

REPORT

HELP TO HEAT

A SOLUTION TO THE AFFORDABILITY
CRISIS IN ENERGY

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ABOUT IPPR

IPPR, the Institute for Public Policy Research, is the UK's leading progressive thinktank. We are an independent charitable organisation with more than 40 staff members, paid interns and visiting fellows. Our main office is in London, with IPPR North, IPPR's dedicated thinktank for the North of England, operating out of offices in Newcastle and Manchester.

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This report is the result of collaboration between IPPR and Verco. IPPR has led the project and the formulation of the policy proposals. Verco have carried out the detailed analytical and modelling work that underpins the analysis and policy proposals.

Verco is an award-winning sustainability and climate change consultancy focusing on low-carbon growth, energy efficiency and clean energy development.

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EXECUTIVE SUMMARY

Rising energy bills are squeezing living standards in the UK. The average energy bill currently stands at £1,320, having risen from just £605 in 2004 (Ofgem 2013, CCC 2012), and the proportion of household income spent on gas and electricity has risen from 1.8 per cent in 2003 to 3.1 per cent in 2013 (ONS 2013a).

The affordability of energy became the main focus of political debate in the autumn of 2013. Since Ed Miliband's announcement that an incoming Labour government would immediately freeze energy bills for 20 months (BBC 2013), the other political parties have been searching for their own answer to public concerns about the cost of energy.

This report argues that an immediate and long-lasting solution to energy affordability must prioritise action to improve the energy efficiency of the UK's existing housing stock. This would boost GDP through job-creation and reduce the UK's reliance on volatile and costly gas imports, and is the cheapest way to reduce carbon emissions.

Unfortunately, Britain's current policies on energy efficiency – particularly in England – are not working. This report outlines the problems with the current approach, and sets out a new framework, called 'Help to Heat', which could deliver steep reductions in bills for consumers.

The Green Deal

In January 2013 the government launched a new energy efficiency scheme called the Green Deal. It enables households to take out loans for efficiency improvements,¹ which are repaid directly from the resultant energy bill savings over the term of a Green Deal loan.

The Green Deal is dramatically under-performing. **The government projected that 130,000 households would take out a Green Deal loan in 2013, but only 813 had done so or committed to doing so by the end of October of that year. At current rates, the government will not achieve even 1 per cent of its projection.**

This report sets out the reasons why the Green Deal is failing. The main problem is that the government has not done enough to create demand for the scheme. In order to create this demand, we propose that large numbers of households should receive free energy efficiency assessments that are delivered in local areas by locally trusted organisations. This proposal is described in detail below.

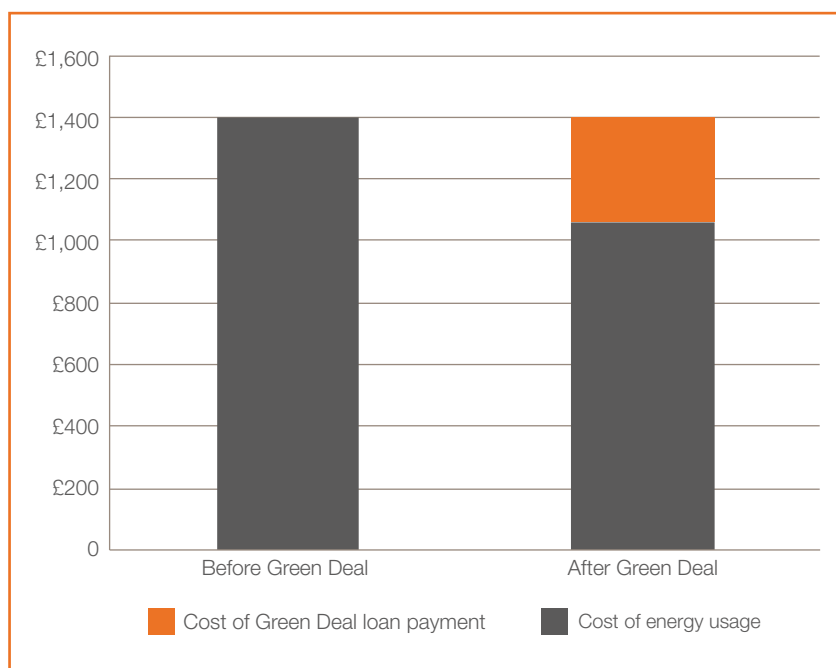
Another problem is that the typical 8 per cent interest rate² for a Green Deal loan makes the product unattractive. The bill savings achieved by a household using the Green Deal go entirely towards the cost of loan repayments (see figure A.1). Furthermore, the product is high-risk because it sits as a charge on the property, with repayments taken on by a new homeowner if the ownership of the property changes. Until Green Deal charges become a common feature on homes, early adopters risk damaging their property's resale value.

1 For example, insulating lofts and cavity walls and installing efficient boilers.

2 Typical APR rate – the precise amount depends on the cost of the package of efficiency measures installed and the length of the Green Deal loan.

Figure A.1

Impact of a typical Green Deal loan on a typical bill, where a loan is provided for a package of eligible measures at an 8 per cent interest rate over 20 years



Source: Original modelling using Verco's Navitas tool.

Fuel poverty and the Energy Company Obligation (ECO)

Fuel-poor households are the most vulnerable to high energy prices both because they are on the lowest incomes and because they live in the least energy-efficient properties. In 2011 there were 2.39 million fuel-poor households in England alone.

The Energy Company Obligation (ECO) policy provides subsidised improvements to low-income households and subsidises high-cost efficiency improvements which are not covered by the Green Deal. Social housing is a major beneficiary of these expensive improvements. ECO obliges the largest energy companies (the 'Big Six' and one smaller supplier³) to carry out the work involved, and the cost of this is passed on to their customers in their energy bills – at an estimated cost of around £47 per year per household in 2013 (DECC 2013a).

The elements of ECO that are focused on low-income households are very poor at targeting fuel poverty. This is because support is given to households that receive particular benefits or live in deprived areas, both of which are poor proxies of fuel poverty. Determining whether a household is fuel-poor requires information about their income and energy costs, which can only be measured accurately through an in-house assessment. As a result of ECO's poor targeting:

- Only 47 per cent of fuel-poor households are benefiting from ECO's provisions for low income households. Our view is that a fuel poverty policy that does not reach all fuel-poor households is not fit for purpose.
- 80 per cent of the funds spent every year (£433 million of £540million) go to households that are not fuel poor.

³ The 'Big Six' are British Gas, EDF, E.ON, npower, Scottish Power, and SSE; First Utility also has obligations under ECO.

An additional problem with ECO is that it is bad for competition, since it entrenches the market power of the Big Six: it increases the size of their balance sheets, and places them among the biggest contracting parties and delivery bodies for energy efficiency improvements.

‘Help to Heat’: a cost-effective framework to drive down bills

Far more needs to be done to ensure that energy bills are kept affordable. We propose a new integrated energy efficiency and fuel poverty framework, called ‘Help to Heat’, which would make substantial bill reductions available to households, and would be substantially more effective than ECO at tackling fuel poverty.

Reports suggest that the government is considering funding ECO from general taxation, which would reduce the average household energy bill by around £47 per year (DECC 2013a). This would be a broadly positive step: funding policies from energy bills is regressive because they act like an indirect tax. To move ECO off bills and maintain its current level of funding the government would need to find £1.3 billion per year to finance the scheme. Whether ECO moves onto general taxation or not, any cut in the annual level of spending on energy efficiency will mean that bill-payers suffer.

The focus of this report is not on how energy efficiency policy should be funded but on how more can be achieved with the money that is spent. ‘Help to Heat’ could be funded by reallocating the money that is currently spent on ECO, whether through energy bills⁴ or general taxation.

Irrespective of how Help to Heat is funded, it should replace ECO, which is highly inefficient and bad for competition.

The Help to Heat framework consists of two complimentary policies, ‘House by House’ and the ‘Great Deal’, both of which are outlined below.

This report sets out what could be achieved through Help to Heat using the existing £1.3 billion raised through ECO. A number of organisations advocate for the government to spend more on tackling fuel poverty⁵ – and should additional funds be allocated to a more ambitious programme, the delivery mechanisms proposed below would still be appropriate.

We project the potential impact of House by House on the basis that it will receive the level of dedicated spending that is currently allocated to low-income households under ECO – £540 million per year. The remaining £760 million per year currently spent through ECO on high-cost efficiency improvements, of which social housing is a key beneficiary, we put towards the costs of the ‘Great Deal’. We have not considered the pros and cons of increasing the proportion of funds spent on low-income households.

‘House by House’

Engaging concentrated groups of households within geographical areas is a proven way to drive demand for energy efficiency improvements (see chapter 2). This is because it can produce social norms around the installation of efficiency measures, and reduce the costs of installations. It is also important to have trusted organisations provide information

4 Were Help to Heat to be funded from energy bills, we propose replacing the energy efficiency obligations on energy companies under ECO with an obligation to contribute to a fund to pay for Help to Heat. The amount that the energy companies contribute to this fund would match what they currently spend on ECO – thus no additional costs would be placed on bills.

5 The Energy Bill Revolution is an alliance of over 150 national organisations and major companies who are campaigning for greater government spending on fuel poverty through the investment of carbon taxes in a major energy efficiency programme targeted at the fuel poor. See www.energybillrevolution.org.

and advice about energy efficiency, and schemes that have run alongside the Green Deal have shown how providing free energy efficiency assessments can be effective at engaging people in the scheme. As described above, individual household assessments are also the only way to accurately tell whether a household is fuel-poor or not.

For these reasons we propose a new delivery model called House by House. It would involve local organisations providing free energy efficiency and fuel poverty assessments to households. This would drive uptake of the Green Deal and enable fuel-poor households to be accurately identified. Households identified as fuel-poor would receive subsidised energy efficiency improvements, and those found not to be fuel-poor would be encouraged to make efficiency improvements using a low-cost Green Deal loan (the loan aspect of the proposed scheme is described below in the section on the 'Great Deal'). The scheme would target low-income areas initially, and so the beneficiaries of the free assessments during this early stage would predominantly be low-income households.

If the current level of spending on low-income households were used to fund House by House, the most effective use of resources would be for all fuel-poor households to be receive efficiency improvements that bring them up to an Energy Performance Certificate 'D' rating. This would mean that:

- 1.1 million more low-income households receive a free energy efficiency assessment every year, and are encouraged to take out a low-cost Green Deal loan (a 'Great Deal')
- 70 per cent of spending on low-income households would be spent on energy efficiency improvements for the fuel-poor (as opposed to 20 per cent at present)
- 197,000 fuel-poor households would receive efficiency improvements every year – 117,000 more than under the ECO model
- each fuel-poor household in receipt of efficiency improvements would achieve average savings of £230 from their energy bills (with some allowance required for comfort-taking)
- the economies of scale that the scheme makes possible would reduce the cost of making efficiency improvements for all households, potentially by as much as 30 per cent (EST 2009, Purple Market Research 2009).

An additional benefit of House by House is that small and medium-sized energy efficiency businesses would have far greater opportunity to compete with the Big Six for delivery contracts.

The local delivery organisations could be either local authorities or third sector bodies, both of which would be encouraged to integrate the scheme with local regeneration plans and use it to create local job opportunities.

With additional funding, the House by House delivery model could be scaled up to increase both the number of households helped each year and the depth of help provided – for example, by setting a higher standard for efficiency improvements.

Recommendation

Government should adopt the House by House delivery model to drive Green Deal demand and target fuel poverty resources cost effectively. Low-income areas should be targeted first and every fuel-poor household identified should be brought up to an EPC 'D' energy efficiency rating.

The ‘Great Deal’

House by House would encourage high numbers of households to consider making energy efficiency improvements using a Green Deal loan. However, if more households are to take up Green Deal loans the financial incentives on offer need to be a ‘Great Deal’ rather than simply a good deal. This can be achieved by using a proportion of current spending on ECO to improve the attractiveness of loans offered via the Green Deal. At the same time, targeted support must be made available to those households, including those in social housing, that require expensive efficiency improvements to protect them from rising energy prices.

This report compares different approaches to using ECO funds to reduce the interest rate of a Green Deal loan. An exceptionally cost-effective option is for the government to guarantee the debt of the Green Deal Finance Company (TGDFC), which provides Green Deal loans. Provided that it is found to be compatible with state aid legislation,⁶ this would reduce the typical interest rate from 8 per cent to around 5–6 per cent. Direct public subsidies could be used to achieve an even lower interest rate. There are different options for how these public subsidies could be provided, but the approach with the lowest immediate costs to government would be for the subsidies to be provided as an annual payment to Green Deal customers.

The effects of reducing the interest rate for a household taking out a typical Green Deal energy efficiency package, and the projected costs of this for the government, are shown below. A 0-per-cent interest rate would produce typical annual savings of £136 for the consumer.

Table A.1
Projected bill savings and costs to government from lowering Green Deal loan interest rates

Loan interest rate (reduced from 8%)	Model for reducing the interest rate	Annual householder bill saving with typical package of measures (to nearest £)	Annual cost to government per household (to nearest £)
5%	Government guarantee for TGDFC	£57	£14
2%	Government guarantee for TGDFC combined with direct public subsidies	£107	£58
0%	Government guarantee for TGDFC combined with direct public subsidies	£136	£83

Source: Original calculations. See appendix 1 for full research methodology and findings.

In this report we argue that the best way forward is for the government to adopt a combined guarantee and public subsidy approach in order to radically reduce the interest rate for early adopters of the Green Deal, which would stimulate much higher demand for the product than exists currently. This interest rate subsidy could be reduced as the product becomes more widely used and is perceived to be less risky to homeowners. The eventual interest rate level should be determined in response to evidence about how consumers respond to the new financial offer. High levels of subsidy for large numbers of households are easily affordable within the ‘Great Deal’ budget.

⁶ There are a number of points on which state aid clearance might be argued, including precedent from other government guarantee schemes, the need to support an emerging market and the retention of private sector investment in a first-loss position within the finance structure of TGDFC. There is also the option of TGDFC paying for the guarantee, although this would reduce the financial benefit.

- Annual cost to government to provide 200,000 households with a 0 per cent interest rate: £16.7 million.
- Annual cost to government to provide 1,000,000 households with a 5 per cent interest rate: £14.2 million.

Recommendation

Low-cost loans for undertaking efficiency improvements should be made available to all households by guaranteeing the borrowing of the Green Deal Finance Company and providing direct public subsidies. The cost of loans should be lowest for first movers, and gradually rise as the number of Green Deal loans rises. Reductions in subsidies should occur in response to evidence of consumer demand.

Some properties, including large amounts of social housing, require expensive solid wall insulation to be installed if their efficiency is to be improved. The high cost of solid wall insulation means that, even when loans are offered at a low interest rate, some form of match-funding is usually required in order to carry out an installation.

Subsidised loans promoted through the House by House scheme would enable and incentivise private households living in solid-walled properties to install solid wall insulation. Upfront capital subsidies would work better for social housing, as social housing providers could then integrate the installation of solid wall insulation with other planned works. With these subsidies in place, social housing providers should be obliged to install solid wall insulation – this would support investment in the solid wall insulation supply chain, which would in turn help to bring down the costs of the technology.

Recommendation

Interest-free loans for households wishing to install solid wall insulation should be made available on a long-term basis. A new standard for social housing should be introduced, requiring that solid wall insulation be installed across the entire stock. Upfront capital subsidies should be made available to social housing providers to help them meet the installation costs.

Additional policy recommendations are presented in chapter 5 of this report.

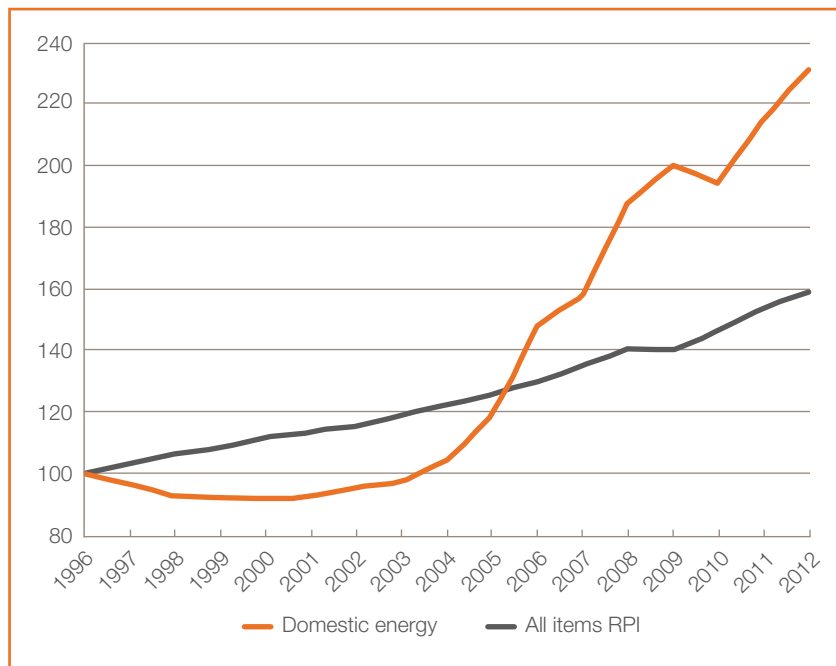
INTRODUCTION

UK households are currently experiencing a tight squeeze on their living standards. Wages have been falling in real terms for 5 years and the average household is around 8 per cent worse off than they were before the financial crisis of 2008 (ONS 2013b). The proportion of household income spent on ‘essential’ household goods, such as energy, has increased dramatically over the past decade, from 19.9 per cent in 2003 to 27.3 per cent in 2013. The proportion of household income spent on gas and electricity specifically rose from 1.8 per cent in 2003 to 3.1 per cent in 2013 (ONS 2013a).

Figure B.1 shows how retail prices of domestic energy have changed since 1996 relative to the prices of the ‘typical’ basket of goods and services that make up the Retail Prices Index (RPI).⁷ It illustrates that, since mid-2005, energy prices have increased more than three times faster than general prices. The average energy bill currently stands at £1,320, having risen from just £605 in 2004 (CCC 2012, Ofgem 2013).

The Department of Energy and Climate Change (DECC) calculate that 60 per cent of the increase in bills since 2010 is due to wholesale energy costs, and that, by contrast, environmental and social policies funded through bills have made up just 15 per cent of the increase (DECC 2013a). The policies set out in this report aim to both provide low-carbon alternatives to our current reliance on high and volatile gas prices, and improve the energy efficiency of peoples’ homes – including those of the most vulnerable – to help them with the high cost of energy.

Figure B.1
Retail prices of domestic energy compared with the prices of the ‘typical’ basket of goods and services that make up the RPI (1996 = 100)



Source: DECC 2013b: 29

Since Ed Miliband announced that Labour will implement a temporary freeze on energy bills if elected in 2015, the affordability of energy has become a central topic of political debate (BBC News 2013). The overriding argument of this report is that we need action

⁷ As measured by the ‘fuel and light’ component of the RPI, which comprises electricity, gas, coal and solid fuels, and heating oil and other fuels.

which is both immediate and long-lasting, not just a quick fix. In the long term we must diversify our energy supply away from overreliance on imported gas, but the immediate solution is to improve the energy efficiency of the UK's housing stock.

This report sets out the case for a new approach to energy efficiency policy. It is organised into five sections.

Chapter 1 contrasts increasing energy efficiency with increasing competition in the energy market as two means of tackling rising energy bills. Increasing competition would reap benefits, but energy efficiency is shown to produce greater immediate and long-term bill impacts while delivering substantial economic gains and inexpensively cutting carbon emissions.

Chapter 2 presents the startling failings of current energy efficiency policy. We argue that, in the design of policy, too little attention has been paid to what people actually want and how they behave. We set out ways to rectify this oversight, and present original quantified analysis on how the cost of loans for energy efficiency can be reduced.

Chapter 3 looks at how energy efficiency can help the 'fuel poor'.⁸ The Energy Company Obligation (ECO) policy that aims to help fuel-poor households is shown to be fundamentally flawed and deeply cost-inefficient. Our original building stock modelling demonstrates that a radically different delivery approach would be a superior alternative.

Chapter 4 outlines the conclusions of this report.

Finally, in chapter 5, we propose a package of cost-effective policies, called 'Help to Heat', to ramp-up energy efficiency delivery with no requirement for additional government spending.

By taking energy efficiency seriously, the government has the means to tackle the rising cost of energy bills. If the government opts instead for a quick-fix solution, such as cutting back on environmental and social policies, struggling households will lose out.

Research methodology

A combination of research methods have been used to compile this report. The primary objective of the research was to identify the most effective delivery models for energy efficiency and fuel poverty policy.

The first stage of the research comprised a review of relevant academic and policy literature to capture evidence on theoretical approaches to energy efficiency policy and evidence of best practice. This evidence review was supplemented by interviews and discussions with expert stakeholders, which were carried out throughout the course of the research. Around 30 interviews were carried out with stakeholders including academics, civil servants and NGO, charity and industry representatives. In July 2013 a small number of these stakeholders met to discuss our research approach, and in September 2013 a select group of high-level stakeholders, including Greg Barker MP, minister of state for climate change and energy, attended a roundtable event at IPPR to discuss the interim findings of the project.

⁸ In England, fuel-poor households are defined as those whose energy costs are above the median level, and whose income after energy costs is below the official poverty line.

Through the evidence review, stakeholder interviews and stakeholder events we developed a critique of current energy efficiency and fuel poverty policy, and considered the potential of various reforms and new delivery options to improve achieved outcomes. Our preferred delivery options were then investigated in detail through housing stock analysis carried out by the consultancy Verco. The analysis was conducted using Verco's in-house tool Navitas, which used housing archetypes from the English Housing Survey and modelled the optimum package of energy efficiency measures that would be relevant to those archetypes based on variables such as interest rate, Green Deal loan term and target energy-efficiency performance. Full details of the analytical and modelling methodologies undertaken by Verco are outlined in the relevant sections of the report.

1. THE REWARDS OF USING ENERGY MORE EFFICIENTLY

Recent debates on how to tackle rising energy bills have barely touched on the potential of energy efficiency. Increasing competition between energy companies will put downwards pressure on bills, but energy efficiency could provide more immediate relief for bill-payers and those living in cold homes, as well as producing longer term affordability benefits. What's more, investing in energy efficiency produces substantial economic gains, and is the cheapest way to tackle climate change.

1.1 The affordability benefits of competition and efficiency

Since the issue of the affordability of energy took centre stage, debate has focussed on whether the largest energy companies (the 'Big Six') are making excessive profits, and on the potential for greater competition to bring down bills. There is certainly little doubt, and plenty of evidence, that the energy market is not in good health.

- The Big Six energy companies generally claim to aim to achieve a profit margin of 5 per cent in their supply businesses. This is despite the energy markets regulators' belief in 1998 that a profit margin of 1.5 per cent adequately reflected the increased costs faced by suppliers when the market was opened to competition (Ofgem 2008). Recent analysis by Utility Regulator, the energy market regulator in Northern Ireland, found a profit margin of 1.7 per cent to be appropriate for a market with a fair degree of competition (Utility Regulator 2011).
- Research by IPPR published in April 2012 found that some of the Big Six were offering tariffs that were not reflective of their costs – in contravention of their licensing requirements laid down by the energy markets regulator Ofgem (Platt 2012). These practices serve to limit the competition that the Big Six face from smaller suppliers.
- When announcing their recent price rises, several of the Big Six identified increases to wholesale energy costs, in the region of 4 per cent annually, as a key driver of price increases. However, these assertions are not supported in analysis by Ofgem (2013) which suggests that wholesale costs have risen by only 1.7 per cent, and have also been disputed by a small supplier in testimony to the Energy and Climate Change select committee (HC-ECCC 2013).

Given the problems in the energy market, action to improve competition should place downwards pressure on bills. IPPR has calculated that if competition were effective at driving suppliers to improve the efficiency of their operations, it could reduce bills by £70 per year by 2020 if all other costs remain static (Platt 2012). However, these potential benefits need to be set against a background of rising costs, which mean further bill increases are likely even if efforts are made to improve competition. These rising costs fall into three categories:

- the costs of buying energy on the wholesale markets
- the costs of investing in energy transmission and distribution networks
- the costs of government policies that are funded through bills.

A great deal of attention has been focused on the cost of pollution taxes and social policies (so-called 'green levies') which are funded through energy bills – despite the fact that rising wholesale gas costs have been the biggest driver of bill increases in recent years. David Cameron has announced that he will 'roll back green levies', and the energy companies have lobbied hard for their obligations under one particular policy, the ECO, to be loosened.

ECO is a key focus of this report. It forms a central part of the government's strategy to keep energy bills affordable by improving the energy efficiency of people's homes. We will argue that ECO ought to be replaced with a far more cost effective set of policies that would help more consumers bring down their bills, at the same time as improving competition in the energy markets.

Energy efficiency improvements are a highly effective way of countering the rising cost of energy for two reasons. First, unlike efforts to improve competition, energy efficiency improvements can produce immediate bill savings for households. Indicative amounts that a household can save each year by installing different energy efficiency measures are:

- cavity wall insulation – up to £140
- loft insulation – up to £205
- efficient boiler – up to £310 (EST 2013).

Moreover, by permanently reducing the amount of energy a household uses, energy efficiency measures insulate households from future price increases: the fewer units of energy a household uses, the smaller the impact it will experience from a rise in the unit price.

In September 2013, Ofgem revised downwards its estimate of how much energy the average household uses, by 9 per cent for gas and 5 per cent for electricity (Ofgem 2013). This reduction in average usage was the result of energy efficiency improvements delivered through government policies and the introduction of building regulations that made high-efficiency condensing boilers mandatory at replacement. This demonstrates that energy efficiency policy, designed and delivered effectively, can produce substantial affordability benefits for consumers.

1.2 The economic benefits of efficiency

As well as being the best way to tackle the rising cost of energy, improving the efficiency of the housing stock also brings with it a multitude of economic benefits.

First, the reduction in spending on energy that results from efficiency improvements enables consumers to spend more on other products and services. This has several benefits.

- **Trade balance:** The majority of energy consumed in the UK is imported: 47 per cent of gas and 87 per cent of coal consumed in 2012 came from abroad (DECC 2013b). In the second quarter of 2013, the UK's net import dependency for total energy usage was 51.4 per cent (DECC and National Statistics 2013). By contrast, across the economy net imports were just 2.2 per cent.⁹ As a result, money saved from bills due to energy efficiency, and spent instead on other products and services, will improve the UK's balance of trade. This will lead to an expansion of net exports and an increased GDP.
- **VAT revenues:** Spending on products and services other than energy will produce higher VAT revenues for government than the equivalent amount of spending on energy. This is because VAT on energy is 5 per cent, while VAT on most items is 20 per cent.
- **GDP:** Since many energy suppliers are foreign-owned, it is likely that shifting spending away from energy and onto other products and services will mean that more of the profits from that spending remain in the UK. This will produce a long-run boost to GDP. The switch from energy to other products and services may also boost regional GDP if the purchases are made in the local economy.

9 Based on IPPR analysis of ONS data. Figure refers to imports less exports as a percentage of total GDP in 2012.

Second, the activities of making efficiency improvements to the building fabric of properties, and installing energy-saving measures, produce direct economic benefits. Investing in energy efficiency increases demand for construction and boosts activity in related sectors in the supply chain. When there is spare capacity in the economy, as there is currently, investing in energy efficiency will create jobs and increase GDP. An additional benefit is that jobs in the energy efficiency sector are generally low-skilled and locally situated – thus providing a good entry-point into the jobs market for the unemployed.

Recent research by Cambridge Econometrics and Verco (2012) concluded that, as a result of these benefits, an energy efficiency refurbishment programme is a ‘more effective way to stimulate the economy – compared to ... cutting VAT, reducing fuel duty or investing in capital infrastructure projects such as building roads’. This research found that a £4 billion annual energy efficiency programme could create 71,000 jobs and boost GDP by 0.2 per cent by 2015.

Studies in other countries have come to similar conclusions. A study looking at the CO₂ refurbishment programme of the KfW bank in Germany found that the policy stimulated demand in the construction industry and other industries along the supply chain. This not only benefitted GDP, but generated an additional social return in the form of ‘tax revenue and social security contributions’ (Kuckshinrichs et al 2010). Another study conducted in the Czech Republic found that ‘the extraordinarily high transaction multiplier of [energy efficiency] construction coupled with [the] high domestic content of inputs used and significant labor intensity all contribute to [the] macroeconomic attractiveness of this type of intervention’ (Zámecník and Lhoták 2012). By comparison, they show that other public investment projects involve a significantly higher share of imported capital goods, components and materials.

Another, final economic argument for using energy more efficiently is that it is necessary if the UK wishes to remain competitive with other nations. In the US, a boom in the production of shale gas has led to a steep fall in energy prices. Shale extraction in the UK is, however, highly unlikely to result in similar price falls. This is because while the country does have large deposits of shale gas, its high population density restricts the potential for extraction operations. Furthermore, the price of gas in the UK is set by global markets, and China and other rapidly developing economies benefit from far cheaper labour costs than those in the UK. For the British economy to remain competitive against low US energy costs and low Chinese labour costs, the focus must be on resource efficiency.

Despite the economic benefits of energy efficiency, it is often overlooked in strategies to promote growth. The existing housing stock is a vast and central component of the UK’s infrastructure, and efforts to improve its efficiency must be prioritised.

1.3 The benefits of efficiency to the climate

The third reason why energy efficiency should be at the forefront of efforts to tackle rising energy prices is the necessity of mitigating climate change by reducing carbon emissions.

The UK must achieve legislated carbon emission reduction targets of 80 per cent on 1990 levels by 2050. Emissions from buildings accounted for 37 per cent of total UK greenhouse gas emissions in 2012, and residential emissions account for 66 per cent of buildings’ emissions (CCC 2013).

Residential energy efficiency is a highly cost-efficient way of reducing carbon emissions compared to the alternatives. Analysis by the DECC has shown that the majority of energy efficiency measures have a negative cost per tonne of carbon dioxide saved, due to the reductions in energy expenditure that they produce (DECC 2011). (In some instances solid wall insulation is the exception to this rule, because it can be very expensive to install.)

This report focuses primarily on improvements that can be made to the thermal efficiency of properties – in other words, the amount of energy required to keep a property warm. Thermal efficiency tends to be the main focus of UK energy efficiency policy, which is unsurprising given that British homes are some of the coldest and draughtiest in Europe. However, there are huge opportunities for improving the efficiency with which electricity is used (see boxed text below).

Despite the fact that energy efficiency is the least costly option for tackling climate change, policymakers often focus mainly on decarbonising the energy supply – for example, by providing support to nuclear power plants and wind farms. It is time for the focus to shift, so that energy efficiency and, consequently, the affordability of energy, is prioritised.

Electrical efficiency

The DECC has estimated that the UK has the potential to reduce its demand for electricity by up to 9 per cent by 2030 (DECC 2013c). As a result, spending on electricity would be reduced by around £2.3 billion and, within sectors that participate in the EU Emissions Trading Scheme, emissions would be cut by 3.2 megatonnes (million tonnes). Options for reducing electricity demand include improving the efficiency of appliances in the home, the rollout of smart meters which provide householders with clear information on energy usage and prices, and changes to behaviour, such as switching off lighting and appliances when not in use.

In addition to reducing electricity demand, there is also the potential for substantial efficiency gains to be made by improving the management of demand and supply (Frontier Economics and Sustainability First 2012). ‘Demand-side response’ refers to the ability of new technologies, such as internet-connected appliances, to adjust the timing of when electricity is used, in order to accommodate fluctuations in the electricity supply.

Energy efficiency improvements can deliver immediate bill reductions, insulate households from future price increases, boost the economy and tackle climate change cheaply. For these reasons it must become a priority for policymakers – the current policy framework is squandering these opportunities.

2. THE ENERGY EFFICIENCY CHALLENGE

Energy efficiency should be the cornerstone of policies to improve the affordability of energy and reduce carbon emissions. However, delivering efficiency improvements to existing properties is challenging. In January 2013 the government launched a policy package with high ambitions for driving uptake of energy efficiency improvements. This policy is failing because it does not adequately address the reasons why people do not make improvements. This chapter sets out these reasons, and the new approaches that are required to put policy on the right track.

2.1 The faltering performance of current policy

The centrepiece of the government's new energy efficiency policy package is the Green Deal. It enables households to take out loans for low-cost efficiency measures, which are then repaid from the bill savings that the measures achieve. Alongside the Green Deal is an obligation on energy suppliers called the Energy Company Obligation (ECO), which serves two purposes. First, it provides subsidies to households for expensive efficiency measures – specifically solid wall insulation and hard-to-treat cavity wall insulation. This element of ECO is the subject of this chapter. The second element of ECO, to provide support to low-income households, will be looked at in the following chapter.

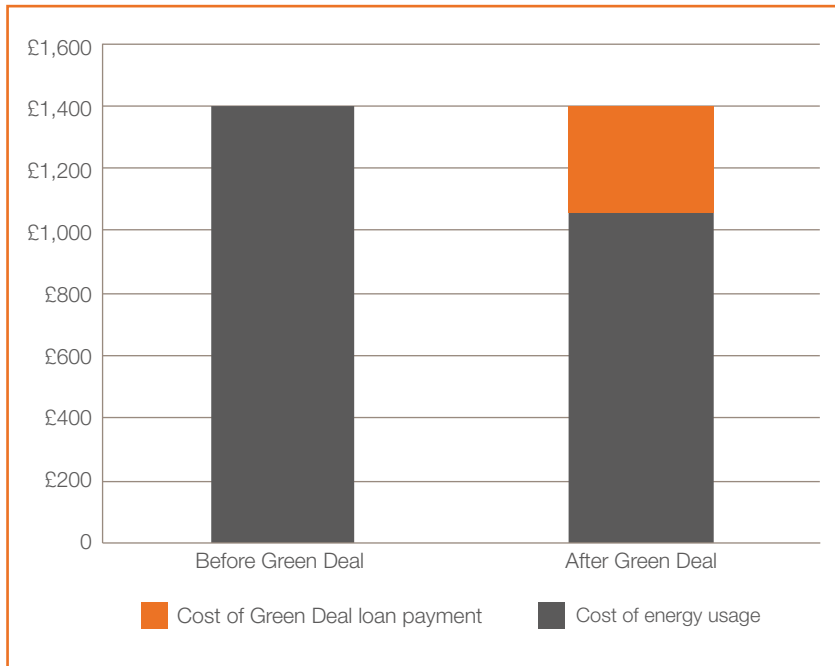
2.1.1 The Green Deal

The Green Deal constitutes a fundamentally new approach to tackling energy efficiency: it is the first attempt in the world to establish a system of 'on-bill financing' for efficiency improvements. Repayments for a Green Deal loan are taken directly out of a household's energy bills. The loan is attached to the electricity meter of the property so that, in the event of a change in property ownership, its cost is taken on by the new homeowner.

The concept of paying for energy efficiency measures from the savings they produce was developed over the course of several years prior to the introduction of the Green Deal (DECC and EST 2011). The 'golden rule' embeds this concept firmly at the heart of the new policy. It stipulates that for a package of measures to be eligible for financing under the Green Deal ('Green Deal finance'), the loan repayments must be lower than the energy bill savings that the measures achieve. While the packages of measures that can be installed within this golden rule varies significantly from household to household, it is primarily low-cost energy efficiency measures, such as loft and cavity wall insulation and efficient boilers, that are eligible.

Prior to the introduction of the Green Deal, low-cost measures were made available on a subsidised basis to all households, most recently through a policy called the Carbon Emission Reduction Target (CERT). The removal of subsidised measures for all households was heavily criticised by the Committee on Climate Change, which published an open letter to the DECC in 2011 expressing their concern (CCC 2011). The Committee highlighted how the DECC's own projections suggested that uptake of energy efficiency measures under the new model would be very low – achieving just 15 per cent of the installations of low-cost measures that was achieved by CERT – because of the lack of subsidy. As will be discussed below, there are strong arguments for subsidising measures for households, but there are far more cost-effective ways of doing this than the CERT model.

Figure 2.1
Impact of a Green Deal loan on an average energy bill for properties with viable packages of measures at an 8 per cent interest rate over 20 years



Source: Original modelling using Verco's Navitas tool.

2.1.2. The supplier obligation model

The element of ECO that focuses on expensive efficiency measures is called the Carbon Emissions Reduction Obligation (ECO CERO). The measures supported under this policy tend not to meet the requirements of the golden rule, and therefore cannot be installed using a Green Deal loan. The projected level of support made available through ECO CERO is £760 million a year.

ECO is the latest in a series of energy efficiency obligations placed on the largest energy suppliers in the UK since 1994 (Rosenow 2012). Having originated in the UK, the supplier obligation model has since been emulated across the world, with EU member states now able to adopt the policy in order to meet the requirements of the Energy Efficiency Directive (Regulatory Assistance Project 2012).

The general approach is that suppliers must install energy efficiency measures into residential properties in order to meet targets specified for them by government. They do so by subsidising the cost of measures for households, and reclaiming these costs by increasing their customers' energy bills. For ECO CERO, suppliers are expected to encourage households to take out a Green Deal loan to part-finance the expensive measures, and for this to be supplemented by a subsidy towards the capital cost of the measures which the supplier provides.

There are several benefits to the supplier obligation model that help to account for its growth in popularity. First, it provides a high degree of certainty that desired policy outcomes – for example, a particular level of carbon emission savings – will be achieved. This certainty is achieved because suppliers are generally put under threat of a heavily punitive fine, which under ECO is up to 10 per cent of a supplier's global turnover (Business Green 2013), if their

targets are not met. An additional benefit is that the cost of the policy does not show up on the government's balance sheet.¹⁰ However, there are also problems with the model.

A significant drawback of supplier obligations is the detrimental impact they have on competition. In effect, they entrench the large energy suppliers' dominance of the energy efficiency market by making them the main delivery bodies and contracting parties of work. They therefore control the route to market for small and medium-sized energy efficiency companies, although their grip is eased somewhat by the existence of the ECO Brokerage scheme.¹¹ It has been argued that the imposition of energy efficiency obligations on big energy suppliers will force them to reorient their businesses around energy efficiency products and services, but in practice this effect has been limited. Supplier obligations work against the development of a thriving, competitive and dedicated energy efficiency market.

A second challenge of the supplier obligation model is that the largest suppliers in the UK, the Big Six, are increasingly resistant to having obligations placed upon them. This was seen towards the end of the CERT period, when some suppliers complained vigorously about the rising costs of delivering their obligations. This was despite evidence showing that, for substantial periods, their delivery costs had been far lower than the government had projected – a fact that the suppliers did not choose to publicise at the time (Platt 2012). Most recently, some of the Big Six have called for a loosening of their ECO obligations as a means of bringing down bills.¹² It is notable that suppliers are happy to call for the weakening of energy efficiency policy in one breath, and with the next claim credit for the support they are obliged to provide in their marketing to consumers.

2.1.3 The Green Deal fails to deliver

To date the performance of the Green Deal is far poorer than what was hoped for, which has knock-on implications for the performance of ECO CERO. Figure 2.2 shows the projected take-up rates for Green Deal loans that the DECC published alongside the consultation for the policy (DECC 2011). It illustrates that if the Green Deal framework had been established without ECO, the DECC expected the number of Green Deal installations in 2013 to reach around 130,000 properties, whereas the combination of Green Deal and ECO was expected to delivered a larger number of installations – around 430,000 properties in 2013.

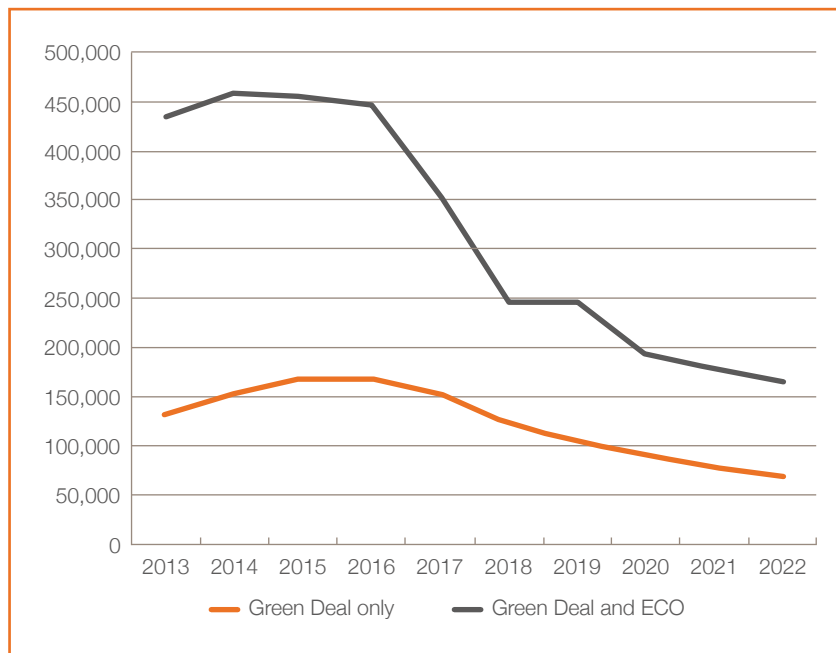
Initial progress and early trends show a dramatic shortfall compared to these projections. As table 2.1 shows, 101,851 Green Deal assessments had been carried out, and 1,173 Green Deal plans were in progress, by the end of October 2013. This amounts to a conversion rate from assessment to plan of just 1.2 per cent (DECC 2013d). Only 813 Green Deal plans were 'live' (in the sense that measures had been installed using a Green Deal loan) or had been signed by householders, which is a very disappointing rate of uptake. At current rates, the government will not even achieve 1 per cent of its projected uptake for 2013.

10 The Office for National Statistics has not yet made a decision on how to record the ECO in government accounts, but it will either be entirely off-balance-sheet as a levy on energy bills, or counted as 'imputed tax and spend'. In the latter case, it would appear within the public finances for National Accounts purposes but would not count against the government deficit.

11 ECO Brokerage is a fortnightly anonymous auction where providers/installers of measures eligible under ECO can sell 'lots' of measures to energy companies to be used to fulfil their ECO obligation. The percentage of a company's obligation that must be met through brokerage is currently being consulted on.

12 See for example British Gas 2013, SSE 2013, HC-ECCC 2013.

Figure 2.2
 Projected uptake rates
 (by number of properties)
 for the Green Deal
 with and without ECO,
 2013–2022, as projected
 by DECC in 2011



Source: DECC 2011

Table 2.1
 Numbers of Green Deal
 assessments and plans,
 end October 2013

Green Deal assessments lodged	101,851
Total Green Deal plans	1,173
New Green Deal plans (quote accepted)	360
Green Deal Plans pending (plan signed)	594
Live Green Deal plans (measures installed)	219

Source: DECC 2013d

Data on delivery under ECO CERO suggests that to date the policy has been delivered in line with the costs estimated by the DECC.¹³ However, there is a risk that costs could rise towards the end of the obligation period as suppliers rush to meet their targets. An additional concern is that Green Deal loans are not being combined with subsidies provided through ECO to finance the cost of efficiency improvements as the DECC had expected, which could also serve to push up costs. If suppliers do not actively promote blending, they are likely to be responsible for the costs of the policy rising above the government's projections.

Some of the main beneficiaries of support under ECO CERO are social housing providers (see boxed text below).

13 <http://www.utilityweek.co.uk/news/eco-delivery-costs-%E2%80%9Cin-line%E2%80%9D-with-decc-estimate/934332#.Uo45XeLnCbo>

Energy efficiency and social housing

Engaging registered social housing providers in energy efficiency programmes brings a number of benefits. They understand their housing stock, and typically have dedicated asset management teams and other internal resources to plan and deliver large-scale programmes. They bring scale and an established contractor supply chain delivering works at competitive rates. This will inevitably have a positive ripple effect by driving demand for energy efficiency products, thereby reducing capital costs and driving innovation more widely.

Also, energy efficiency measures can be integrated with other works, such as planned maintenance or the replacement of kitchens or bathrooms, and can therefore be delivered at lower marginal costs and with reduced disruption. Social housing providers are ideally placed to liaise with their residents before, during and after the refurbishment process to enable these synergies to happen. Finally, registered providers often allocate their own match funding (from planned maintenance budgets or other sources) to government-backed energy efficiency programmes, thereby creating a positive leveraging effect.

While the statistics on the Green Deal detailed above paint a bleak picture of the policy's performance, other evidence suggests that they may not capture all of its impacts. A survey of 499 households who had received a Green Deal assessment, commissioned by the DECC, found that of the total of 1,259 measures recommended in the assessments, 32 per cent were already installed or in the process of being installed. A further 17 per cent of those measures would either 'probably' or 'definitely' be installed, according to the survey respondents (DECC 2013e). However, of all the households who had already installed measures, not one had done so using a Green Deal loan. Instead, measures had been financed using funds provided by energy companies and local authorities, the households' own money, and funds from the Green Deal Cashback Scheme, which is discussed below.

These are telling figures. They demonstrate that the Green Deal assessment is an effective driver of energy efficiency improvements, but that people are not interested in Green Deal finance. In one sense, the ultimate aim of the policy package is for efficiency improvements to be carried out, irrespective of how this is achieved. Yet it appears that some characteristics of the Green Deal offer mean it is unattractive to many householders. We consider what these unattractive characteristics are in section 2.2.

The overriding problem that arises from the poor performance of the Green Deal is that householders are not getting the support they need with their energy bills. Meanwhile, the UK's legislated carbon targets are at risk of being missed, and vast numbers of jobs in the energy efficiency industry have been lost as a result of the abrupt changes to the policy framework.

The Committee on Climate Change (CCC) sets out pathways for the UK to follow in order to achieve its legislated carbon reduction targets. In 2009, as part of this work, the Committee established indicator targets by which progress on residential energy efficiency can be measured. Achieving these targets is important for the direct emission reductions that will result, and to enable the mass deployment of heat pumps¹⁴ which,

¹⁴ Ground and air source heat pumps recycle residual warmth from the ground or atmosphere for heating purposes.

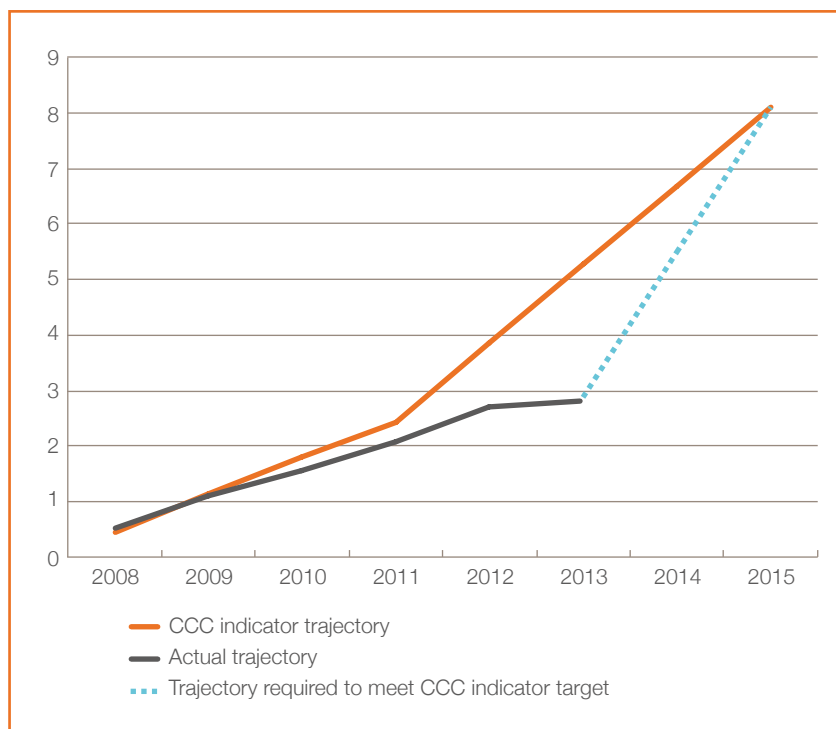
the CCC believes, is required to decarbonise heating. Heat pumps must be installed in energy-efficient properties to work effectively. However, other reports have found that high-efficiency gas and hybrid boilers could play an important part in the transition to a low-carbon residential sector (Delta-ee 2012).

The CCC’s indicators in relation to residential emissions are:

- the insulation of all available lofts and cavity walls (10.5 million and 8.1 million respectively) by 2015¹⁵
- the insulation of 2.3 million solid walls by 2022
- the replacement of 12.6 million old, inefficient boilers by 2022, and
- 58 per cent of the stock of wet appliances being rated A+ or better, and 45 per cent of cold appliances rated A++ or better, by 2022 (CCC 2013).

In its most recent assessment of progress against these indicators, published in June 2013, the CCC found that there was considerable work to do (CCC 2013). Since the introduction of the Green Deal, the prospects for hitting these targets have deteriorated. While the installation of loft insulation and efficient boilers are on track to meet the 2015 targets, both cavity wall and solid wall insulation installation rates are far below the trajectories set out by the CCC, as figures 2.3 and 2.4 illustrate. To meet the indicator target for cavity wall insulation in 2015, the rate of installations needs to increase to 2.6 million each year. To meet the indicator target for solid wall insulation in 2020, the rate of installations needs to increase to 240,000 installations each year.

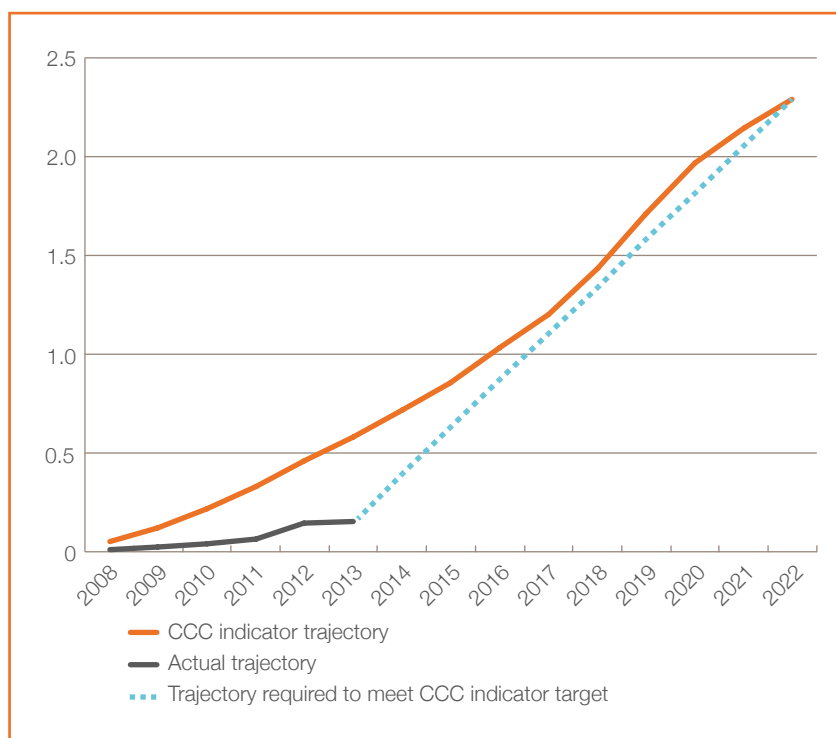
Figure 2.3
Actual numbers of installations (millions) of cavity wall insulation to 2013 (and subsequent trajectory required to meet CCC target) versus CCC indicator trajectory, 2008–2015



Source: IPPR analysis of CCC 2013 and DECC 2013d

15 Recent research by DECC (2013B) into the remaining potential for loft and cavity wall insulation suggests that the CCC’s indicators on these measures may need to be revised. The CCC is due to consider DECC’s research, and review its indicators, before it submits its progress report to parliament next year.

Figure 2.4
Actual number of installations (millions) of solid wall insulation to 2013 (and subsequent trajectory required to meet CCC target) versus CCC indicator trajectory, 2008–2022



Source: IPPR analysis of CCC 2013 and DECC 2013d

An additional issue to consider is the impact that the launch of the Green Deal has had on parts of the energy efficiency industry. The DECC predicted that the total number of jobs in the insulation sector would increase from 22,000 in 2007/08 up to between 29,000 and 50,000 by 2015 (DECC 2012). It was hoped that this increase, which was to be driven by greater activity in the solid wall insulation and hard-to-treat cavity wall insulation sectors, would compensate for a decrease in activity around basic insulation measures. However, figures show that 5,504 insulation installer jobs had been lost between January and June 2013 – due in large part to a shortfall in expected installations of solid wall and hard-to-treat insulation (Knauf Insulation 2013). This loss of insulation jobs may entail additional costs for up-scaling energy efficiency delivery, because companies will have to rebuild capacity if activity increases.

2.2 First principles for policy design

To address what is going wrong with energy efficiency policy, we need to go back to first principles and consider the reasons why people are not choosing to install energy efficiency measures.

The neoclassical economic view of consumer behaviour is that people make rational choices to maximise their own utility and opportunities in a marketplace. In the context of energy efficiency, one might expect a 'rational' homeowner living in an inefficient home and facing increasing energy bills to make efficiency improvements that would minimise her exposure to these increases: even if the costs of the improvements take a long time to pay back, she will be better off in the long run. However, this is not the option that most homeowners choose. In reality, behaviour relating to energy efficiency is far more complex.

There are a number of practical factors that act as barriers to the uptake of energy efficiency measures (Accenture 2010, Cabinet Office 2011, Consumer Futures 2012, Defra 2010, Whitmarsh et al 2011).

- **Upfront costs:** Installing energy efficiency measures involves a relatively large upfront cost, which is recouped over a long period. This is a barrier both for people who do not have the capital to invest, and for people who expect to move house before the costs have been recouped from the savings made on their energy bills.
- **Split incentives:** In the private rented sector there are disincentives for both landlords and tenants to make efficiency improvements to properties. From the perspective of the tenant, if they fund the improvements they will reduce their bills, yet the ongoing value of their investment will stay with the landlord and future tenants of the property. From the perspective of the landlord, they experience no direct benefit or bill reductions from funding improvements.
- **Awareness and information:** In general, people have a low level of awareness about the efficiency of their property, the types of efficiency improvements they could make and the support that is available to help them do so. Furthermore, a common complaint from householders and consumer groups is that the information that is provided is inconsistent, which suppresses uptake.
- **Trust:** Related to people's lack of awareness about energy efficiency options is the issue of trust. People are most likely to act upon information when it is provided to them by a trusted source, one that is not set to benefit commercially from their taking action. This is a significant barrier given that energy companies are particularly untrusted (Ellis 2013).
- **Hassle and disruption:** Making energy efficiency improvements can be a disruptive and time-consuming process. For example, a loft may need to be cleared to enable insulation to be installed, and a householder may need to arrange time off work in order to allow installers into the property. It is often the case that the hassle of making improvements is seen to outweigh the benefits that would result.
- **Quality of work:** The insulation and boiler industries are fragmented, and consumers are sometimes concerned that work carried out will be of varying quality. Some householders are very cautious about agreeing for work to be done in their home, and this in itself can be a barrier to energy efficiency measures.

Other barriers to the take-up of efficiency measures relate to the behaviour and psychology of individuals. The Cabinet Office conducted some work on behaviour change and energy use as part of the development of the Green Deal (Cabinet Office 2011), and they identified three behavioural issues that affect uptake:

1. **Tendency to discount the future:** people prefer smaller rewards today rather than larger rewards in the future. Since the benefits of making efficiency improvements accrue over time, this can be a barrier to uptake.
2. **Social norms:** people are heavily influenced by what others around them are doing. Collective action can result in activity developing very quickly once a critical mass is reached, but it can also act as a brake on positive change because people don't want to move early and risk making the wrong decisions. At present it is not 'the norm' to make energy efficiency improvements.
3. **Use of default settings:** people tend to accept default settings on appliances and heating controls because they are the easiest option, often regardless of whether these options maximise individual or collective wellbeing.

To be effective, energy efficiency policy must take account of the above factors and work with the grain of people's behavior and psychology. A useful framework for designing policy in areas where behavioural issues are important has been developed by the Department for Food and Rural Affairs (Defra 2010). Called the '4E's' approach, this framework is based around four policy principles:

- **Encourage:** Policy should give the right signals to the target audience by introducing measures to incentivise desired behaviour or disincentivise unwanted behaviour.
- **Enable:** Policy should make it as easy as possible for people to change their behaviour by providing infrastructure, services, skills, guidance, information and support.
- **Engage:** The target audience should be engaged in the objectives of policy. This requires an understanding of those being targeted, and the development of partnerships, networks, communication and engagement methods that can ensure that engagement is successful.
- **Exemplify:** Government should lead by example where it wishes households to act.

Having established the range of barriers to energy efficiency uptake and reviewed the '4E's' approach we can now seek to explain the poor performance of current policies and identify new approaches that could improve their performance.

2.3 Policy that puts people at the centre

Initially, the government's view appeared to be that the market alone would generate demand for energy efficiency improvements under the Green Deal (Eyre 2013) and the government has therefore focussed on developing the Green Deal supply chain. Over time, the government has adapted its approach and launched initiatives aimed at promoting demand, but these initiatives have been poorly designed, piecemeal and under-prioritised. For the Green Deal to work, a fundamental shift in the government's approach is required, one which makes demand creation its central focus. Below we highlight three key ways in which the current approach could be improved to drive demand, each of which is rooted in an understanding of people's behaviour and how they engage with energy efficiency.

2.3.1 Local area schemes

According to Defra's 4E's framework, people must be actively engaged in energy efficiency policy for it to be successful. An approach that assigns responsibility for that engagement to the market will fail for two reasons. First, information is most effective when it is presented to people by a trusted source that does not stand to gain commercially from the installation of energy efficiency measures. Second, until it is clear that the Green Deal policy will be a success, investing heavily in marketing the scheme presents financial risks to the companies involved. The government must therefore pursue alternative approaches.

Engaging households within specific geographical areas has demonstrated itself to be a successful approach (CCC 2012). Engaging at a local level establishes undertaking improvements as a social norm. As has previously been described, research undertaken by the Cabinet Office, and supported by IPPR's own work around behavioural issues, showed that people tend to feel themselves restricted by the activity of their neighbours but that, equally, they can also be spurred into action in response to change around them (Cabinet Office 2011, Platt 2010). An approach whereby activity is concentrated within a particular area can create a wave of uptake that cannot be achieved with dispersed, individualistic approaches (SDC 2010, Existing Homes Alliance 2010).

A further benefit of area-based schemes is that it can drive reductions in costs, which can help to make energy efficiency packages more appealing to consumers. The logistics of delivering many schemes at once within an area have been proven to achieve economies of scale in both delivery and purchasing costs (EST 2009). In addition, area-based schemes have driven the development of local supply chains, which facilitates roll-out and further reduces the associated costs (Existing Home Alliance 2010). WWF has reported that transport costs were significantly reduced by area-based schemes in Scotland, and that in Kirklees productivity was increased by 50 per cent due to reductions in contractors' travel and time (WWF 2010). The Energy Savings Trust found that bulk purchasing through area-based approaches resulted in 30-per-cent reductions in the cost of individual measures, and the Energy Efficiency Partnership for Homes has identified a 20–30 per cent reduction in the costs of solid wall insulation when multiple properties are treated together (EST 2009, Purple Market Research 2009).

Another benefit of local area schemes is the opportunity to involve locally based organisations in delivery. These organisations, including local authorities or third sector bodies, often have well-recognised and trusted brands through their provision of other support services. Their involvement can therefore help to drive demand for new energy efficiency measures. They also have existing local networks, which can be used to forge partnerships for delivery, and well-developed knowledge of their areas, which can help with targeting support.

Local area schemes also offer advantages beyond energy efficiency delivery (CCC 2012). Guidance notes for local authorities issued by the Home Energy Conservation Association (HECA) states that any area-based, street-by-street roll-out of energy efficiency measures, based on a sound understanding of what can best be achieved locally, would add significant value in local areas provided that they are linked with other planned works.

The huge potential for local area schemes has been acknowledged by the government:

'It is widely recognised that delivering energy efficiency projects street by street across whole communities has many benefits including economies of scale, increased demand driven by seeing the work being carried out and what can be achieved on neighbouring properties, and the resulting benefits from and opportunities to link with other planned works. The Secretary of State considers that any strategic area based street by street roll out of energy efficiency measures, based on what could best be achieved locally, could add significant value.'

DECC 2012

A number of local area initiatives have subsequently been launched:

- **Pioneer Places**, a £10 million fund for local authorities and/or a consortia of local authorities in England to undertake innovative approaches to kick-starting local Green Deal activity in both the domestic and non-domestic sectors.
- **Core Cities**, which provides Birmingham, Bristol, Leeds, Manchester, Newcastle, Nottingham and Sheffield with a share of a £12 million fund to pilot initiatives for driving Green Deal uptake. Activities undertaken under this initiative include raising awareness of the Green Deal through community engagement and show homes, as well as providing support to local supply chains.

- **Green Deal Communities**, a £20 million fund enabling local authorities to deliver area-based schemes with delivery partners. Delivery bodies are expected to carry out street-by-street schemes to drive Green Deal uptake, while also providing support to ECO-eligible households.

While well-meaning, each of these schemes suffer from being budget- and time-constrained. Delivery bodies have consistently been given very small windows to bid for funding when it becomes available and, when their bid is successful, have had to deliver their projects in very short timescales. In practice, this means that the bigger, better-resourced local authorities are best placed to bid for support. The overarching problem with the current schemes is that none of them are of a sufficient size to be made available in all areas, and there is no guarantee of continued support for local area schemes once the allocated budgets are used up.

One important outcome of the DECC's local area schemes is the department's finding that the provision of free assessments is a key means of boosting interest in the Green Deal. Green Deal assessors are able to set their own price for carrying out an assessment, with the market rate tending to be around £120. While we do not have exact numbers on the number of free assessments that have been offered, people interviewed as part of our research suggested that they have been the primary incentive used by local authorities through the Core Cities and Pioneer Places schemes. The impact of providing free assessments was demonstrated in the results of a survey of households who had had a Green Deal assessment, which was published by the DECC in September 2013. It showed that 58 per cent of respondents had an assessment because it was provided for free, while only 12 per cent paid for their assessment in full (DECC 2013e). Based on their experiences in the field, some people we interviewed suggested that the price of the assessment was proving a barrier to take-up when offered at the market rate.

2.3.2 Incentives and regulation

Other ways to drive demand for energy efficiency improvements include the use of incentives and regulation. These approaches can offer low-cost options for government, which is attractive in the currently constrained fiscal environment.

Cashback

The DECC has attempted to drive demand for the Green Deal through a time-limited cashback incentive scheme. The scheme has been poorly designed, has underperformed relative to expectations, and is proving to be a highly wasteful use of resources.

To be eligible for the cashback offer, a household must first have a Green Deal assessment and then have one or more efficiency measures installed by an accredited Green Deal installer. Significantly, they do not have to finance their measures using Green Deal finance. Once a measure, or package of measures, has been installed, the household can claim a cash payment from the government. A total of £125 million has been made available through the scheme on a 'first come, first served' basis.

Between early January and the end of October 2013, 7,453 cashback vouchers had been paid, worth a total of just over £2 million (DECC 2013d). However, the scheme is being used almost entirely to finance new boilers, with 95 per cent of the cashback vouchers issued during this period being used for this purpose. British Gas may be benefiting disproportionately from the scheme: reports suggest they have carried out over 85 per cent of the boiler installations for which cashback has been claimed. An

additional problem with the design of the cashback offer is that it gives all of the available incentive to the current bill-payer in a property. Should someone take over a property with a Green Deal loan they will receive none of the benefit.

There are other incentives and regulations that could drive demand, but which are not currently in use. Below we look at two options: minimum standards and regulations for building efficiency, and financial incentives.

Standards, regulations and incentives

Minimum efficiency standards are an effective means of enforcing energy efficiency improvements, and they are fiscally attractive for government since they require no direct spending. They are most useful in the private rented sector, where the specific issue of split incentives between tenant and landlord poses a barrier to uptake of energy efficiency measures. The Energy Act 2011 states that, from 2018, 'it will be unlawful to rent out a residential or business premise that does not reach a minimum energy efficiency standard (the intention is for this to be set at EPC rating "E")' (HM Government 2011).

When considering regulations for private rented sector properties, the way in which rental prices will be affected should be the key concern. The proposals we outline later in this report would ensure that affordable financing options for energy efficiency are available to landlords, which would minimise the risk of rents rising in response to efficiency standards. It is in this context that we argue for a strengthening of the proposed regulations.

Before the Green Deal and ECO were introduced there was a consultation on changes to building regulations that included a proposal to require home owners to make improvements to the energy efficiency of their homes when carrying out an extension. These were termed Consequential Improvements. The proposals would have driven a substantial increase in energy efficiency improvements, but were dropped after the *Daily Mail* newspaper ran a campaign against their introduction (see for example Slack and Cohen 2012). Building regulations could be an effective means of driving energy efficiency, yet we see little opportunity in the immediate future for consequential improvements to be introduced: it would be politically toxic for any political party to support their introduction.

The UK Green Building Council (UK-GBC) has investigated a range of financial options that could be used to drive demand for energy efficiency improvements (UK-GBC 2013). It concluded that the best options were to offer energy-efficient properties discounted council tax or stamp duty, and an energy efficiency feed-in tariff that would pay a household for every unit of energy they save.

Each of these options comes with challenges. The discounted council tax option would be very complicated to administer, and the feed-in tariff would involve a cost to government. Stamp duty incentives could be designed to be revenue-neutral, with lower duty rates for efficient households and higher rates for inefficient households. However, it is likely that this would be regressive, since low-income households often live in low-efficiency properties.

Local area engagement, the provision of free energy efficiency assessments, and the regulation of the private rented sector are the least problematic approaches for driving demand of energy efficiency improvements, and are therefore the focus of this report.

2.3.3 The Green Deal should be a ‘Great Deal’, not just a good deal

Once a range of initiatives are in place to drive the demand for energy efficiency, attention should turn to the cost of a Green Deal loan.

The current interest rate for the Green Deal is around 8–10 per cent APR, depending on the length of the loan term and the package of measures installed. There has been a lively debate as to whether this rate is too high to be attractive. The Green Deal Finance Company (TGDFC), which provides the loan facility, has demonstrated that the rate is broadly competitive relative to other financial products – specifically mortgages and personal unsecured loans – that can be used to install energy efficiency measures (Capital Economics 2013). However, this finding has little relevance because households are not actively looking for energy efficiency offers in the marketplace. What good is a competitively priced product for which there is no demand?

As described above, local area schemes, incentives and regulations can be used to drive demand for energy efficiency improvements, and consequently should also drive uptake of the Green Deal. However, it is clear that for the policy to fulfil its potential, the cost of Green Deal loans will have to be reduced. There are three reasons for this, each of which relate to how attractive the current Green Deal offer is from the standpoint of a prospective customer.

First, the cost of a Green Deal loan *sounds* high. Research by the Great British Refurb campaign (2010) has shown that only 6 per cent of respondents are ‘very’ or ‘fairly’ likely to take up the Green Deal when it has an interest rate of 7 per cent, but the proportion increases to 32 per cent with an interest rate of 2 per cent. Engagement initiatives, incentives and regulation to promote demand could push the actual level of uptake for Green Deal loans, at various rates of interest, higher than this research suggests. Nonetheless, a rate of 8 per cent is likely to put many people off.

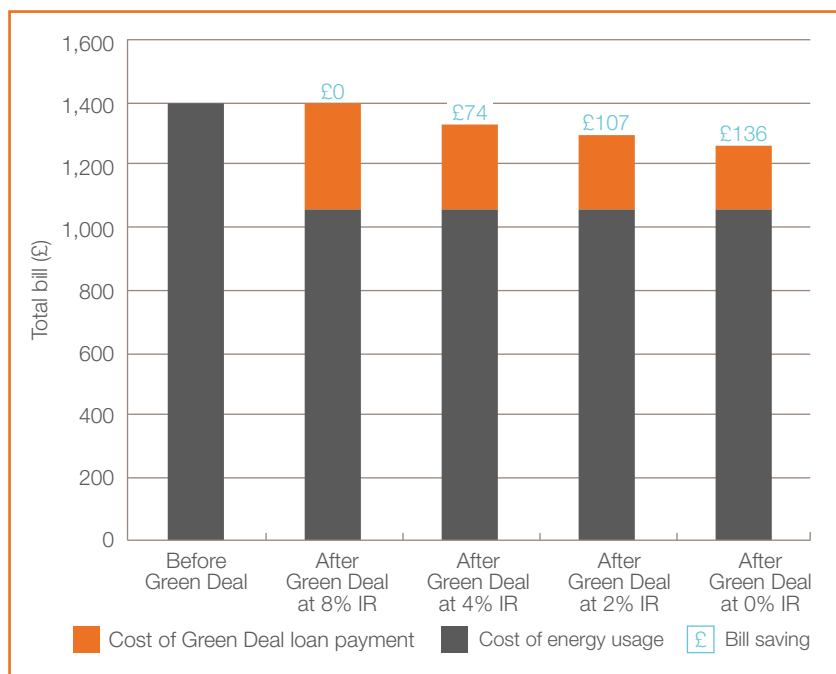
Second, the Green Deal requires households to forego the immediate bill savings that can be achieved by undertaking efficiency improvements – the bill savings achieved by the installed measures go directly towards the cost of Green Deal loan repayments. In effect, households are being asked to go through the hassle of making efficiency improvements, which they don’t want to make in the first place, for no immediate gain. This works directly against the behavioural tendency to prefer rewards sooner rather than later, as described above. If the cost of a Green Deal loan was reduced, households would be able to install a package of measures, make the loan repayments and also reap immediate savings on their bills. This is illustrated in figure 2.5.

The final reason for the current unattractiveness of a Green Deal loan is because, until the loan model becomes widely used, a significant risk premium is attached to the product. This risk premium exists because a Green Deal loan is attached to a property, and so must be taken on by a new homeowner if the property changes hands. Only when the use of Green Deal loans is normalised within society through widespread uptake can a prospective customer be sure that the product will not act as a barrier to the sale of their property or diminish its value. Early adopters of the Green Deal are being asked to take on a substantial risk, and this needs to be reflected in the cost of the loan to make it as attractive as possible to this customer segment.

It is likely that, even if the financial offer is improved, the Green Deal product will be unattractive to some customer segments. Some may prefer to finance energy efficiency measures in other ways, which could include paying in cash or using another finance

product, particularly mortgages. The promotion of mortgages to finance energy efficiency improvements could realise two benefits. First, it would enable households to install larger packages of measures than are possible within the limitations of the Green Deal's 'golden rule'. Second, since mortgages are commonly used to finance renovations and home improvements, it would encourage people to undertake these works in an energy efficient way. Research has shown that engaging consumers when they are already thinking about making improvements to their homes could be an effective approach for green policy (EST 2011).

Figure 2.5
Impact of a Green Deal loan on average energy bill for properties with viable packages of measures over 20 years at different interest rates (IR)



Source: Original modelling using Verco's Navitas tool.

2.4 Options for reducing the cost of the Green Deal

There are a variety of means by which the cost of Green Deal loans could be reduced. Verco has analysed three different approaches that the government could take: direct public subsidies; a government guarantee for TGDFC; and a government guarantee to bring down the cost of mortgage finance for undertaking efficiency improvements. Full details on the methodology and findings of this analysis are given in appendix 1 of this report. Here we explain these three different options in full, and present Verco's summary findings.

Direct public subsidies

- i. The subsidy is integrated into the Green Deal's processes so that the interest rate a household pays on their Green Deal loan is reduced to a predetermined level. To achieve this, TGDFC could receive a grant from the government in a similar way to how European Regional Development Funds are used to reduce the interest rate in JESSICA (Joint European Support for Sustainable Investment in City Areas) funds.¹⁶
- ii. Households opting for a Green Deal loan receive a direct subsidy from the government, received by the bill-payer as an annual payment, at a sum equivalent to a predetermined

¹⁶ An example of such a policy this in practice is the London Green Fund, operated by the European Investment Bank for the Greater London Authority.

reduction in the interest rate of their loan. This would be similar to the annual payments received under the Renewable Heat Incentive.

- iii. Households opting for a Green Deal loan receive an upfront payment from the government, calculated to have the same net present value of the annual payments in options i and ii above. This would operate in a similar way to the current cashback incentive scheme.

The first option is the simplest for prospective Green Deal customers to understand and, should they take out a loan, they would experience the benefit of the subsidy through a direct reduction in their energy bills. Options ii and iii are more difficult for the customer to understand, because they receive a cash payment that is not clearly linked to their Green Deal payments.

Providing annual payments over the tenure of a Green Deal loan (20 years, for example), as with options i and ii, would put less immediate pressure on the government's finances than providing upfront cash payments, as required under option iii. However, option iii presents a very attractive offer for existing bill-payers, because the benefit is front-loaded. This may drive the uptake rate but, in the event of the ownership or occupancy of the property changing, it would occur at the expense of future bill-payers. For this reason, options i and ii are preferable to option iii.

Three levels of direct subsidies have been modelled that would reduce the effective interest rate for a Green Deal loan from the current rate of around 8 per cent¹⁷ (the exact rate varies by loan term and amount) down to 5 per cent, 2 per cent and 0 per cent respectively (see appendix 1).

A government guarantee for the Green Deal Finance Company (TGDFC)

This option would work by reducing the risk premium that is attached to finance raised by the TGDFC, with the resultant cost benefits passed on to Green Deal customers in the form of a reduced interest rate. Currently, the cost of borrowing for the TGDFC includes a risk premium due to a lack of track record, which is reflected in its 'BBB' credit rating (see boxed text below).

The Green Deal Finance Company

The Green Deal Finance Company (TGDFC) has been set up as a not-for-profit company to offer long-term, fixed-rate finance for energy efficiency improvements carried out by accredited Green Deal providers. Its capital structure consists of a risk-absorbing junior debt layer (which currently includes private sector capital and DECC funding), topped-up by senior debt, currently from the Green Investment Bank (GIB). It is expected that the overall proportion and interest rate of the risk-absorbing layer will drop over time, with additional capital for the senior debt layer provided by the European Investment Bank and from the capital markets in the medium-to-long term.

¹⁷ The TGDFC currently provides finance at an APR of 7.9 per cent over 20 years for a loan amount of £5,000, inclusive of all charges and expenses. The interest rate for the £5,000 figure was chosen as a reasonable benchmark for the purpose of this research. However, the detailed cost-benefit figures are derived from modelling of a range of archetypes within the housing stock (taken from English Housing Condition Survey data 2011) to work out the package of measures (and therefore the loan amount) that would fit within the 'golden rule' for each typology.

It is assumed that government guarantees would bring down the borrowing rate for TGDFC's senior debt component close to that for gilts, potentially with a small premium to reflect its structured finance aspect.¹⁸ The overall impact of the guarantees on the interest rate to the consumer will depend on the size and interest rate of the risk-absorbing layer.

If the guarantees could be extended to cover 100 per cent of TGDFC's debt, including the risk-absorbing layer, then this would maximise the guarantee's impact and do most to reduce the interest rate to the consumer. If the junior debt layer remains in place without being guaranteed then it might still be argued that those providing the junior debt would accept a lower return because the government guarantee on the senior debt reduces TGDFC's overall risk of exposure.

Depending on the extent of the guarantee and the size and interest rate of the risk-absorbing layer, then it is estimated that the affect could be to reduce the overall interest rate to the consumer from 8 per cent to around 5–6 per cent.

The cost of providing this government guarantee is likely to be somewhere between the cost of guarantees for investment in social housing via the Housing Finance Corporation (which is low-risk) and those for Enterprise Finance (high-risk¹⁹). State aid issues may well require the government to pass these costs onto the TGDFC, which would raise the interest rate to the consumer by the cost of the guarantee.

However, an exemption from state aid rules should be investigated for all Green Deal finance, given the potential social benefits of reduced energy bills for consumers over the medium and long term.

In addition to analysing the cost and benefits of this guarantee model, the effect of combining it with direct public subsidies has been investigated (see appendix 1).

A government guarantee for energy efficiency mortgage finance

Under this approach, the upfront finance required to carry out efficiency improvements can be secured against a property, with the government guaranteeing the portion of the mortgage that is to be used for investment in energy efficiency. Such an arrangement creates an opportunity to offer loans that are not necessarily limited by the Green Deal's golden rule, thereby allowing a costlier package of measures to be installed than would otherwise be possible. This option is limited to house-buyers and landlords re-mortgaging their property, and is not accessible for tenants.

It is expected that such a guarantee would bring down the interest rate on finance for energy efficiency measures from 6 per cent (which is consistent with the average level of interest rates on mortgages over the last 20 years) to 4 per cent over the loan duration. The cost of extending guarantees for energy efficiency loans secured against a property is likely to be in a similar range as that of the 'Help to Buy' guarantee scheme, which helps people finance home purchases. These are currently set at an annual rate of between 0.3

¹⁸ Structured finance refers to the pooling of economic assets (such as loans and mortgages) and the repackaging of these to mitigate the risks of the underlying assets.

¹⁹ A cost of 2 per cent per year is required to guarantee 75 per cent of the value of a loan (BIS 2013).

and 0.9 per cent of the outstanding loan amount, depending on the loan-to-value ratio. However, investment in energy efficiency should lead to an increase in the disposable income of a household, thus arguably improving their ability to repay the additional mortgage. As a result, the additional risk (over and above the average level of mortgage defaults) will be minimal, if any.

2.4.1 Summary findings

For each of the financial incentives outlined above, we have been calculated the indicative cost to the government, including the cost of both subsidies and guarantees, and the net consumer benefit – which would be received either as an annual cash payment or a direct reduction in energy bills. We have also compared the modelled options using the following metrics:

- The ratio of pounds invested in domestic energy efficiency investments (the capital cost of measures installed) to government spending
- The ratio of consumer benefit (the financial value of the incentive to the consumer) to government spending
- Pounds spent by government per tonne of CO₂ saved.

Due to the lack of data and uncertainty about consumer response, our analysis does not attempt to model the relative impact of these incentives on consumer uptake of the Green Deal. Instead, costs and benefits of the different approaches are analysed on the assumption that Green Deal uptake will rise in line with DECC's projections up to 2022 – that is, 1.2 million Green Deal loans taken out. Table 2.2 presents summary findings of our analysis:

Our modelling demonstrates the range of benefits to consumers from reducing the interest rate of a Green Deal loan. On average:

- a reduction from 8 per cent to 5 per cent would save the consumer £57 per year
- a reduction from 8 per cent to 2 per cent would save the consumer £107 per year
- a reduction from 8 per cent to 0 per cent would save the consumer £136 per year.

The option of providing government guarantees to the TGDFC is by far the least expensive option for reducing the interest rate to the consumer to around 5–6 per cent. Furthermore, it works out far more favourably than the subsidy alternatives not only in terms of the cost to government, but also the ratio of consumer benefit to every £1 of government money spent, the level of private sector investment that can be leveraged, and the cost of carbon abatement for reducing the interest rate to this level. Our analysis suggests that, should the reduced interest rate suffice to stimulate consumer demand, the additional government spending on these guarantees could realise carbon savings at £16 per tonne of CO₂, leveraging £9 in investment for every £1 of government spending.

To achieve a reduction in the interest rate beyond the rate of 5 per cent or so that could be achieved through the government guarantee, it should be combined with direct public subsidy.

An additional benefit of reducing the Green Deal interest rate is its potential impact on the range of measures that could be installed. The current high cost of finance limits the range of measures that can be financed within the golden rule. In some cases, part of the space created within the golden rule by the reduction of the interest rate could be used to deliver larger packages of energy efficiency measures to customers.

Government guarantees for green mortgages offer an alternative source of finance for those households that are interested in installing high-capital-cost measures – for example, solid wall insulation – but not in the Green Deal. As with the government guarantee for the TGDFC, this is a low-cost and highly efficient use of government funds. This option should be pursued in parallel with Green Deal finance to encourage more intensive retrofit of the housing stock, and maximise opportunities to integrate energy efficiency with property repairs.

2.5 Summary

This chapter has demonstrated that the existing energy efficiency policy package is not working because it has not been sufficiently focused on addressing the reasons why people do not undertake efficiency improvements. In summary, the key points covered in this chapter were:

1. Only 813 households have either funded energy efficiency improvements using a Green Deal loan or committed to doing so since the scheme launched in January 2013. The government will not achieve even 1 per cent of its first year projections for uptake of the Green Deal.
2. A key reason why the Green Deal is not working is that the government has not done enough to create demand for efficiency improvements through local area initiatives. Engaging households within local areas is a proven means of driving demand for energy efficiency improvements. It can develop social norms around the installation of efficiency measures, and reduce the costs of installations. It is also important that trusted organisations provide information and advice about energy efficiency, and schemes that have run alongside the Green Deal have shown that providing free energy efficiency assessments can be effective at engaging people in the scheme.
3. The current Green Deal financial offer is not attractive and needs to be improved. It is unattractive for a number of reasons: the interest rate (at 8 per cent) sounds high; the bill savings achieved by a household using the Green Deal are entirely offset by the cost of loan repayments; and early adopters risk damaging their property's resale value by taking on a Green Deal loan.
4. We evaluated three options for improving the financial attractiveness of energy efficiency: direct public subsidies, a government guarantee for TGDFC to improve the Green Deal financial offer, and a government guarantee for energy efficiency mortgages. Our analysis demonstrated that providing government guarantees to the TGDFC is by far the most cost-effective option for reducing the Green Deal interest rate to around 5–6 per cent. To lower the interest rate beyond this level, the guarantee should be topped up with public subsidies.

Clearly a great deal needs to be done to increase the rate at which energy efficiency improvements are made, and we have outlined ways in which this can be achieved. However, people who are most vulnerable to high energy bills need a different type of support, and it is to them that we turn in the next chapter.

Table 2.2
Summary findings: options for reducing the cost of Green Deal (GD) loans and mortgages for energy efficiency improvement, modelled using the average loan size of £2,625

Option	Model	Interest rate used for golden rule calculation	Original interest rate	Subsidised interest rate	Average consumer benefit per property over GD loan term (20 years), undiscounted	Annual consumer benefit per property over GD loan term	Ratio of total £s invested to government spending	Government spending per tonne of CO ₂ saved	Consumer benefit (£) per £ of government spending
i Direct public subsidies	Subsidise GD interest rate	8%	8%	5%	£1,135	£57	2.3	£63	£1.00
	Subsidise GD interest rate	8%	8%	2%	£2,137	£107	1.2	£118	£1.00
	Subsidise GD interest rate	8%	8%	0%	£2,723	£136	1.0	£150	£1.00
ii Government guarantees for TGDFC, combined with direct public subsidies	Government guarantee for TGDFC	8%	8%	5%	£1,135	£57	9.2	£16	£4.00
	Government guarantee for TGDFC and subsidised interest rate	8%	8%	2%	£2,137	£107	2.3	£64	£1.80
	Government guarantee for TGDFC and subsidised interest rate	8%	8%	0%	£2,723	£136	1.6	£92	£1.60
iii Government guarantee for mortgage finance	Government guarantees for green mortgages (100% of energy efficiency loan to achieve an EPC 'C' efficiency rating)	EPC band 'C'	6%	4%	£1,515	£76	9.2	£26	£2.50

Source: Results based on original analysis. See Appendix A for full details for methodology and findings.

3. THE FUEL POVERTY CHALLENGE

High energy prices are a concern for many households. However, for ‘fuel-poor’ households – those who are on a low income and living in energy-inefficient homes – high prices can be far more serious. Millions of households across the UK are classified as fuel-poor, and face daily decisions about whether to spend their money on ‘heating or eating’. Under-heating properties and living in cold temperatures can have a serious impact on the occupants’ health: it is estimated that 10 per cent of excess winter deaths, of around 2,400 people, in England and Wales during the winter of 2011/12, can be attributed to fuel poverty (Hills 2012).

Energy efficiency policy is the solution to fuel poverty, but fuel-poor households require targeted support. The delivery model for current fuel poverty policy is not effective, but there is potential for a new approach that will substantially increase the effectiveness of delivery and be a far more cost-efficient use of government resources.

3.1 Fuel poverty in the UK

Two factors influence the degree to which a household is vulnerable to high energy prices: first, their income, and second, the amount they need to spend on energy. The amount they spend on energy is influenced by factors including the energy efficiency of their property, its size, and the type of heating system it uses. It is this understanding that underpins the new definition of fuel poverty that has been adopted in England.

In the 2000 Warm Homes and Energy Conservation Act, fuel-poor households in the UK were defined as those that would need to spend more than 10 per cent of their income on energy in order to maintain adequate warmth and meet their other energy needs. While Scotland, Wales and Northern Ireland retain this definition, the government has committed to changing the definition of fuel poverty in England to reflect the broader approach recommended by the Hills review (Hills 2012). This includes households whose energy costs are above the median level and whose income after energy costs is below the official poverty line. The decision to move to the new definition, called the ‘low income, high costs’ (LIHC) indicator, was taken partly because households with high energy costs but with sufficient incomes to manage those costs, are captured by the 10 per cent definition. Moreover, the number of households classified as fuel-poor under the 10 per cent definition is highly sensitive to changes in energy prices.²⁰ There are no plans currently in place within the devolved administrations to review how they define fuel poverty, which creates a challenge for UK-wide policy design; however, the Welsh and Scottish governments have recently produced fuel poverty estimates for their areas using LIHC (DECC 2013f).

The LIHC indicator is an improvement on the previous fuel poverty definition because it provides a more accurate picture of which households are most vulnerable to high energy prices, and enables government policy to be better targeted. In order to facilitate effective UK-wide policy, we recommend that the devolved administrations also begin to publish fuel poverty figures using the LIHC indicator.

Very large numbers of households are classified as fuel-poor under both definitions of fuel poverty. In 2011, the last year for which comprehensive data is available, 2.39 million households in England were classified as fuel-poor using the LIHC indicator – approximately 10.9 per cent of all English households (DECC 2013f). Under the 10 per

20 Concerns have been raised that the usefulness of the LIHC definition is limited because, under its definition, the number of fuel-poor households *does not* respond to changes in energy prices. However, the LIHC does provide a measurement of the ‘depth’ of fuel poverty which does reflect changing energy prices.

cent indicator, 3.2 million households were classified as fuel-poor in England, or 14.6 per cent of all households.

As well as identifying how many households are in fuel poverty (termed the ‘extent’ of fuel poverty) the LIHC indicator has focused attention on the ‘depth’ of fuel poverty. This depth is defined as the amount by which the assessed energy needs of a fuel-poor household exceeds the threshold for reasonable costs, and is referred to as the ‘fuel poverty gap’. Measuring fuel poverty in this way has the advantage of focusing attention on the need to tackle the hardship faced by the most severely affected households.

In 2011 the aggregate fuel poverty gap (the combined gap across all fuel-poor households) in England was around £1 billion, and the average gap for individual fuel-poor households was £438 (DECC 2013f). Table 3.1 illustrates the extent and depth of fuel poverty in England using the LIHC indicator in England, and the extent of fuel poverty in the devolved nations using the 10 per cent indicator.

Table 3.1
2011 fuel poverty figures according to definitions used in each administration

Fuel poverty definition	Country	Number of fuel-poor households (millions)	Proportion of the population fuel-poor (%)	Aggregate fuel poverty gap (£bn)	Average fuel poverty gap for individual households (£)
LIHC	England	2.39	10.9	1.15	438
10%	Scotland	0.68	28.9	-	-
10%	Wales	0.37	29	-	-
10%	Northern Ireland	0.32	42	-	-
10%	England*	3.20	14.6	-	-

Sources: DECC 2013f and 2013g, Scottish Government 2013, Northern Ireland Housing Executive 2013, Welsh Government 2013)

*Extent of fuel poverty in England under the 10 per cent definition is included for comparison although it is no longer in use.

Since fuel poverty under the LIHC indicator is determined partly by using a threshold of ‘high fuel costs’ based on the median of all fuel costs, assessment of the extent of fuel poverty made under its definition will not change substantially from year to year. Under LIHC, the number of households in England defined as fuel-poor has remained at just under 2.5 million since 2003 (DECC 2013f). As a result, the current statutory fuel poverty target, which stipulates that the government must have a strategy to eliminate fuel poverty as far as is reasonably practicable by 2016, has been rendered unworkable. The government intends to abandon the current target and replace it with an alternative.

3.2 The role of energy efficiency

Different policy options for assisting fuel-poor households include providing financial support to help them afford their energy bills, or improving the energy efficiency of their properties. A key finding of the Hills review was that providing energy efficiency improvements is the most cost-effective approach (Hills 2012). This is because while energy efficiency improvements do involve an upfront cost, it is a one-off cost, and the resultant savings continue for as long as those improvements are in place. By contrast, financial support with bills must be provided on an ongoing basis. Only when compared to the most expensive energy efficiency improvements – some installations of solid wall insulation, for example – is financial support the more cost-effective approach (DECC 2013h). The DECC is acting on the findings of the Hills review by committing to making the energy efficiency of fuel-poor homes the focus of the new fuel-poverty target. This is a welcome development, but it is important that the government’s focus extends beyond thermal efficiency to include electrical efficiency as well (see boxed text below).

Electrical efficiency and fuel poverty

Most work around energy efficiency and fuel poverty, including this report, is focussed on the thermal efficiency of buildings. Electrical efficiency receives less attention, but by 2020 efficiency improvements in electrical appliances are expected to knock £158 off the average energy bill (DECC 2013a). The concern for low-income and fuel-poor households is that they are least likely to buy the most efficient new appliances, and therefore least likely to reap the benefits of them.

The Green Alliance found that UK electrical efficiency policy is unlikely to deliver its projected benefits due to low uptake of efficient products and delays in the implementation of regulations (Green Alliance 2012). The CCC has noted that the UK government does not monitor the uptake of efficient appliances, despite the fact that this is a key indicator of progress towards achieving the national emission reduction targets (CCC 2013). IPPR is conducting research into how uptake of efficient electrical appliances could be increased.²¹

Since many fuel-poor households under-heat their homes, a proportion of the savings that could be achieved with efficiency improvements will be taken in the form of increased comfort (that is, the property will be heated to a higher temperature). For this reason, the Green Deal is an inappropriate tool for providing support to fuel-poor households, who are both unlikely to want to take out a loan, and likely to take potential bill savings in increased comfort. This limits the measures that can be financed in line with the Green Deal's 'golden rule'.

Government has recognised that fuel-poor homes need targeted support beyond that provided by the Green Deal, and has made subsidised measures available through the ECO. Two sub-obligations of ECO specifically target support at low-income homes. The Affordable Warmth (AW) obligation stipulates that suppliers must deliver energy efficiency measures to low-income and vulnerable households that receive certain benefits. The Carbon Saving Communities Obligation (CSCO) stipulates that suppliers must install measures in households located in areas categorised as the 15 per cent most-deprived in the country by the Index of Multiple Deprivation.²² The projected level of support made available through these two obligations is £540 million a year (in addition to the £760 million being spent through ECO on expensive energy efficiency measures, such as solid wall insulation, as described in the previous chapter) (DECC 2012).

ECO covers the whole of the UK. Since the exchequer-funded Warm Front programme was scrapped in January 2013, it is the only policy providing support to fuel-poor homes in England. In the devolved administrations, however, exchequer-funded fuel poverty schemes continue to run alongside ECO.²³ In Scotland, within the overarching Home Energy Efficiency Programmes for Scotland (HEEPS) package sits the Energy Assistance Scheme, which effectively widens the criteria for the ECO AW obligation, making an additional £16 million of government funding available in 2013–2014. It also has an area-based programme delivered through local authorities. This scheme relies on the draw-down of significant funding from ECO, and therefore replicates its

²¹ <http://www.ippr.org/research-project/44/11282/keeping-energy-affordable>

²² <http://data.gov.uk/dataset/index-of-multiple-deprivation>

²³ Fuel poverty is a partially devolved issue, with each administration having their own separate targets. The main reason for this is that the devolved administrations have the power to affect certain aspects of fuel poverty policies (energy efficiency programs, for example) but not others (such as incomes and energy-market conditions, which impact on fuel prices) (DECC 2013G).

inefficiencies. Nevertheless, the HEEPS programme could easily be adapted to work with our recommendations, which would improve the total offering in Scotland.

Wales has two schemes in addition to ECO. ‘Nest’ delivers energy efficiency advice and measures to low-income households, and ‘Arbed’ is an area-based scheme delivering energy efficiency measures and renewable energy in deprived areas. These additional schemes are utilising exchequer funding to fill in the gaps left by supplier obligations, and to leverage as much ECO support as possible. By contrast, England is now entirely reliant on supplier obligations to tackle fuel poverty.

Some have argued that the UK government should follow the example of the devolved nations by restoring and increasing exchequer funding for fuel poverty programmes (Consumer Futures 2012). However, as we outline below, the main question is not whether fuel poverty programmes are funded from energy bills or from general taxation. Rather, the focus should be on the effectiveness of the delivery model.

3.3 A new delivery approach

The exchequer-funded Warm Front scheme was a central government policy for tackling fuel poverty in England until January 2013, when it was scrapped in the wider drive to cut back public spending. However, the government has since argued that it is right to tackle fuel poverty through ECO because it is the most cost-efficient delivery model. This argument is based on analysis first presented in the Hill review, which illustrated how the cheapest energy efficiency measures would be expected to be prioritised under a supplier obligation model, whereas there would be less discretion about costs under a Warm Front model (Hills 2012). There are a number of reasons to question the Hills report’s conclusion,²⁴ but its greatest flaw is undoubtedly the lack of attention it paid to the largest aspect of cost inefficiency that affects both the ECO and Warm Front models – the way in which households are targeted. The answer to how fuel poverty can be tackled at the lowest cost lies not in a debate about the pros and cons of a supplier-led or exchequer-funded approach, but in a radical new approach to targeting.

3.3.1 The inefficiency of current targeting

Determining whether a household is fuel-poor requires accurate knowledge about their income and the characteristics of the property in which they live. Relevant property characteristics include size, age, and the type of heating system installed, all of which affect overall energy efficiency. Since accurate data does not exist for these factors at the level of individual households, support has historically been targeted using proxies of fuel poverty. The proxies have tended to be based on income-related criteria, either in relation to individual households (for example, whether a householder receives means-tested benefits) or areas (such as whether an area is classified as deprived). Using proxies is a highly inefficient way of targeting support, because their use gives rise to two problems, ‘coverage’ and ‘leakage’:

- **Coverage** refers to the proportion of fuel-poor households that are eligible for support using a proxy. The imprecise nature of proxies means that large numbers of fuel-poor homes can be left ineligible for support. The failure of proxies to capture all fuel-poor homes is their biggest flaw as a means of targeting.
- **Leakage** refers to the proportion of households that proxies determine to be eligible for support but which are not fuel-poor. Clearly, if money allocated for tackling fuel

24 These include the fact that it does not include a full analysis of the costs of locating fuel-poor households and persuading them to install energy efficiency measures, nor does it consider the potential for area-based approaches to reducing delivery costs.

poverty is spent on non-fuel-poor households then the amount that can be spent on genuinely fuel-poor households is reduced. This is a key concern in the current fiscal environment, in which the resources available to tackle fuel poverty are limited.

Where policies are targeted using benefit-related proxies, an additional problem arises: many households who are eligible for benefits don't claim their entitlement. In 2009/10 up to £12 billion in means-tested benefits went unclaimed – nearly 25 per cent of all benefits expenditure (Fuel Poverty Advisory Group 2012). It is likely that that a substantial number of the households who fail to claim their benefit entitlement would be classed as fuel poor.

Table 3.2 below shows the targeting efficiency of previous fuel poverty policies (both energy efficiency policies and policies that provide financial assistance with bills) in relation to the 10 per cent fuel-poverty definition for which they were designed. It shows that the majority of the policies achieved a level of coverage of only 50 per cent or under, and that, in general, 70 per cent or more of the households that were eligible for support under the policies were not fuel poor.

Table 3.2
Targeting efficiency of previous UK fuel-poverty policies in terms of leakage and coverage

10% indicator	Coverage		Leakage	
		(% of all fuel-poor households in this group)		(% of households in this group that are not in fuel poverty)
	CERT 'Priority Group' sub-target	75.0		74.8
	CERT 'Super Priority Group' sub-target	41.1		72.6
	Community Energy Saving Programme	-		77.6
	Warm Front (pre-April 2011)	35.1		69.7
	Warm Front (post-April 2011)	16.4		31.2
	Winter Fuel Payments	50.0		81.0
	Cold Weather Payments	-		80.0
	Warm Home Discount	-		72.0

Source: DECC 2013f, Platt et al 2012

Original analysis carried out for this report has found that the provisions for low-income households under ECO are similarly inefficient at targeting the fuel poor (see table 3.3). Just under half of fuel-poor households are eligible for support when the Affordable Warmth (AW) and Carbon Saving Communities (CSCO) obligations are combined. Furthermore, vast numbers of non-fuel-poor households are captured: 73 per cent and 86 per cent of those captured by AW and CSCO respectively are not fuel poor. If we assume that spending on the obligations is distributed evenly between households that have been found to be eligible, £417 million (or 80 per cent) of the £540 million budget for the obligations, is going to households that are not fuel poor.

Improving the targeting efficiency of proxies to maximise coverage and reduce leakage is not straightforward. First, these two factors are often interlinked. The development of the now-defunct Warm Front policy provides a case in point. The policy was criticized as inefficient by the National Audit Office in 2003 because of the large amount of support it provided to non-fuel-poor homes (the leakage of the policy) (NAO 2003). As a result, the eligibility criteria for Warm Front were changed in April 2011 so that only households in receipt of means-tested benefits could receive support. As table 3.2 above shows, this

substantially reduced the ‘leakage’ of the policy, reducing it from 70 per cent pre-2011 to 31 per cent post-2011 – but in so doing the ‘coverage’ of the policy deteriorated. The proportion of fuel-poor homes not covered by the policy rose from 65 per cent pre-2011 to 83 per cent post-2011, meaning that only a fifth of fuel-poor homes were able to benefit from the policy after the changes.

Table 3.3
Targeting efficiency of
ECO provisions for low-
income households in
terms of leakage and
coverage

		Coverage		Leakage	
		% of all fuel-poor households that are in this group	% of households in this group that are not in fuel poverty	Total projected spend on obligation (millions)	Total budget going to non-fuel-poor homes (millions)
LIHC indicator	ECO AW	33%	73%	£350	£254
	CSCO	19%	86%	£190	£163
	ECO AW and CSCO combined	47%	-	£540	£433

Source: Original modelling based on English Housing Survey data²⁵

An additional consideration when using proxies is the implications they have for delivery. As a general rule, the more proscriptive a proxy is (the more strictly defined the eligibility criteria) the more difficult it is to find eligible households. This was borne out by the change in eligibility criteria for the Warm Front policy: the changes made it harder to find eligible households, to the extent that a proportion of the budget for the policy was not spent. Under a supplier obligation, where a supplier must meet their targets and under-delivery is not an option, the effect of stricter targeting criteria is to push delivery costs up.

Given these trade-offs, debate on fuel poverty policy tends to focus on how well-targeted proxies can be made cheaper for the suppliers to deliver through the sharing of government data – information on who receives benefits, for example. However, these debates are misplaced. A fundamental principle of fuel poverty policy must be that all fuel-poor households are eligible for support. Proxies are simply incapable of achieving 100 per cent coverage of fuel-poor households while keeping levels of leakage at acceptable levels. There is therefore a compelling argument for abandoning the use of proxies and moving towards a new approach to targeting, which we outline below.

3.3.2 How house-by-house targeting could revolutionise cost efficiency

A new approach to targeting, which we term ‘House by House’, has the potential to radically improve the cost efficiency of fuel poverty policy. It could stem the vast leakage in spending that arises from using poorly targeted proxies, while at the same time ensuring that all fuel-poor households are eligible for support.

This new approach centres on the provision of free assessments to individual households, carried out house-by-house, in order to accurately determine the energy efficiency of homes, and whether the householder should be classified as fuel-poor or not.²⁶ The assessments would be based on the Green Deal assessment process, which covers the energy efficiency and occupancy details of a property, with the simple extension of also covering the household’s income.

²⁵ <https://www.gov.uk/government/collections/english-housing-survey>.

²⁶ The eaga Charitable Trust and DECC are currently exploring the development of a ‘doorstep assessment tool’ that would enable straightforward identification of fuel-poor households through adaptation of the existing Green Deal assessment procedure. Further information will be provided on the Trust’s website, www.eagacharitabletrust.org

Once a series of assessments have been carried out, those households identified as fuel-poor would receive subsidised energy efficiency improvements. The provision of assessments and the provision of subsidised measures constitute two distinct elements of the House by House model, and section 3.3.4 outlines various implementation issues for these two elements, such as which organisations lead delivery.

The concept of targeting 'leakage' under the House by House model is different to that of leakage using proxies. This difference is central to understanding how they compare in terms of cost efficiency:

- **Leakage with proxies** refers to the proportion of all households captured by the proxy that are not fuel poor. If it is assumed that support is distributed between all eligible households on an even basis, non-fuel-poor households will receive a level of efficiency improvements from the policy budget that is in proportion to their number.
- **Leakage with House by House** refers to the cost of providing free assessments to non-fuel-poor households. Since the approach allows accurate identification of fuel-poor households, none of the policy budget is spent on providing efficiency improvements to the non-fuel-poor.

The concept of 'coverage', concerning how many fuel-poor households are eligible for support under a targeting model, is identical for both approaches.

We have carried out original modelling of national building stock data in England using Verco's proprietary model to compare the cost efficiency of House by House targeting to different proxy combinations (see appendix 1 for full details on our methodology and findings). The results are compelling, and clearly illustrate the superiority of the proposed new approach.

In this modelling we have:

- Looked at nine possible proxy combinations, including: the eligibility criteria for support under ECO AW and CSCO; properties with an EPC efficiency rating of 'F' and 'G', or 'E', 'F' and 'G'; properties with solid walls; and properties off the gas grid.
- Looked at two house-by-house approaches, the first targeting a geographical area with an above-average density of fuel-poor households (determined to be 14.4 per cent²⁷) using indicative data from DECC (DECC 2013i), and the second targeting an area in which the density of fuel-poor households is in line with the English average (10.9 per cent).
- Assumed a given level of spending on each option of £540 million, which is in line with the figure already allocated to low-income households annually through ECO.
- Considered different scenarios in which each fuel-poor household is brought up to the same standard of energy efficiency.

The average cost for bringing a fuel-poor household up to different energy efficiency ratings has been calculated as shown in table 3.4.

We estimate the cost of an assessment under House by House targeting to be £120, in line with the typical market rate for a Green Deal assessment. In practice, this figure could be lower due to the economies of scale that the delivery model would produce.

27 This figure is based on the fuel poverty density in a Lower Super Output Area (LSOA) ranked according to fuel poverty density at the 80th percentile, where a LSOA at the 100th percentile has the highest density of fuel poverty.

Table 3.4
Average costs of bringing a fuel-poor household up to selected Energy Performance Certificate (EPC) levels

Achieved energy efficiency rating for fuel-poor household	Average cost of improvements	Average householder bill saving (after allowing for in-use factors)	Average householder bill saving (after allowing for in-use factors and comfort-taking)
EPC 'D'	£1,902	£230	£138
EPC 'C'	£7,189	£430	£258
EPC 'B'	£19,028	£510	£306

Source: Original analysis based on English Housing Survey data.²⁸

Summary findings from our analysis are shown in table 3.5. In short, with no additional spending for low-income households, house-by-house targeting in an area with above-average fuel-poverty could enable 117,414 more fuel-poor households to be improved to an EPC 'D' efficiency rating annually than the best of the proxies – 197,417 fuel-poor households in total. Even in a typical area in Britain, house-by-house targeting is a highly cost-efficient approach. It would bring 99,848 more fuel-poor households up to an EPC 'D' rating than the best of the proxies, or 179,851 in total. Moreover, every fuel-poor household would be eligible for support under the House by House approach, whereas only 65 per cent would be eligible under the best of the proxies we examined.

Table 3.5
Modelling of potential energy efficiency improvements (by number of households) and coverage (%) under House by House targeting (in areas with either above-average or average-density fuel poverty), compared to the best proxy measure

Spending allocation	Efficiency rating achieved	Number of fuel-poor households in receipt of support		
		House-by-house targeting in area with high density of fuel poverty (14.4%)	House-by-house targeting in area with average density of fuel poverty (10.9%)	Best of the proxy options
£540 million	EPC 'D'	197,417	179,851	80,003
£540 million	EPC 'C'	67,312	65,143	21,166
£540 million	EPC 'B'	27,189	26,828	7,977
Coverage		100%	100%	65%

Source: Results based on original analysis. See appendix 2 for full details for methodology and findings.

Table 3.4 illustrates the way in which the number of fuel-poor households that can be supported through either of these targeting models diminishes in inverse proportion to the support each household receives. For instance, to raise the efficiency of a fuel-poor household to an EPC 'C' rating costs £5,287 more on average than raising that household to an EPC 'D' rating. Within the constraints of currently allocated spending, under a house-by-house approach in an area with above-average fuel poverty, 130,105 fewer fuel-poor households would receive support if an EPC 'C' efficiency rating was targeted instead of an EPC 'D' rating. For this reason, if no additional funds are allocated to tackling fuel poverty through energy efficiency, we advocate bringing fuel poor households up to an EPC 'D' rating.

A major benefit of house-by-house targeting is the number of non-fuel-poor households that would receive free energy efficiency assessments, thus helping them to take action to reduce their energy bills either through the Green Deal or by going through local installers. Our analysis' findings on this point are shown in table 3.6. If the House by House targeting model was launched with the same level of resources as is currently available for low-income households, starting in areas with above-average levels of fuel poverty, and the efficiency of every identified fuel-poor household was brought up to an EPC 'D' rating, then just over 1.1 million free assessments would be given to non-fuel-poor households every year.

²⁸ <https://www.gov.uk/government/collections/english-housing-survey>.

Table 3.6
Number of non-fuel-poor households provided with a free energy efficiency assessment under different targeting and Energy Performance Certificate (EPC) level scenarios (under the House by House targeting regime with £540 million budget)

	Number of non-fuel-poor households provided with a free assessment in area with above-average density of fuel poverty (14.4%) <i>(Number of assessments required to find a fuel-poor household: 5.94)</i>	Number of households provided with a free assessment in area with UK average density of fuel poverty (10.9%) <i>(Number of assessments required to find a fuel-poor household: 8.17)</i>
EPC 'D'	1,173,532	1,469,504
EPC 'C'	400,133	532,260
EPC 'B'	161,621	219,200

Source: Results based on original analysis. See appendix 2 for full details for methodology and findings.

3.3.3 House-by-house targeting would boost the Green Deal

On the basis of cost efficiency alone, the House by House targeting model should be adopted as fuel poverty policy. An additional argument in support of the model, relating to how it would be delivered, is that it would drive uptake of the Green Deal.

As described above, there are two stages to the House by House model. First, there is the assessment process which identifies the energy efficiency status of a property and whether or not the householder is fuel-poor. Second, there is the installation of subsidised measures for those households that are identified as fuel-poor. Features of how the model would be delivered are discussed in section 3.3.4.

It would neither be possible nor desirable to provide free assessments to all households immediately. Working within budgetary and delivery capacity constraints, some households would need to be prioritised for assessments. The best approach would be to prioritise areas which can be expected to contain high proportions of fuel-poor homes, as this would limit the amount spent on assessments for households that are not fuel-poor. (Those not in fuel poverty would still benefit from the improved Green Deal offering we are recommending.) It would also ensure that a high proportion of the households who are in need are quickly identified and provided with support. Free assessments could also be made available to low-income households who do not live within the initially targeted areas, and who have gone to local support services seeking help with their energy bills.

IPPR has previously illustrated how areas generally known to contain low-income households and low-efficiency properties ('low income, low efficiency areas', or 'LILEAs') are likely to contain high proportions of fuel-poor households (Platt et al 2012). These areas should be targeted first, and could be identified using a combination of national fuel poverty statistics, local authority housing stock data, and the expertise of organisations that work at the local level. National government could support delivery by developing improved local area datasets.

As well as ensuring that high proportions of fuel-poor households are identified in the first instance, the area-based rollout of free house-by-house assessments would drive widespread uptake of energy efficiency measures and consequently help the Green Deal to achieve greater success. The evidence for this was covered in the previous chapter, in which we described:

- the importance of engaging households in order to create demand for energy efficiency improvements
- how the provision of free Green Deal assessments had been instrumental in driving engagement with the programme

- how delivering improvements in local areas can produce social norms around the installation of measures and reduce the costs of installations, and
- the importance of having trusted organisations provide information and advice about energy efficiency.

The evidence indicates that a street-by-street delivery model for house-by-house targeting – led by local organisations including local authorities and involving well-recognised and trusted brands – would be the most promising approach. This would result in an integrated policy design that would both drive Green Deal uptake and radically improve the cost-efficiency of fuel poverty policy.

3.3.4 Delivery considerations for house-by-house targeting

There are different options for how the House by House scheme could be designed and delivered. Here we outline a number of considerations.

The first step in rolling out the scheme would be to establish a dedicated resource for the programme. As will be outlined in chapter 5, this could be done in a way that is fiscally neutral by reallocating current spending under ECO.

Once funds are in place, resources could be allocated to individual top-tier local authority areas based on an assessment of need. Factors that could be taken into consideration include the number of fuel-poor homes in an area, the depth of fuel poverty and the proportion of low-income households. The Scottish government currently allocates funds based on the percentages of fuel-poor households and solid-wall properties in an area.

The distributed funds could be used by local organisations to deliver the free House by House assessments. The most cost-effective way for these assessments to be delivered would be ‘street-by-street’: an area-based approach such as this, although it presents a greater challenge in rural areas, would still reduce costs for the delivery organisations, and would minimise the costs of carrying out the assessments through economies of scale. Delivery bodies could propose a range of dates to households within an area on which the assessments would be carried out. It would then be up to individual householders to find a time slot within this range when they can meet with an assessor; however, it will not always be straightforward to find appropriate time-slots for all people in an area, so repeat visits will be necessary. There are existing examples of good practice, such as Warm Zones (see below), that could help to inform the design of new programmes, but each delivery organisation would be free to define its own approach.

Local support services should be made aware of the House by House scheme. They could then refer low-income households who do not live within the initially targeted areas but who have sought advice on how to tackle high energy bills, so that they too receive a free assessment.

As the assessments are carried out, fuel-poor households would receive subsidised energy efficiency improvements on a rolling basis. The local delivery organisation would be responsible for procuring a contractor to carry out these works. If they wish, they could opt for a locally based contractor, or one that will commit to using the contract to create jobs in the area. Big energy companies would be free to compete against other energy efficiency firms for the contracts.

Non-fuel-poor households that are not eligible for subsidised measures could be invited to have energy efficiency improvements undertaken during the dates on which the contractor

is in their area. This would reduce the costs to that householder of having these works undertaken, and so incentivise them to do so.

In order to ensure that delivery is in line with national objectives, the local organisations should be required to submit plans for how they will spend their funds, and to undertake comprehensive monitoring of their delivery of the scheme, the results of which should be made publicly available at regular intervals.

There are two options regarding which local organisations should lead the delivery of the House by House scheme: local authorities or third sector organisations. There are examples of best practice in energy efficiency improvements delivery by both types of organisation.

- **Best practice in local authority delivery**
Birmingham Energy Savers is a partnership between Birmingham city council and Carillion Energy Services. It provides support for households to help them navigate through the various stages of improving the energy efficiency of their properties, including the initial energy efficiency assessment, the Green Deal process, and the installation of efficiency measures. A key advantage of the scheme is that it carries the trusted Birmingham city council brand, which helps to stimulate demand for improvements from householders, particularly the more vulnerable. Once households are engaged in the scheme, having the experience and expertise of a contractor on board ensures that any improvements that are undertaken are of a high quality. It is hoped that the scheme will deliver improvements to 10,000 homes by 2015.²⁹
- **Best practice in third-sector delivery:**
Warm Zones is an independent community interest company owned by National Energy Action. It was first set up, with government support, in 2001 to trial, deliver, evaluate, develop and promote area-based approaches to delivering energy efficiency and tackling fuel poverty. Warm Zones uses a coordinated street-by-street approach, working in close partnership with local authorities, energy companies and local organisations. The scheme began with five pilot projects, but has since been adopted in over 20 areas. Since its introduction, Warm Zones has assessed over a million households and overseen the installation of 386,000 insulation measures. It has proven an effective model for overcoming the barriers to delivering energy efficiency measures because the Warm Zones brand is known as a trusted, not-for-profit partnership, because it engages the whole community through its street-by-street approach, and because it provides a one-stop-shop that integrates multiple policies, programmes, and funding streams, which simplifies the offer to the householder.³⁰

While examples can be made of best practice, current engagement with energy efficiency at the local level is patchy. Some local authorities have a well-established resource and skills bases that have enabled them to deliver innovative schemes alongside national government programmes and supplier obligations, and these authorities would be able to adapt quickly to the new policy package. Many others, however – and indeed the third sector in general – have struggled to maintain a focus on energy efficiency in the face of large budget cuts. These organisations will need support to set up the systems necessary to deliver the proposed new policy framework effectively. Well-resourced organisations could partner and share their expertise with those who may struggle, but ultimately the government would need to provide financial assistance with administration and set-up costs for the new policy package. In chapter 5 we recommend that resources saved by

29 <http://www.energysaverspartnerships.co.uk/birmingham>

30 <http://www.warmzones.co.uk/>

scrapping the ineffectual cashback scheme that is currently in operation could be used for this purpose.

A benefit of having local authorities be the lead delivery organisations is that they could be obliged to achieve certain outcomes – for example, providing support to a targeted number of fuel-poor households – in line with national policy objectives. Under the third sector option there would be greater risk that delivery objectives would not be achieved, although this approach might be expected to result in more innovative delivery approaches.

Irrespective of the delivery model chosen, central government should stipulate the proportion of funds to be spent on assessments and the proportion to be spent on installing energy efficiency measures. The ideal proportion would be determined by the total spending commitment to the programme made by government, as the greater the amount of money made available, the more could be spent on improvements to individual properties. In chapter 5 we set out our preferred approach, based on what would be the best use of funds that are already available.

Finally, under both models the delivery organisations should seek to integrate their street-by-street engagement programme with other local activities. This could include working in partnership with locally based services, such as health and wellbeing boards and social services, to promote the scheme and identify households in need of assistance. Energy efficiency improvements could be integrated with other planned regeneration works. Furthermore, delivery organisations should seek out additional sources of funding – for example, from EU development funds and the Big Lottery Fund.

The scheme should be linked to local job creation initiatives. Jobs in the energy efficiency industry are generally low-skilled, and so present a good entry point to the labour market for the unemployed. By their nature, energy efficiency jobs tend to be widely dispersed around the country, with higher need in poorer areas. Unemployed local people could be trained to become assessors or installers of energy efficiency measures – potentially through a jobs guarantee scheme, such as that proposed by IPPR (Dolphin et al 2011) and adopted as policy by the Labour party. In addition, local businesses could be prioritised when delivery organisations are choosing between contractors for the installations.

3.4 Summary

Improving the energy efficiency of properties is the best solution to fuel poverty. This chapter has set out the problems with current fuel poverty policy, and outlined a new approach that would be more effective and dramatically more cost-efficient. To recap, the key points covered in this chapter were:

1. The main nationwide fuel poverty policy is the ECO, which obliges the largest energy companies to deliver efficiency improvements to households that meet eligibility criteria relating to whether they receive benefits and the area in which they are situated. These proxies are ineffective at targeting the fuel-poor, and as a result only 47 per cent of fuel-poor households are benefiting from ECO's provisions for low-income households. Furthermore, 80 per cent of the funds spent every year (£433 million of the total £540 million) go to households that are not fuel poor.
2. We outlined a new approach to targeting fuel poverty, called House by House, under which free assessments would be provided to individual households in order to accurately determine whether they are fuel-poor or not. Those households that are identified as fuel-poor would then receive subsidised energy efficiency improvements.

As well as radically improving the cost-efficiency of fuel-poverty policy, the provision of free assessments would drive demand for the Green Deal.

3. At the current level of spending on low-income households (£540 million per year) the most effective use of resources under House by House would be for all fuel-poor households to receive efficiency improvements that bring them up to an EPD 'D' rating. Provided that areas with above-average fuel-poverty were targeted first, this would mean:
 - 1.1 million more fuel-poor, low-income households would receive a free assessment every year
 - 70 per cent of spending on low-income households would be spent on efficiency improvements for the fuel-poor
 - 197,417 fuel-poor households would receive efficiency improvements every year, 117,000 more than under the current ECO model, and
 - each fuel-poor household in receipt of energy efficiency improvements would achieve average bill savings of £230, with some allowance required for comfort-taking.
4. Delivery considerations for the House by House scheme were also covered, including which organisations would be best-placed to lead the scheme, how householders could be effectively engaged, and how the budget for the scheme should be apportioned between local areas.

Over chapters 2 and 3 we outlined the key reasons why current energy efficiency and fuel poverty policy is not working, and put forward solutions to put it on the right track. In the next section we summarise these findings before, in the final chapter, setting out our proposals for a new policy framework.

4. CONCLUSION

Improving the energy efficiency of the UK's housing stock is the best response to the current crisis in the affordability of energy. Energy efficiency improvements can not only produce immediate bill savings for households, but also help to insulate them from future price increases by reducing energy usage. They produce substantial short-term economic benefits by creating jobs and boosting GDP, and deliver cheap carbon emission reductions.

The government's current policies are failing to capitalise on the opportunities that energy efficiency presents, and much more needs to be done.

The Green Deal loan scheme is a welcome innovation which has the potential to transform the delivery of energy efficiency improvements. However, the scheme will only succeed if Green Deal loans are taken out by large numbers of households. This is because a Green Deal energy efficiency loan sits as a charge on a property, which means that the loan repayments are passed on to the new homeowner if there is a change in ownership. Without mass uptake, which would normalise the use of the product, a Green Deal loan is high-risk because it could negatively impact on the resale value of a home.

The gravity of the Green Deal's failings is demonstrated by how few households have taken out or committed to taking out a Green Deal loan since the scheme launched in January 2013 – just 813 by the end of September 2013. The government had projected that 130,000 households would have taken out a loan by the end of the scheme's first year, but at current rates it will not achieve even 1 per cent of this projection.

The fundamental problem with the government's approach has been that it focuses on the supply side of the Green Deal (making Green Deal loans available and building the Green Deal supply chain) without doing enough to create demand from householders for improvements. People do not make energy efficiency improvements unless they are encouraged to do so through effective engagement approaches and incentives. The government must become much more proactive about making energy efficiency an attractive prospect.

Households in fuel poverty are the most vulnerable to rising energy prices, and they need support to improve the energy efficiency of their properties above and beyond that provided through the Green Deal. The government rightly mandates that subsidised improvements be provided to the fuel-poor, but because the provisions for low-income households under the ECO policy are poorly targeted, 53 per cent of fuel-poor households are unable to access support. Moreover, 80 per cent of the policy's budget for low-income households is being spent on households that are not fuel poor.

An additional problem with ECO is that it is bad for competition because it entrenches the Big Six energy companies as the biggest contracting parties and delivery bodies for energy efficiency, boosting their balance sheets and restricting opportunities for small and medium-sized businesses.

In this report we have outlined ways to make the Green Deal more attractive, and demonstrated how a new integrated delivery model for promoting energy efficiency and tackling fuel poverty would:

- boost uptake of the Green Deal by providing households with the information they need to make efficiency improvements
- be radically more cost-efficient than current fuel poverty policies, enabling 80 per cent of available funds to reach fuel-poor households

- reduce the costs of efficiency improvements for all households, and
- improve competition in the energy efficiency market.

This new model would involve free energy efficiency and fuel poverty assessments being carried out house by house, and would be led by local organisations who could integrate the scheme with local regeneration and job-creation initiatives.

5. 'HELP TO HEAT': A NEW APPROACH TO ENERGY EFFICIENCY AND FUEL POVERTY

In this chapter we outline a new policy framework that would transform the delivery of energy efficiency measures and efforts to tackle fuel poverty. We call this framework 'Help to Heat', because it emulates the approach taken by the government to assist people with buying homes through the 'Help to Buy' scheme, specifically its use of government guarantees. Help to Buy is a flagship government programme that has the full backing of Number 10 and the Treasury. It is time that a similar level of commitment was shown to ensuring that energy bills are made and kept affordable, and the proposals outlined here can achieve this.

5.1 Funding Help to Heat

'Help to Heat' is a fully-costed set of proposals, which could be financed through the redeployment of existing notional funds, primarily those currently spent through the ECO policy.

ECO places an obligation on the biggest energy companies (the Big Six and one smaller supplier) to deliver prescribed energy efficiency improvements to residential properties. They reclaim the costs incurred in doing so by increasing their customers' bills. The actual amount that the companies spend is far from clear (see boxed text below), but the notional amount the suppliers are projected to spend on ECO is a total of £1.3 billion a year. The DECC has estimated that this will contribute an additional £47 to the average energy bill (DECC 2013a).

The cost to suppliers of delivering energy efficiency obligations

There is considerable uncertainty about the amount that suppliers pay to deliver energy efficiency obligations.

During 2012, some energy companies complained vigorously about the rising cost of the energy efficiency obligation that was in place before ECO, the Carbon Emissions Reduction Target. However, analysis by IPPR found that the cost of this policy was in line with government estimates across its lifetime (Platt et al 2012). The energy companies' protestations can be partly explained by the fact that some of them spent less on the policy during its early stages than the government had projected.

The amount that the companies spend on ECO is similarly uncertain. Evidence on the energy companies' progress towards targets shows that some are more effective at fulfilling their obligations than others, and are therefore likely to spend less (ibid).

In recent months, the Big Six energy companies have lobbied for their energy efficiency targets under ECO to be watered down, and for their costs under the policy to be financed from general taxation (see for example British Gas 2013 and SSE 2013). However, simply weakening the ECO targets would result in less money being spent on helping households through energy efficiency, and must be firmly resisted by the government.

Recent reports suggest the government is considering funding ECO from general taxation as a way to reduce energy bills (Ross 2013). This would be a broadly positive step, since funding policies from energy bills produces regressive outcomes. To maintain current levels of spending on ECO, the government will need to find £1.3 billion per year to fund

the scheme. If annual spending on energy efficiency is cut as a result of moving ECO from general taxation, it is bill-payers who will suffer.

The focus of this report is not on how energy efficiency policy should be funded, but on how more can be achieved with the money that is spent. The Help to Heat framework could be funded by reallocating the amount that energy companies' currently spend on ECO, or by funding it from general taxation.

Reallocating the energy companies' spending on ECO could involve replacing their energy efficiency obligations with an obligation to contribute to a fund to pay for Help to Heat. If the amount that the energy companies were obliged to contribute to this fund were to their current notional level of spending on ECO (£1.3 billion a year), no additional costs would be placed on to bills.

If the government does wish to move energy efficiency spending off bills and onto general taxation, it will need to undertake a wholesale review of the ECO policy. This would be necessary because, should the energy companies no longer have to pass on their delivery costs under the policy to their customers, there would be no longer be a competitive imperative for them to deliver their obligations at least cost. Furthermore, under the new arrangement the government would in effect be contracting the big energy companies to deliver energy efficiency improvements. It would be unacceptable for the government to contract energy efficiency delivery through the largest energy companies by default, because of the negative impacts this would have on competition in the industry.

Many organisations are advocating for the government to spend more on tackling fuel poverty.³¹ Indeed, at current levels of spending, even with the radical improvements to the cost-effectiveness of the current regime that could be achieved through the policies we propose, it will take many years for all fuel-poor households to receive energy efficiency improvements. This fact, and the arguments laid out in chapter 1 of this report, make a strong argument for investment in energy efficiency to be prioritised by the government in any decisions about infrastructure. However, the scope for additional spending is not the focus of this report.

We have analysed the potential impacts of the Help to Heat framework using the current £1.3 billion of notional ECO spending. Should further funds be allocated to a more ambitious programme, the delivery mechanisms we have proposed would be capable of delivering it.

In addition to the reallocation of ECO funding, Help to Heat would use funds that could be raised by scrapping the Green Deal's ineffectual cashback incentive scheme. A total of £125 million was made available for this scheme when it was launched, but so far only £2 million has been spent (DECC 2013d). From our personal communications with the DECC it is apparent that some of the original cashback funds may have been reallocated. Therefore, we take a conservative figure of £80 million as the amount that could be raised by scrapping this scheme.

Help to Heat would be implemented across the UK. The devolved administrations have different energy efficiency and fuel poverty policy policies in place, which would benefit from the new framework and could be easily adapted to work with Help to Heat. For example, the Scottish government has adopted a predominantly area-based approach for delivering

31 The Energy Bill Revolution is an alliance of over 150 national organisations and major companies who are campaigning for greater government spending on fuel poverty through the investment of carbon taxes in a major energy efficiency programme targeted at the fuel poor. See www.energybillrevolution.org.

its energy efficiency programme for fuel-poor households, in which local authorities play a lead role in delivering the programme. However, this approach critically depends on local authorities leveraging-in ECO funds to complement government monies. The Scottish government aims for a 2:1 ratio with respect to ECO and public funds. This means that the Scottish programme is very dependent on ECO rules and supplier priorities. The Help to Heat approach could easily be adapted to meet the Scottish government's policy priorities, and would give the Scottish government and local authorities much greater control over resources and policy direction than they have under the current arrangements.

5.2 The Help to Heat framework

Help to Heat is an integrated energy efficiency and fuel poverty framework comprised of two main policies, House by House and the Great Deal. The potential impact of House by House is projected using the current level of spending on fuel poverty, £540 million per year (that is, the current level of spending through ECO on the Affordable Warmth and Carbon Saving Communities obligations). The remaining £760 million per year that is currently spent through ECO (on the Carbon Emissions Reduction Obligation, or 'CERO') would go towards the costs of the Great Deal. The Great Deal retains CERO's focus on subsidising high-cost solid wall insulation, but uses some of its funds to reduce the cost of energy efficiency loans through the Green Deal. This would be achieved primarily by guaranteeing the borrowing of the Green Deal Finance Company (TGDFC). We have not considered the pros and cons of increasing the proportion of funds spent on low-income households.

5.2.1 House by House

In chapter 2 we described how engaging households within specific geographical areas is a proven way to drive demand for energy efficiency improvements, because doing so can produce social norms around the installation of efficiency measures and reduce the cost of installations. It is also important to have information and advice about energy efficiency provided by trusted organisations, and initiatives that have run alongside the Green Deal have demonstrated how providing free energy efficiency assessments can be effective at engaging households in the scheme.

We also illustrated how policies that use proxies to target support to fuel-poor households, as is done under ECO, are fundamentally flawed because they do not capture all fuel-poor households. It is also a highly cost-inefficient approach, mainly because very large numbers of non-fuel-poor households receive subsidised energy efficiency improvements.

House by House is our proposal for a new area-based delivery model designed to create demand for energy efficiency improvements at the same time as targeting support for fuel-poor households in an effective and cost-efficient way.

House by House centres on the provision of free energy efficiency and fuel-poverty assessments to individual households. This would drive uptake of the Green Deal and enable the accurate identification of fuel-poor households. Those households that are identified as fuel-poor would receive subsidised energy efficiency improvements, and those found not to be fuel-poor would be encouraged to make efficiency improvements using a low-cost Green Deal loan. (The loan aspect of our proposed scheme is described below in the section on the Great Deal). House by House would initially target low-income areas, so the beneficiaries of the free assessments would mainly be low-income households. Referral schemes would be put in place for low-income households that need support with their bills but do not live in the initially targeted areas.

The scheme would be delivered by trusted local organisations, which would help to improve the uptake rates of energy efficiency improvements. It would reduce the cost of undertaking these improvements through the economies of scale that would be achieved by targeting specific local areas.

To enable House by House to be delivered locally, the policy's budget will need to be apportioned between distinct areas. This could be done at the level of top-tier local authority areas, and based on an assessment of need. The definition of 'need' could include the proportion of fuel-poor households in an area, and how severely these households are affected by fuel poverty.

One challenge that stands in the way of establishing a UK-wide means of measuring and quantifying fuel-poverty need is that different definitions of fuel poverty are currently in use. In England, fuel poverty is defined using the 'low income, high costs' (LIHC) indicator, which identifies a fuel-poor household as one that has energy costs above the median level and whose income after energy costs is below the official poverty line. In the devolved nations, a fuel-poor household is defined as one that spends more than 10 per cent of its income on energy. The LIHC indicator is an improvement on the 10 per cent indicator, as it does not capture high-income households. Therefore, the LIHC indicator should be used to calculate fuel-poverty need by area.

Recommendation

The House by House delivery model should be adopted. The annual budget for House by House should be made available to local authority areas based on an assessment of the fuel poverty need within them using the 'low income, high costs' (LIHC) fuel-poverty definition. Scotland, Wales and Northern Ireland should begin to measure fuel poverty using the LIHC indicator to facilitate effective UK-wide policy implementation.

A detailed discussion of delivery considerations for House by House was included in section 3.3.4. Its main points were that:

- Local authorities or third sector bodies could be the main delivery organisations. They would be expected to set out their delivery plans, monitor implementation and report back to national government on the outcomes of their programmes. If local authorities were to be the delivery bodies then the government could set targets for them to achieve, in line with national objectives.
- Delivery organisations would use a portion of the locally-allocated funds to provide free energy efficiency and fuel poverty assessments. They could either hire a contractor to carry out the assessments, or train and employ their own assessors. Whichever route is chosen, the delivery organisation could use the scheme to create local employment opportunities.
- The assessments would be provided house-by-house, initially in areas likely to have high levels of fuel poverty. These areas ('low income, low efficiency areas', or 'LILEAs') could be identified using a combination of existing national and local housing data, and the local knowledge of the delivery bodies themselves. National government could support the effective identification of these areas by improving its fuel poverty data at the local-area level.

- The delivery organisations would procure contractors to carry out the subsidised energy efficiency improvements for those households identified as fuel poor. In the procurement process, local contractors, or larger organisations which commit to employing local people, could be prioritised.

National government would need to stipulate the proportion of funds it expected the delivery organisations to spend on assessments, and how much it expected to be spent on subsidised improvements for fuel-poor households. This balance in spending would determine the amount of subsidised support each fuel-poor household receives.

Assuming the maintenance of current levels of spending on low-income households (£540 million per year), we recommend that each fuel-poor household should be brought up to an energy efficiency rating of EPC band 'D'. This would cost on average £1,902 for each fuel-poor household. Targeting a higher rating would mean the available resources are spread too thinly, with too few fuel-poor households receiving support. The outcomes of the approach that we recommend, if it began with a focus on areas with above-average levels of fuel poverty, would be that:

- 1.1 million non-fuel-poor, predominantly low-income households receive a free energy efficiency assessment every year, and are encouraged to take out a low-cost Green Deal loan (a 'Great Deal'). (Great Deal loans would also be made more widely available, as described below).
- 70 per cent of spending on low-income households is spent on efficiency improvements for the fuel-poor (as opposed to 20 per cent at present).
- 197,000 fuel-poor households would receive efficiency improvements every year, 117,000 more than under the ECO model.
- Each fuel-poor household in receipt of energy efficiency improvements would achieve average annual bill savings of £230 (with some allowance required for comfort-taking).
- The economies of scale that the scheme makes possible would reduce the cost of making efficiency improvements for all households, potentially by as much as 30 per cent (EST 2009, Purple Market Research 2009).

Recommendation

Each fuel-poor household identified through the House by House scheme should be brought up to an energy efficiency standard of EPC 'D'. To achieve this goal, national government should stipulate that delivery organisations spend approximately 70 per cent of their budget on improvements for low-income households and 30 per cent on assessments.

Engagement with the delivery of energy efficiency measures and tackling fuel poverty at the local level is currently patchy. Some local authorities and third sector bodies have a well-established resource and skills base that would enable them to quickly adapt to delivering House by House. However, many others would need support to set up the systems and competencies necessary to deliver the new policy framework effectively.

The existing cashback incentive scheme is proving ineffective at driving demand for the Green Deal. Moreover, it is proving to be a highly wasteful use of resources, as nearly all of its expenditure is going to fund boiler replacements.

The cashback scheme should be scrapped, saving an estimated £80 million. This money should be used to fund set-up costs for the local organisations who will deliver the House by House scheme.

5.2.2 The ‘Great Deal’

The House by House scheme will create high levels of consumer interest in the Green Deal. However, if significant numbers of households are to take out a Green Deal loan, the financial offer needs to be improved – it needs to become a ‘Great Deal’ rather than simply a good deal. The reasons for this, which were outlined in chapter 2, include:

- Research shows that the interest rate for a Green Deal loan sounds high to potential consumers.
- Under the current offer, if a householder installs energy efficiency measures using a Green Deal loan, they see no impact on their energy bills – all of the savings that the measures achieve are used to fund the loan repayments.
- Early adopters of Green Deal loans face a substantial risk of it devaluing their property.

Different approaches to reducing the cost of a Green Deal loan were also covered in chapter 2 of this report. Guaranteeing the borrowing of TGDFC was found to be an exceptionally cost-effective option which can also be compatible with state aid legislation. This approach could reduce the interest rate of a loan from around 8 per cent to around 5–6 per cent,³² while delivering £57 of consumer benefit (that is, savings from bills) annually and leveraging £9.20 of private investment in efficiency improvements for every pound spent. To achieve a lower interest rate, direct public subsidies should be used to top-up the impact of the guarantee. There are different options for how these public subsidies could be provided. The approach with the lowest immediate costs to government is for the subsidies to be provided as an annual payment to Green Deal customers. To ensure that the offer is as easy for consumers to understand as possible, efforts should be made to integrate these payments with the Green Deal offer so that the benefit is evident in consumers’ energy bills.

It is impossible to know precisely how many people would want to take out a Green Deal loan if the interest rate were lower than it is currently: in part this would depend on how effective the House by House scheme and new efficiency standards for private rented sector properties (described below) are at creating demand. The design of the low-cost loan framework must therefore balance the need for an interest rate that is low enough to ensure demand for the product with the need for it not to be set so low as to constitute an inefficient use of government resources.

An additional consideration is that as the number of Green Deal loans taken out increases, the less need there will be to subsidise the interest rate. This is because:

1. The product will become normalised among consumers, thus reducing the current risk premium attached to the product.
2. TGDFC will build a track record in the capital markets, thus enabling it to offer lower interest rates unaided by government.

Given these complex dynamics, one promising approach would be for the level of interest rate subsidy to be very high initially, which would be guaranteed to drive demand, and for this to decrease over time in proportion to the number of Green Deal loans taken out. With this design, the impact that different interest rates have on uptake could be closely monitored and responded to, while keeping government spending under tight control.

³² Indicative APR rates. Actual rates will differ according to the size of loan and the loan term.

An indicative subsidy framework for the first million Green Deal loans is outlined below:

- The first 200,000 Green Deal loans receive an interest rate of 0 per cent, producing an average annual bill saving for each household of £136.
- The next 400,000 Green Deal loans receive an interest rate of 2 per cent, producing an average annual bill saving for each household of £107.
- The next 400,000 households receive an interest rate of 5 per cent, producing an average annual bill saving for each household of £57.

The costs of providing loans at these rates would not be incurred immediately by government, but would accrue over time. Table 5.1 illustrates the costs to government over five years on the assumption that the Help to Heat scheme resulted in 200,000 Green Deal loans being taken out annually.

Table 5.1
Five-year projection of accumulated costs to government (£) of subsidising Green Deal loan interest rates under an indicative tiered framework (outlined above), assuming 200,000 new loans annually

Year	1	2	3	4	5
Number of Green Deal loans	200,000	400,000	600,000	800,000	1,000,000
Accumulated cost (average loan size of £2,625)	£16.7 million	£28.4 million	£40.0 million	£42.8 million	£45.7 million

Source: Results based on original analysis. See appendix 1 for full details for methodology and findings

In chapter 2 we presented analysis of the government expenditure required to bring down the cost of mortgage finance for undertaking energy efficiency improvements. This is an avenue that the government should explore, since mortgage finance could be more attractive than Green Deal finance to some customers. However, this is not a focus of our recommendations because we believe that the government's priority must be to make the Green Deal work.

Recommendation

Low-cost loans for undertaking efficiency improvements should be made available to all households. To bring down the cost of loans, the government should both guarantee the financing of TGDfC and provide direct public subsidies. The cost of the loan should be lowest for first-movers, and gradually rise as the number of Green Deal loans in use increases.

Some properties require expensive energy efficiency measures, solid wall insulation in particular, that need some form of match funding if they are to be installed, even when loans are offered at a low interest rate. Supporting households with solid walls to install insulation is important for ensuring that their energy bills are affordable. In addition, the Committee on Climate Change has set out a target relating to the deployment of solid wall insulation that must be achieved as part of the UK's carbon reduction efforts. In chapter 2 we illustrated that progress towards this target has thus far been very poor. We propose a combination of interest rate subsidies, incentives, obligations and standards operating across different housing tenures as means of driving uptake of solid wall insulation.

First, private households should be incentivised to install solid wall insulation as part of a package of measures with a low-interest-rate loan. The 0 per cent interest rate that would be made available for first-movers under the Great Deal scheme, as described above, could be made available on an extended basis to all households installing solid

wall insulation. The interest rate subsidy should decrease over time as mass take-up leads to cost reductions in installation processes and insulation materials. Compared to a 20-year Green Deal loan with an interest rate of 8 per cent, a 0 per cent loan would provide a subsidy of around 50 per cent on the total loan repayment value for solid wall insulation. This is similar in value to the level of subsidy that is currently available to households through ECO.

Second, delivery bodies of the House by House policy outlined above should be given incentives to encourage private households to install solid wall insulation. Substantial cost reductions can be achieved for solid wall insulation if it is installed at scale in local areas, and House by House offers a good opportunity to promote such initiatives. House by House delivery bodies could be offered bonus payments from Great Deal funds – which they could use to expand their activities – as rewards for facilitating street-wide installations involving private sector housing stock.

Third, the social housing sector represents a major opportunity for driving solid wall insulation uptake. Large numbers of social housing units are constructed with solid walls. Since individual landlords manage large numbers of social homes, they present a good opportunity for at-scale installations of solid wall insulation. What's more, social housing providers bring substantial added value to energy efficiency programmes by helping to facilitate works and providing match-funding for works undertaken. Social housing providers should be able to access funds to undertake solid wall insulation from the Great Deal in the form of upfront capital subsidies of an equivalent value to that of the Green Deal interest rate subsidy provided for private housing. This would allow social housing providers to take advantage of their existing supply chains and large-scale procurement to maximise cost-efficiencies, and create a beneficial ripple effect for solid wall insulation costs more broadly. A new obligation on social housing providers, similar to the successful Decent Homes programme,³³ could be introduced to drive the uptake of solid wall insulation. This should stipulate that all social homes with solid walls must be fully insulated within a given timeframe, which would give certainty to the solid wall insulation industry that a certain level of deployment will be achieved and so enable them to make appropriate investments in the supply chain.

Recommendation

Interest-free loans should be made available on a long-term basis to households that wish to install solid wall insulation. Area-wide installations of solid wall insulation should be encouraged through the House by House policy. A new standard for the social housing stock should be introduced, requiring that solid wall insulation be installed across the entire stock. Upfront capital subsidies should be made available to social housing providers to help them meet the installation costs.

The final element of the Great Deal is the introduction of efficiency standards for the private rented sector. This is intended to drive further uptake of efficiency improvements, and requires no direct spending by government.

The private rented sector stock is often overlooked in energy efficiency programmes because the incentives to the landlord and tenant for undertaking improvements are not

33 <https://www.gov.uk/government/policies/improving-the-rented-housing-sector---2/supporting-pages/decent-homes-refurbishing-social-housing>

aligned. (If a tenant funds efficiency improvements, the ongoing value of their investment stays with the landlord; if the landlord funds improvements they experience no direct benefit or reduced bills.)

The route to improving energy efficiency performance in the private rented sector is through efficiency standards. Although the danger with implementing efficiency standards is that they may increase rental rates, this risk is minimised under the Help to Heat framework because financial support is made available to landlords to assist them with the costs of making improvements. This support should include low-cost loans through the Great Deal, and subsidised improvements through House by House for fuel-poor tenants. The government has proposed that by 2018 the private rented stock will be required to reach a minimum energy efficiency standard of EPC 'E' (Energy Act 2011), but this is not ambitious enough.

Recommendation

The ambition of the proposed energy efficiency standard for the private rented stock should be increased so that an EPC 'D' rating is mandatory by 2022.

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APPENDIX 1

ASSESSING OPTIONS FOR REDUCING THE COST OF ENERGY EFFICIENCY FINANCE

1. Introduction

A review of published data on Green Deal activity to date indicates that uptake has been much slower than was forecast in the initial impact assessment. Furthermore, ECO and the Green Deal are currently not working together to finance energy efficiency retrofit in hard-to-treat properties as was intended.³⁴ This will impact on the overall cost of meeting the obligation, as well as impacting on the amount that gets passed on to bill payers.

Anecdotally, a number of reasons have been cited for the slow uptake of Green Deal, including, among others, the (perceived) high cost of finance and the lack of upfront bill savings for the consumer despite the hassle involved in installation. The high cost of finance also limits the range of measures that can be financed within the Green Deal's 'golden rule'.

As part of IPPR's research into energy efficiency and fuel poverty policy, Verco has carried out an initial analysis of financial incentives that could reduce the cost to consumers of Green Deal finance. These incentives could be funded either through ECO or other funding channels, such as the recycling of carbon tax revenues.

This appendix provides a brief outline of the suggested incentives and how they could be designed, along with indicative costs and consumer benefits for each option.

Due to the lack of data and uncertainty about the consumer response, this analysis does not attempt to model the relative impact of these incentives on consumer uptake, but is limited to a cost-benefit analysis of the incentives were uptake to be in line with original government projections for the Green Deal up to 2022. Targeted consumer surveys would be required to determine both the relative attractiveness of these incentives and to optimise the level or monetary value of them.

2. Financial incentives for the Green Deal

Three main categories of incentives have been investigated and modelled:

- direct cash subsidies to lower the interest rate of Green Deal loans for consumers
- government guarantees for TGDFC to lower its cost of borrowing
- government guarantees for green mortgages.

Each of these options is discussed in more detail in the following sections, and each has been compared using the following metrics:

- the ratio of money invested in domestic energy efficiency retrofit (the capital cost of measures installed) to government spending via subsidies and/or guarantees
- the ratio of consumer benefit (that is, the financial value of the incentive to the consumer) to government spending via subsidies and/or guarantees
- money spent via government subsidies and/or guarantees per tonne of CO₂ saved.

2.1 Direct subsidies to lower the Green Deal interest rate for consumers

Under this option, households that opt for Green Deal finance to upgrade the energy performance of their property would receive a direct subsidy from the government. This could, for instance, be provided as an annual payment to the electricity bill payer, or alternatively as an upfront payment (calculated as the net present value of the annual payments) under a system similar to that of the current cashback scheme. The latter option, however, skews the benefits in favour of a property's current bill-payer at the

³⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/43000/3603-green-deal-eco-ia.pdf

expense of future bill-payers. Another option would be to deliver this direct subsidy in the form of low-cost finance to TGDFC via the Green Investment Bank (GIB), although this would require state aid clearance.

Three levels of direct subsidies have been modelled that would reduce the interest rate for Green Deal finance from its current level of around 8 per cent³⁵ down to 5 per cent, 2 per cent and 0 per cent respectively. The corresponding consumer benefits and costs to the Treasury are summarised in section 3 of this appendix.

However, it is worth noting that the Consumer Credit Act 2006 places certain restrictions on 0-per-cent-interest-rate products, which would prevent Green Deal providers from marketing an equivalent cash product.

If there was enough consumer interest then, at an 8 per cent interest rate, the Green Deal would deliver a total capital investment of £3.15 billion to the economy to upgrade 1.2 million homes by 2020. The cost to the government for subsidising the consumer interest rate from 8 per cent to 5 per cent and 0 per cent respectively would range between £1.4 billion and £3.3 billion, with these subsidies directly translating into consumer benefits (in the form of cash savings). Under each interest rate scenario, the package of works is assumed to remain unchanged. This package is one which is eligible within the golden rule when the interest rate is fixed at 8 per cent. The value of the resultant consumer benefit ranges from £57 to £136 per annum over the Green Deal loan term.

2.2 Government guarantees for TGDFC

Currently, the cost of borrowing for TGDFC includes a risk premium due to its lack of track record, which is also reflected in its 'BBB' credit rating. The intention of the proposed government guarantees is to reduce the risk premium attached to finance raised by the TGDFC, and in doing so to reduce the interest rate that is charged to the end consumer.

The Green Deal Finance Company (TGDFC) has been set up as a not-for-profit company to offer long-term, fixed-rate finance for energy efficiency improvements carried out by accredited Green Deal providers. Its capital structure consists of a risk-absorbing junior debt layer (which currently includes private-sector capital and DECC funding), topped up by senior debt which is currently from the Green Investment Bank (GIB). However, state aid rules require that this GIB lending is provided at current market rates. It is expected that the overall proportion and interest rate of the junior (risk-absorbing) layer is to be reduced over time, with additional capital for the senior debt layer provided by the European Investment Bank and from the capital markets in the medium-to-long term.

The blended rate to the consumer is currently 6.96 per cent, before any admin costs and Green Deal payment charges are added. Once these overhead costs are added, this translates into an APR of between 7.9 per cent and 10.3 per cent, depending on the value of the Green Deal loan and term, which ranges from 10 to 25 years.

It is assumed that government guarantees would bring down the borrowing rate for TGDFC's senior debt component close to that for gilts, potentially with a small premium to reflect its structured finance aspect.³⁶ The overall impact of the guarantees on the interest rate to the consumer will depend on the size and interest rate of the risk-absorbing layer.

35 The TGDFC is providing finance at an APR of 7.9 per cent over 20 years for a loan amount of £5,000, inclusive of all charges and expenses

36 Structured finance refers to the pooling of economic assets (such as loans and mortgages) and the repackaging of these to mitigate the risks of the underlying assets.

If the guarantees could be extended to cover 100 per cent of the TGDFC's debt, including the risk-absorbing layer, then this would maximise the impact and do most to reduce the interest rate to the consumer. If the junior debt layer remains in place without being guaranteed then it might still be argued that those providing the junior debt would accept a lower return, because the government guarantee on the senior debt reduces the overall risk exposure of TGDFC.

Depending on the extent of the guarantee and the size and interest rate of the risk-absorbing layer, then it is estimated that the effect could be to reduce the overall interest rate to the consumer from 8 per cent to around 5–6 per cent. The underlying cost of finance (excluding admin costs and Green Deal payment charges) is consistent, for instance, with the blended rate that the Housing Finance Corporation are able to offer to social housing providers given its 'A+' corporate credit rating. Arguably, the Housing Finance Corporation's lending interest rates are low partly because its loans are secured against the assets of housing providers, but nevertheless it is a useful benchmark of interest rates for an organisation with a strong credit rating.

The cost of providing these guarantees is likely to be somewhere between the cost of guarantees for investment in social housing through the Housing Finance Corporation (low-risk) and those for Enterprise Finance (high-risk: 2 per cent per year to guarantee 75 per cent of loan value).

Assuming an annual cost of 1 per cent of the outstanding loan amount for extending the guarantee, this would cost £340 million over the life of Green Deal (20 years in our modelling) to deliver a total capital investment in the economy of £3.15 billion, upgrade 1.2 million homes by 2022, and deliver a net benefit to consumers (over and above Green Deal payments) of £1.4 billion. This translates into £4 in benefit to the consumer for every £1 spent by the government. Should state aid issues require the government to pass these costs on to TGDFC, this would have the effect of raising the interest rate to the consumer by a similar level, thereby reducing the net consumer benefit. However, a block exemption on state aid rules should be investigated, given the potential social benefits of reduced energy bills for consumers over the medium-to-long term.

2.3 Combination of government guarantees and subsidies

This option models the effect of government guarantees for TGDFC coupled with additional direct subsidies. Two sub-options have been modelled, with the 'golden rule' interest rate fixed at 8 per cent. It is assumed that government guarantees bring down the consumer interest rate to around 5 per cent for both options, and that direct subsidies further reduce the interest rate for the consumer down to 2 per cent and 0 per cent.

Cost-benefit analysis suggests that the total consumer benefit will be similar to that for direct subsidies, but with a lower cost to the government of between £1.4 billion and £2.0 billion, thereby giving a higher multiplier on both total investment and consumer benefit per pound of government spending.

2.4 Government guarantees for green mortgages

Under this option, Green Deal finance for energy efficiency upgrades can be secured against the property, with the government guaranteeing the Green Deal element of the mortgage. This option is particularly suited to first-time buyers and landlords remortgaging their property, estimated at approximately 60,680 homes (out of the 1.2 million expected to take up the Green Deal) based on 2012 figures for mortgage approvals.

Such an arrangement creates an opportunity to offer loans that are not necessarily limited by the golden rule, and could potentially be linked to minimum EPC standards. The cost-benefit figures presented in section 3 below are based on an EPC band 'C' standard, assuming an average interest rate of 6 per cent over the loan period. This is consistent with the average level of interest rates on mortgages over the last 20 years. It is expected that the guarantee would bring down the interest rate on Green Deal finance from 6 per cent to 4 per cent over the loan duration.

The cost of extending guarantees for Green Deal loans secured against a property is assumed to be of a similar order to those for the Help to Buy guarantee scheme. These are currently set between 0.3 and 0.9 per cent of the outstanding loan amount annually, depending on the loan-to-value ratio. Arguably, investment in energy efficiency measures would improve the affordability of the household and impact positively on their ability to repay the additional mortgage, and therefore there would only be minimal, if any, additional risk over and above that of mortgage default.

Assuming the annual cost of the guarantee is 1 per cent of the outstanding Green Deal loan amount, the cost to the government is estimated at £37 million to upgrade approximately 60,680 homes³⁷ to EPC 'C' standard. For every pound invested, the guarantee would leverage £9 as investment in energy efficiency measures. On average, this would deliver an annual benefit to the consumer of £76.

As with the Help to Buy scheme, state aid rules will require the cost of these guarantees to be passed on to the consumers. Where the guarantee costs are passed on, the net benefit to the consumer is expected to be in the range of a 1 per cent reduction in interest rates.

3. Results

The following table compares the alternative options discussed above. For each of the options, the cost and consumer benefit figures have been calculated for upgrading 1.2 million homes by 2022, apart from Option 4 for which the costs relate to approximately 60,680 homes out of the 1.2 million that are likely to take out a mortgage product.

³⁷ Based on 2012 figures for mortgage approvals as a percentage of total housing stock (both first-time purchase and re-mortgages).

Table C.1
Comparison of financial incentive options for the Green Deal (GD)

Option	Financial incentive	Package of measures	Original interest rate	Subsidised interest rate	No. of homes upgraded	Direct costs to govt – undiscounted (£bn)	Indicative guarantee costs to govt – undiscounted (£bn)*	Total capital costs of measures (£bn)	Total consumer benefit – undiscounted (£bn)	Average consumer benefit per property over – GD loan term – undiscounted	Total £ invested for each £ of govt spending	Govt spending per tonne of CO ₂ saved	Consumer benefit per £ of govt spending
1a	Subsidise GD interest rate	Golden Rule at 8%	8%	5%	1.2m	£1.36	-	£3.15	£1.36	£1,135	£2.30	£63	£1.00
1b	Subsidise GD interest rate	Golden Rule at 8%	8%	2%	1.2m	£2.56	-	£3.15	£2.56	£2,137	£1.20	£118	£1.00
1c	Subsidise GD interest rate	Golden Rule at 8%	8%	0%	1.2m	£3.27	-	£3.15	£3.27	£2,723	£1.00	£150	£1.00
2	Govt guarantee for TGD/FC	Golden Rule at 8%	8%	5%	1.2m	-	£0.34	£3.15	£1.36	£1,135	£9.20	£16	£4.00
3a	Govt guarantee and subsidised interest rate	Golden Rule at 8%	8%	2%	1.2m	£1.05	£0.34	£3.15	£2.56	£2,137	£2.30	£64	£1.80
3b	Govt guarantee and subsidised interest rate	Golden Rule at 8%	8%	0%	1.2m	£1.67	£0.34	£3.15	£3.27	£2,723	£1.60	£92	£1.60
4	Govt guarantees for green mortgages (100% of GD loan – EPC 'C')	EPC Band 'C'	6%	4%	60,680	-	£0.036	£0.34	£0.092	£1,515	£9.20	£26	£2.51

Source: Original analysis using Verco's Navitas tool.

Note that the interest rate and net benefit to consumer do not include the impact of the guarantee costs. These have been kept separate given the uncertainty about what these costs are likely to be and the level of flexibility around state aid rules.

*Assumed to be 1 per cent of annual outstanding loan amount.

4. Discussion

Counterfactual situation

The current ECO CERO obligation is designed to fund insulation measures in hard-to-treat properties, with the carbon price (and therefore the level of funding) determined either through the brokerage mechanism or bilateral agreements. While the proportion of funding varies by project, ECO will typically fund 70 per cent of the costs of solid wall insulation, meaning that every £1.00 of ECO leverages a total spend of £1.40. At a funding level of 60 per cent, the leverage rises to 1.7. Bilateral deals on ECO CERO obligations are currently attracting funding for solid wall insulation at around £120–£140 per tonne of CO₂.

Option 1a: cut subsidised Green Deal interest rate from 8 to 5 per cent

A direct subsidy to lower the Green Deal interest rate from 8 per cent to 5 per cent would leverage greater investment (£2.30 per £1.00) than ECO CERO, and deliver carbon reductions at a lower price (£63 per tonne of CO₂). However, when assessing the relative attractiveness of this option, it is worth noting that ECO CERO provides funding for measures higher up the carbon abatement curve compared to measures funded through Green Deal finance.

Option 1b: cut subsidised Green Deal interest rate from 8 to 2 per cent

Subsidising the Green Deal interest rate from 8 per cent to 2 per cent would leverage less investment (£1.20 per £1.00) than ECO CERO, but would deliver carbon reductions at a comparable price (£118 per tonne of CO₂).

Option 1c: cut subsidised Green Deal interest rate from 8 to 0 per cent

Subsidising the Green Deal interest rate from 8 per cent to 0 per cent would leverage less investment (96p per £1.00) than ECO CERO, and deliver carbon reductions at a higher price (£150 per tonne of CO₂).

Option 2: government guarantee for TGDFC

A government guarantee for TGDFC that brought the interest rate down from 8 per cent to 5 per cent would give a substantially greater leverage ratio (£9.20 per £1.00) than ECO CERO, and deliver carbon reductions at a much lower price (£16 per tonne of CO₂).

Option 3a: government guarantee for TGDFC plus subsidy to 2 per cent

A government guarantee for TGDFC that brought the interest rate down from 8 per cent to 5 per cent, and which then subsidised the interest rate further to 2 per cent, would give a greater leverage ratio (£2.30 per £1.00) than ECO CERO and deliver carbon reductions at a much lower price (£64 per tonne of CO₂).

Option 3b: government guarantee for TGDFC plus subsidy to 0 per cent

A government guarantee for TGDFC that brought the interest rate down from 8 per cent to 5 per cent, and which then subsidised the rate further to 0 per cent would still give approximately the same leverage ratio (£1.60 per £1.00) as ECO CERO, and deliver carbon reductions at a relatively lower price (£92 per tonne of CO₂).

Option 4: government guarantees for green mortgages

A government guarantee for green mortgages to upgrade properties to EPC band 'C' would give a greater leverage ratio (£9.20 per £1.00) than ECO CERO and deliver carbon reductions at a much lower price (£26 per tonne of CO₂).

5. Conclusions

Not surprisingly, the guarantee options work out more favourable in terms of the level of private sector investment that can be leveraged as well the cost of carbon abatement. Guarantee options 2 and 4 would also provide a higher multiplier on the net consumer benefit for every £1 spent by the government than the direct subsidy options.

Government guarantees for TGDFC is the best option for reducing the cost of finance for consumers at the least cost to the government. When combined with further interest-rate subsidies, this would provide a good middle ground should the interest rate reduction achieved by guarantees alone be insufficient to drive greater uptake. In effect, the interest rate subsidies could be introduced in a stepped fashion starting from a higher subsidy level (potentially bringing interest rates close to 0 per cent) that is time-limited. Based on the consumer response, the subsidy could then be gradually lowered to achieve an optimum balance of costs versus uptake.

Government guarantees for green mortgages also offer an alternative source of finance for those interested in high-capital-cost measures that may not otherwise work within the Green Deal's golden rule or fit within borrowing limits. This option should be considered in parallel with Green Deal finance to encourage more intensive retrofit of the housing stock, and maximise opportunities to integrate energy efficiency with capital repairs.

APPENDIX 2

ASSESSING THE EFFECTIVENESS OF TARGETING MODELS FOR FUEL POVERTY POLICY

Our modelling was carried out using English Housing Survey (EHS) 2011 data (DCLG 2011) to assess the effectiveness of alternative targeting proxies in terms of their coverage and leakage. For this purpose, nine possible proxy combinations were modelled:

- eligibility criteria for support under ECO AW – for example, households in receipt of specific benefits and allowances
- eligibility criteria for ECO CSCO areas, such as properties in the lowest 15 per cent of LSOAs (Lower Super Output Areas) ranked in the Index of Multiple Deprivation
- solid-wall properties
- ECO CSCO-eligible and solid-wall properties
- EPC bands 'E', 'F' and 'G'-rated properties (those whose ratings fall in the bottom end of the A–G rating system)
- EPC band 'F' and 'G'-rated properties only
- properties not connected to the gas grid
- EPC band 'E', 'F' and 'G'-rated properties and those with solid walls
- EPC band 'E', 'F' and 'G'-rated properties and those not connected to the gas grid.

These targeting proxies were compared with an alternative House by House targeting approach, as described in chapter 3. The effectiveness of House by House was assessed for an area with high incidence of fuel-poor households, defined as 14.4 per cent,³⁸ as well as an area in which the density of fuel-poor households is in line with the national average. To enable comparison of traditional proxies with the house-by-house approach, the amount of spending on fuel poverty has to be taken into account. This was assumed to be £540 million per annum, in line with the current allocation for low-income households through ECO AW and CSCO obligations. The cost of an assessment under house-by-house targeting is assumed to be £120, which is reflective of the typical market rate for a Green Deal assessment.

Furthermore, the effectiveness of the house-by-house approach is affected by the amount of spending per fuel-poor household. For this reason, the comparison has been carried out for three potential energy efficiency standards: improving fuel-poor households to EPC band 'D', 'C' and 'B' standards. The cost of improving households to these EPC bands has been carried out using Verco's in-house model, Navitas. The EHS data has been classified into archetypes based on the physical attributes of the properties, such as dwelling type, wall construction, heating fuel, loft and glazing type, and EPC band. For each of the archetypes, modelling has been carried out using SAP 2009 software to work out the energy efficiency measures and the associated costs required to improve the property to the required EPC band. Our calculations of the resultant fuel bill savings take account of in-use factors for the various energy efficiency measures. The results were then weighted and scaled-up to the total housing stock based on the relative distribution of these archetypes in the EHS data.

Table D.1 below provides a comparison of the effectiveness of the targeting proxies and the house-by-house approach. This analysis suggests that the house-by-house approach is a more targeted and cost-efficient alternative to other proxies, even in areas with an average incidence of fuel poverty. The effectiveness of the proposed approach increases in areas with high incidence of fuel poverty.

38 This figure is based on the fuel poverty density of a Lower Super Output Area (LSOA) at the 80th percentile, where a LSOA at the 100th percentile has the highest density of fuel poverty.

Table D.1

Comparison of the effectiveness of the targeting proxies and the house-by-house approach

Delivery model	Proxy-based targeting										House by House	
	Individual eligibility criteria / targeted area	ECO Affordable Warmth eligibility	ECO Carbon Saving Communities Obligation (Areas in Lowest 15% IMD)	Areas in lowest 30% IMD + solid walled properties	Properties with an efficiency rating of F & G	Properties with an efficiency rating of F & G	Properties with an efficiency rating of E, F & G	Solid walled properties	Properties off the gas grid	Properties with an efficiency rating of E, F & G + solid walled properties	Properties with an efficiency rating of E, F & G + properties off the gas grid	House-by-house approach in area with above-average FP density (FP density = 14.4%)
Results for upgrading fuel-poor households to EPC Band D												
Average cost of upgrades for each home: £1,902												
% of resources that reach a FP home	28%	14%	18%	27%	20%	15%	16%	22%	22%	22%	70%	63%
Capital cost reaching FP homes (£)	152,165,393	75,612,430	95,916,153	143,459,043	106,558,296	83,182,283	84,451,218	116,383,398	119,915,349	119,915,349	375,486,230	342,077,310
Number of FP homes receive support	80,003	39,754	50,429	75,425	56,024	43,734	44,401	61,190	63,047	63,047	197,417	179,851
Cost of finding a fuel poor home under street-by-street approach (£)	-	-	-	-	-	-	-	-	-	-	833	1,100
Results for upgrading fuel-poor households to EPC Band C												
Average cost of upgrades for each home: £7,189												
% of resources that reach a FP home	28%	14%	18%	27%	20%	15%	16%	22%	22%	22%	90%	87%
Capital cost reaching FP homes (£)	152,165,393	75,612,430	95,916,153	143,459,043	106,558,296	83,182,283	84,451,218	116,383,398	119,915,349	119,915,349	483,906,594	468,311,690
Number of FP homes receive support	21,166	10,518	13,342	19,955	14,822	11,571	11,747	16,189	16,680	16,680	67,312	65,143
Cost of finding a fuel poor home under street-by-street approach (£)	-	-	-	-	-	-	-	-	-	-	833	1,100
Results for upgrading fuel-poor households to EPC Band B												
Average cost of upgrades for each home: £19,028												
% of resources that reach a FP home	28%	14%	18%	27%	20%	15%	16%	22%	22%	22%	96%	95%
Capital cost reaching FP homes (£)	152,165,393	75,612,430	95,916,153	143,459,043	106,558,296	83,182,283	84,451,218	116,383,398	119,915,349	119,915,349	517,342,910	510,476,718
Number of FP homes receive support	7,997	3,974	5,041	7,539	5,600	4,372	4,438	6,116	6,302	6,302	27,189	26,828
Cost of finding a fuel poor home under street-by-street approach (£)	-	-	-	-	-	-	-	-	-	-	833	1,100

Source: Original analysis by Verco using in-house tools and English Housing Survey data 2011.