



National Audit Office

Report

by the Comptroller
and Auditor General

Department for Business, Energy & Industrial Strategy

Low-carbon heating of homes and businesses and the Renewable Heat Incentive

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Department for Business, Energy & Industrial Strategy

Low-carbon heating of homes and businesses and the Renewable Heat Incentive

Report by the Comptroller and Auditor General

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Commons in accordance with Section 9 of the Act

Sir Amyas Morse KCB
Comptroller and Auditor General
National Audit Office

20 February 2018

This report examines the objectives of the Renewable Heat Incentive (RHI) and progress against them, its cost-effectiveness, monitoring and evaluation. We also look at whether the Department is learning lessons for the future and its approach to managing fraud, non-compliance and gaming.

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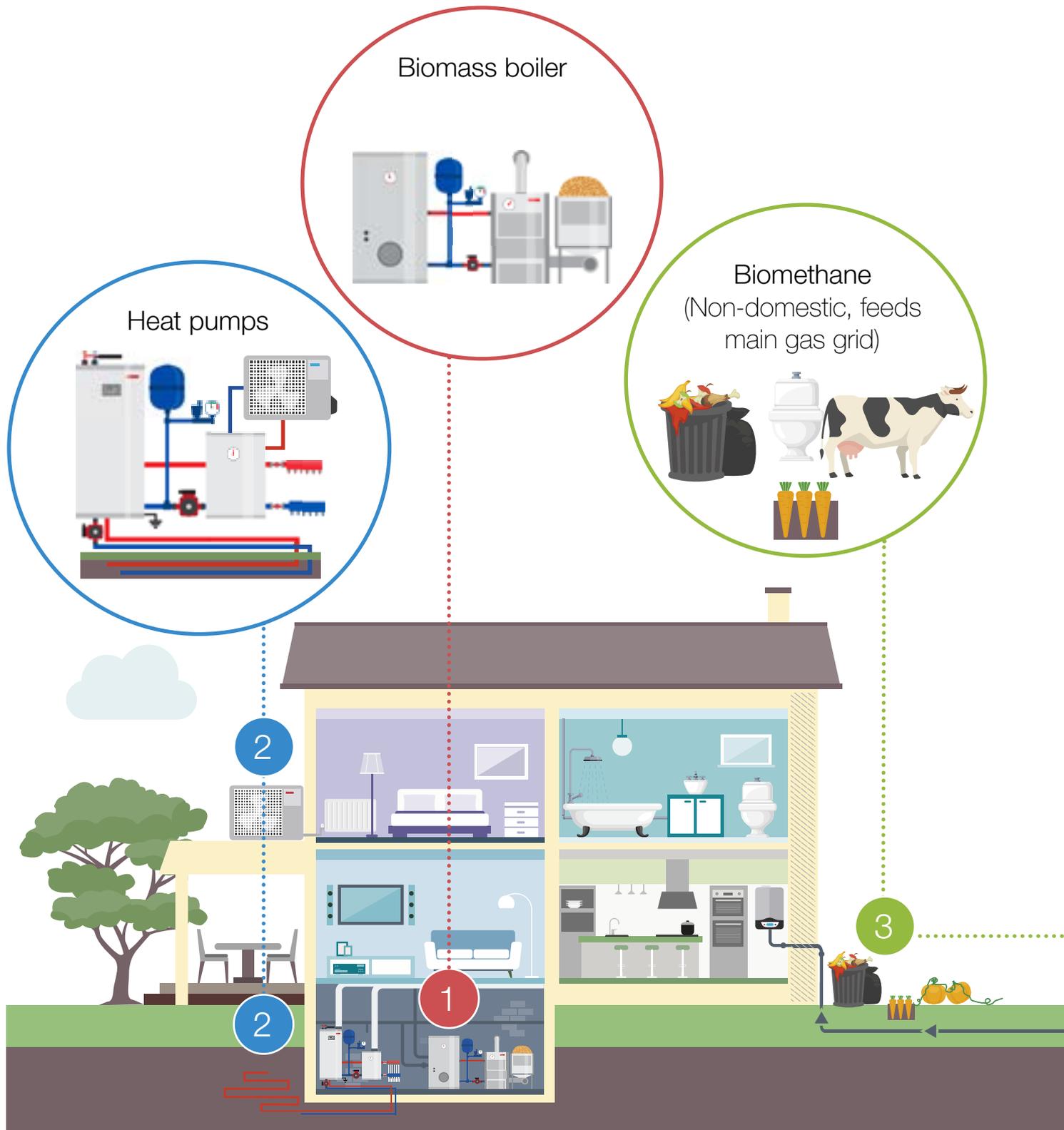
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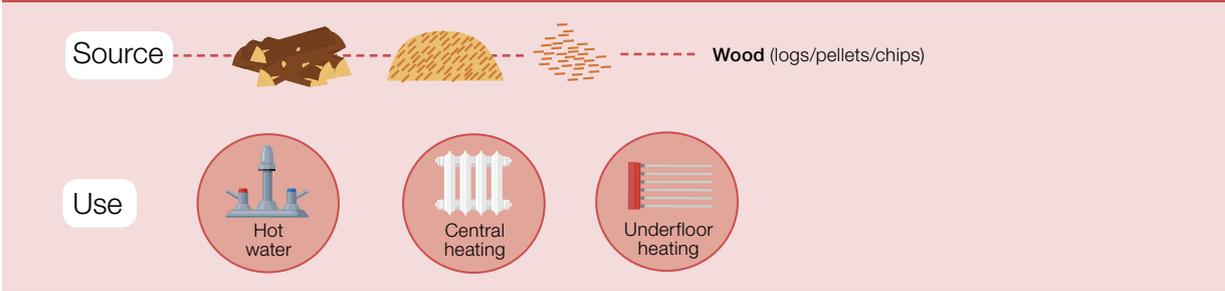
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What is renewable heating?

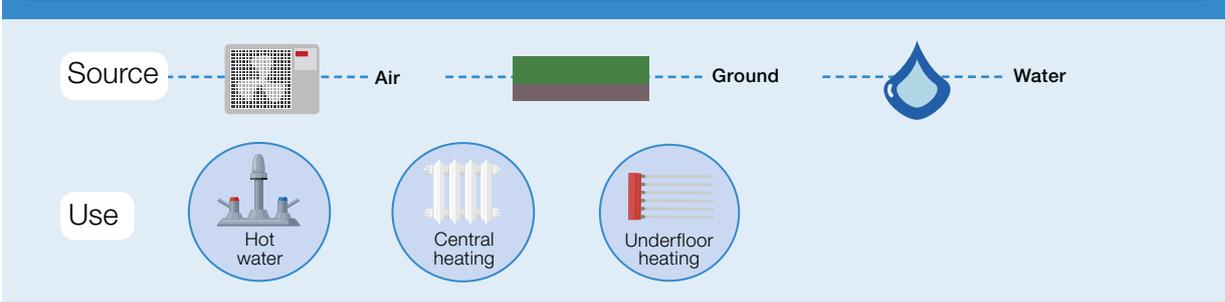
Popular renewable heating technologies eligible for the Renewable Heat Incentive



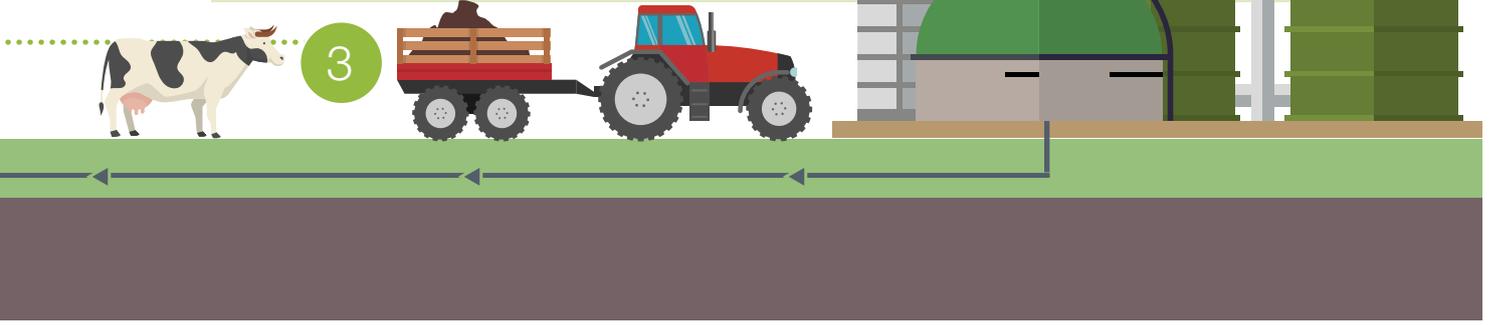
1 Biomass Biomass boilers are wood-fuelled heating systems that burn wood pellets, wood chips or logs to produce heat. This heat can then be used to heat radiators and underfloor heating systems and to provide hot water.



2 Heat pumps Heat pumps use electricity to absorb heat from either the air, ground or water. This heat can then be used to heat radiators and underfloor heating systems and to provide hot water.



3 Anaerobic digestion Anaerobic digestion is a biological process in which microorganisms break down biodegradable material in the absence of oxygen. Biogas is a product of this process. It consists of around 60% methane and 40% carbon dioxide. Biogas can be upgraded to biomethane by removing the carbon dioxide and other trace gases, and injected into the main gas grid.



Key facts

£23bn

estimated lifetime payments to participants on the Renewable Heat Incentive (RHI) scheme through to 2040-41 (in current year prices or cash terms)

£1.4bn

payments to date, as at August 2017

78,048

number of installations delivered by the RHI, as at December 2017

513,000

number of installations that the Department for Business, Energy & Industrial Strategy (the Department) originally planned that the RHI would deliver by 2020, in its 2012 business case

65% and 44%

reduction in planned renewable heat generated and carbon dioxide saved through the RHI scheme by 2020

4.5 million tonnes CO₂ equivalent

estimated carbon emissions saved in 2017-18, approximately 1% of total UK carbon emissions

4.4% and 2.5%

Ofgem's estimate in May 2017 of non-compliance (over-payment as a share of total payments) in the Non-domestic and Domestic RHI schemes during 2016-17

£3 million

estimated overpayments to RHI participants as a result of non-compliance with the regulations in 2016-17

Summary

1 The Renewable Heat Incentive (RHI) is a scheme to encourage a switch from fossil fuel heating systems to renewable and low-carbon alternatives in homes and business premises in Great Britain. It supports the government's approach towards meeting EU renewable energy obligations (by 2020) and UK statutory carbon reduction targets (out to 2050).

2 The RHI pays people and businesses money in the form of a tariff for each unit of heat produced from renewable sources. Technologies supported by the RHI include biomass boilers, heat pumps and anaerobic digestion plants, which produce biomethane injected into the gas grid. The scheme is funded directly by taxpayers, unlike subsidies for low-carbon electricity, which are funded through higher energy bills. Great Britain was the first country in the world to use this type of financial incentive to encourage the use of renewable and low-carbon heat.

3 The RHI is in two parts:

- Non-domestic RHI: launched in November 2011 for industry, businesses and public sector organisations, participants receive payments over 20 years; and
- Domestic RHI: launched in April 2014 for homeowners, self-builders, private and social landlords, participants receive payments over seven years.

4 The scheme's objectives are to:

- increase the amount of heat produced from renewable sources;
- reduce carbon emissions from heating homes and business premises; and
- help to grow supply chains which can support a national transition from fossil fuel to low-carbon heating technology from the 2020s.

5 Between November 2011 and August 2017, total payments under the RHI amounted to £1.4 billion. The scheme currently has a budget for new applicants until March 2021. Final payments to these applicants will run to at least 2040-41, by which time these payments are expected to have cost £23 billion.

6 The Department for Business, Energy & Industrial Strategy (the Department) is responsible for the design, performance and overall value for money of the RHI in Great Britain. Ofgem, a non-ministerial government department, is funded directly by the Department to administer the RHI on its behalf. Ofgem is responsible for approving applications, making payments to participants and ensuring that participants' heating systems comply with the scheme's requirements. Ofgem provides information on the RHI through its website. The Department mainly targets its marketing activity directly at trade associations who work in the heating supply chain through its Industry Advisory Group.

7 A similar scheme in Northern Ireland is now suspended to new applicants. The Department of Enterprise, Trade and Investment (DETI) was responsible for designing the devolved Northern Ireland RHI scheme, which is administered by Ofgem.

Our report

8 Our report assesses the value for money of the RHI for Great Britain only. The Northern Ireland RHI does not fall within the scope of this report.

- Part One sets the context, explains the rationale for the design of the RHI, the Department's approach to implementation, and take-up to date by homes and businesses.
- Part Two examines progress against the objectives of the RHI, the cost-effectiveness of the scheme, and how the Department and Ofgem monitor progress and learn lessons.
- Part Three assesses the Department and Ofgem's approach to controlling costs and managing the impact of fraud, non-compliance and gaming.

We outline our audit approach and evidence base in Appendices One and Two. We compare the Great Britain RHI to the Northern Ireland RHI and alternative policy approaches used by other countries in Appendices Three and Four respectively. We set out our more detailed analysis on cost-effectiveness in Appendix Five.

Key findings

Scheme take-up

9 Take-up of the scheme has been much lower than originally anticipated.

The Department's original long-term strategy for reducing carbon emissions from the heating of the majority of homes and businesses was to replace oil and gas heating with heat pumps and biomass boilers. In its 2012 business case, the Department planned to deliver 513,000 new installations in Great Britain by 2020. It took a phased approach to launching the RHI, and showed appropriate flexibility in its decisions to delay the launch of the Domestic scheme by 18 months to prioritise its limited internal capacity on introducing cost control measures into the Non-domestic scheme. However, its initial assumptions about take-up were too optimistic and the Department could not deliver on its initial plans. As at December 2017, the RHI had delivered just 78,048 new installations in Great Britain. At current rates of take-up, we estimate the RHI will achieve around 111,000 new installations by March 2021, just 22% of its original expectations. (Paragraphs 1.14 to 1.17 and Figures 4, 5 and 6).

Progress against revised objectives

10 The Department has reduced its ambitions for the renewable energy produced by the RHI by 65% and carbon reductions by 44%. The Department has changed its strategy for reducing carbon emissions from heating. It now sees the role of the RHI to be more focused on a smaller number of homes and businesses which are not connected to the gas grid. In 2015, the Department agreed a Spending Review settlement with HM Treasury based on a refocused scheme. Taking this and other changes into account, the Department has lowered forecast lifetime spending from £47 billion to £23 billion (cash terms) and reduced ambitions for producing renewable energy and reducing carbon emissions. As of August 2017, it was on track to achieve these revised objectives. However, the Department has not fully replaced the reduced ambitions of the RHI for renewable heat with equivalent contributions from other sources. Through the implementation of its Clean Growth Strategy, it is exploring other measures which are anticipated to make-up for the reduced carbon savings from the RHI (Paragraphs 2.2 to 2.12 and Figures 7, 8, 9 and 10).

11 The Department has not set specific goals or clear milestones to measure progress on the objective of developing the supply chain for the future. It uses stakeholder engagement and management information to make judgements on progress and to adjust the scheme to support specific technology supply chains. However, the Department has not set specific goals, established a monitoring plan or defined clear criteria for making adjustments to the programme in support of this objective. We are therefore unable to determine whether or not the Department is on track. Measuring against the four areas it has identified as important for preparing the supply chain, we find mixed progress. The Department recognises this position and is undertaking reforms to the scheme (Paragraphs 2.13 to 2.17, and Figures 11 and 12).

12 The cost-effectiveness of the RHI in producing renewable heat and reducing carbon emissions is uncertain. Using the same key assumptions as the Department, our estimate of the cost to taxpayers of each megawatt hour of heat produced under the RHI scheme is £49 compared with the Department's latest target of £51. For carbon reductions, we estimate the cost to taxpayers for each tonne of carbon dioxide equivalent saved is £142. But our assessment found some of the Department's assumptions are optimistic. In particular, they do not take account of installations which may have occurred anyway, regardless of whether a RHI was launched, and assume large 'upstream' carbon savings from biomethane and biogas technologies. As a result, the actual cost-effectiveness of the RHI is uncertain, but likely to be worse than the Department's estimate (Paragraphs 2.18 to 2.22, Figure 13 and Appendix Five).

13 There are gaps in the Department's monitoring of progress. We found some examples of good practice. For example, the Department uses a benefit realisation tracker and budget reports to monitor progress on scheme objectives and spending. We also found gaps. The Department does not include measures on developing the supply chain in its benefit realisation tracker. The key performance indicators it has agreed with Ofgem focus on the number of applications and the speed at which they are processed rather than on their quality. There are also no targets for audit work to reduce levels of fraud and non-compliance (Paragraphs 2.23 and 2.24, and Figure 14).

Non-compliance and cost control

14 The Department cannot reliably estimate the amount it has overpaid to participants that have not complied with the scheme's regulations. Non-compliance includes generating heat for ineligible uses (such as heating domestic swimming pools), using unsustainable fuel sources and inaccurate metering. The Department needs to measure the impact of non-compliance to assess the costs and benefits of the RHI, as well as being able to assure Parliament of the regularity of expenditure. The Department relies on Ofgem to estimate the impact of non-compliance. Ofgem has conducted audits on a sample of scheme participants since 2015-16. In May 2017, Ofgem estimated that overpayments were worth 4.4% and 2.5% of Non-domestic and Domestic RHI expenditure respectively, equating to £3 million in 2016-17. But we found significant weaknesses in Ofgem's estimate. The financial impact of non-compliance could be higher, although it is not possible to say by how much. The Department did not review Ofgem's estimate and was unaware of its unreliability (Paragraphs 3.10 to 3.15 and Figure 16).

15 Ofgem could be more effective in how it is aiming to reduce the rates of non-compliance. In addition to its sample audits, Ofgem targets audit on participants it deems to be at highest risk of non-compliance. The Department and Ofgem have also changed regulations, issued new guidance and updated processes with the aim of reducing non-compliance. But there are ways of making these activities more effective. In particular, Ofgem could do more to pinpoint the root causes of non-compliance and target its activities accordingly. Furthermore, its activities have tended to focus more on the most commonly occurring types of non-compliance, rather than those that have the greatest financial impact. Ofgem's lack of a reliable estimate of non-compliance, means it cannot measure robustly how effective its actions have been in reducing non-compliance (Paragraph 3.16).

16 Ofgem could improve its management of the scheme by collaborating more effectively with other public bodies. The Environment Agency and local authorities have a remit to monitor and enforce civil and environmental regulations. These public bodies, which operate on the ground, could provide useful intelligence to Ofgem to assist with its audit and inspection programme. Data from Ofgem could also be used by other public bodies to support their wider environmental enforcement action. Ofgem has not been proactive in sharing its data. It is now developing a data-sharing agreement with the Environment Agency and it is exploring what more it can do with local authorities (Paragraphs 3.17 to 3.20).

17 The Department does not know the impact of ‘gaming’ by scheme

participants. RHI regulations are complex and provide opportunities for gaming. This is where participants comply with the rules but act in a way that does not align with the scheme’s objectives. For example, participants could be using heat in a way that is not energy-efficient, or installing multiple boilers to take advantage of the higher tariff rate for smaller units. The Department consults stakeholders and works with Ofgem to identify gaming risks, and it has changed the regulations of the scheme to close some known risks. However, the Department has not assessed the extent and potential financial impact of gaming. This means the Department does not know how much gaming reduces the scheme’s value for money, nor whether it has addressed the risks that have the greatest impact (Paragraphs 3.21 to 3.26, and Figure 17).

18 At an aggregate level, the Department has controlled costs to remain

within its revised budget. The Department designed cost control measures into the Great Britain scheme to manage the flow of new applicants and spending on existing participants. Key measures include switching participants’ tariff from a higher to a lower rate as the amount of heat they produce increases over pre-defined limits; reducing tariffs for new applicants; and closing the scheme to new applicants if forecast spend exceeds a set amount. The RHI scheme in Northern Ireland did not include similar measures, and has suffered from budget overruns and accusations that participants were abusing the scheme (Paragraphs 3.3 to 3.6 and Appendix Three).

19 Controlling the cost of the scheme will be more challenging once the

RHI closes to new applications. The RHI makes payments to participants for up to 20 years. The Department estimates total lifetime costs for the existing scheme of £23 billion, of which £18 billion could be spent between 2021-22 and 2041-42. The Department has fewer cost control measures available to manage its spending on existing participants. It is committed to making payments to participants based on the tariff offered at accreditation, which increases annually in line with inflation; and to Non-domestic participants on the basis of their meter readings. Long-term rates of inflation and the amount of heat produced under the Non-domestic scheme are uncertain. Where rates exceed the Department’s expectations, the higher expenditure will have knock-on effects to the Department’s expenditure and/or the taxpayer (Paragraphs 3.7 to 3.9, and Figure 15).

Conclusion on value for money

20 The Department needed to increase rates of renewable and low-carbon heating in order to meet the UK's legal obligations. The RHI is a novel approach to making progress against these obligations and identifying longer-term options for eliminating carbon emissions from heat production. The Department showed flexibility in rolling out the scheme, adjusting scheme objectives to respond to a changing strategy and over-optimistic initial planning assumptions and it is learning lessons for the future. Measures it introduced to control the scheme's costs have enabled it to avoid the budget control problems that occurred on a similar scheme in Northern Ireland. However, the Department has not achieved value for money. It does not have a reliable estimate of the amount it has overpaid to participants that have not complied with the regulations, nor the impact of participants gaming them, which could accumulate to reduce the scheme's value significantly.

Recommendations

21 The Department should:

- a** **Set clear goals and milestones for its objective of developing the supply chain** and develop indicators, in collaboration with stakeholders, which enable the Department to monitor progress.
- b** **Work with Ofgem to develop additional measures that provide further information on scheme delivery** beyond the accreditation process.
- c** **Work with Ofgem to improve management of the risk of fraud, non-compliance and gaming**, including:
 - establishing a reliable estimate of non-compliance and factoring this into progress measures on renewable heat production, carbon savings and cost-effectiveness;
 - introducing measures that enable the Department to monitor and evaluate the effectiveness of Ofgem's activity to reduce non-compliance;
 - working more effectively with other public bodies to support its approach to preventing and detecting fraud and non-compliance; and
 - developing new measures to estimate the extent to which existing and new participants may be gaming the scheme, assessing the consequences, identifying the highest-impact areas of gaming, and prioritising actions to address these, including via changes to regulation where appropriate.
- d** **Provide Parliament with assurance on how the costs and value for money of the RHI will be managed over the whole life of the scheme.**