Boardman	University of Oxford
Richard Twinn	UK Green Building Council
Mark Hooton	Wakefield Council
William Gillis	Warm Zones cic
Evangeline Haggarty	West Berkshire Council

GLOSSARY

Domestic Sector

This report defines the domestic sector in a broad sense as buildings which people live in. The particular policies which it looks at as well as some of the research which it quotes have much more precise definitions of different types of properties which fall within this overarching category. This report has not examined the minutiae of domestic versus non-domestic which becomes important in cases such as care homes or mixed use buildings comprising flats and shops. However, it draws a broad distinction between domestic sector buildings and non-domestic sector buildings such as public sector buildings, those used by not-for-profit and community organisations, and those which are used for industrial and commercial purposes.

Energy Efficiency Retrofit

Retrofitting a building is used in this report to mean adding to an existing building to make it more energy efficient. This often involves installing measures which are applied to the building fabric of properties such as insulation or the installation of technical measures such as heating controls. 'Deep' retrofits mean that a property has been brought up to a very high standard of efficiency.

Energy Performance Certificate (EPC)

Since October 2008, Energy Performance Certificates (EPCs) have been a mandatory requirement for all dwellings sold or rented in England and Wales. They can be obtained by anyone at prices ranging between approximately £35 to £120. The certificate provides information including a score of the home's performance, the rating this corresponds to (ranging from A-G), a list of the measures currently installed and some recommended measures to improve performance.

Gigawatt Hour (GWh)

A gigawatt hour is a unit of energy equivalent to one million kilowatt hours (kWh) (See definition below). 1GWh = 1,000,000 kWh.

Greenhouse Gas (GHG)

A gas that contributes to the greenhouse effect by absorbing infrared radiation. Carbon dioxide and chlorofluorocarbons are examples of greenhouse gases.

Houses in Multiple Occupation (HMOs)

The 2004 Housing Act defines two broad types of HMOs: 1) Private rented properties occupied by three or more people in two or more households sharing access to and/or use of some facilities; 2) Poorly converted blocks of fully self-contained flats where more than a third of the flats are privately rented.

Kilowatt Hour (kWh)

A kilowatt hour is a unit of energy used to describe energy use over a particular period of time. One kilowatt (kW) equals 1,000 watts, and one kilowatt-hour (kWh) is one hour of using electricity at a rate of 1,000 watts.

Supplier Obligation Schemes

Supplier obligation schemes require energy companies to deliver energy savings. In the UK, supplier obligation schemes have generally involved requirements for energy companies to deliver energy savings by funding the installation of energy efficiency measures in domestic properties. The costs of these installations are then passed on to energy bills.

Terawatt Hour (TWh)

A terawatt hour is a thousand times the size of a gigawatt hour. 1 TWh = 1, 000 GWh.

The Green Deal

The Green Deal was a government scheme that provided a loan to households to finance energy-efficient home improvements. The loan was paid back through the savings made on energy bills. The deal was introduced in 2013 and finished in July 2015.

The Energy Company Obligation (ECO)

ECO is a supplier obligation scheme in operation in Great Britain. ECO2 began on 1 April 2015 and is planned to run until 31 March 2017.

ABOUT THE WESTMINSTER SUSTAINABLE BUSINESS FORUM

The **Westminster Sustainable Business Forum** (WSBF) is a high-level coalition of key UK business leaders, Parliamentarians, Civil Servants, and other organisations. Providing a politically neutral environment for knowledge sharing and discussion on sustainability policy, we help to inform the wider sustainability agenda in government and are a trusted source of independent information and advice for policymakers. We are cross-party, independent, and not-for-profit. The WSBF works in the policy areas of sustainable construction, sustainable infrastructure, sustainable planning, water, green finance, and natural capital.

To inform policy debate, the WSBF publishes authoritative research reports with a strong track-record of influencing policymakers towards more sustainable practices. The WSBF has a history of high profile, independent research inquiries, each chaired by MPs and Peers and overseen by steering groups made up of our members and other subject experts.

The WSBF runs parliamentary events which provide our members with the opportunity to take part in constructive high quality discussion with policy makers, parliamentarians and business leaders about built environment policy. We impact on government policy through both our in-depth round table policy discussions and outputs and by convening Parliamentarians, senior Civil Servants, business experts and other stakeholders at our larger policy events and seminars. The WSBF is part of the Policy Connect Network.

Policy Connect is the not-for-profit organisation with two decades in policy work, overseeing the research and delivery of more than 50 key publications. Policy Connect have a long history of success in running engaging forums, commissions and All-Party Parliamentary Groups.

Policy Connect brings together parliamentarians with public and private organisations to tackle big issues across a range of sectors affected by policy. We deliver key pieces of policy-led independent research with evidence-based recommendations to inform and improve UK public policy.

By getting involved our partners can better understand their market demands and encourage government to focus on critical areas with an informed approach. All of the above is delivered by the dedicated teams at Policy Connect who are passionately involved in policy work, and experts in their area of inquiry.

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CONTACT

Policy Connect
CAN Mezzanine
32-36 Loman Street
Southwark
London SE1 0EH

@Policy_Connect
policy-connect
info@policyconnect.org.uk
0207 202 8585

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