National Audit Office

Report
by the Comptroller
and Auditor General

Department of Energy & Climate Change

Green Deal and Energy Company Obligation

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National Audit Office

Department of Energy & Climate Change

Green Deal and Energy Company Obligation

Report by the Comptroller and Auditor General

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Comptroller and Auditor General
National Audit Office

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This report examines the achievements and costs of the Green Deal and the Energy Company Obligation, evaluating how the Department of Energy & Climate Change has designed, implemented and managed them.

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Contents

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Key facts

£240m

Department of Energy & Climate Change's spend on the Green Deal between 1 April 2011 and 31 March 2015 (including grants to stimulate demand)

£3.0bn

cost to energy suppliers of meeting their energy company obligations, 1 January 2013 to 31 December 2015

£94

overall cost per tonne of carbon saved by the schemes (excluding energy suppliers' administrative costs) compared with £34 for the previous set of schemes

2.3m

number of fuel-poor households in England

£6.2 billion estimated notional lifetime savings on energy bills resulting from the installation of Energy Company Obligation (ECO) measures in low income and vulnerable households by 31 December 2015

50,000 homes made more energy-efficient with direct subsidies from the Department of Energy & Climate Change, worth £170 million (Green Deal cashback scheme and Green Deal Home Improvement Fund)

12 million approximate number of homes lacking wall insulation in 2015 (cavity-walled and solid-walled homes that could be insulated)

	Green Deal finance	**ECO**
Aims to improve homes' energy efficiency by...	…providing loans to households	...placing an obligation on energy suppliers
Homes improved by 31 December 2015	**14,000**	**1.4 million**
Individual improvements to homes (measures) by 31 December 2015	**20,000**	**1.7 million**
Millions of tonnes of carbon dioxide savings expected over lifetime of measures installed by 31 March 2017	**0.4**	**33.7**

Summary

1 The UK's 27 million homes are responsible for more than a quarter of the country's total energy demand and greenhouse gas emissions. Due to the age and design of many buildings, the UK's housing stock is among the least energy-efficient in Europe. Occupants of inefficient homes have to use more energy to keep their home warm, leading to higher bills and harm to the environment. They may alternatively suffer colder conditions, which can have a significant impact on their health.

2 Improving the energy efficiency of homes supports three of the Department of Energy & Climate Change's (the Department's) strategic aims:

- reducing emissions of greenhouse gas, such as carbon dioxide (CO_2);
- improving energy security; and
- mitigating fuel poverty.[1]

3 There are several ways to make homes more energy-efficient. These range from relatively cheap measures, such as loft insulation, to more expensive measures, such as refitting walls with a more energy-efficient structure.

4 In 2013, the Department implemented two schemes with the primary aim of improving household energy efficiency to reduce CO_2 emissions:

- Through the **Energy Company Obligation (ECO)**, the Department requires the largest energy suppliers to install measures in homes that will cumulatively reduce CO_2 emissions by a certain amount. Suppliers face penalties if they do not comply. Suppliers can install measures, or contract installers, either directly or through public auctions over a 'brokerage platform'. The suppliers pass on their costs to all their customers through energy bills. The government has obligated suppliers to improve homes' energy efficiency in this way for more than 20 years.
- **The Green Deal** is primarily a finance mechanism, which enables householders to borrow money so they can improve the energy efficiency of their homes. They repay this money through their energy bills ('Green Deal finance'). This is complemented by a framework of advice, accreditation and assurance intended to increase homeowners' trust in the supply chain for home improvements.

1 In England, households are considered fuel-poor if the cost of heating their home is above average, and meeting these costs would leave them with an income below the poverty line.

5 The Department's stated target was that the schemes should combine to improve one million homes by March 2015. It intended the schemes to work together: where measures cost too much to meet the conditions for accessing Green Deal loans, the Department expected homeowners to 'blend in' contributions from energy suppliers through ECO. The Department also expected suppliers to encourage people to pay partly for ECO measures using Green Deal finance to minimise their costs.

6 The Department wanted the schemes to reduce CO_2 emissions in a way that would achieve other objectives:

- **Stimulate significantly more private investment:** In 2010, the Coalition Government stated that it wanted to change the way energy-efficiency measures were paid for. It wanted households that benefited from measures to pay for them, rather than all energy consumers contributing as under previous schemes. The Department wanted Green Deal finance to enable more households to pay for measures.
- **Improve harder-to-treat properties:** The Department stipulated that suppliers should meet most of their ECO target by improving the energy efficiency of 'harder-to-treat' properties, which cost more and take longer to improve. Its analysis showed that the previous supplier obligation schemes had absorbed most of the potential demand for cheaper measures, such as loft insulation. It wanted the supply chain to develop more efficient ways of improving harder-to-treat properties over time.
- **Mitigate the main cause of fuel poverty:** The Department required suppliers to install a number of measures in homes more likely to be occupied by fuel-poor people.

7 In late 2013, ministerial concern over the impact of government policies on consumer bills led to the Department adapting ECO. It reduced suppliers' obligated CO_2 savings and decreased the requirement for them to improve harder-to-treat homes.

8 In July 2015, the Department announced that it would not provide any further funding for Green Deal loans, effectively bringing the scheme to a halt. ECO will end on 31 March 2017, and the Department plans to replace it with a smaller scheme that focuses on mitigating the main causes of fuel poverty.

Our report

9 This report assesses the value for money of the Green Deal and ECO schemes. It identifies lessons to help the government improve the way it designs and manages domestic energy-efficiency schemes in future.

- Part One explains the importance of household energy efficiency and describes the two schemes.
- Part Two assesses the schemes' performance and costs.
- Part Three identifies key lessons we have drawn from the Department's design, implementation and monitoring of the schemes.

10 We outline our audit approach and evidence base in Appendices One and Two. We have considered suppliers' costs in meeting their obligations in our value-for-money assessment. This is because energy consumers ultimately pay these costs, as suppliers recover them through increased bills; and because the Department sets the schemes' rules, which largely dictate suppliers' costs.

Key findings

Performance and cost

11 The Department achieved its main target for the schemes ahead of schedule. The schemes provided energy-saving measures in one million homes by the end of December 2014, three months early, with energy suppliers meeting their obligations. But this target does not directly correspond to the schemes' primary aim of reducing CO_2 emissions, due to the variation in energy reductions that different types of measures can achieve (paragraphs 1.16 and 2.2).

12 The Department did not set clear success criteria for the Green Deal. Ministers were highly ambitious about the number of homes the Green Deal would make more energy-efficient. As part of the 2011 Energy Act, ministers told Parliament the Green Deal had the potential to improve the energy efficiency of Great Britian's entire housing stock. However, the Department did not set any expectations for the Green Deal. It did not state what proportion of measures' total cost should be paid for by the households that benefitted, either through Green Deal finance or other means such as savings. Nor did it quantify the amount of CO_2 the Green Deal should save in addition to suppliers' minimum obligations through ECO. This meant it could not compare the scheme's progress against its expectations to identify early warning signs that performance was off-track. The Department considered that uncertainty over what the Green Deal would achieve meant it could not set meaningful expectations for the scheme (paragraphs 1.18 to 1.21).

13 The schemes have saved substantially less CO_2 than previous schemes, mainly because of the Department's initial focus on harder-to-treat homes.

- The Department expects the measures installed through ECO up to 31 December 2015 to generate 24 megatonnes of CO_2 ($MtCO_2$) savings over their lifetime. This is approximately 29% of the predecessor schemes' achievements over similar timescales. The Department initially focused ECO on harder-to-treat homes, in which increasing energy efficiency is relatively expensive. To keep suppliers' total costs similar to previous schemes it set lower suppliers' obligations for CO_2 savings. Its analysis showed that previous schemes had absorbed demand for cheaper measures. Its changes in 2014, aimed at reducing the costs of ECO, meant it shifted away from this focus. At the same time, it reduced suppliers' obligations for CO_2 savings.

- Policies aimed at offsetting the impact of the Department's changes to ECO in 2014 have not achieved CO_2 savings comparable to the ECO reductions.

- Green Deal finance has saved negligible amounts of CO_2. The Department believes it is "unlikely to have provided any material additional energy and carbon saving over and above what would have been delivered by other policies" in its absence (paragraphs 2.3 to 2.6, Figure 12).[2]

14 Demand for Green Deal finance has fallen well below the government's expectations. By 31 December 2015, 14,000 households had taken Green Deal loans, only 1% of the total number of homes the schemes have improved. The Department estimates that a further 35,000 households have paid for measures following a Green Deal assessment, although this is not captured by its monitoring information. Even taking these additional measures into account, the Department has not succeeded in stimulating private investment in energy efficiency (paragraphs 2.3, 2.5 and 2.10).

15 The schemes have not improved as many solid-walled homes, the main type of 'harder-to-treat' homes, as the Department initially expected. The Department had expected suppliers to improve 100,000 solid-walled homes per year from 2015. With its changes to ECO in 2014, the Department set a minimum target for suppliers to improve the equivalent of around 100,000 solid-walled properties by 31 March 2017 and save 4 $MtCO_2$. This is equivalent to an average of just 23,500 properties per year, compared with 83,000, which the predecessor schemes delivered at their peak. To date, suppliers have insulated 110,000 solid-walled properties saving approximately 3.1 $MtCO_2$. The remainder of the 4 $MtCO_2$ will need to be met between now and the target date of 31 March 2017. The Department now thinks there is more potential for suppliers to meet their obligations through cheaper measures than its analysis initially showed (paragraphs 2.8 to 2.9).

2 *Submission on the Future of the Green Deal Finance Company*, Department of Energy & Climate Change, 8 July 2015.

16 ECO generated £6.2 billion of notional lifetime bill savings up to 31 December 2015, with suppliers on track to meet their bill savings obligation by 31 March 2017. Suppliers have installed 525,000 measures, mostly boilers, through Affordable Warmth, a sub-obligation of ECO aimed at reducing bills for low-income households. If all suppliers fulfil their obligations, these savings will reach £7.9 billion by 31 March 2017 (paragraph 2.7).

17 The schemes have cost the Department and energy suppliers more than £3.2 billion to date. Energy suppliers spent £3.0 billion meeting their obligations between 1 January 2013 and 31 December 2015, which was in line with the Department's predictions. The Department spent £240 million on the Green Deal up to 31 March 2015. This includes grants to stimulate demand and unexpected costs of supporting the Green Deal Finance Company.[3] Other parties have incurred costs from participating in the Green Deal. For example, energy suppliers changed their billing systems to accommodate Green Deal loans, and the supply chain (installers, assessors and finance providers) invested in training and accreditation. The Department has not monitored these costs (paragraphs 2.11 to 2.14).

18 Overall, the schemes were less cost-effective in terms of saving CO_2 than previous similar schemes. We estimate that the schemes have cost suppliers and central government £92 to £95 per tonne of CO_2 saved excluding suppliers' administration costs. This compares with previous supplier obligations, the Carbon Emissions Reduction Target (CERT) and the Community Energy Saving Programme (CESP), which together cost £34 per tonne (paragraphs 2.15 to 2.18).

19 Although the Department's changes to ECO in 2014 improved cost-effectiveness in the short term, they could result in greater costs of improving household energy efficiency in the future. According to the Committee on Climate Change, 1.5 million solid walls must be insulated throughout the 2020s for the UK to meet its recommended fifth Carbon Budget between 2027 and 2032.[4] Because the schemes have improved fewer harder-to-treat properties, there has been less potential for the supply chain to find efficiencies in how it improves these homes than the Department initially intended (paragraph 2.20).

3 Comptroller and Auditor General, *Investigation: The Department of Energy and climate Change's loans to the Green Deal Finance Company*, Session 2015-16, HC 888, National Audit Office, April 2016.

4 The Carbon Budgets are interim targets towards meeting the Secretary of State for Energy & Climate Change's duty under the Climate Change Act to reduce UK greenhouse gas emissions by 80% from 1990 levels by 2050.

Information

20 There are significant gaps in the Department's information on costs, which means it is unable to measure progress towards two of its objectives. The Department collects some cost information from households, suppliers and the brokerage platform. But the information does not show households' contribution to measures installed under ECO, nor how much each measure has cost suppliers. This means the Department cannot track accurately whether it is achieving its aims of improving harder-to-treat homes more efficiently and getting households to bear more of the cost of measures. The Department believes commercial motives ensure suppliers keep their costs to a minimum, so it would not be cost-effective for it to collect more detailed information. The Competition and Markets Authority has recently examined suppliers' costs as part of a market investigation. While it did not look at ECO, it found evidence suggesting that in other areas of their businesses, some suppliers incur higher costs than is efficient (paragraphs 3.15 and 3.16).

21 Neither we nor the Department can determine the impact of the schemes on fuel poverty. Affordable Warmth is the main government policy to address the root causes of fuel poverty. But the Department is unable to assess the overall impact of the scheme on fuel poverty, partly because it does not have access to data on household incomes. Furthermore, the Department expects suppliers to ask some households to contribute to the cost of replacement boilers. Without better information on these contributions it cannot tell whether this has led to the poorest households receiving help. The Department hopes that planned changes to the legal framework for sharing personal data across government will give it more information on the impact of its schemes on fuel poverty (paragraphs 3.11 and 3.12).

Design

22 The Department's design reduced the cost-effectiveness of the schemes for saving CO_2. The Department's initial focus on harder-to-treat homes increased suppliers' costs of delivering CO_2 savings, as anticipated by the Department, because these measures are more complex and take longer. The focus on these measures, while costly, was a deliberate attempt to improve cost-effectiveness in the long term by stimulating private investment and innovation. But the Department also increased delivery costs by requiring installers to calculate potential carbon savings and assess homes in detail, to enable 'blended' finance with the Green Deal. Suppliers also found it difficult to identify eligible homes and monitor installers' compliance with the process for calculating carbon savings. Additionally, the Department incurred costs in setting up the Green Deal that have not resulted in materially higher CO_2 savings (paragraph 2.19).

23 The Department did not test the Green Deal finance design with consumers. Many stakeholders warned the Department that it would be difficult to persuade people to pay for measures themselves. Its own consumer survey did not provide a strong case for schemes like the Green Deal creating demand. The Department understood these concerns, but implemented the scheme anyway, as it believed its market-led model held little financial risk for the government. Even where there was consumer interest, people were initially put off by the complexity of the process of arranging a loan. Only 50% of loan applications ultimately resulted in one being arranged. The Department simplified the process in late 2013 and uptake of Green Deal finance subsequently increased (paragraphs 3.2 to 3.5).

24 The schemes have not worked together as the Department intended. The Department expected energy suppliers would stimulate consumer contributions to reduce their cost of installing expensive measures. To date, no more than 1% of measures have blended finance from the Green Deal. The Department consulted energy suppliers during the design phase, as it wanted them to benefit financially from households using Green Deal finance to contribute to the cost of ECO measures. However, suppliers told us that they were rarely able to achieve this as very few households saw Green Deal finance as a sufficiently attractive proposition. The Department's information does not show to what extent households have contributed funds from other sources, such as savings (paragraphs 3.6 and 3.7).

Implementation

25 The lack of consistency in the government's approach during the schemes could increase the long-term costs of improving household energy efficiency. During the lifetime of the schemes, the Department has overseen a significant shift in focus, first towards improving harder-to-treat homes and then away from it. Additionally, it suddenly stopped support for Green Deal finance without a replacement. To improve homes' energy efficiency, the Department relies on a supply chain of different enterprises, such as installers and assessors. A lack of continuity in government energy-efficiency policies is likely to increase costs, as businesses require a higher return on risky investment in training, accreditation and capacity (paragraphs 3.17 to 3.19).

Conclusion on value for money

26 Improving household energy efficiency has the potential to contribute to each aim of the energy 'trilemma' – decarbonising energy and ensuring it remains secure and affordable. The Green Deal, supported by ECO for more expensive measures, was an ambitious and novel attempt to increase the scale and cost-effectiveness of the market for energy-efficiency measures. But the Department's £240 million expenditure on the Green Deal has not generated additional energy savings because its design and implementation of the scheme did not persuade people that energy-efficiency measures are worth paying for. The Green Deal has therefore not been value for money.

27 The Department achieved its target to improve one million homes almost entirely through ECO, with suppliers meeting their minimum obligations for saving energy and reducing bills. However, the Department's design of ECO to support the Green Deal added to suppliers' costs of meeting their obligations. This reduced the value for money of ECO, but the Department's information is not detailed enough for us to conclude by how much.

Recommendations

28 As part of its 2015 Spending Review, the government announced it would improve one million homes over the course of this Parliament. It said it will require suppliers to target fuel-poor homes. In designing and implementing energy-efficiency policies the Department should:

a **be clear about the purpose of schemes from the outset, setting realistic priorities and clear success criteria, developed with stakeholders, including other government departments.** If the Department's schemes are ambitious and support multiple desired outcomes, it should be clear what constitutes success for each outcome. The Department needs to develop goals based on evidence. It should also plan what to do in the event of underperformance, such as reducing the scope of the programme while minimising the impact on outcomes;

b **understand and plan for how the desired outcomes will be delivered in practice.** For energy-efficiency schemes this means, in particular, testing designs with consumers to ensure policies have the desired impact on behaviours, and being realistic about the motivations of energy companies in fulfilling their obligations;

c **ensure it has sufficient information to track progress of the schemes towards each of its desired outcomes.** It needs to regularly validate its assumption that market forces ensure cost-effectiveness. It should also collect sufficient information to evaluate the costs and benefits over time, and establish interim measures where evidence of effectiveness is delayed; and

d **consider the long-term impact of its decisions on the overall progress towards increasing household energy efficiency.** This means establishing a clearer long-term vision for household energy efficiency, based on engagement with the main stakeholders involved in achieving it, which gives greater clarity over how one scheme will transition into the next.

Part One

Government's role in household energy efficiency

1.1 In this part, we:

- explain the importance of household energy efficiency;
- describe the Green Deal and Energy Company Obligation (ECO) schemes; and
- assess whether the Department of Energy & Climate Change (the Department) had appropriate success measures for the schemes.

The importance of household energy efficiency

1.2 In 2014, the residential sector accounted for more than a quarter of energy use and carbon dioxide (CO_2) emissions in the UK.[5] Emissions would be lower if homes were more energy-efficient. All homes are rated from A to G for energy efficiency, and around 75% of Great Britain's houses have an energy-efficiency rating of D or below.

1.3 As well as increasing CO_2 emissions, poor domestic energy efficiency can cause fuel poverty.[6] Households are in fuel poverty if the cost of adequately heating their home is above average, and that cost would leave them with income below the official poverty line.[7] Some 2.35 million households in England were in fuel poverty in 2013. Households in the two lowest income deciles spend nearly 10% of their income on energy and often under-heat their homes.[8] Insufficient heating is also associated with poor health and with a large number of deaths during winter.

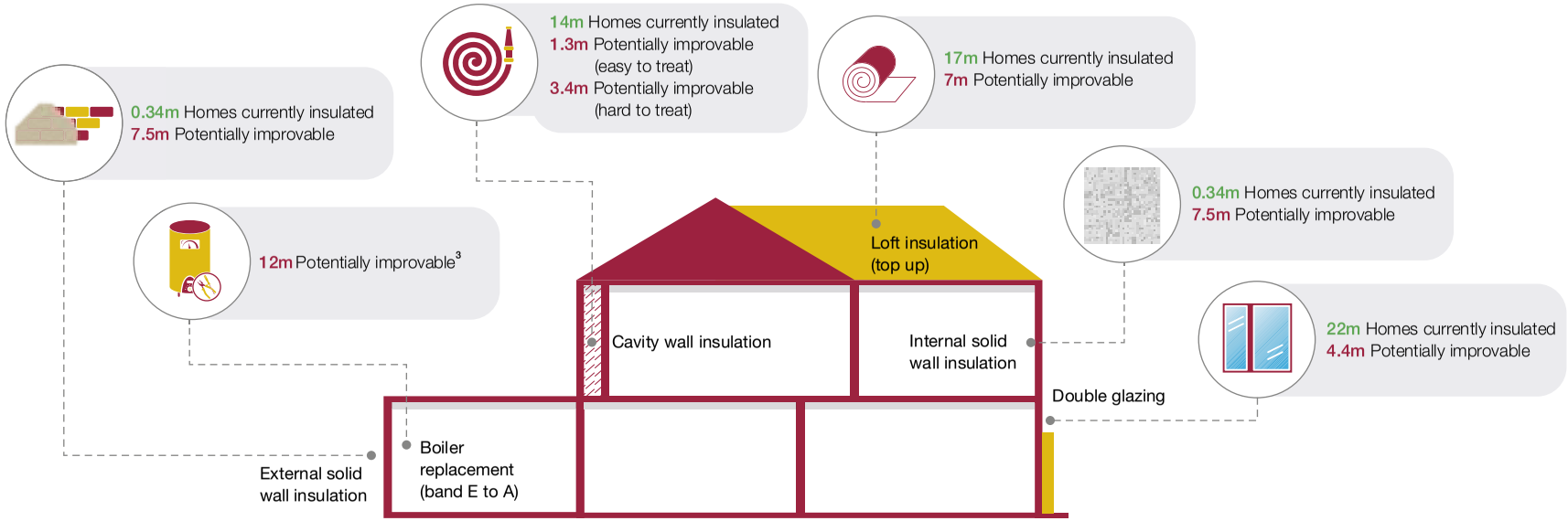
1.4 There are different ways of improving the energy efficiency of homes, at different costs and with different impacts on energy use (**Figure 1** overleaf).

5 Department of Energy & Climate Change, *UK housing energy fact file*, 2013.
6 J Hills, *Getting the measure of fuel poverty*, 2012.
7 This is the statutory definition of fuel poverty in England. Fuel poverty is a devolved matter and the devolved administrations in Northern Ireland, Scotland and Wales have their own definitions.
8 Comptroller and Auditor General, *Infrastructure investment: the impact on consumer bills*, Session 2013-14, HC 812-I, National Audit Office, November 2013.

Figure 1

Common measures for improving the energy efficiency of a typical semi-detached house

Different measures vary in terms of their cost-effectiveness and the number of remaining opportunities to install them



		Impacts on a typical house[1]						
	Measure	Installation cost (£)	Annual CO_2 saving (kg)	Annual saving on bills (£)	Expected life (years)	Lifetime CO_2 saving (tonnes)	Lifetime saving on bills (£)	Net cost (or saving) per tonne of CO_2 saved[2] (£ per tonne)
Easy to treat	Loft insulation (top up)	250	55	15	42	2.3	630	(165)
	Cavity wall insulation (easy to treat)	475	650	160	42	27.3	6,720	(229)
Hard to treat	Cavity wall insulation (hard to treat)	1,875	650	160	42	27.3	6,720	(177)
	Internal solid wall insulation	8,000	1,100	260	36	39.6	9,360	(34)
	External solid wall insulation	12,000	1,100	260	36	39.6	9,360	67
	Double glazing	4,500	355	85	20	7.1	1,700	394
	Boiler replacement (band E to A)	2,500	900	215	12	10.8	2,580	(7)

Notes

1 Impacts on a typical semi-detached property according to the Department's Standard Assessment Procedure. Costs and energy savings vary significantly by home (see Figure 2).

2 Net cost per tonne of CO_2 saved = (installation cost – lifetime saving on bills) ÷ lifetime CO_2 savings.

3 Number of inefficient (non-condensing) gas boilers still in use.

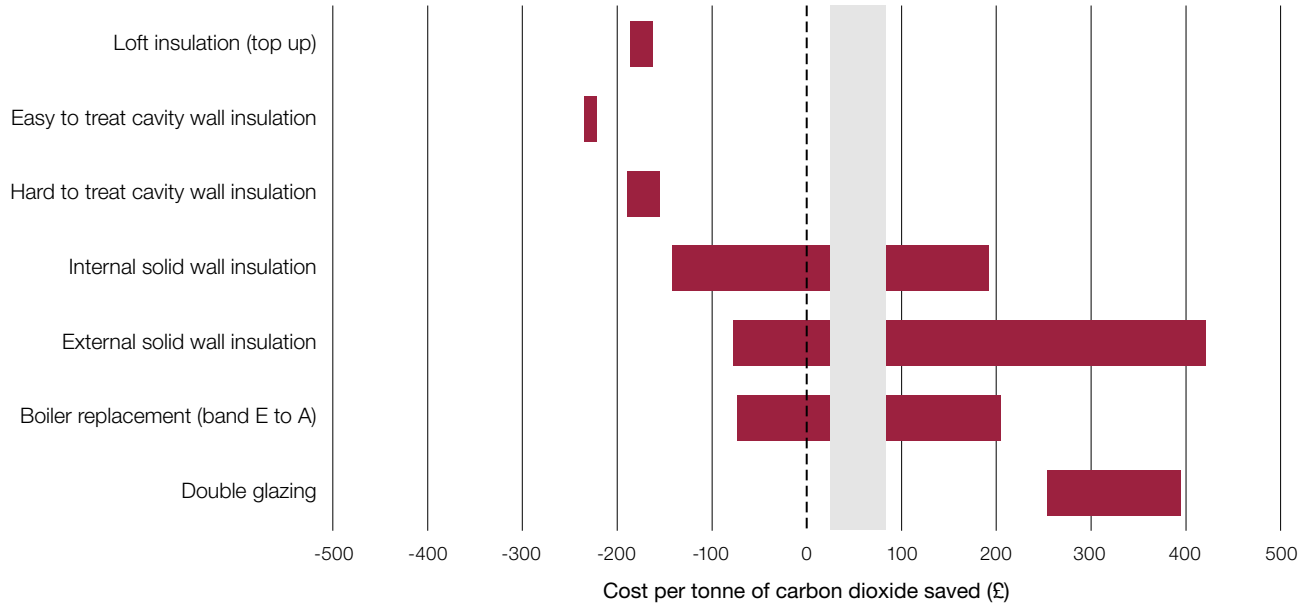
Sources: Energy Saving Trust; Department of Energy & Climate Change; National Audit Office analysis

1.5 Household energy efficiency is crucial to the Department achieving its strategic aim of ensuring security of energy supply and decarbonisation in an affordable way. Improving homes' energy efficiency will lower overall demand for energy and is often cheaper than generating electricity (**Figure 2**). There is significant potential for saving energy with domestic energy-efficiency measures (**Figure 3** overleaf).

Figure 2

Cost-effectiveness of saving carbon dioxide with energy-efficiency measures

Home energy-efficiency measures can be more or less cost-effective than other carbon-saving interventions, depending on the type of measure and the home it is installed in



Notes

1 The cost-effectiveness of a given measure depends on the home it is installed in. Each red bar shows the range of results for most homes.

2 Measures to the left of the dotted line save more money on lifetime bills than they cost to install. Measures to the right cost more money than they save.

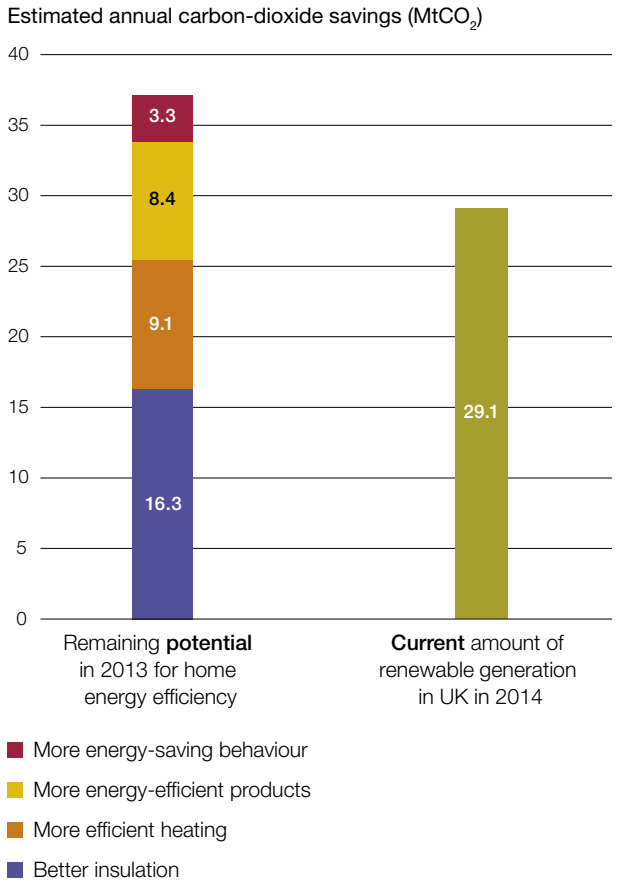
3 Aside from improving energy efficiency, another way of reducing carbon emissions from energy is to invest in renewable electricity generation infrastructure such as wind farms. The grey band gives an indication of the costs per tonne of CO_2 saved by large-scale renewable energy projects recently approved by the Department. Energy users will bear the costs of these projects through their energy bills.

Source: Energy Saving Trust, Purple Market Research, Department of Energy & Climate Change, National Audit Office analysis

Figure 3

Potential for carbon savings from home energy efficiency

Potential carbon savings from home energy efficiency are significant in relation to savings achieved through other interventions



Notes

1 Potential for home energy-efficiency savings takes into account the interaction between different measures in the same property, and the reduced performance of measures in practice compared with theoretical savings.

2 The carbon-dioxide savings attributed to renewable generation here are based on an assumption that energy from renewables displaces energy from other sources whose carbon emissions are in line with the system average.

3 **Better insulation** includes wall and loft insulation, double glazing and other measures such as draught proofing.

4 **More efficient heating** includes replacement boilers, heating controls and similar measures, but does not include uptake of low-carbon heat technologies such as heat pumps.

5 **More energy-efficient products** include efficient TVs, dishwashers, lights and other measures.

6 **More energy-saving behaviour** includes smart meters and turning thermostats down by 1°C.

Source: National Audit Office analysis of Energy Saving Trust, *Review of Potential Carbon Savings from Residential Energy Efficiency for the Committee on Climate Change*, December 2013, and the Department of Energy & Climate Change's *Energy Trends*

1.6 Improving household energy efficiency helps the government meet three legal obligations:

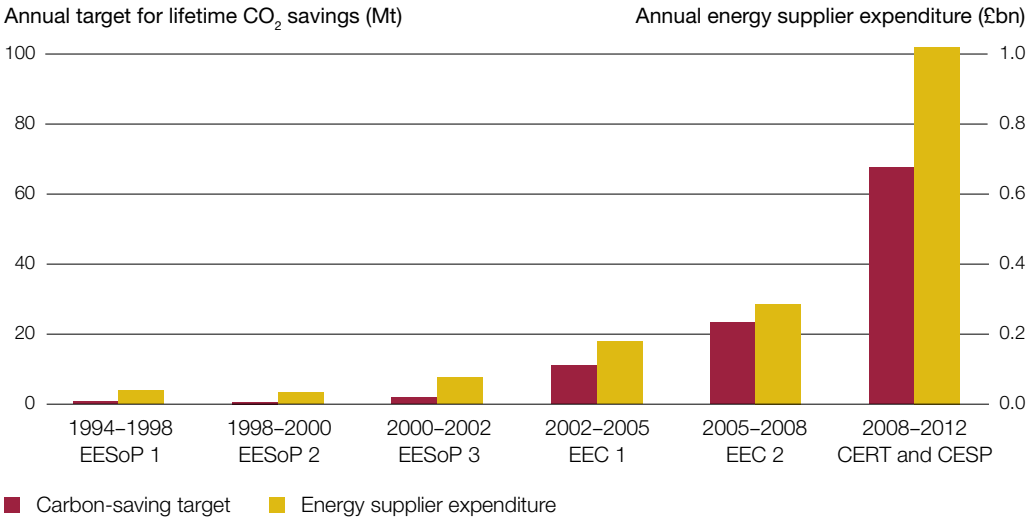
- **EU Energy Efficiency Directive 2012** – specifies targets for overall UK energy use in 2020.
- **Climate Change Act 2008** – requires the UK to reduce greenhouse gas emissions by at least 80% by 2050 from the 1990 level. According to the Committee on Climate Change, improving household energy efficiency is essential to achieving this.
- **Fuel Poverty (England) Regulations 2014** – the government has an objective that "as many as is reasonably practicable of the homes in which [fuel-poor] persons live have a minimum energy-efficiency rating of Band C" by 2030 (England only).

1.7 Since 1994, the Department and its predecessors have required energy suppliers to improve homes' energy efficiency.[9] Suppliers arrange the installation of energy-efficiency measures in homes and recover the costs through the gas and electricity bills of all their customers. Between 1994 and 2012, supplier obligations increased both in terms of the target for CO_2 savings and costs (**Figure 4**).

Figure 4

History of supplier obligations: CO_2 savings and expenditure

Prior to ECO, the expense and ambition of supplier obligations gradually increased



Notes

1 These CO_2 levels are not directly comparable with ECO's targets and ECO's actual savings. This is because energy and CO_2 savings calculation methodologies have changed. We provide comparison on an equal basis in Figure 9.

2 Supplier obligations prior to the Carbon Emission Reduction Target (CERT) and the Community Energy Saving Programme (CESP) were defined in units of energy; these have been converted to CO_2.

3 EESoP stands for Energy Efficiency Standards of Performance.

4 EEC stands for Energy Efficiency Commitment.

Source: Department of Energy & Climate Change, National Audit Office analysis

9 The Department of Energy & Climate Change was created in 2008. It took responsibilities for energy from the Department for Business, Enterprise and Regulatory Reform and responsibilities for climate change from the Department for Environment, Food & Rural Affairs.

Green Deal and Energy Company Obligation

1.8 In 2013, the Department implemented the Green Deal and Energy Company Obligation.[10] The Green Deal is primarily a finance mechanism, which enables homeowners to borrow money to improve the energy efficiency of their home, making repayments through their energy bills (Green Deal finance). A Green Deal loan needs to meet the 'golden rule': repayments have to be at least offset by the reduction in energy bills resulting from the improvement. There were many steps involved in the process of arranging a loan (**Figure 5**). Green Deal finance was complemented by a broader framework of advice, accreditation and assurance that sought to build homeowners' trust in the supply chain for home improvements (**Figure 6** on pages 20 and 21).

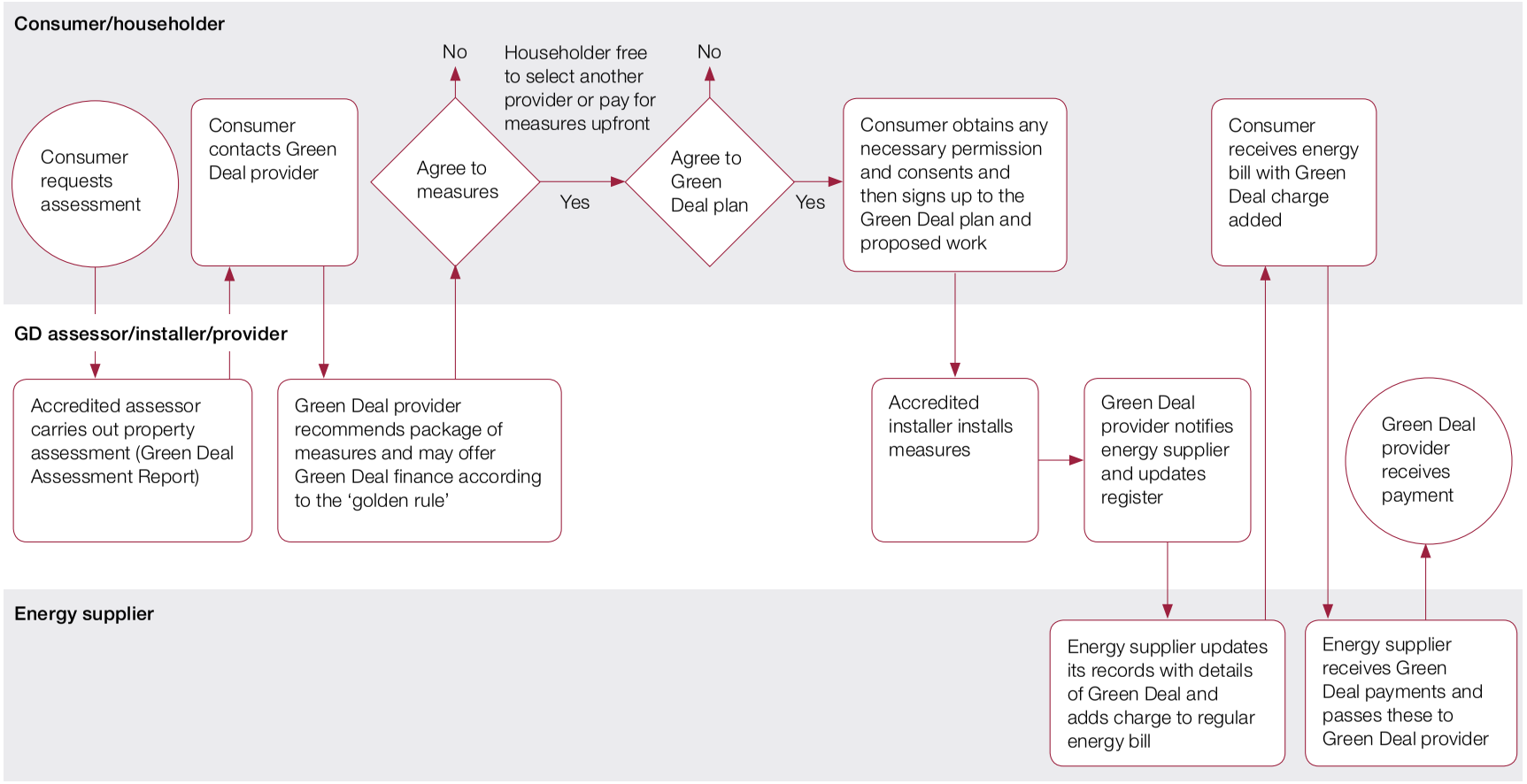
1.9 ECO resembled previous supplier obligation models. The Department set total obligation levels, which suppliers must collectively achieve, measured in lifetime tonnes of CO_2 savings and savings on bills. Ofgem, the energy market regulator, split the total obligation among major suppliers according to their market share. To meet their obligations, suppliers install energy-saving measures, or pay contractors to do so, and recover their costs through the energy bills of their domestic customers. The Department introduced a brokerage platform, where installers and Green Deal providers could bid competitively for contracts to save set amounts of CO_2 on behalf of suppliers. Ofgem may fine any supplier that does not meet an obligation, or require mitigating actions by them.

1.10 ECO consists of three sub-obligations:

- **Carbon Emissions Reduction Obligation (CERO):** required suppliers to save 17.8 $MtCO_2$ between 1 January 2013 and 31 March 2015.[11] The Department initially stipulated that suppliers improve 'harder-to-treat' homes, requiring more expensive and time-consuming improvements.[12]
- **Carbon Saving Communities Obligation (CSCO):** required suppliers to save 5.8 $MtCO_2$ between 1 January 2013 and 31 March 2015, by installing measures in deprived areas. A wider range of improvements to homes was eligible than under CERT.[13]
- **Affordable Warmth (AW):** suppliers provide measures, mostly replacement boilers, to low-income households and households vulnerable to the effects of inadequate heating. To be eligible, households must live in private housing and be in receipt of certain means-tested benefits, which in practice also restrict the scheme to households with children, pensioners or disabled residents. The Department required suppliers to achieve overall notional bill savings of £4.2 billion by March 2015.[14]

10 The Green Deal and ECO cover households in England, Scotland and Wales.
11 The target was defined as a 20.9 Mt reduction in CO_2 when quantified using the Standard Assessment Procedure (SAP), but due to behavioural change following the installation of measures, the Department estimates that the actual impacts will be 15% lower than the SAP implies, that is 17.8 $MtCO_2$.
12 Harder-to-treat homes are typically more expensive or take longer to improve, or both, because of the way they were built. The main types of harder-to-treat homes are harder-to-treat cavity-walled buildings and solid-walled buildings. Unless otherwise stated, we use the term 'harder-to-treat' to describe all such types of homes.
13 See footnote 11 – the target is defined as 6.8 Mt of CO_2 savings using the SAP, which is equivalent to 5.8 Mt after adjusting for behaviour change.
14 Notional bill savings are estimated reductions in the cost of heating a home and its hot water supply to a set level.

Figure 5
Green Deal finance customer journey



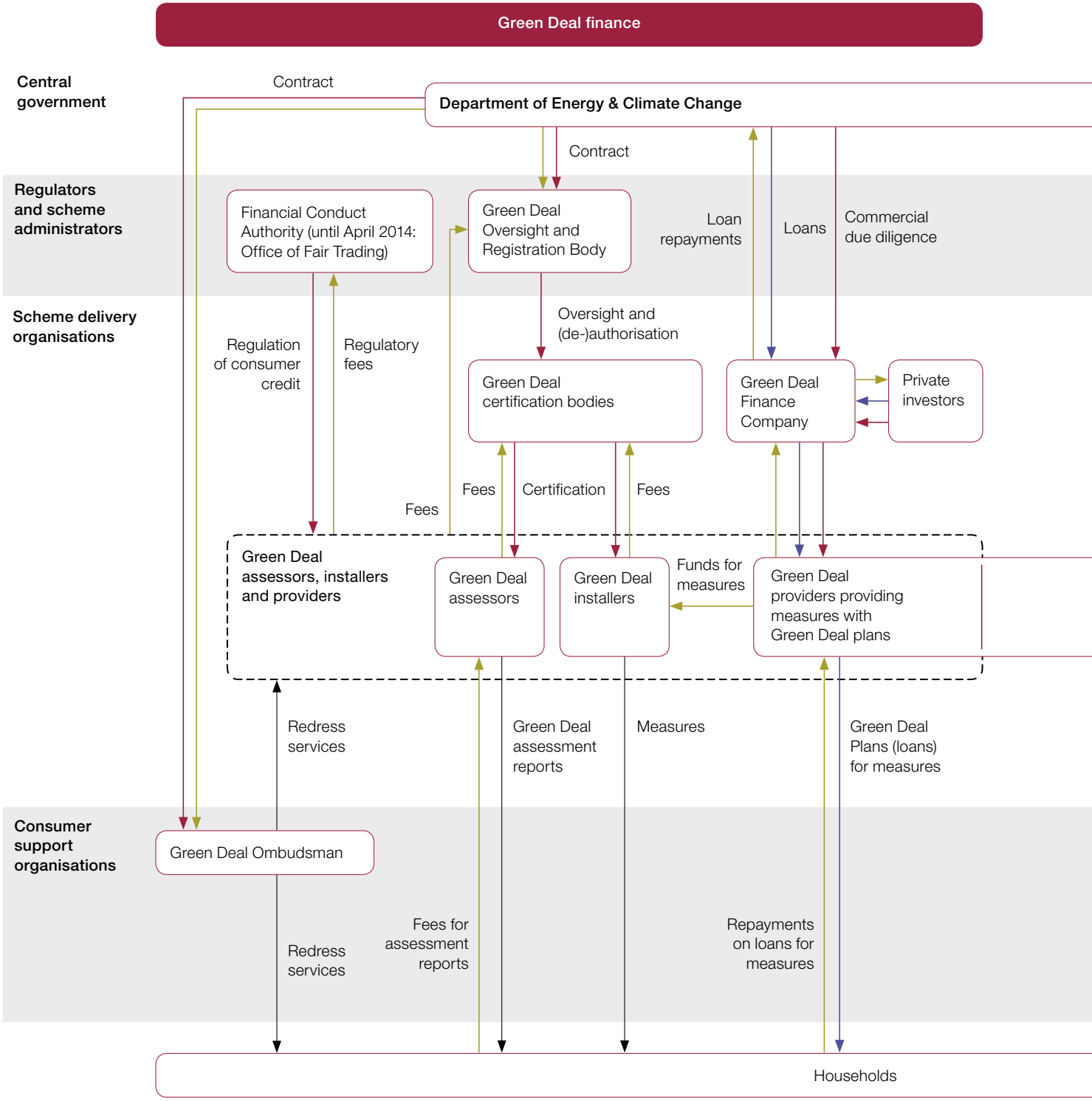
Note

1 This diagram shows one possible way in which Green Deal finance could be arranged, although other permutations were possible. For example, many providers marketed to consumers directly, rather than waiting to be contacted.

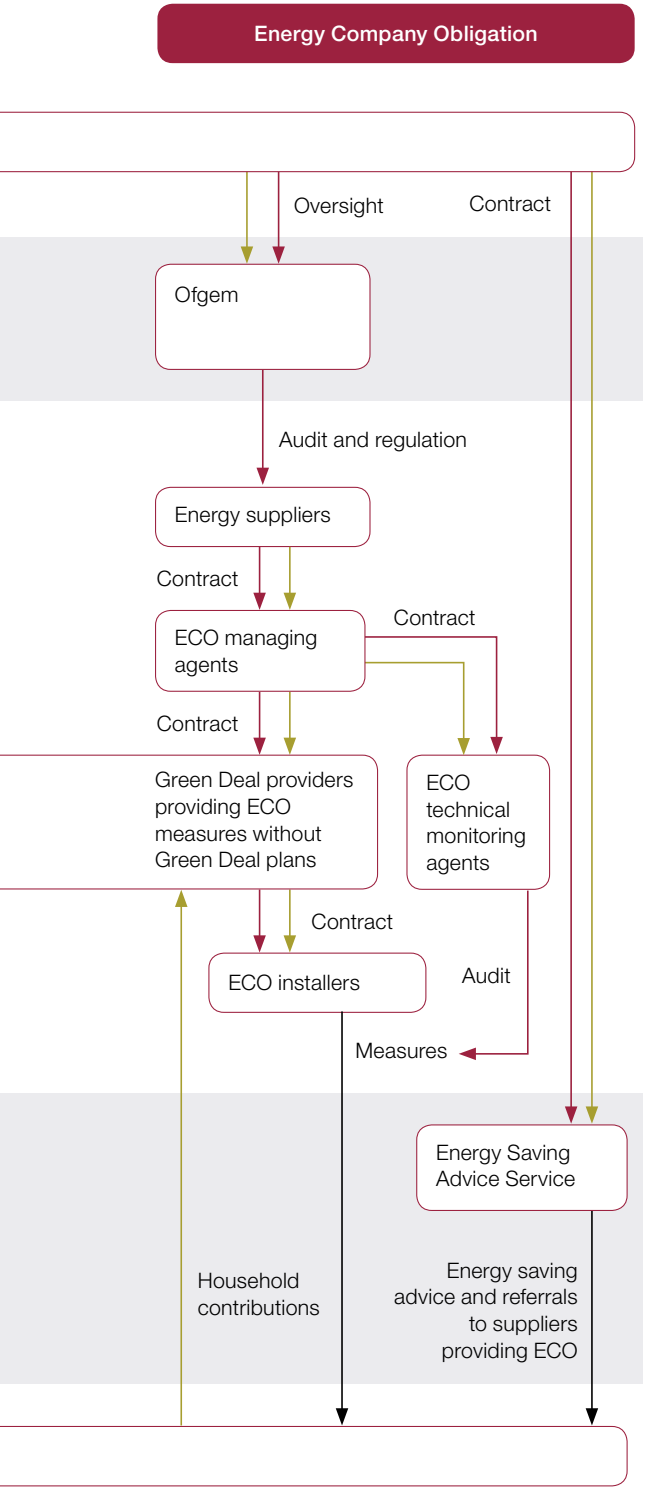
Source: Department of Energy & Climate Change, National Audit Office adaptation

Figure 6

Key roles and responsibilities for the Green Deal and ECO



Source: National Audit Office



Key to diagram

Provider	Regulator	Lender	Payer
Goods and services	Oversight	Finance	Funds
Recipient	Regulated entity	Borrower	Recipient

Key roles and responsibilities

The Department has overall responsibility for the schemes and their outcomes.

Local government has commissioned providers, installers and assessors to arrange Green Deal plans and provide subsidised Green Deal assessments and measures – using funds provided by the Department.

The Green Deal Oversight and Registration Body was set up to oversee the accreditation and authorisation of companies delivering the Green Deal. Gemserv, a for-profit company, has been contracted by the Department to fulfil this role.

Ofgem is the scheme administrator of ECO. It monitors suppliers' compliance with the scheme and has enforcement powers.

Energy suppliers: All major energy suppliers are given obligations to deliver carbon savings as part of ECO. Energy suppliers delivered ECO measures themselves, paid Green Deal providers to do it on their behalf through the Department's brokerage platform, or paid managing agents to manage Green Deal providers for them.

Providers are authorised to sell Green Deal finance plans to households. In legal terms, providers (rather than the Green Deal Finance Company) are the lender.

Installers are companies or sole traders paid to install measures (as part of the Green Deal, or as part of ECO, or independently of the schemes).

Assessors inspect homes and write Green Deal assessment reports, advising consumers on which measures to install.

The Green Deal Finance Company buys the rights to Green Deal loan repayments from Green Deal providers, and administers these loans.

Consumer support organisations include the Energy Saving Trust (which was contracted by the Department to act as the Energy Saving Advice Service), the Green Deal Ombudsman and Citizens Advice.

1.11 A large number of organisations are involved in delivering the schemes through a complex structure relying on central government, regulators, energy suppliers, finance providers, delivery contractors and consumer support organisations (Figure 6 on pages 20 and 21).

Scheme objectives

1.12 The Department's primary objective was to reduce CO_2 emissions by making homes more energy efficient. It wanted to achieve this in a way that would also mitigate the causes of fuel poverty; improve 'harder-to-treat' homes; and stimulate private investment in energy-efficiency measures (**Figure 7**).

1.13 Focusing ECO on harder-to-treat properties marked a significant shift from previous supplier obligations, which allowed suppliers to install cheaper measures. The Department calculated that previous supplier obligations had improved the majority of easier-to-treat properties. It wanted ECO to focus on expensive measures, which households are unlikely to fund without government support. It hoped this would increase the capacity of the supply chain to improve the energy efficiency of harder-to-treat properties, leading to more efficient ways of making these improvements.

1.14 The Department expected the Green Deal and ECO to combine to stimulate private investment in energy-efficiency measures. It hoped to transfer the financial burden from society as a whole (bill payers) to those who directly benefit. The government has required suppliers to pay for most energy-efficiency measures in recent decades, with costs passed on to all energy consumers. This meant the measures were usually free to the residents who benefited from them. Green Deal finance would support households that were able to pay for the measures themselves, in full or combined with ECO ('blending'). The latter would be necessary for measures that cost too much to meet the Green Deal's golden rule without subsidy. The Department also expected energy suppliers to take advantage of the opportunity to lower their ECO delivery costs by encouraging households to contribute using Green Deal finance.

1.15 The Department designed the schemes to facilitate this interaction. The starting point for measures installed through Green Deal finance, CERO and CSCO was for an accredited assessor to produce a Green Deal assessment report, which would include a recommendation for the most effective measure (see **Figure 8** on page 24).[15] The report calculated the potential savings on energy bills and corresponding CO_2 savings that energy suppliers could count towards their obligation target.

15 A Green Deal assessment report would not be required if the property had a chartered surveyor report.

Figure 7

Green Deal and ECO contributed to multiple objectives

Objective	**Reduce CO_2 emissions**	**Mitigate the causes of fuel poverty**	**Improve harder-to-treat homes**	**Stimulate private investment**	
Green Deal					
Green Deal finance	✔	✗	✔	✔	In combination with other subsidies (primarily ECO), it enables consumers to install expensive measures in harder-to-treat properties. This, and the possibility to install measures with minimal upfront costs, stimulate additional demand and creates a market for measures funded by households.
ECO					
Carbon Emissions Reduction Obligation	✔	(✔)	✔	✔	Beside reducing CO_2 emissions, it: ● improves harder-to-treat homes, by increasing competition and innovation in the supply chain, bringing costs down; and ● stimulates private investments by focusing on expensive measures, where households would be less likely to pay for the measure in full. It also indirectly benefits fuel-poor households, which are statistically more likely to live in properties which are too expensive to insulate.
ECO					
Carbon Saving Communities Obligation	✔	(✔)	✗	✗	While its main objective is saving CO_2, it indirectly addresses the causes of fuel poverty: it can only be delivered to relatively poor areas (and adjoining areas).
ECO					
Affordable Warmth Obligation	✗	✔	✗	✗	Targets low-income households vulnerable to the effects of inadequate heating. The Department estimated that, under the previous definition of fuel poverty, 55% of households receiving this assistance would be in fuel poverty. Measures installed under the scheme reduce bills but are not expected to create CO_2 savings because of comfort taking: instead of spending less, households would heat their homes more.

✔ Expected to contributed to objective

(✔) Expected to contributed slightly

✗ Expected not to contribute

Source: National Audit Office analysis

Figure 8

Green Deal assessment reports up to 30 June 2015: frequency of recommendations by measure

Measure types	Number of improvements recommended	Percentage of improvements recommended (%)
Boiler	174,347	10.0
Cavity wall insulation	186,286	10.7
Lighting	715	0.0
Loft insulation	277,860	15.9
Micro-generation	403,385	23.1
Other heating	162,804	9.3
Other insulation	342,660	19.6
Solid wall insulation	155,993	8.9
Window glazing	41,383	2.4
Total	**1,745,433**	**100.0**

Note

1 Percentage figures have been rounded.

Source: Department of Energy & Climate Change

Department's ambition for the schemes

1.16 The Department set a target for the schemes to combine to improve one million homes by March 2015. However, the number of homes improved is only an indirect measure of the Department achieving its objectives:

- different measures save different amounts of CO_2 (Figure 1);
- the Department did not specify how many of the one million homes should be harder-to-treat properties;
- it did not specify how many of the homes should be those occupied by fuel-poor people, or how many of them would be lifted out of fuel poverty; and
- it did not clarify what proportion of the cost of measures should be borne by households rather than suppliers.

Furthermore, the Department set its target in May 2013, seven months after the initial launch of the Green Deal in response to an Energy and Climate Change Committee enquiry.[16]

16 Energy and Climate Change Committee, *The Green Deal: watching brief*, Session 2012-13, HC 142 Incorporating HC 966, May 2013.

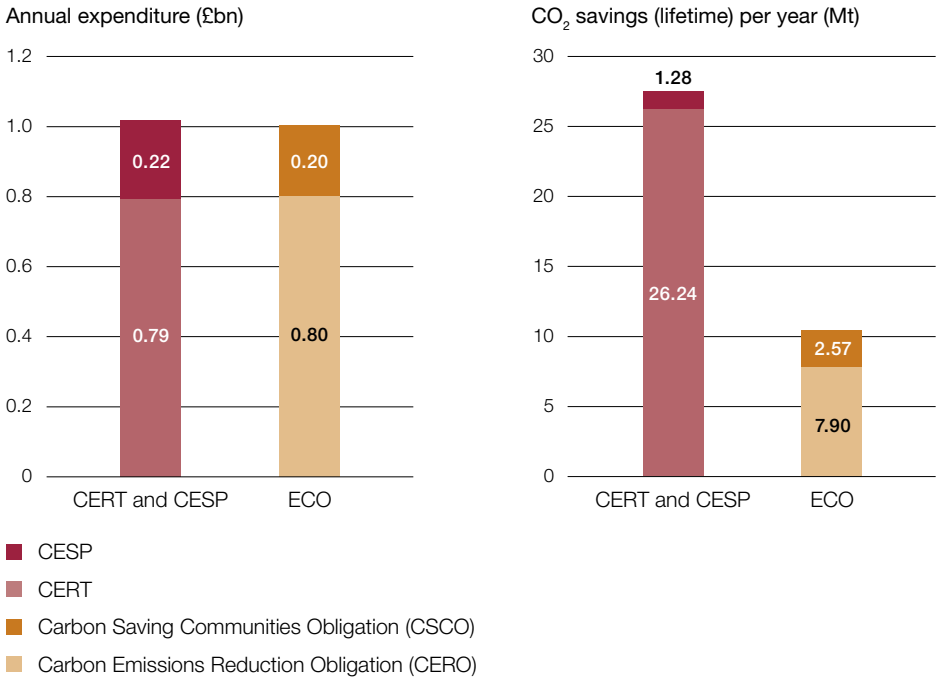
ECO

1.17 The Department set the suppliers' CO_2 savings' obligations for ECO based on the costs it expected suppliers to incur. It set the CO_2 obligations within ECO (CERO and CSCO) so that suppliers' costs were the same as the schemes they replaced (CERT and CESP). However, the focus on improving harder-to-treat homes meant the Department set minimum obligation levels in terms of CO_2 savings that were significantly lower than the previous schemes (**Figure 9**). This is because harder-to-treat properties cost more to improve relative to the CO_2 they save. The Department set the Affordable Warmth obligation in terms of bill savings so that it would cost suppliers around the same as its predecessor, Warm Front, had cost the government.

Figure 9

ECO's initial ambition compared with its predecessor schemes, CERT and CESP

ECO was originally designed to cost as much as CERT and CESP but save less CO_2 due to a greater focus on harder-to-treat properties



Notes

1 CERT and CESP figures are outturn data. Figures are taken from analysis the Department carried out in 2015, which evaluated ECO, CERT and CESP on the same basis. This analysis found that CO_2 savings attributable to CERT and CESP were 50% lower than it originally calculated.

2 ECO figures are taken from the 2012 impact assessment and therefore do not reflect the changes to ECO made in 2014. They include a 15% adjustment for the CO_2 impact of behavioural change following installation of measures.

3 Annual expenditure is in 2014-15 prices.

Source: Department of Energy & Climate Change

Green Deal

1.18 Ministers were very ambitious for what the Green Deal would achieve when they introduced it as part of the 2011 Energy Act. The then Energy Minister told Parliament that it had the potential to improve 26 million homes, almost the entire housing stock. He said the Green Deal "will set a new paradigm and will certainly become the biggest home improvement scheme since the Second World War".[17]

1.19 Ministerial ambitions notwithstanding, the Department did not have clear success measures for the Green Deal. It did not set any expectations for the number of homes the Green Deal would improve, or the CO_2 savings it should achieve in addition to suppliers' minimum obligations under ECO. It believed that because the Green Deal was a new scheme with little precedent, there was too much uncertainty about its performance to set meaningful expectations.

1.20 The Major Projects Authority (MPA) and the Energy and Climate Change Committee both raised concerns about the Green Deal's lack of success measures linked to the Department's objectives. In October 2012, the MPA drew attention to the difficulty of judging how to manage a programme appropriately when success indicators are lacking. In its May 2013 report *Green Deal: watching brief,* the Energy and Climate Change Committee described it as "unacceptable" that the Department could not define the goals of a flagship government policy.[18] In our previous reports, we have concluded that managing policies effectively is difficult in the absence of clear success criteria.[19]

1.21 The Department's lack of success criteria for the Green Deal reflects its approach to achieving policy objectives through the market. The Department viewed its role as putting in place the market conditions that would enable stakeholders – energy suppliers, Green Deal providers and consumers – to find the most cost-effective means of achieving its scheme objectives. It did not want to set targets for the Green Deal as it was concerned that government intervention would have risked influencing how the market operated, increasing inefficiency. Having clear success criteria is still important even where the Department is reliant on market stakeholders to achieve outcomes. Assessing performance against expectations helps departments to respond if the market mechanism is not delivering public policy objectives, and identify the remedy required.

17 Gregory Barker, HC Public Bill Committee, Energy Bill Debate: First Sitting, 7 June 2011, col 5.
18 HC Energy and Climate Change Committee, *The Green Deal: watching brief*, First Report of Session 2013-14, HC 142, May 2013.
19 Comptroller and Auditor General, *Criminal justice system: confiscation orders*, Session 2013-14, HC 738, National Audit Office, December 2013; Comptroller and Auditor General, *The Regional Growth Fund*, Session 2012-13, HC 17, National Audit Office, May 2012; Comptroller and Auditor General, *Taking the measure of government performance*, Session 2010-11, HC 284, National Audit Office, July 2010.

The review of green levies, 2013

1.22 In autumn 2013, in response to ministers' concerns about the impact of government policies on the cost of energy bills, the Department changed its ambitions for the schemes. The government sought to reduce household bills by an average of £50 a year. The Department saw ECO as the most flexible of its schemes of a sufficient size to reduce bills quickly.[20]

1.23 The changes, which came into effect from March 2014, were:

- reducing the CERO carbon-saving target from 17.8 $MtCO_2$ to 11.9 $MtCO_2$;[21]
- making easier-to-treat homes eligible under CERO;
- making more areas eligible for CSCO;
- allowing measures that suppliers installed early to count for an additional 75% towards their CO_2 saving obligation, and allowing credit for excess measures installed during the previous supplier obligation to be carried over. These changes combined to reduce the obligation by a further 5 $MtCO_2$;
- extending the ECO period to 31 March 2017; and
- introducing a new target for the CO_2 that suppliers should save by insulating solid-walled properties: 4 $MtCO_2$ by 31 March 2017, equivalent to around 100,000 homes. This is an average of 23,500 homes and less than 1 $MtCO_2$ a year, approximately 25% of the original forecast.

Despite these changes, the Department did not amend its target to improve one million homes.

1.24 HM Treasury allocated the Department £540 million over three years, to be spent on new programmes that would save enough CO_2 to offset the impact of its changes to ECO. The Department used the funds primarily for the Green Deal Home Improvement Fund. This provided subsidies of up to £1,000 for the installation of measures recommended in an assessment report, or a maximum of £5,600 (later reduced to £3,750) for solid-wall insulation.

20 Of the £50, £30–£35 was to come from changes to ECO, and the remainder was made up by other government policies.

21 Between 1 January 2013 and 31 March 2015. These targets were defined in terms of estimated CO_2 impacts using the Standard Assessment Procedure (SAP): 20.9 $MtCO_2$ before the changes to ECO, and 14.0 $MtCO_2$ afterwards. However, due to behaviour change following the installation of measures, the Department estimates that the actual impacts would be 15% lower than the SAP implies, that is, 17.8 $MtCO_2$ and 11.9 $MtCO_2$.

Part Two

Performance of the schemes

2.1 In this part we:

- assess whether the Department of Energy & Climate Change (the Department) has achieved its objectives for the schemes;
- provide information on the Green Deal and Energy Company Obligation (ECO) schemes' cost; and
- estimate the schemes' cost-effectiveness in terms of carbon dioxide (CO_2) saved.

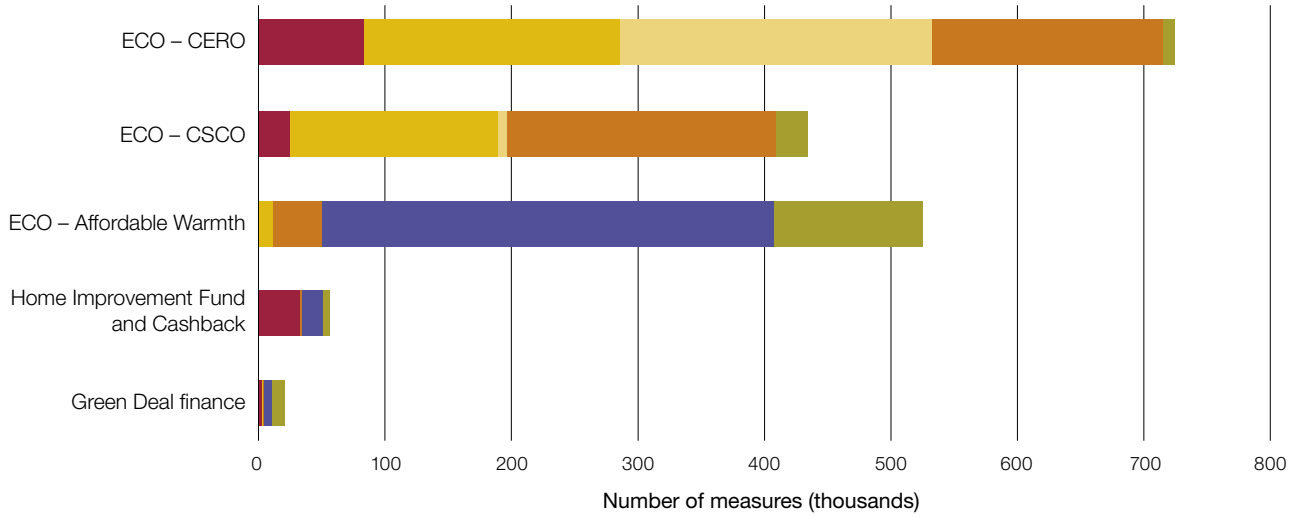
Performance against targets and objectives

2.2 The schemes improved the energy-efficiency of more than 1.4 million homes by 31 December 2015 (**Figure 10**). The vast majority (96%) were improved through ECO; government subsidies part-funded a further 50,000 measures, primarily through the Green Deal Home Improvement Fund; and 14,000 households took out a Green Deal loan. Due to some households installing more than one measure, the schemes provided more than 1.7 million measures in total (Figure 10). The Department reached its target to improve one million homes by the end of 2014, three months early. This was far fewer than the homes improved under the previous supplier obligations (**Figure 11** on page 30), due in part to the Department's decision to focus ECO on harder-to-treat homes without increasing the total cost to bill payers.

Figure 10

Total measures installed under ECO and Green Deal by 31 December 2015, by scheme

ECO accounts for the vast majority of measures installed



- Solid wall insulation
- Hard to treat cavity wall insulation
- Easy to treat cavity wall insulation
- Loft insulation
- Boiler replacement
- Other measures

Note

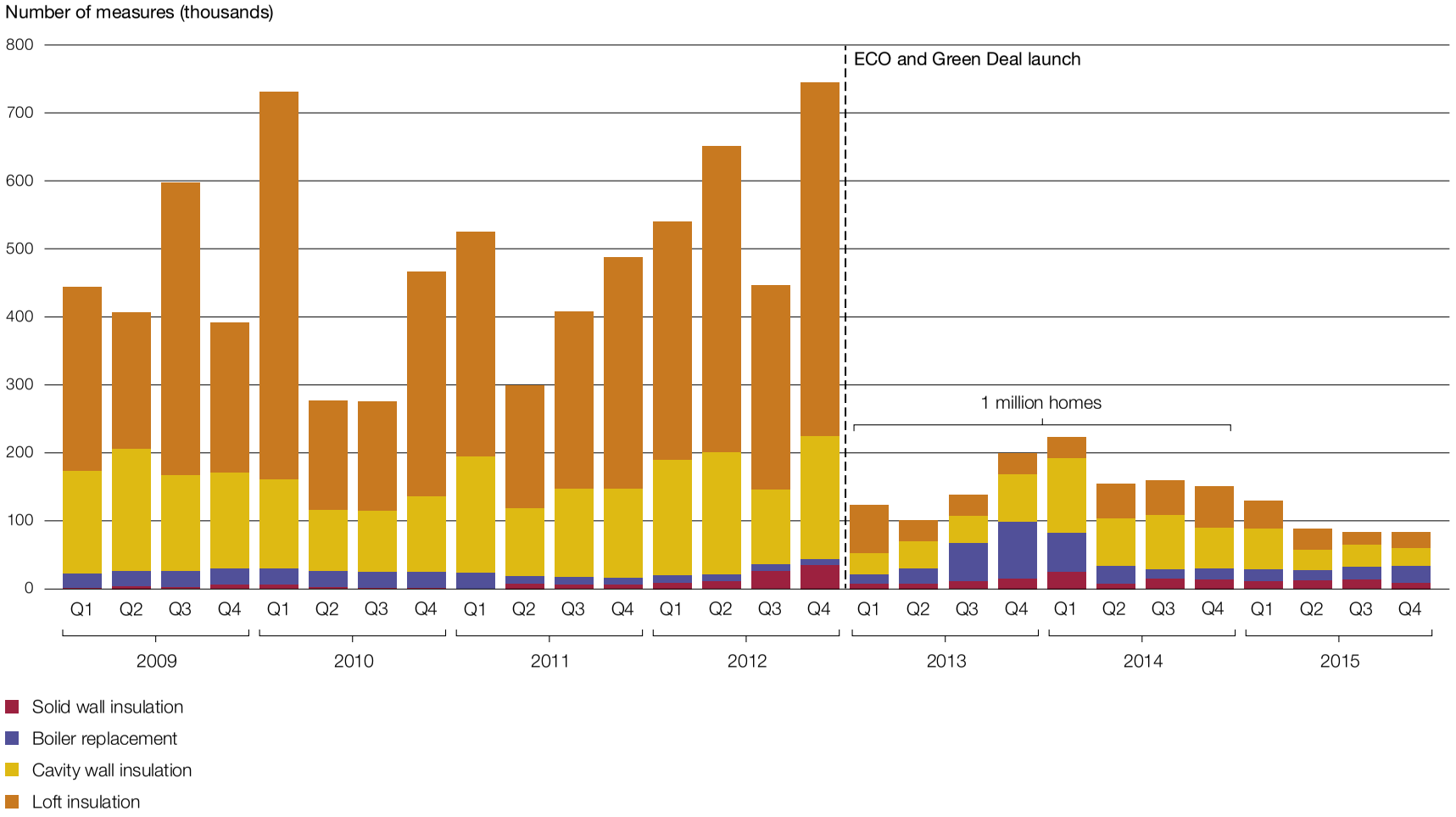
1 Green Deal finance potentially overlapped with ECO and the Home Improvement Fund, so Green Deal finance measures cannot be added to the other schemes' measures without double counting.

Source: Department of Energy & Climate Change

Figure 11

Measures installed through government schemes since 2009

Since their launch in 2013, ECO and the Green Deal have delivered significantly fewer measures per year than previous schemes



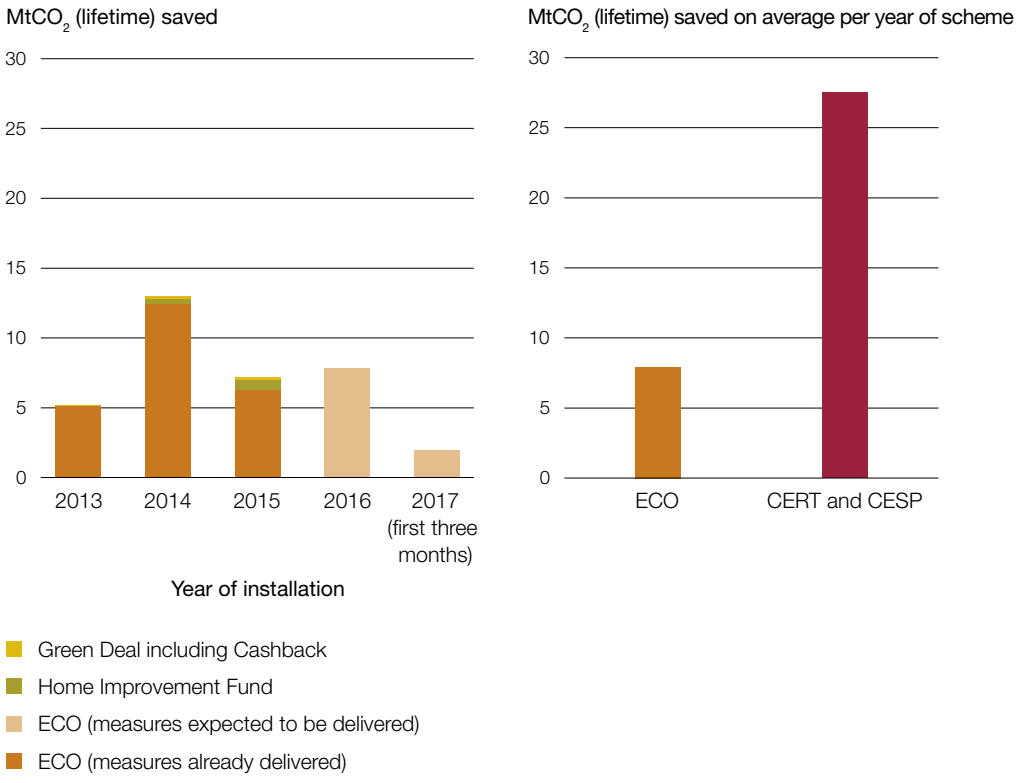
Source: Department of Energy & Climate Change, National Audit Office analysis

CO_2 reduction

2.3 The Department estimates that measures installed through the schemes by 31 December 2015 will save 24 to 25 megatonnes of CO_2 ($MtCO_2$) during their lifetime, of which 24 $MtCO_2$ is associated with ECO. These savings are in line with the Department's estimates in the revised impact assessment it published in October 2014. By 31 March 2017, assuming all energy suppliers meet their minimum obligation, the Department expects the schemes to result in total lifetime savings of 34 to 35 $MtCO_2$ (**Figure 12**).

Figure 12
Total expected CO_2 savings from ECO and the Green Deal

Including actual achievements as of 31 December 2015 and expected savings to 31 March 2017



Note

1 On average, ECO saved less than 8 $MtCO_2$/year, compared with 27.5 $MtCO_2$/year saved by CERT and CESP between 2008 and 2012.

Source: Department of Energy & Climate Change, National Audit Office analysis

2.4 ECO carbon savings are approximately 29% of the predecessor schemes' achievements over similar timescales (Figure 12). This is primarily due to the Department's initial focus on harder-to-treat homes, meaning it set obligations lower than previous schemes, and the reduced size of ECO following the changes in 2014. By March 2017 ECO will save 18.6 $MtCO_2$ less than it would have under the initial obligation levels, a 36% reduction.

2.5 The Department estimates that measures financed by Green Deal loans will save just 0.4 $MtCO_2$ over their lifetime, and now believes that these CO_2 savings probably would have been made anyway, without Green Deal finance. This is because measures that Green Deal loans have financed probably would have been installed anyway as a result of ECO, the Home Improvement Fund and other government policy instruments, such as the Feed-In-Tariffs for solar power. While the Department did not set a target for the Green Deal's CO_2 savings, this is clearly below its expectations. The Department's 2012 impact assessment modelled a central scenario in which over the course of ten years, Green Deal finance contributed an additional 27.5 $MtCO_2$ of lifetime savings.[22]

2.6 The Department has only spent approximately half of the £540 million that it was originally allocated by HM Treasury to offset the carbon impact of its 2014 changes to ECO. Most of the funds used (£154 million) were spent on the Green Deal Home Improvement Fund. This will generate lifetime savings of 1.0 $MtCO_2$, far less than the Department's reduction to ECO's CO_2 target. The Department used a further £51 million for a scheme to provide loans to the public sector to invest in energy efficiency. It estimates this will generate 0.2 $MtCO_2$ savings between 2018 and 2022. The Department subsequently used £34 million for loans to the Green Deal Finance Company (see our separate investigation into the Department's loans to the Green Deal Finance Company).[23] Changes in wider government priorities meant the Department has not received the outstanding share of money.

Addressing the causes of fuel poverty

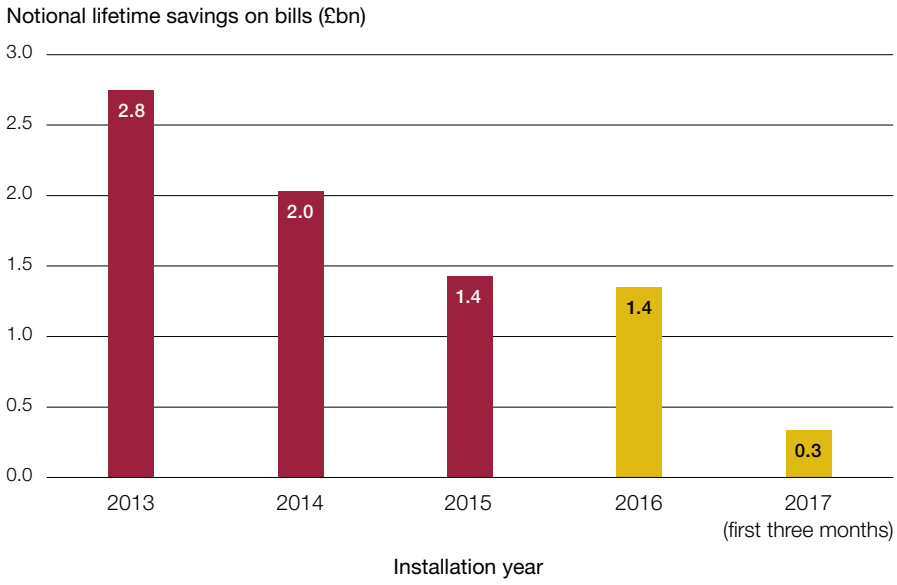
2.7 Up to 31 March 2015, suppliers installed 434,000 measures through the Affordable Warmth scheme. The Department estimates these measures will save around £5.1 billion notionally on energy bills over their lifetime (**Figure 13**). This is above the initial minimum obligation level, which the Department set at £4.2 billion by 31 March 2015. This is because the Department extended the obligation period to 31 March 2017 as part of its changes to ECO in 2014, which equates to a new minimum obligation of £7.9 billion. As of 31 December 2015, suppliers had installed 525,000 measures which are together expected to contribute £6.2 billion in notional energy bill savings. However, the Department is unable to determine the impact this has had on rates of fuel poverty (see also paragraph 3.11).

22 J Rosenow and N Eyre, 'The Green Deal and the Energy Company Obligation', *Proceedings of The Institution of Civil Engineers*, Vol. 166 Issue EN3, August 2013.

23 Comptroller and Auditor General, *Investigation: The Department of Energy & Climate Change's loans to the Green Deal Finance Company*, Session 2015-16, HC 888, National Audit Office, April 2016.

Figure 13
Affordable Warmth bill savings

By 31 March 2017, the Department expects suppliers to install measures that will deliver £7.9 billion in notional energy bill savings



Source: Department of Energy & Climate Change, National Audit Office analysis

Improving 'harder-to-treat' homes

2.8 The schemes have not improved as many harder-to-treat properties as the Department initially predicted. The Department wanted the supply chain to focus on these measures and establish more efficient installation practices.

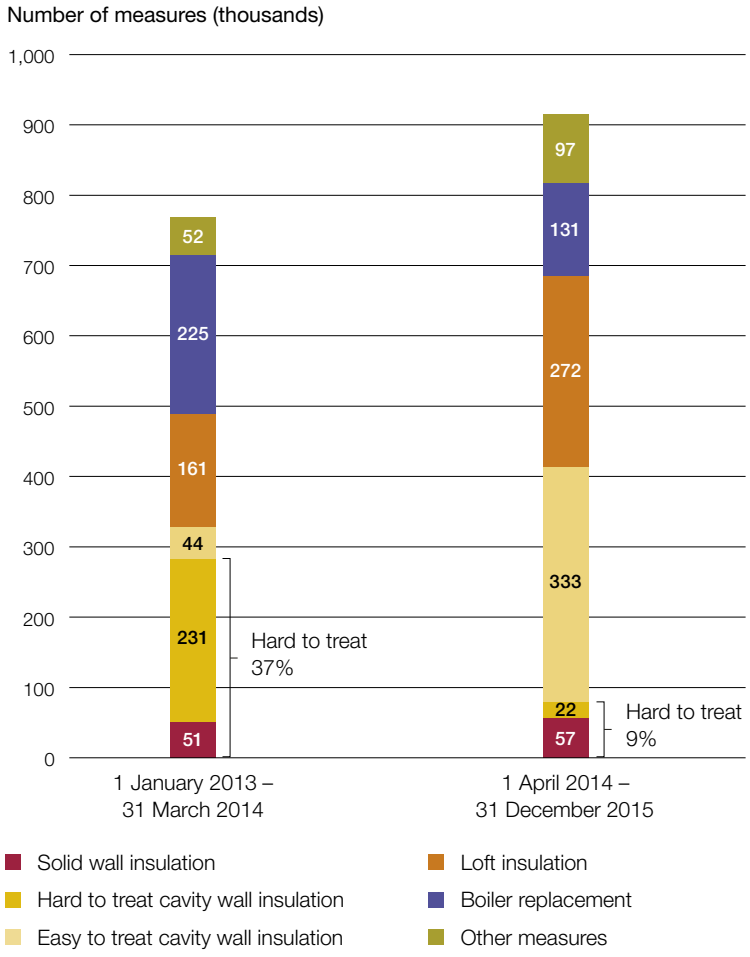
- **Solid wall:** In 2012, the Department projected that ECO would improve 100,000 solid-walled homes per year from 2015 onwards. This compares with peak annual installations of solid wall insulation through the previous schemes, CERT and CESP, of around 83,000 homes. Between 1 January 2013 and 31 March 2014, suppliers had insulated 52,000 solid-walled homes compared with the Department's expectation of 62,000 over this period.
- **Harder-to-treat cavity wall:** suppliers had improved around 235,000 harder-to-treat cavity-walled homes by 31 March 2014, roughly in line with the Department's expectation of 247,000.

2.9 As part of its changes to ECO in 2014, the Department enabled suppliers to achieve their obligations with cheaper measures, moving away from its focus on harder-to-treat properties. Consequently, the Department expected very few harder-to-treat properties would be insulated (**Figure 14**). To maintain some solid-wall activity, it set suppliers a target to save 4 $MtCO_2$ before 31 March 2017 by insulating solid-walled properties. The Department estimated this would require insulating around 100,000 solid-walled homes, equivalent to 23,500 per year over the obligation period. But the Department overestimated the average CO_2 savings from insulating each solid-walled property. While suppliers had insulated around 110,000 solid-walled homes by 31 December 2015, an average of 36,000 properties per year, the Department estimates these measures will only save 3.1 $MtCO_2$. Suppliers will have to save the remaining 0.9 $MtCO_2$ by 31 March 2017 to meet their obligation.

Figure 14

Mix of ECO measures delivered before and after the Department's changes to ECO in 2014

Suppliers have improved fewer harder-to-treat homes to meet their obligations after the Department's changes to ECO in 2014



Source: Department of Energy & Climate Change

Stimulating private investment

2.10 The Department has failed to create consumer demand for energy-efficiency measures as it intended. Around 97% of all measures installed through the schemes were delivered for free or on a subsidised basis for the household. Although it did not set a target, this is above the Department's expectations. In 2012, the Department forecast that the Green Deal Finance Company would provide loans worth more than £1.1 billion by the end of 2015. The actual figure by that date was £50 million. While households have financed 1% of measures using Green Deal finance, the Department estimates that households financed another 2% independently of the Green Deal and ECO. The Department estimates that this equates to around 35,000 additional measures to 31 December 2015.

Scheme costs

2.11 The Department spent £240 million on the Green Deal between 1 April 2011 and 31 March 2015 (**Figure 15**) compared with its expectation of around £225 million. This includes grants to stimulate demand and unexpected costs to support the Green Deal Finance Company. It now expects that the finance company will not repay the the Department's initial £25 million subordinated loan (see our separate investigation into the Department's loans to the Green Deal Finance Company).[24]

Figure 15
Departmental expenditure on the Green Deal from 1 April 2011 to 31 March 2015

	Item	Notes	2014-15 prices expenditure (£m)
Core costs	Green Deal mechanism	Costs to set up a national 'infrastructure' of technology, accreditation frameworks, consumer helplines and regulators to support arrangement of Green Deal plans	21.0
Supporting activities	Support to the Green Deal Finance Company	Stakeholder loan, impaired	25.6
	Cashback	Financial incentives to encourage households to install measures through the Green Deal process	16.3
	Core Cities, Pioneer Places and Communities	Funding for local government to support uptake and learning about how to roll-out the scheme	105.8
	Other programme, administration and capital expenditure		71.7
			240.4

Source: Department of Energy & Climate Change

24 See footnote 23.

2.12 The Green Deal has also led to costs outside government:

- The Department expected households to contribute £1.0 billion–£1.3 billion to the cost of assessments and measures, either through Green Deal finance or other sources, such as savings, by the end of 2015. As a result of the low take-up, the actual amount that households have contributed is likely to be far lower, although the Department's information does not capture this (paragraph 3.15).
- Some 14 private sector companies and one local authority invested £44 million in the Green Deal Finance Company.
- The Department forecast Green Deal providers and other businesses would contribute £422 million towards the Green Deal. This includes the costs of training and accreditation that enabled small businesses, such as installers, to participate in the Green Deal. The Department also expected energy companies to spend £15 million upgrading their billing systems to enable the Green Deal Finance Company to collect loan repayments. The Department does not know how much businesses have actually spent, although it is likely to be significantly less than £422 million.

2.13 Suppliers have spent £3.0 billion fulfilling their obligations under ECO up to 31 December 2015, 8% of which they classified as administrative costs (**Figure 16**). The Department allowed suppliers to install cheaper measures and reduced their obligations with its 2014 changes to ECO. Suppliers' annual costs reduced significantly following this, from £1.35 billion a year to £0.77 billion a year. While suppliers' costs were higher than the Department expected up to the point it made the changes, this was partly because they were ahead of schedule in achieving their obligations.

2.14 As of 31 December 2015, the Green Deal Home Improvement Fund cost the Department £154 million (£153 million in 2014-15 prices). Vouchers that households had not redeemed as of 31 December 2015 will account for another £1 million to £2 million of the Department's expenditure in 2016.

Figure 16

ECO costs (2014-15 prices) to 31 December 2015

	Initial impact assessment (2012) (£bn)	Revised impact assessment (2014) (£bn)	Outturn (£bn)	Previous schemes over a similar timeframe (£bn)
Costs to suppliers				
Carbon Emissions Reduction Obligation	2.41	1.32	1.28	2.31
Carbon Saving Communities Obligation	0.60	0.52	0.53	0.64
Affordable Warmth Obligation	1.11	1.07	0.95	0.98
Administration	0.004	0.245	0.256	0.108
Total ECO	**4.13**	**3.14**	**3.02**	**4.04**
Costs to the Department				
Administration	**0.011**	**0.011**	**0.022**	**0.009**
Costs to households				
Contributions to installations	**Costs not separately specified**		**Costs unknown**	

Notes

1 For 'previous schemes' we compare CERO with CERT, CSCO with CESP and Affordable Warmth with Warm Front. We compare ECO's administrative costs with the sum of CERT and CESP's administrative costs.

2 The reporting requirements of ECO (one of the factors affecting administrative costs) were not decided until after the initial impact assessment had been written. In the outturn data and the revised impact assessment, 'administrative costs' includes some costs that were not foreseen or categorised as administrative costs in the original impact assessment. For example, in the original impact assessment the Department assumed search costs would be treated as delivery costs, but in the outturn data they are counted as costs of administration.

3 Regional and local government have also contributed to the costs of installations.

4 Figures have been rounded.

Source: Department and Energy & Climate Change, National Audit Office analysis

Cost-effectiveness of the schemes

2.15 On the basis of the available information, we estimate the cost per tonne of CO_2 saved by the schemes:[25]

- Overall, energy suppliers and government have spent £100 to £102 per tonne of CO_2 saved with the Green Deal, ECO and the Home Improvement Fund. Excluding suppliers' administration, the cost is £94 per tonne (between £92 and £95 depending on the assumptions employed).
- **ECO:** up until 31 March 2015, the Carbon Saving Communities Obligation (CSCO) and the Carbon Emissions Reduction Obligation (CERO) cost energy suppliers an average of £82 per tonne of CO_2 saved, excluding administrative costs.[26] This is higher than previous schemes such as the Carbon Emissions Reduction Target (CERT) and the Community Energy Savings Programme (CESP), which together cost £34 per tonne. The difference is partly due to the fact that the Department focused ECO more on harder-to-treat measures than CERT and CESP. After the 2014 changes to ECO, when the Department made easier-to-treat measures eligible, ECO cost suppliers £61 per tonne of CO_2 saved, compared with £110 before the changes (**Figure 17**).
- The **Green Deal Home Improvement Fund** cost the taxpayer £153 million to 31 December 2015, saving 1.0 $MtCO_2$; equivalent to £150 per tonne of CO_2 saved.

2.16 Setting up the Green Deal finance infrastructure, supporting the finance company and paying grants to pump-prime the scheme cost the Department £240 million as of 31 March 2015 (Figure 15). Due to uncertainty surrounding additional CO_2 savings attributable to Green Deal finance (see paragraph 2.5), we have not estimated the cost of the scheme per tonne of CO_2 saved. However, given that just 14,000 homes have taken out Green Deal finance plans, the scheme has cost the taxpayer £17,000 per plan, when including grants to stimulate demand.

2.17 The ECO sub-obligation for vulnerable households (Affordable Warmth) is measured in reductions to energy bills. The Department estimates that households that received these measures before 31 March 2015 will save £5.1 billion on bills. This is an average of £1 saved for each £0.16 spent by energy suppliers. The Department's original expectation was £1 saved per £0.20 spent. This does not include household contributions, which the Department expected to be around £100 million.

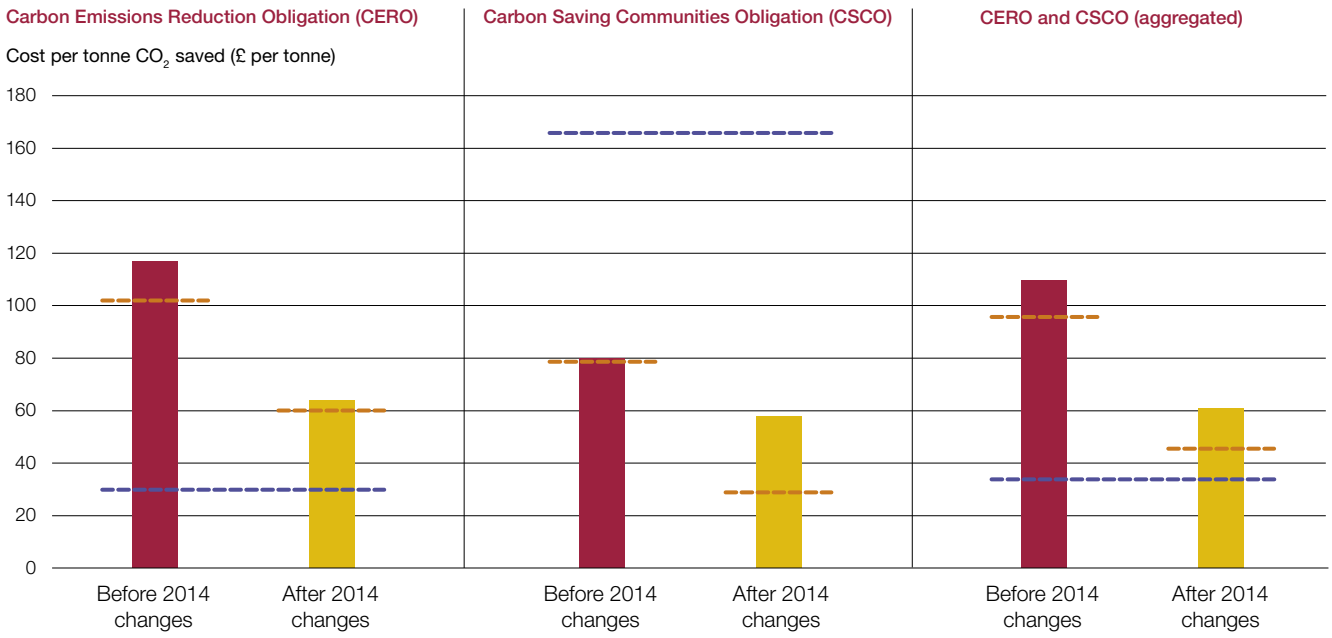
2.18 The Department's information on the schemes' energy and emissions impacts does not capture some other benefits. These include learning lessons to feed into future schemes, and engagement of local bodies in energy efficiency. The Green Deal also provided advice to households in the form of Green Deal assessment reports, which the Department estimates resulted in around 35,000 additional measures by 31 December2015 outside Green Deal finance. We estimate that, at best, these measures have saved 0.6 $MtCO_2$. However, the Department cannot say with any certainty how many of these measures would have been installed anyway, without a Green Deal assessment.

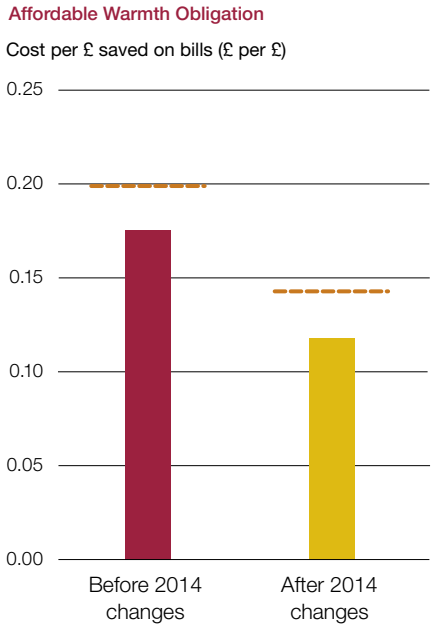
25 All costs in this paragraph are in 2014-15 prices.
26 The Department's information does not break suppliers' administrative costs down by sub-obligation.

Figure 17

Cost-effectiveness of energy suppliers' ECO expenditure

As predicted in the Department's 2014 impact assessment, changes to ECO in 2014 reduced suppliers' costs of delivering energy savings





Cost-effectiveness of suppliers' ECO expenditure

- Actual performance from 1 January 2013 to 31 March 2014 (before 2014 changes)
- Actual performance from 1 April 2014 to 31 March 2015 (after 2014 changes)

Benchmarks

- Impact assessments
- Previous schemes (CERT and CESP)

Notes

1 These figures do not include suppliers' administrative costs because the Department's information does not break these costs down by sub-obligation.

2 CERO is compared with its predecessor, CERT, and CSCO is compared with CESP. CERT and CESP figures are based on the Department's most recent estimates of their lifetime carbon savings, which differ from the CO_2 savings presented in the 2014 CERT and CESP evaluation. The Department reduced its estimates of CERT and CESP CO_2 savings by around 50% and 80% respectively.

Source: Department of Energy & Climate Change, National Audit Office analysis

2.19 The relatively high cost of the schemes per tonne of carbon saved is attributable to of a number of factors:

- **The initial focus on improving harder-to-treat homes:** The Department believes it is necessary to improve these homes for the UK to meet its requirement under the Climate Change Act to reduce its emissions by 80% from 1990 levels by 2050. It intended that ECO would reduce the long-term cost of doing this by insulating solid-walled properties at unprecedented rates, an ambition which it scaled back in 2014.

- **Closing the Green Deal:** The Department expected that most Green Deal costs would be for setting up the scheme structure and incentivising early demand. It then expected the private sector to provide finance to sustain the scheme over several years. Its cost–benefit ratio might have improved over time had it not brought the scheme to a halt in July 2015, as more households installed measures with little or no additional government funding.

- **Administrative costs:** The Department underestimated suppliers' administrative costs (Figure 16). It required suppliers to use the time-consuming RdSAP system to calculate carbon savings so households could blend Green Deal and ECO financing.[27] At most, 1% of measures have blended the schemes. The Department identified high administrative costs as an area to improve in a lessons learned exercise in 2015.

- **Identifying eligible households:** For measures to be eligible towards meeting their obligations, suppliers needed to identify homes that met certain criteria, such as harder-to-treat construction or occupants on certain means-tested benefits. Suppliers told us that finding eligible homes could be time-consuming and expensive. The Department initially confined suppliers to delivery of hard-to-treat cavity walls rather than standard cavity walls. Hard-to-treat cavity walls can only be identified with a detailed assessment.

2.20 Although the Department's changes to ECO in 2014 improved cost-effectiveness in the short term, costs could be higher as a result in future. According to the Committee on Climate Change, 1.5 million solid-walled homes must be insulated throughout the 2020s for the UK to meet the fifth Carbon Budget between 2027 and 2032. Carbon Budgets are interim targets towards meeting the UK's requirement under the Climate Change Act. The Department initially expected ECO to run until 2022, with three separate interim targets. It hoped that, over time, this would enable suppliers to establish mature models for improving harder-to-treat homes. Suppliers switched to achieving their obligations primarily through cheaper measures after the changes (Figure 14). Therefore fewer harder-to-treat properties have been improved, and there has been less potential for the supply chain to achieve efficiencies over the medium term.

27 Reduced data Standard Assessment Procedure (RdSAP).

Part Three

The Department's design, implementation and monitoring

3.1 In this part, we identify some areas of the Department of Energy & Climate Change's (the Department's) design and implementation that have impacted on performance and costs of the schemes. We also evaluate whether the information the Department uses to monitor the schemes' progress is adequate. We have highlighted issues that we consider to be most relevant for the Department when it is designing and implementing energy-efficiency schemes in future.

Implementing an untested design

3.2 To achieve its objectives, the Department should have ensured that the Green Deal was a sufficiently attractive proposition to generate consumer demand. This would have required it to have insight into the behaviours of the target groups for the scheme, and to design it according to their motivations. Predicting behaviours can be difficult, so policies that rely on consumer behaviours normally require testing and adjustments before they are fully implemented, for example by running pilots.

3.3 The Department based its design on a 2011 consumer survey, focus groups, a stakeholder consultation and lessons from previous locally run 'pay-as-you-save' schemes. However, the Department did not fully integrate this evidence into the design and implementation of the Green Deal:

- The measures that were popular in previous local 'pay-as-you-save' schemes, such as double glazing, generally did not qualify under the Green Deal's 'golden rule', which stipulates that repayments must be offset by lower energy bills.
- Consumer research showed people were interested in benefits other than financial savings, such as a warmer home. In contrast, the Department's early marketing for the scheme focused on the financial benefits for households.
- Green Deal loans were offered with interest rates ranging from 7% to 10%, whereas in local 'pay-as-you-save' schemes, consumers were attracted by offers of interest-free finance.

3.4 The Department did not test its final design of the Green Deal with consumers before implementing the scheme. It did have concerns that its design would not generate demand, as did stakeholders that responded to the Department's consultations in 2011 and 2012. The Department based its demand forecast on a stated preference survey. It did so despite the advice of the Department's consultants, who reviewed the Department's modelling and warned against relying on the consumer survey to forecast uptake. From the Department's perspective, the market-led design meant the financial risk to government of the scheme not working was acceptably small.

3.5 Even where there has been some interest in Green Deal loans, the complex process meant many people did not complete the process of arranging a finance plan. Arranging a loan involves several participants and process steps (Figures 5 and 6). Of the consumers who applied for finance plans, only 50% completed the process of arranging a loan. In 2014, the Department simplified the loan application process. The changes were not sufficient to bring the number of plans back on track.

'Blending' the schemes

3.6 The Department believed that it was critical for the success of the schemes to present a single offer to consumers. It expected this to lead households to pay for a significant share of measures through a blend of Energy Company Obligation (ECO) subsidy and Green Deal finance. 'Blending' was important for the success of the Green Deal because few measures with low upfront costs met the 'golden rule' (**Figure 18**). For most measures, consumers required another source of finance to reduce the loan amount. The Department expected this to come from ECO.

3.7 The Department was partly relying on energy suppliers to 'blend' finance from the Green Deal with their own spending to pay for measures. But suppliers told us that, while the Department designed the schemes to work together, this did not happen in practice, because:

- financing measures entirely through ECO closely resembled the delivery models suppliers had developed under previous government schemes. Adapting their approach could have increased suppliers' short-term costs;
- due to delays in obtaining state aid approval, Green Deal finance was only available to consumers in April 2013, four months after the suppliers' obligation period began; and
- the Green Deal was not sufficiently attractive for households. If installers had spent more time explaining the Green Deal proposition to each household, the resources spent on this effort would have added to their costs, and suppliers might have found it harder to meet the deadline for their obligations under ECO.

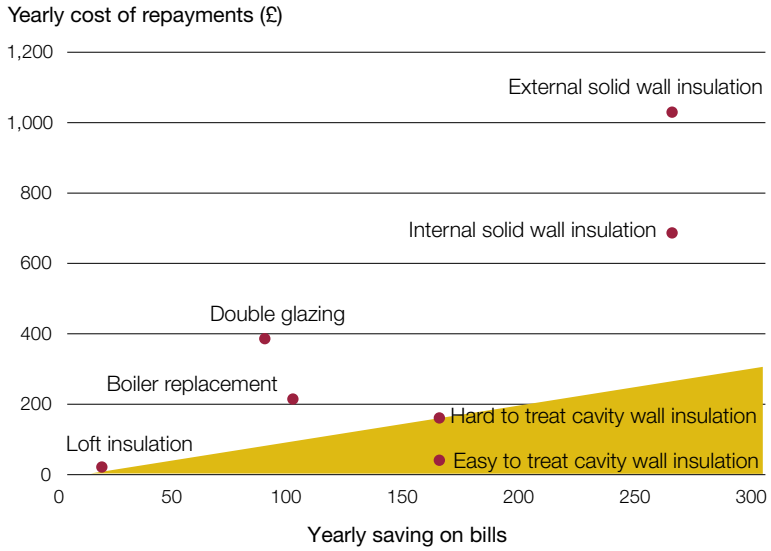
Figure 18
The golden rule

Most measures do not meet the golden rule if consumers cannot find additional funds to reduce the amount they borrow with a Green Deal plan

The rule limits the amount that households can borrow, dictating that total repayments must be lower than total savings on the energy bill over 25 years.

The chart shows a hypothetical example of different measures financed with a 25-year loan at a 7% rate of interest.

Only easy-to-treat cavity wall insulation would qualify on its own, while other measures would require some form of subsidy to be installed at zero net cost for the householder.



Source: Energy Saving Trust; Department of Energy & Climate Change; National Audit Office analysis

The Department's information on scheme progress

3.8 To manage policies effectively, departments need information on performance against objectives, enabling them to identify problems early and make adjustments. Performance information should also provide balance between different aspects of performance such as cost, delivery and quality. This would help the Department to assess the consequences of its decisions. For example, a reduction in the cost of schemes could affect the carbon dioxide (CO_2) they save and the quality of measures.

Delivery

3.9 The Department's information on the schemes is a significant improvement compared with previous schemes. It is wide-ranging, granular and published at regular intervals. It includes:

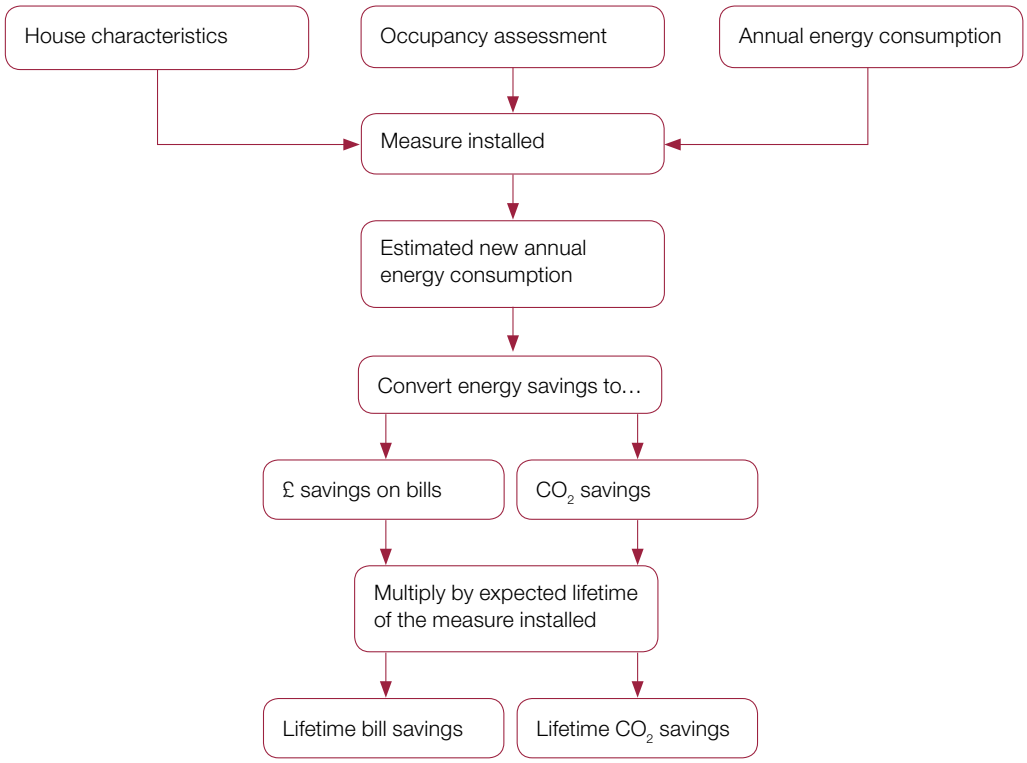
- measures installed – by type, location and scheme;
- Green Deal advice reports, plans sold and Home Improvement Fund payments;
- number of enterprises in the Green Deal supply chain, that is, advisors, installers and providers;
- survey data on households and businesses; and
- estimates of the schemes' total lifetime energy, emissions and bill savings.

CO_2 savings

3.10 The Department has improved its monitoring of the actual CO_2 that energy-efficiency measures save since it implemented the schemes. The Department estimates how much each measure would save, in terms of both CO_2 and bills, because measures' actual impact takes time to become evident (**Figure 19**). It has developed the National Energy Efficiency Data framework (NEED), which since 2013 has monitored actual energy usage in four million homes. The Department used these data to significantly reduce its estimate of the CO_2 saved through the previous supplier obligations and adjust savings from measures installed through ECO. Developing this detailed dataset provides the Department with greater insight into the actual impact of its schemes than was possible before Green Deal and ECO.

Figure 19

How the Department estimates CO_2 and bill savings



Source: National Audit Office analysis

Fuel poverty

3.11 The Department has not assessed whether the effects of ECO on low-income and fuel-poor households are in line with its expectations:

- The Department expected its design of ECO to offset the regressive impact that supplier obligations can have, given suppliers recoup costs from all households regardless of their income. It expected that, as Affordable Warmth is ring-fenced for low-income and vulnerable households, ECO's overall impacts on bills would be proportionate to households' income.

- The Department does not collect income data on households that have received a measure through ECO. Therefore it cannot be sure whether it has succeeded in preventing ECO from having a regressive impact. The Department told us that collecting this information would be intrusive and increase suppliers' administrative costs.

- Although some households eligible for Affordable Warmth are fuel-poor, many are not. Under the current definition of fuel poverty in England, less than a third of those eligible for Affordable Warmth are fuel-poor. Under the definition used at ECO's launch, about half were fuel-poor. It is not clear how much assistance the scheme gives to the households that are fuel-poor, partly due to lack of income data.

- The Department states that ECO is aimed at addressing the causes of fuel poverty, not fuel poverty itself, therefore assessing its actual impacts on fuel poverty is not required. The Department plans to focus its replacement for ECO on tackling the root causes of fuel poverty from 2017.

3.12 The Department told us the current legal framework for sharing personal data obstructs it from assessing ECO's impact on fuel poverty. For example, the Department for Communities and Local Government holds data on energy performance certificates, which describe the energy efficiency of individual homes. The current legal framework for sharing personal data has limited the Department's access to this information. The government plans to create wider data-sharing powers between public bodies, which the Department hopes to use to undertake better policy analysis and evaluation.

Cost

3.13 The Department receives quarterly returns from energy suppliers on the costs they incur in meeting their obligations. These include:

- costs of meeting each sub-obligation (**Figure 20**);
- administrative costs; and
- exchanges on the brokerage platform, where enterprises can bid for contracts to fulfil some of the suppliers' obligations.

The Department also commissioned a one-off report in 2014 that looked in detail at suppliers' costs.

3.14 For Green Deal finance, the Department monitored the number of loan applications the Green Deal Finance Company has received and the total value of loans issued. It also monitored how much of its loans the finance company had drawn down, to predict how long the loans would fund its purchases of Green Deal finance plans. TheDepartment also monitored the delivery costs of Green Deal Communities, Cashback and the Home Improvement Fund.

Figure 20

Variation in energy suppliers' cost-effectiveness, to 31 December 2015

	Affordable Warmth Obligation (£ per £ saved on bills)	Carbon Saving Communities Obligation (£ per tonne CO_2)	Carbon Emissions Reduction Obligation (£ per tonne CO_2)
Average	0.15	60.0	82.0
Low	0.13	41.2	66.1
High	0.17	73.7	95.2
Percentage difference between highest and lowest supplier	31%	79%	44%

Note

1 For the Carbon Saving Communities and Carbon Emissions Reduction obligations, the figures for expenditure per tonne of CO_2 saved have been adjusted to account for behavioural change following the installation of measures.

Source: Department of Energy & Climate Change, National Audit Office analysis

3.15 There are, however, some important gaps in the Department's information on costs:

- **Household and third-party contributions:** The Department cannot quantify third-party contributions to measures, which means it cannot fully evaluate their cost-effectiveness. There is anecdotal evidence that households have contributed financially to some ECO measures, and that suppliers have received financial support from local authorities and housing associations. However, the Department has not collected this information. Having more detailed information would provide evidence of whether the schemes are transferring the burden from bill payers to householders receiving measures, which is a central aim of the schemes. Furthermore, the Department has limited oversight of the contributions from low-income and vulnerable households. Some stakeholders have raised concerns that poorer households may not benefit from the schemes because they cannot afford to make financial contributions.

- **The cost of each measure:** The Department receives aggregated information from suppliers on their costs of delivering ECO; it does not know how much each individual measure has cost to install. Therefore it cannot track the programme against its objective of driving down the costs of improving harder-to-treat homes.

- **Suppliers' performance:** The Department's information shows significant variation between suppliers in the costs they incur (Figure 20); however, it is not sufficiently detailed for the Department to understand why this is, or to identify examples of good practice that it could share to improve performance.

- **Detailed administrative costs:** The Department collects information on suppliers' administrative costs in aggregate across the obligations. This information is inadequate for understanding whether the administrative burden is too high. For example, suppliers told us that the Reduced data Standard Assessment Procedure (RdSAP) energy-savings scoring system creates significant costs; the Department cannot be sure the costs of RdSAP are proportional to its benefits without knowing how much suppliers spend on it.

3.16 The Department's cost information is more detailed than for previous schemes. It considers its data are sufficient and that it would not be cost-effective to collect more data. It considers it would be too complex to obtain information on the full cost of measures, including household contributions, as this is held by different parties, such as suppliers, installers and the households themselves. It also believes pressure from shareholders will motivate suppliers to reduce their costs, which reduces the impact on their customers' bills. However, the Competition and Markets Authority (the CMA) recently found evidence suggesting some suppliers incur higher costs than would be the case if they operated efficiently. Although the CMA has not investigated how efficiently suppliers deliver ECO, it has found differences between major suppliers' indirect costs. The CMA states that the extent of differences in indirect costs suggests some suppliers may not have been operating efficiently in those areas of their cost base.[28]

28 Competition and Markets Authority, *Energy market investigation: provisional findings report*, July 2015.

Managing long-term cost-effectiveness

3.17 Between 2013 and 2015 the Department made significant changes to the schemes which have, at times, been inconsistent:

- ECO, with the support of the Green Deal, was supposed to develop a supply chain for harder-to-treat homes over ten years; yet the Department reduced this ambition after 15 months. The Department now plans to replace ECO from April 2017 with a smaller obligation, which it intends will tackle the root cause of fuel poverty and contribute to the government's commitment to insulate one million homes during this Parliament.
- Changes to ECO negatively impacted the potential demand for Green Deal finance plans. Suppliers often did not need additional finance to install the cheaper measures allowed after the 2014 changes.
- The low uptake of Green Deal finance meant the Department did not provide further financial support for the Green Deal Finance Company in July 2015, bringing the scheme to a halt. It has no plans to replace the Green Deal, which risks financial losses to small businesses that have invested in training, accreditation and in the finance company.
- Its releases of vouchers for the Home improvement Fund created a series of peaks and troughs in the supply chain, increasing and depressing the price of measures. The fund was cut after the Department had spent only one-third of its original budget.

3.18 The lack of consistency in the Department's actions on household energy efficiency has created uncertainty with its main stakeholders, which could increase the long-term cost of improving the housing stock. The Department relies on a range of stakeholders for improvements to household energy efficiency, such as energy suppliers, small businesses and consumers. Enterprises in the supply chain require a higher return where there is a risk they are investing in skills and equipment that the government could deprioritise in the next round of schemes.

3.19 Currently, the future of household energy-efficiency policies remains uncertain, which could impact on the implementation of the Private Rented Sector Energy Efficiency Regulations.[29] This regulation requires landlords to improve rented properties' energy efficiency to EPC band E by 2023. From April 2016, tenants have the right to request and pay for measures that improve their home's energy efficiency. The Department had intended that tenants would have the option to obtain a Green Deal assessment report and use Green Deal finance to pay for the measure. Without a replacement for the Green Deal, or a change to the regulations, the future of this policy is uncertain. While alternative sources of finance may be available, such as ECO, local authority grants or their own savings, tenants may find it harder to pay for the improvement.

29 The Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015.

Appendix One

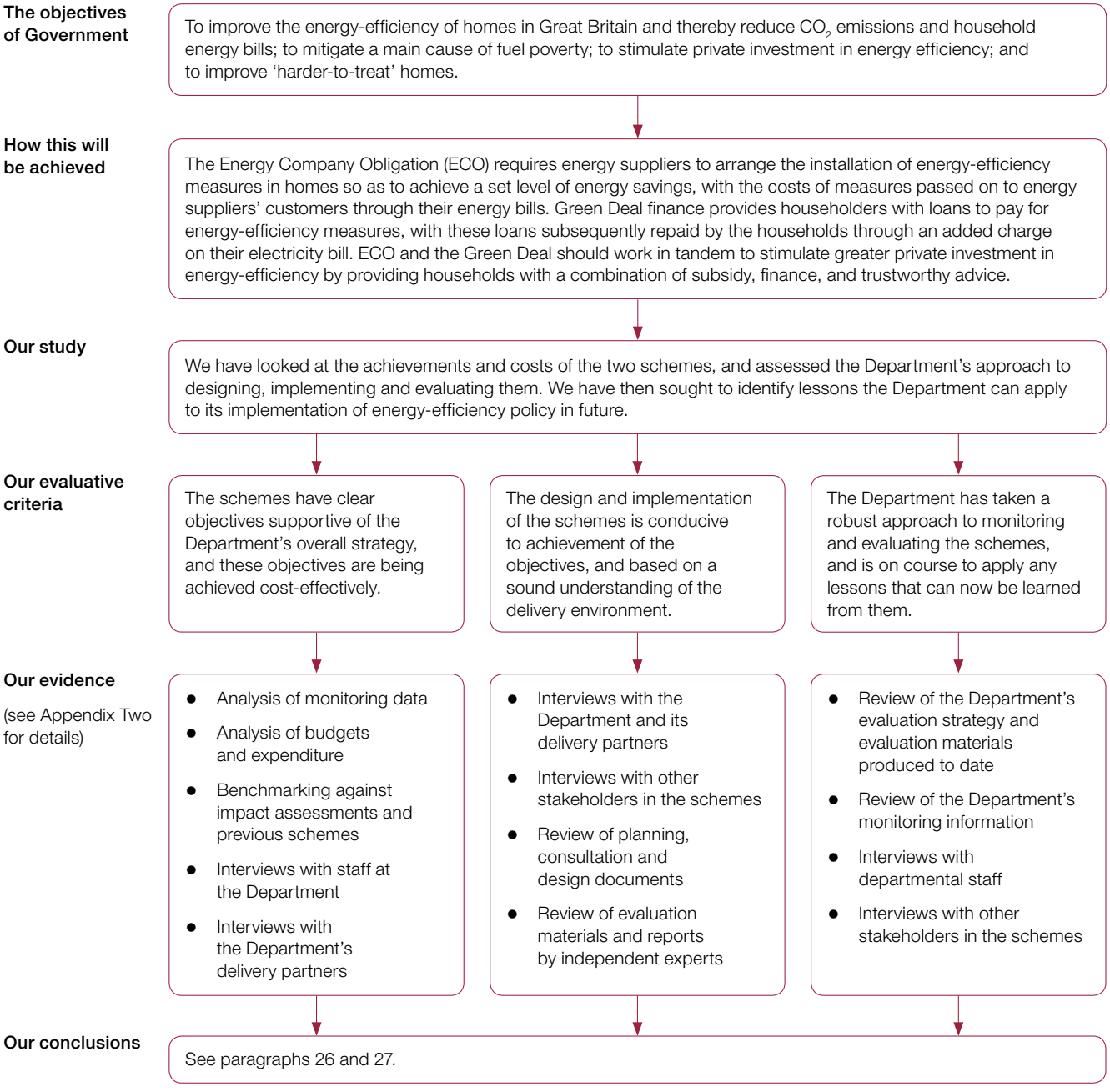
Our audit approach

1 This study assessed the value for money of two government schemes aimed at improving the energy efficiency of homes in Great Britain: the Green Deal and the Energy Company Obligation (ECO). We reviewed:

- the role government currently plays in improving the energy efficiency of existing homes, and the objectives the Department of Energy & Climate Change (the Department) set for the Green Deal and ECO;
- the costs and achievements of the schemes; and
- the Department's approach to designing, implementing, monitoring and evaluating the schemes.

2 We applied an analytical framework with evaluative criteria for determining whether the Department has achieved value for money. This framework encompassed quantitative and qualitative approaches to assessing value for money. Our quantitative assessment compared the costs and achievements of the schemes against those of previous schemes and the Department's impact assessments. Our qualitative assessment considered the Department's approach to managing the schemes, which we compared against accepted principles of best practice as set out in National Audit Office and government guidance. We provide details of our audit approach in **Figure 21** overleaf.

Figure 21
Our audit approach



Appendix Two

Our evidence base

1 We reached our independent conclusions on the Department of Energy & Climate Change's (the Department's) implementation of the Green Deal and the Energy Company Obligation (ECO) and whether the schemes cost-effectively improved household energy-efficiency following our analysis of evidence collected between August 2015 and April 2016.

2 Our audit approach is outlined in Appendix One.

3 **We reviewed the government's role in household energy efficiency (Part One):**

- We interviewed officials from the Department to understand how the objectives of these schemes aligned with the Department's strategy.
- We interviewed officials from the Department and organisations involved in the delivery of the schemes to assess the appropriateness of the Department's measures of success for the schemes against its objectives.
- We reviewed previous National Audit Office (NAO) reports on public services delivered through markets to identify good practice in how departments identify early warning signs that their policy objectives are not being achieved.

4 **We assessed the performance of the schemes (Part Two):**

- We analysed the Department's documents to understand its expectations for the schemes in terms of cost and performance.
- We obtained information from the Department's accounting records and returns from suppliers' to calculate the costs of the schemes.
- We compared the cost-effectiveness of the schemes with forecasts made in the Department's impact assessments, and with previous schemes. We did this through quantitative analysis of (1) the Department's monitoring data on the costs and performance of the schemes; (2) the Department's impact assessments; and (3) published and unpublished departmental information on the achievements of previous schemes.

5 We suggested the lessons the Department should learn for future schemes (Part Three):

- We reviewed the Department's design and implementation documents and interviewed departmental officials to assess how it understood the design environment. This includes reviewing internal papers relating to the consultation processes, planning, developing and implementation of the Green Deal and ECO, as well as customer surveys, business plans and performance reviews.
- We interviewed major stakeholders, including energy suppliers, industry representatives and academics to obtain their perspectives on how the Department's design and implementation has impacted on the schemes' performance.
- We examined previous NAO reports and government documents that describe good practice for departments implementing policies that rely on influencing individual behaviours and managing delivery chains effectively.
- We reviewed the Department's monitoring and evaluation information to understand what lessons it has learned from the schemes.
- We interviewed officials from the Department and major stakeholder groups to assess whether lessons were being systematically learned and applied, and whether these lessons are influencing the planning and implementation of future domestic energy-efficiency policies.

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