

CENSUS OF OWNER-OCCUPIER APPLICANTS TO THE DOMESTIC RHI

Findings from surveys of accredited domestic RHI applicants who submitted their application between May 2014 and April 2016



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Key findings (1)

An online census of all successful owner-occupier applicants to the domestic RHI was carried out, surveying applicants who submitted their application between May 2014 and April 2016. An overall response rate of 43% was achieved.

These slides summarise the overall findings as well as changes in applicant responses over time.

Number of domestic Renewable Heat Incentive applications

Between May 2014 and April 2016, 35,495 successful applications were received by the Renewable Heat Incentive (RHI) scheme from owner-occupiers, of which 19,045 (54%) were 'legacy' applications and 16,450 (46%) were 'new' applications.¹ Except where stated otherwise, all figures in this report refer to new applications.

Sources of information for applicants

Installers were by far the most common source of information for owner-occupier applicants about renewable heat technologies (71%) and also about the RHI (58%). Installers were also rated the most trusted (where applicants accessed more than one source) and among the most useful source of information for applicants about renewable heat technologies and the RHI.

Although installers remained the most cited source of information across all eight quarters of the survey, the proportion of applicants consulting installers declined steadily throughout the course of the survey.

Triggers for investing in a new heating system

Applicants were asked what triggered their decision to install a new heating system (note that applicants could select multiple reasons).

The availability of a grant or other funding was the most common reason for owner-occupier applicants to decide to install a new heating system (36%), along with upgrading or refurbishing a home (33%) and the need to replace a heating system (32%).

Overall, a grant or funding becoming available was particularly important for applicants who installed biomass systems (49%) although this importance diminished over time, possibly related to the impact of reductions in the tariff.

Reasons for choosing a renewable heat technology

Having explained why they invested in a new heating system, owner-occupier applicants were asked to choose the one main reason for specifically choosing a *renewable* heat technology. Across the main reasons given, 42% were financial (e.g. saving money or claiming the RHI), 23% were attitudinal (e.g. liking the technology or hearing recommendations from others), 17% related to self-sufficiency and 10% reflected environmental concerns.

Over time, however, applicants tended to place less importance on financial motivations for installing renewable technologies and greater importance on attitudinal and environmental reasons.

Installation of renewable heating systems

The most common way in which owner-occupier applicants found an installer was via word of mouth or a recommendation (41%). Most (80%) reported that it was easy to find an installer they believed would install the technology correctly.

Nearly eight in ten (78%) owner-occupier applicants were satisfied overall with their renewable heat technology. Satisfaction was higher among applicants whose renewable heat technology had been installed for longer.

¹ 'Legacy' applications were those pertaining to technologies commissioned before 9 April 2014. 'New' applications refer to technologies commissioned on or after this date.

Key findings (2)

Most (60%) owner-occupier applicants did not face any difficulties during installation. Of those who did encounter problems with the installation, the issues cited most often were to do with disruption caused by the installation (14% of all applicants), unclear information or advice (11%) and a lack of trusted installers (11%).

Influence of the Renewable Heat Incentive on decisions

The RHI is an important lever in promoting the decision to install renewable heating technologies. Almost half of all owner-occupier applicants said that, without the RHI, they would either not have replaced their heating system at all (41%) or would have installed a non-renewable technology (7%).

The situations and events triggering the installation of a new heating system and applicants' motivations for installing a *renewable* system were key factors determining whether applicants' installation decisions were influenced by the RHI. Those who installed their technology for financial reasons were more likely to be influenced by the RHI while those who cited environmental or efficiency reasons or were replacing a broken system were less likely to be influenced by the RHI.

The RHI tariff influenced the technology choice of 76% of applicants, especially for those installing biomass systems (84% of whom said their choice was influenced by the tariff).

Three-quarters (74%) of applicants were aware that the value of the RHI tariff available to new applicants may reduce (degress) over time. Among these applicants, degression was a spur to 63% who reported installing their technology more quickly to avoid reduced tariffs.

How applicants funded their renewable heat technology

Three-quarters (76%) of RHI scheme owner-occupier applicants funded the installation of their renewable heating system using their own savings.

Of those financing their installations through a loan almost half (46%) said that the scheme made it easier to secure finance for their renewable heat technology installation.

Difficulties and satisfaction with the Renewable Heat Incentive application process

Two-thirds (67%) of owner-occupier applicants did not face any difficulties in meeting the initial requirements of the RHI scheme. For those encountering a problem, the main issue cited was an unclear RHI application process (14% of applicants).

Seven in ten applicants (71%) did not have any problems with the RHI application process. For those reporting having had a problem, the most commonly cited difficulty was their application was initially rejected (12% of applicants), though this has fallen over time.

Overall levels of satisfaction with the ease of applying for the RHI were very high (81% were very or fairly satisfied).

Satisfaction with renewable heat technologies

A majority (78%) of RHI applicants were satisfied overall with their technology, with 16% reporting that it was too early to tell.

Compared to other technologies, air source heat pump applicants were less satisfied with their installation's noise (excluding those that felt it was too early to say, 79% were very or fairly satisfied compared to 87% for other technologies), its looks (76% vs. 87%), understanding the system controls (65% vs. 77%) and ease of adjusting controls (67% vs. 74%).

Summary of changes over time (1)

The following two slides present the changes over time within the RHI domestic census. Changes were examined between quarters and are presented where they are statistically significant at the 95% confidence level and show a clear pattern over time.

Results from quarters 1-4 (waves 1-12) were [published in January 2016](#). Updated results from quarters 1-8 (waves 1-24) are provided in this slide pack. Overall, the results have remained stable over time. The changes presented here have been isolated and do not constitute a shift in overall experiences with the RHI.

Sources of information

While installers are by far the most used source of information about installing renewable heating systems, fewer applicants have relied on them over time – from 81% in the first quarter to 67% in the eighth.

The importance of installers as a source of information about the RHI has declined over time. In quarter one 67% of applicants heard about the RHI from installers, falling to 53% in eighth quarter. The use of websites as an information source also declined from 26% to 18% over the same period.

Accessing information about the RHI through tradespersons and professionals increased over time, rising from 13% in the first quarter to 20% in the eighth. This change is driven primarily by ground source heat pump applicants and self-builders.

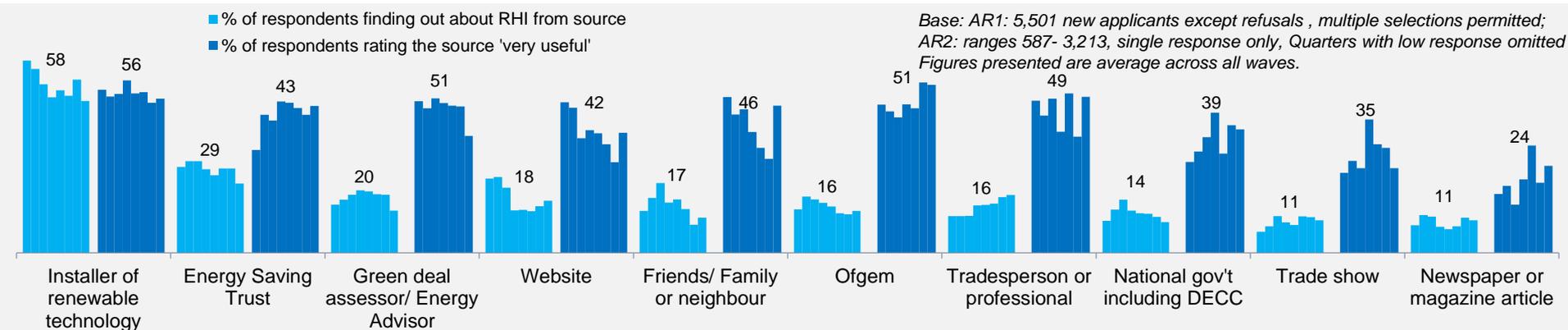
Installation experiences

Applicants increasingly rely on word of mouth recommendations in finding an installer (35% in quarter one rising to 45% quarter eight).

Biomass applicants reported a steady increase in installation difficulties across quarters (from 30% in quarter one to 42% in quarter eight). This was driven in particular by respondents reporting difficulties with deciding which technology to install (5% to 8%) and accessing a loan (2% to 8%).

Over time, fewer applicants reported problems with the RHI application - from 35% in the first quarter to 29% in the eighth. This was mainly driven by a fall in the proportion of people saying their application was initially rejected, from 23% to 9% during this period.

Chart 1: How respondents found out about RHI (% of applicants) and how useful they found info (% of applicants rating it 'very useful'), Quarters 1-8



Summary of changes over time (2)

Motivations for installation

Decreasing proportions of biomass applicants report that they were prompted to install a new technology by grant funding – from 52% in the fourth quarter to 40% in the eighth.

Declining proportions of biomass and air source heat pump applicants cite the RHI as a motivation to install a renewable technology, falling from 75% in the first quarter to 49% in the eighth quarter for biomass and from 72% to 59% for air source applicants.

Greater proportions of air source applicants cite building a home as the main prompt for installing their renewable technology (from 19% in quarter four to 33% in quarter eight) while fewer cite replacing another heating system (from 40% in quarter four to 27% in quarter eight).

The proportion of applicants citing a financial reason for choosing a renewable heat technology fell from 53% in the first quarter to 33% in the eighth. This decline was particularly pronounced for applicants installing air source heat pump and biomass systems.

Main motivation for installing RHT (grouped), by quarter



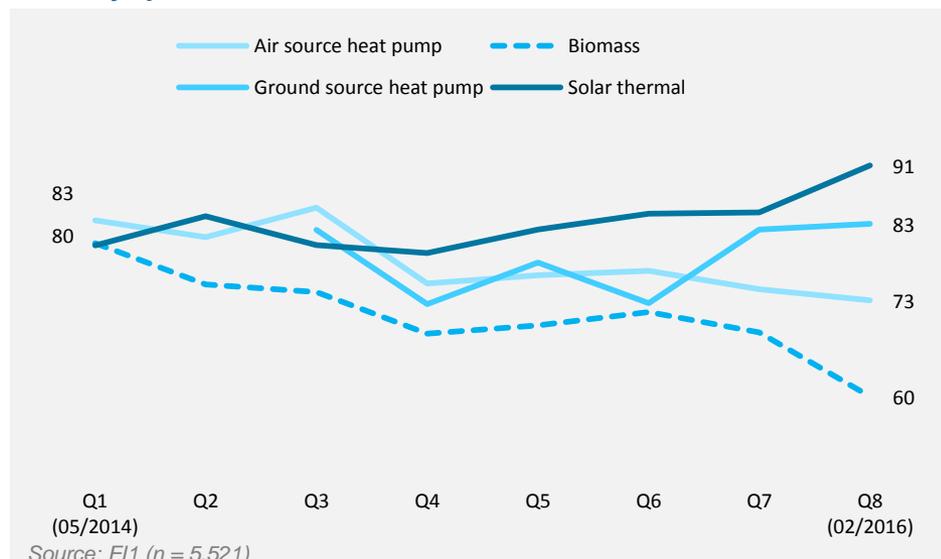
The proportion of applicants mentioning attitudinal reasons for choosing a renewable heat technology rose from 15% to 27%.

The impact of tariff bands on technology choice has decreased among biomass applicants (85% to 71%) and increased among ground source heat pump (70% to 79%) and solar thermal applicants (51% to 66%).

Financing

Over time, savings have become less common as a funding source for some technologies. The proportion of biomass and air source heat pump applicants using savings to finance their renewable technologies decreased over time, falling from 80% in the first quarter to 60% among biomass applicants and from 83% to 73% among air source heat pump applicants.

Proportion of applicants using savings to fund installation, by survey quarter



Introduction to the evaluation and this research project

The **evaluation** of the **Renewable Heat Incentive (RHI)** was commissioned by the Department for Business, Energy & Industrial Strategy (BEIS). The aim of the evaluation was to understand the administration, delivery and performance of the RHI and explore its effects on the renewable heat supply chain. A **synthesis report** draws together the learning across all strands of work¹.

The census of domestic RHI applicants was conducted by NatCen Social Research and the Centre for Sustainable Energy.

A census of all successful owner-occupier applicants to the domestic RHI was carried out, surveying applicants who submitted their application between May 2014 and April 2016².

35,495 successful applications were received by Ofgem in that time, from 33,281 owner-occupier applicants (applicants who submitted more than one application were invited to take part only once).

RHI applications consist of two groups: **legacy applications** (54% of the total³) for installations that were commissioned before the RHI scheme opened (typically under the discontinued RHPP scheme) and applied for RHI before 5th April 2015; and **new applications** (46%) that were commissioned on or after 9 April 2014. Unless otherwise stated, **figures reported refer to new applications only**.

The census was carried out as an online survey and had an overall response rate of 43%. Responding to a decrease in response rate, the survey was substantially shortened after wave 9. As a result, information for some questions is reported only for waves 1-9 or waves 10-24.

More information on the methodology is available in the accompanying technical annex⁴. Differences by technology and over time presented in this report are statistically significant at the 95% confidence level.

¹ Available from <https://www.gov.uk/government/publications/>

² The survey took place between July 2014 and July 2016, with a pilot in June 2014.

³ According to Ofgem administrative data.

⁴ Available from <https://www.gov.uk/government/publications/report-from-waves-1-24-of-the-domestic-rhi-census-of-accredited-applicants>

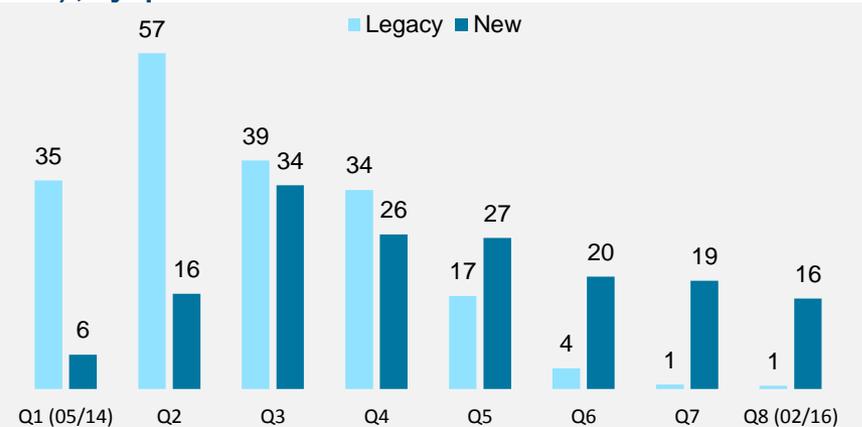
Research Aims

The census focused on the following themes:

- applicants and installations
- hearing about renewable heat technologies and the RHI
- investment in renewable heat technologies
- influence of the RHI
- financing renewable heat technologies
- applicants' experiences of the RHI scheme
- experiences of installing renewable heat technologies
- satisfaction with renewable heat technologies

Separate research projects have explored the impact of the domestic RHI on social housing providers⁵ and installers⁶.

Successful applications made to the RHI by owner-occupiers ('00s), by quarter⁷



Source: Ofgem administrative data (n = 34,495)

⁵ Available from <https://www.gov.uk/government/publications/qualitative-research-with-social-housing-providers>

⁶ Available from <https://www.gov.uk/government/publications/mcs-installer-survey>

⁷ Quarter relates to time application reaches accreditation stage and is deemed complete

Uptake profile and motivations to install a renewable heating system

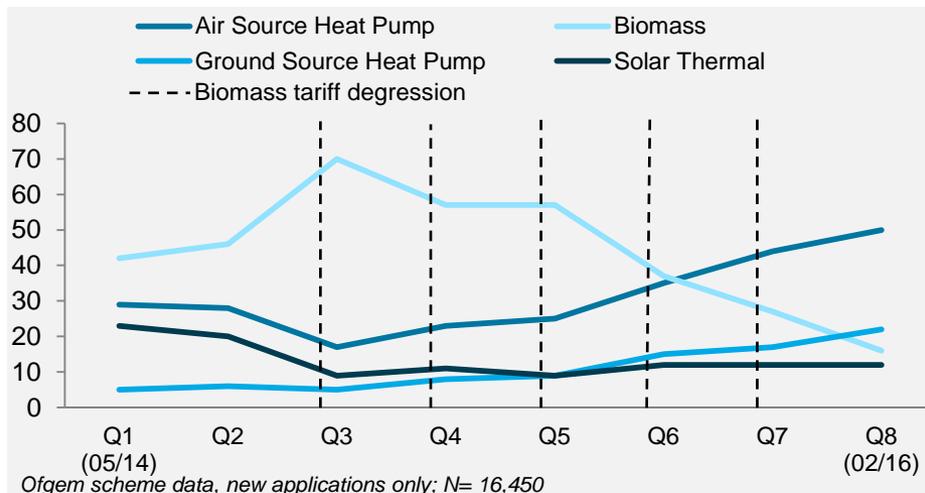
In its first two years, across both new and legacy applications by owner-occupiers, the domestic Renewable Heat Incentive (RHI) saw the following uptake for the four technologies supported (according to Ofgem scheme data): air source heat pumps (34% of all applications), biomass (31%), solar thermal installations (19%) and ground source heat pumps (16%).

Among **legacy applications**, air source heat pumps were most common (38%), followed by solar thermal (25%), ground source heat pumps (22%) and biomass boilers (16%).

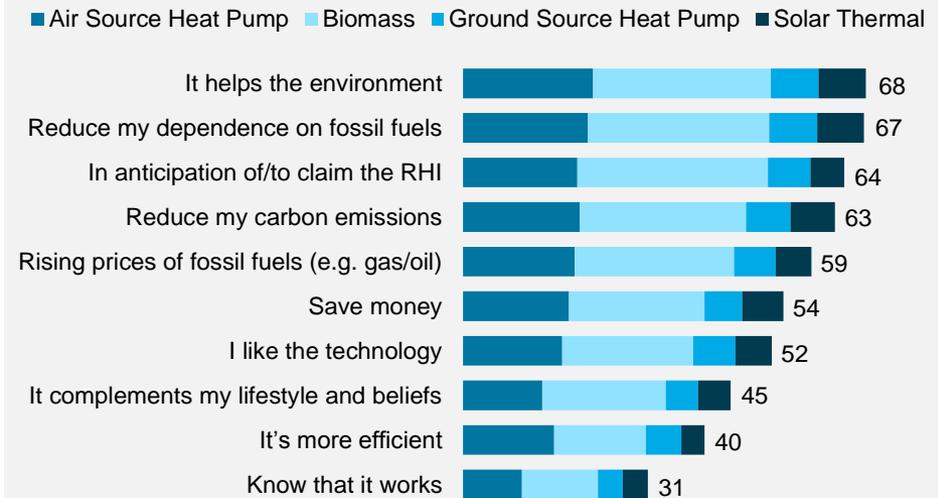
Nearly half (48%) of **new applications** in the first 24 months of the RHI scheme were for biomass boilers. This proportion increased during the first and second quarter of applications but decreased steadily in subsequent quarters as tariff degenerations were introduced. This period also saw a steady increase in the applications for air source heat pumps, for which tariffs increased with inflation.

Overall, nearly one in three applications (29%) were for air source heat pumps and over a tenth were for solar thermal installations (12%) and ground source heat pumps (11%).

New applications by technology type (%), by quarter



Top ten motivations to install a renewable rather than a conventional heating system (% of new applicant responses)



Base: 5,509, new applicants, except refusals, Question MO1. Multiple responses possible

The most important reasons applicants gave for installing renewable rather than conventional heating were a desire to help the environment (68%) and to reduce fossil fuel dependence (67%).

The RHI has been most important to biomass applicants, with around three quarters (73%) citing it as a motivation and least to solar thermal applicants, where half (50%) were motivated by it.

For biomass and air source heat pump applicants the proportion citing the RHI as a motivation to install a renewable technology has declined over time, falling from 75% in the first quarter to 49% in the eighth quarter for biomass and from 72% to 59% for air source applicants. For biomass applicants, this fall can be explained by a reduction in the number of items selected in response to this survey question, although is not the case for air source applicants.

Circumstances in which renewable heat technologies were installed

The four eligible technologies tend to be installed in different circumstances.

Biomass boilers and **ground source heat pumps** were most likely to be installed to heat both space and water. **Ground source heat pumps** were more frequently installed in **self-built** and **larger properties**, often as part of building or upgrading a home. Ground source heat pump applicants reported a **median cost** of £20,000 for buying the technology and getting it installed. Biomass applicants reported a figure of £17,000.

Air source heat pump applicants tended to be **older**, live in **smaller homes** and have **lower incomes**. The median cost of technology and installation was £12,000.

Characteristics of owner-occupier installations within the domestic RHI (%), by technology type

Solar thermal installations **only heat water** and correspondingly had a much **lower capacity** (on average 4kWh, compared to 12kWh for air, 14kWh for ground source heat pumps and 26kWh for biomass). Solar thermal applicants reported a **median cost** of around £6,000 for the technology and installation. Solar thermal differs from the other technology types as it does not heat space and is a complementary system installed alongside other technologies, hence the lower costs. A degree of caution should therefore be used in interpreting any differences between solar thermal and other technologies.

Among new owner-occupier applicants in Great Britain, air source heat pumps were installed much more in the East and South of England, while in Northern England and Scotland, biomass boilers were predominant. Solar thermal applications were more likely to be installed in Southern England and Wales.

Technology type	Per cent of applications that are legacy, by technology ¹	Per cent of properties on the gas grid, by technology ¹	Per cent of properties that are self built, by technology ¹	Per cent of installations that heat both space and water, by technology ¹	Average (mean) installed capacity (kWh) ¹	Average (mean) floor space (m ³) ¹	Median cost of technology and installation (£ '000) ²	Average (mean) household income (£'000) ²	Average (mean) no. of occupants ²	Per cent of households in which youngest person is aged 55+, by technology ²
Air source heat pump	60%	30%	22%	90%	12	184	12	54	2.6	50%
Biomass	28%	16%	5%	98%	26	232	17	60	3.1	29%
Ground source heat pump	70%	22%	41%	95%	14	273	20	72	3.0	38%
Solar thermal	70%	58%	14%	1%	4	182	6	56	2.8	46%
Average across technologies	54%	30%	18%	76%	17	213	14	59	2.9	41%
Base	35,495	34,421	35,495	35,495	24,736	35,495	5,959	9,622	13,114	13,089

Source: (1) Ofgem scheme data, new and legacy applications and (2) RHI applicant survey, new and legacy applications.

Sources of information on renewable heat technologies

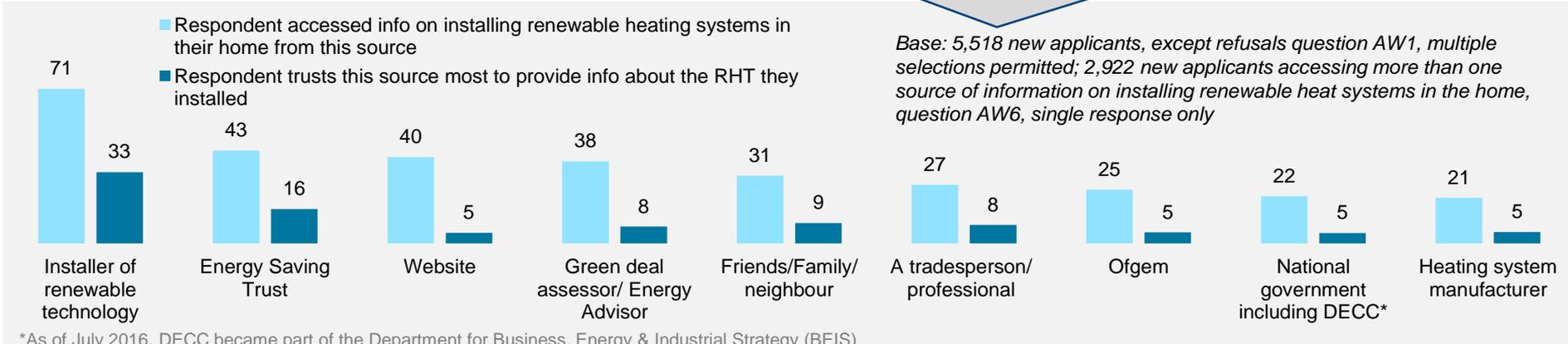
Seven in ten (71%) applicants accessed information about installing renewable heating systems in the home from installers, far more than from any other source. Installers were the most frequently mentioned source for all technology types.

Where applicants had accessed information from more than one source, installers of renewable heating systems were also the source that applicants trusted most to provide information about their renewable heat technology (33% of applicants who accessed more than one information source chose installers as the most trusted).

The next most frequently accessed source of information about installing domestic renewable heat systems was the Energy Saving Trust (43%). This was the most trusted source for 16% of applicants who accessed more than one source.

Sources of information accessed by applicants (% of applicants) and the sources trusted most (% of applicants who accessed multiple sources of information)

- While installers have been by far the most accessed source of information about installing renewable heating systems, applicants were relying less on them over time – in the first quarter of the census, 81% of applicants accessed information from installers; by the eighth quarter this figure had fallen to 67%.
- There was no corresponding significant increase in figures for other sources of information. Since many consumers accessed multiple sources, installers played a proportionally smaller role over time while remaining the most frequently used source.
- While applicants installing biomass systems also used installers as their most common source of information (74%), they were more likely than other applicants to have accessed information from a Green Deal Assessor (49% vs. 26%-30% for other technologies) or from the Energy Saving Trust (47% vs. 38%-42%).
- Those building their own homes were less likely than others to access information from an installer (62% compared to 72% for those with a retrofit property) or a Green Deal Assessor¹ (14% vs. 40%).
- Self-builders were, however, much more likely to access information from a tradesperson or professional (45% compared to 25%) or a trade show (32% vs. 15%).



*As of July 2016, DECC became part of the Department for Business, Energy & Industrial Strategy (BEIS)

¹ Self-build applicants are not required to undertake a green deal assessment although some may chose to do so.

Hearing about the Renewable Heat Incentive scheme

Installers of renewable heating systems were the main route via which applicants heard about the Renewable Heat Incentive (RHI). Over half (58%) of new applicants heard of the RHI through installers. The Energy Saving Trust was the second most frequently cited information source (29%).

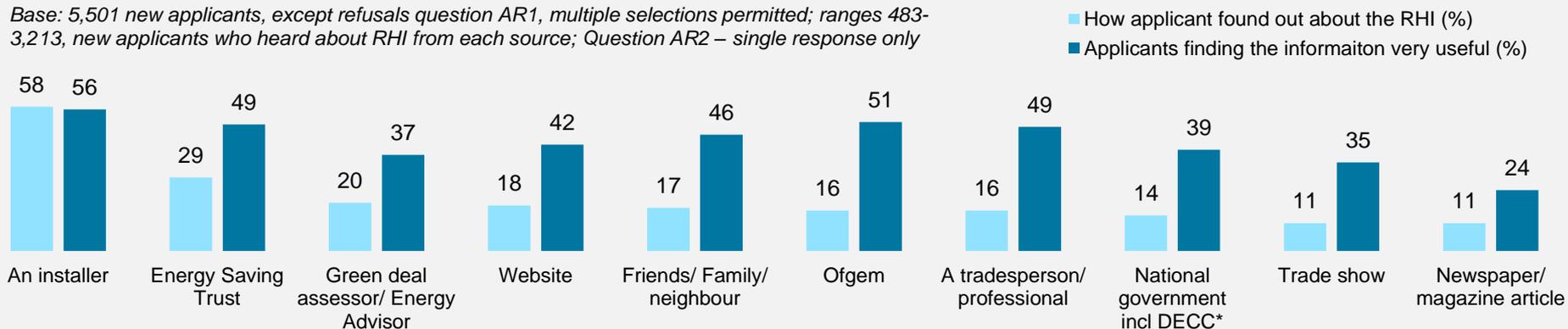
Installers and Ofgem were the best-rated source of information on the RHI – over half (56% and 51%, respectively) of those who got information about the RHI from these sources said that the information was ‘very’ useful. Many other sources were rated ‘very’ useful by around half of respondents who had used them: for example, the Energy Saving Trust and tradespersons/ professionals (both 49%).

All named sources were rated as ‘very’ or ‘quite’ useful by between 87% and 96% of applicants who used them.

Where applicants heard about the Renewable Heat Incentive (%) and percentage of those receiving information from each source that reported it was ‘very useful’

- Installers were the most frequently cited source of information about the RHI for all technology types.
- The importance of installers as a source of information about the RHI, while very high, has declined over time. During the first quarter of the survey, 67% of applicants heard about the RHI from installers, falling to 53% in eighth quarter. The use of websites as an information source also declined from 26% to 18% over the same period.
- Accessing information about the RHI through tradespersons and professionals increased over time, rising from 13% in the first quarter to 20% in the eighth. This change is driven primarily by ground source heat pump applicants and self-builders.
- Biomass applicants were more likely than others to have heard about the RHI from Green Deal Assessors (26% vs. 13-16% for others) or friends, family or a neighbour (24% vs. 9-14%).
- Self-builders, while primarily relying on installers, were more likely than others to hear about the RHI from tradespersons or professionals (28% vs. 15%) or a trade show (17% vs. 10%) and much less likely to hear from a Green Deal Assessor¹ (6% vs. 21%) or family, friends or neighbours (11% vs. 18%).

Base: 5,501 new applicants, except refusals question AR1, multiple selections permitted; ranges 483-3,213, new applicants who heard about RHI from each source; Question AR2 – single response only



*As of July 2016, DECC became part of the Department for Business, Energy & Industrial Strategy (BEIS)

¹ Self-build applicants are not required to undertake a green deal assessment although some may choose to do so.

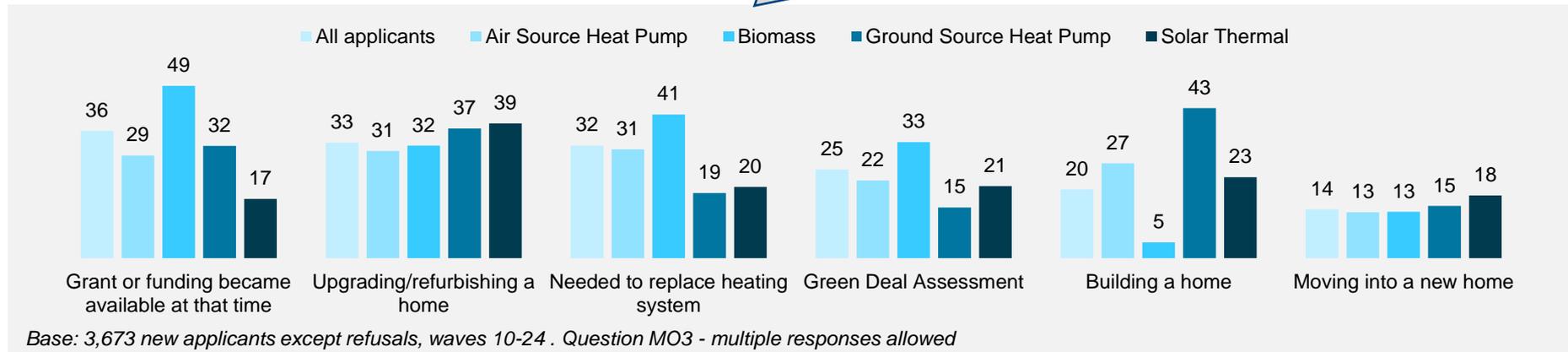
Triggers for investing in a new heating system

The availability of a grant or funding was the most common reason cited by applicants as a trigger to install a new heating system (36%).

Around a third of people mentioned refurbishing a home (33%) and needing to replace a heating system (32%) as triggers for installing a new heating system (note that the wording of this question changed after survey wave 9; the data presented therefore relate to survey waves 10-24 only). However, these overall figures mask a number of significant differences between applicants who subsequently installed different technology types.

Did any of the following prompt your decision to install a new heating system? (% of applicants mentioning each reason)

- For applicants who eventually installed biomass systems, grants or other funding becoming available was a trigger to install a new heating system for 49%, compared to 17%-32% for other technologies. Over time, biomass applicants were less likely to report that they were prompted by grant funding, decreasing from 52% in the fourth quarter to 40% in the eighth.
- Those installing biomass systems were also much more likely than those who installed other technologies to mention a Green Deal Assessment as a trigger for investing in a new heating system (33% compared to 15%-22% for other technologies).
- For those installing ground source heat pumps, the main prompts were building a home (43%) or upgrading/refurbishing a home (37%).
- For applicants opting for an air source technology, the need to replace an existing heating system (31%) and upgrading a home (31%) were the most common reasons. Over time, air source applicants were more likely to cite building a home as the motivation for installing their renewable technology (from 19% in quarter four to 33% in quarter eight) and less likely to cite replacing another heating system (from 40% in quarter four to 27% in quarter eight).
- Among those installing solar thermal systems, the most common reason was refurbishing/upgrading a home (39%).



Main reason for choosing renewable heat technologies

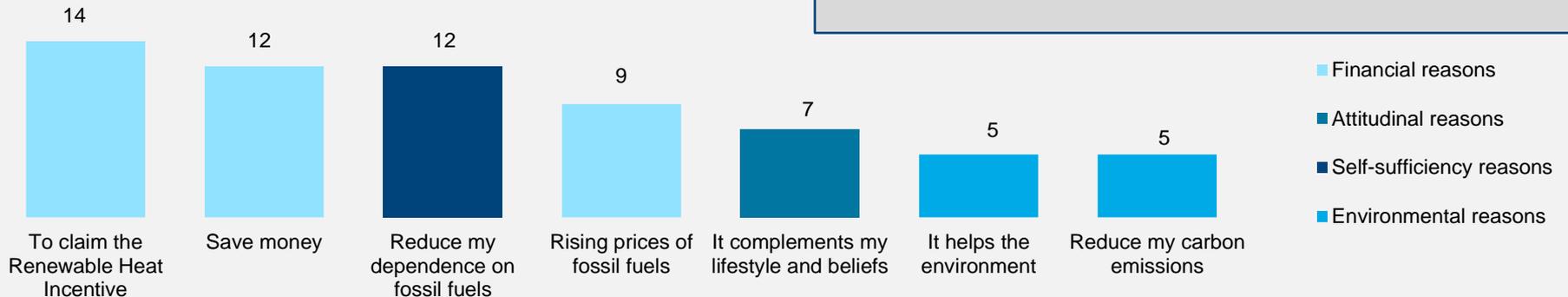
Having decided to invest in a new heating system, applicants' main reasons for choosing to install *renewable* heat technologies specifically, rather than conventional systems, were dominated by financial considerations and, to a lesser degree, reasons to do with personal or environmental attitudes and self-sufficiency.

Across applicants, the single main reason cited for choosing a renewable system was financial in nature (e.g. to save money) for 42% of applicants, attitudinal (e.g. liking the technology or hearing recommendations from others) for 23%, related to self-sufficiency (e.g. being able to generate one's own energy) for 17%, environmental (e.g. to reduce carbon emissions) for 10%, and technical (e.g. ease of use) for 8%.

Three of the four most frequently cited reasons for choosing renewable heat technologies were financial: in anticipation of / to claim the Renewable Heat Incentive (RHI - 14%); to save money (12%) and because of the rising cost of fossil fuels (9%).

What was the main reason you decided to install a renewable heat technology rather than a conventional heating system in your home? (%)

Base: 5,528 new applicants who installed a renewable heating system for more than one reason, except refusals ; Question MO2 - single response only



The importance of financial considerations in deciding to install renewable heat technologies has declined over time.

The proportion of applicants citing a financial reason for choosing renewable heat technologies fell from 53% in survey quarter one to 33% by quarter eight. This decline was particularly pronounced for applicants installing air source heat pump and biomass systems.

In the same period, the proportion of applicants mentioning attitudinal reasons rose from 15% to 27%.

Despite these changes, financial factors remain the most frequent main reasons given for choosing renewable heat technologies by applicants from all technology groups.

- The prospect of claiming the RHI was the main reason given by applicants who installed biomass systems (22%), compared to 4%-11% for other technologies.
- People installing in self-build homes were most likely to say the main reason was a recommendation by a professional (11% vs. 3% for other applicants)
- Previous users of oil or LPG were most likely to cite the RHI as the main reason for choosing renewable technologies – 17% compared to 9% for previous gas users and 15% for electricity.

Finding a renewable heat technology installer

The most popular way applicants found a renewable heat technology installer was by 'word of mouth or a recommendation' (41%).

The internet was commonly used: 23% used a 'general web search', and 16% found their installer through 'websites which put them in direct contact with installers'.

There has been an **increase** over time in the proportion of people relying on word of mouth recommendations (35% in quarter one rising to 45% quarter eight).

Of people who used 'word of mouth' to find their installer 40% found the process of finding an installer 'very easy'. Easiest of all was using an installer the applicant had used before (57% found this 'very easy').

Word of mouth was particularly important to:

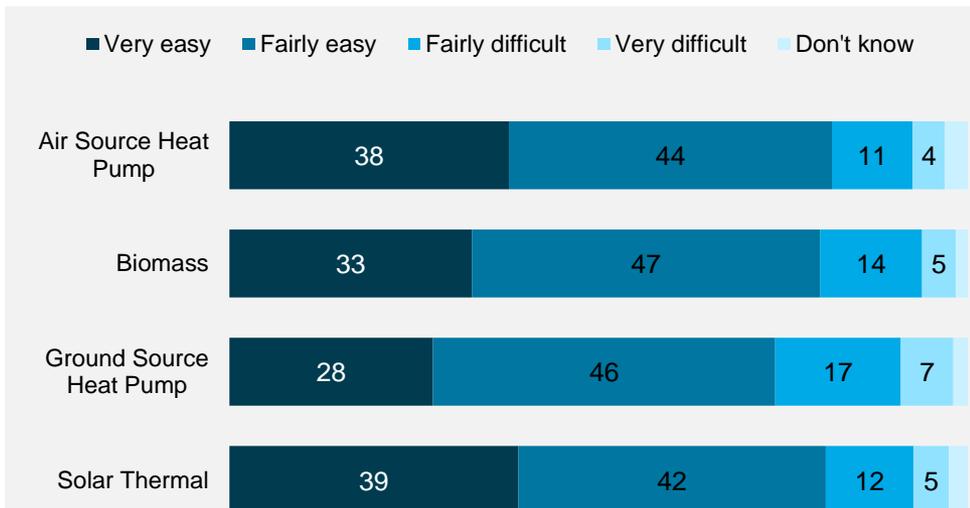
- People who installed a ground source heat pump (52% compared to 37-41% for all other technologies).
- People in a self-built property (52% compared to 39% in retrofit properties).
- Conversely, those in retrofit properties were more likely than self-builders to rely on a general web search (23% vs. 16%) or websites directing them to installers (17% vs. 12%); those in self-built properties were more likely to use a trade show to find an installer (14% vs. 8% for retrofit applicants).

The majority found it easy (35% 'very easy', 45% 'fairly easy') to find an installer whom they believed would fit the technology correctly.

A small proportion found this difficult (13% 'fairly difficult', 5% 'very difficult').

Applicants who installed a ground source heat pump were more likely to report that they found finding an installer difficult (24% found it 'fairly' or 'very' difficult, compared with 15-18% for other technologies).

How difficult applicants found it to find an installer meeting their needs (%), by technology type



Base: 5,449 new applicants, except refusals, Questions IM1, IM4 & IM5 combined - single response only

Installation experience

Over half (60%) of owner-occupier applicants to the Renewable Heat Incentive (RHI) scheme did not face any difficulties during the installation process.

For those that did face difficulties, the most commonly cited problems were:

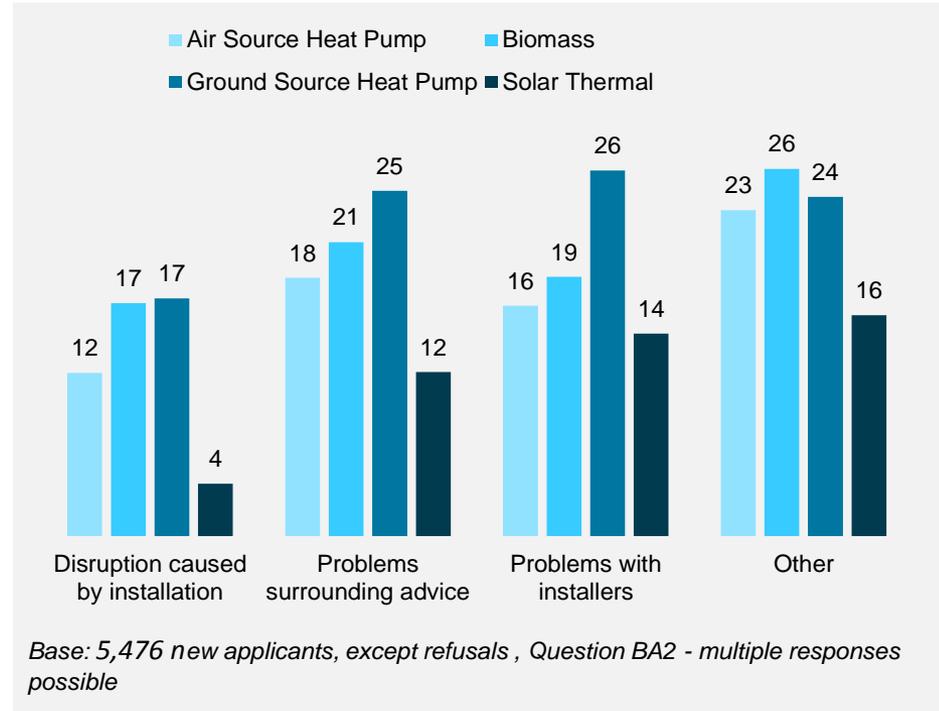
- ‘disruption caused by installation’ (14% of all applicants);
- problems surrounding advice (‘unclear information or advice’, 11%; ‘not clear who to go to for advice’, 10%; ‘lack of information or advice’, 8%);
- and problems with installers (‘lack of trusted installers’, 11%, ‘identifying or finding an installer’, 10%, ‘lack of local installers’, 8%).

People installing solar thermal technologies were the **least** likely to experience difficulties (73% reported no problems, compared to 54-62% for non-solar technologies). This was true of every potential problem, especially disruption caused by installation, and also of issues surrounding advice.

Applicants installing ground source heat pumps and biomass boilers had particular problems with installers. 17% reported installer difficulties compared to around 12% for air source heat pump applicants and 4% for solar thermal applicants.

Installers provided a wide range of **additional services** to applicants. Over three-quarters (77%) of applicants had a ‘demonstration of how to use their renewable heat technology’, 65% recalled receiving a warranty, 53% reported they had ‘help with making their RHI application’, and 41% received ‘advice on renewable heating technologies’. Less frequently received were ‘energy saving advice’ (24%), a ‘maintenance package’ (33%) and a ‘Green Deal Assessment’ (32%).

Difficulties faced by applicants (%), by technology type



Those who had received a demonstration on how to use their installation were more likely to report that they were ‘very satisfied’ with their installation (51% compared to 39%).

Over time, however, the percentage of applicants receiving a demonstration at installation declined (from 79% in the first quarter to 69% in the eighth). During this period, the percentage of applicants receiving advice on renewable heating also reduced (from 48% in quarter one to 34% in quarter eight).

Difficulties faced when installing renewable heat technologies

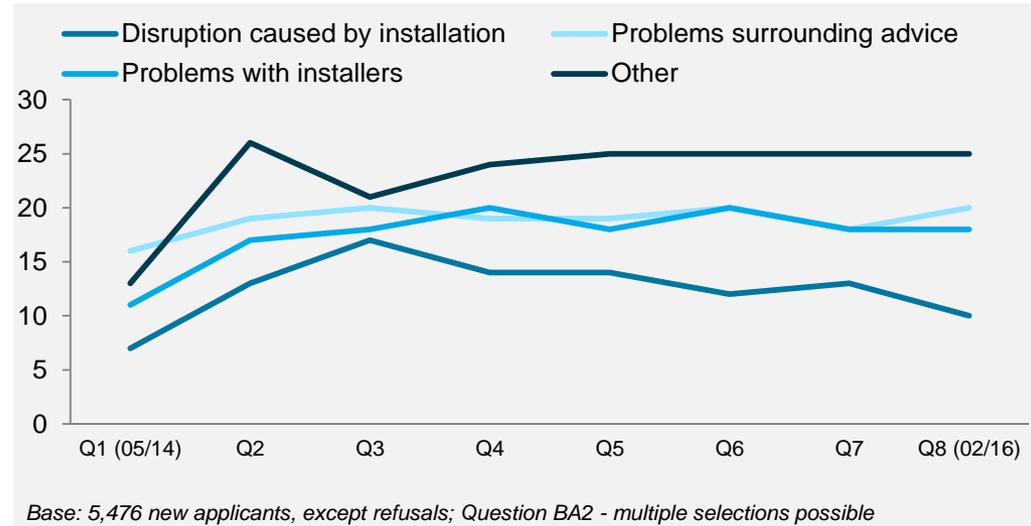
Across the two years of the RHI, the proportion of applicants reporting **difficulties** with the installation of their renewable heat technology remained broadly constant at 40%. After an initial increase in the first three quarters, from 32% to 42%, the proportion levelled off gradually to 38% in the eighth quarter.

In contrast to the general trend, biomass applicants reported a steady increase in installation difficulties across quarters (from 30% in quarter one to 42% in quarter eight). This was driven in particular by requirements for survey or engineer reports (4% to 9%) and accessing a loan (2% to 8%).

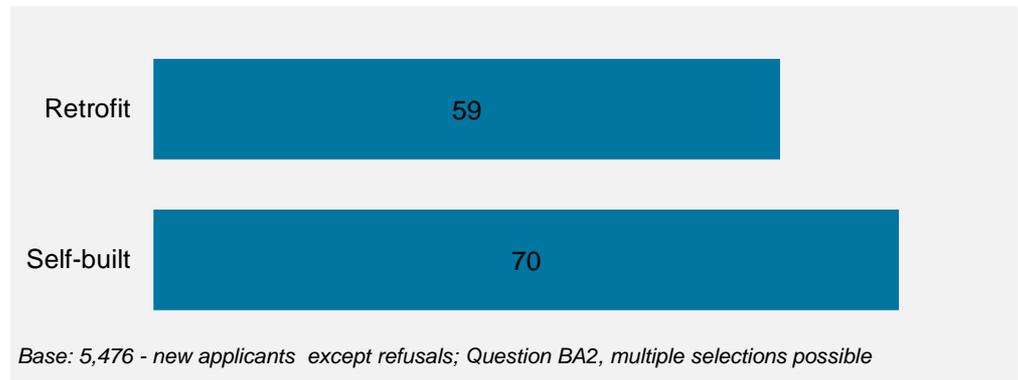
Applicants installing in **properties that were self-built** were less likely to report difficulties (30%) than those in retrofit properties (41%).

Applicants switching from gas also reported greater **clarity on who to go to for advice** (7% reported not being clear on who to go to, compared with 13% of those switching from electrical heating and 10% of those switching from oil or LPG).

Difficulties faced by applicants, over time (%)



Applicants who did not face difficulties (%), by building type



Influence of the Renewable Heat Incentive on renewable heat technology installations

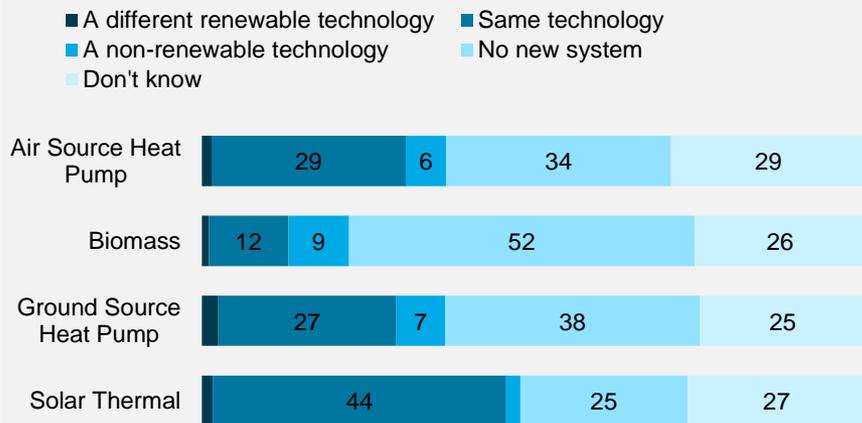
Applicants believed that the Renewable Heat Incentive (RHI) was key in their decision to install a renewable heating system.

Nearly half of all applicants believed that without the RHI, they would have either not replaced their heating system at all (41%) or installed a non-renewable technology (7%).

This influence was particularly large for biomass applicants, 52% of whom would not have installed a renewable heating system without the RHI. On the other hand, nearly half (44%) of solar thermal applicants said that the RHI made no difference to their decision to install their technology.

Across technology types, the proportion of applicants reporting that they would have installed their renewable technology even without the RHI increased steadily (from 23% to 28%). This was true of all technology types but solar thermal applicants.

Applicants' hypothetical behaviour in the absence of RHI (%)

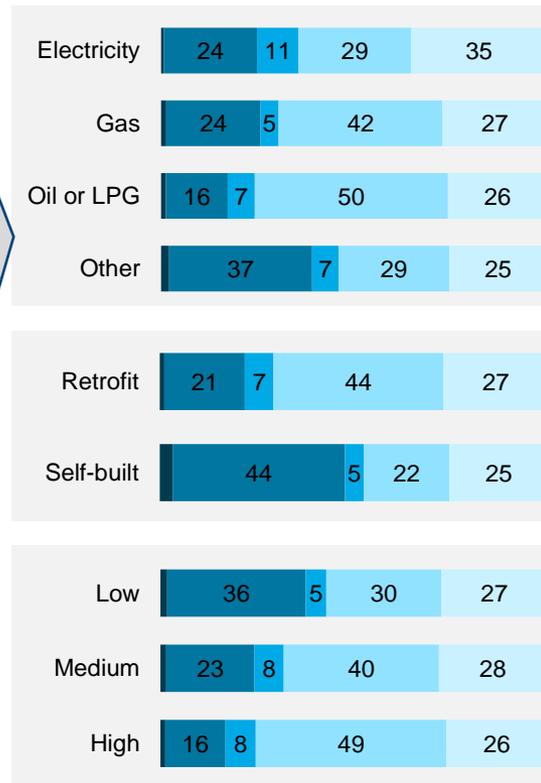


Base: 5,513 new applicants, except refusals, Questions IM1, IM4 & IM5 combined - single response only

Applicants whose **previous fuel was oil** were more likely to believe that they would not have installed a new system at all without the RHI (50%).

Nearly half (44%) of applicants with **self-built properties** believed they would have installed the same technology without the RHI, compared to around one in five (21%) applicants with retrofit properties.

Finally, applicants with **higher estimated heat demand** (which reflects the size of the house as well as other heating related properties like insulation) were also more influenced by the RHI.



Base: 5,513 new applicants, except refusals; Questions IM1, IM4 & IM5 combined - single response only

Note: this question relies on respondents' judgement on how they would have acted in a hypothetical situation. Some care should be exercised in interpreting results, since people are not always able to accurately predict how they would act in hypothetical situations. Further, over a quarter of respondents did not know how they would have acted without the RHI.

Explaining the RHI’s influence on technology installation (2)

Further analysis was undertaken to explore the types of applicants influenced by the RHI. This analysis sought to determine which household characteristics and motivations for installation increase or decrease applicants’ likelihood of being ‘RHI additional’ – meaning that they report that in the absence of the RHI, they would not have installed a new heating system or would have installed a conventional system.

Analysis was carried out using logistic regression, which considers the correlation of a factor with the outcome (in this case, whether or not an applicant is additional), while holding all other factors constant.

Considering all potential reasons concurrently, applicants who were **more likely to be influenced by the RHI** : (a) installed their technology for financial reasons, (b) considered conventional systems along with renewables, (c) accessed information through the Energy Savings Trust, a Green Deal Advisor or friends, family or neighbours, and (d) installed systems with larger total installed capacities.

Those who were **less likely to have been influenced by the RHI** included applicants who (a) live in a rural area, off the gas grid, (b) were motivated to install their renewable technology for efficiency reasons, (c) were familiar with their technology prior to installation and (d) installed the technology as part of a renovation or new build.

Factor	Marginal effect ¹
Motivated to install a renewable technology because of Renewable Heat Incentive	18%
Prompted to install by availability of grant funding	11%
Replaced an old system to take advantage of financial incentives	9%
Considered conventional systems alongside renewable technologies	7%
Higher total installed capacity ²	7%
Replaced old system because of the rising price of fuel	6%
Previously used oil or LPG fuel	6%
Accessed information on renewable technologies from a Green Deal Advisor	5%
Accessed information from friends, family or a neighbor	5%
Accessed information on renewable technologies from the Energy Savings Trust	4%
Installed technology as part of a renovation	-6%
Had seen the renewable technology in operation and knew it worked prior to installation	-7%
Prompted to install a renewable technology when old system broke down	-9%
Motivated to install because renewable technologies are more efficient than conventional systems	-9%
Lives in a rural area, off the gas grid	-10%
Motivated to install because building a new home	-12%

¹ The marginal effect is percentage increase in likelihood that an applicant is was influenced by the RHI considering a factor, when all other factors are at their average value. This can be read as: Holding all other factors constant, if an applicant reported they were prompted to install a new heating system by the availability of grant funding, they were 11% more likely to also say that without the RHI they would not have installed their non-renewable technology.

² This represents a 7% increase in likelihood of being influenced by the RHI *per 1% increase* in total installed capacity.

Awareness of degression and its impact

Degression refers to a budget mechanism whereby individual tariffs offered to applicants are lowered if uptake of the scheme is higher than specified limits. During the 8 quarters of the census, the only technology to undergo degression was the **biomass tariff**.

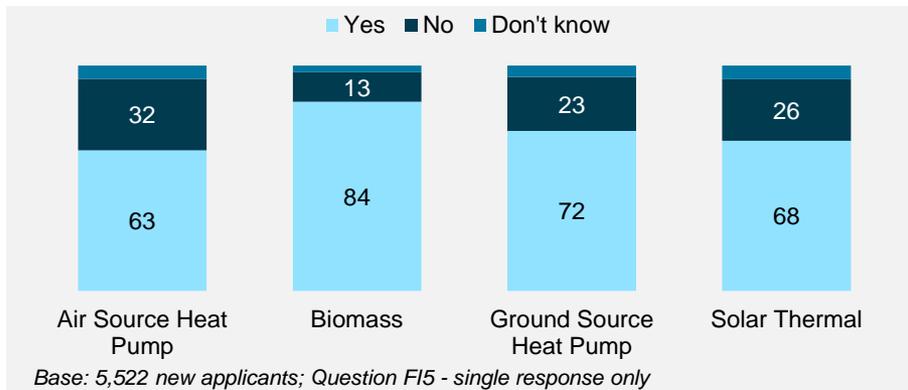
Changes to the Biomass tariff

Announced	Effective	Old tariff (p/kWh)	New tariff (p/kWh)
Nov 2014	Jan 2015	12.2	10.98
Feb 2015	April 2015	10.98	8.93
May 2015	July 2015	8.93	7.14
Aug 2015	Oct 2015	7.14	6.43
Aug 2015	Jan 2016	6.43	5.14

Nearly quarters (74%) of applicants were aware that the value of RHI tariffs may be reduced in the future.

Awareness was particularly high among biomass applicants, over eight in ten (84%) of whom were aware of degression.

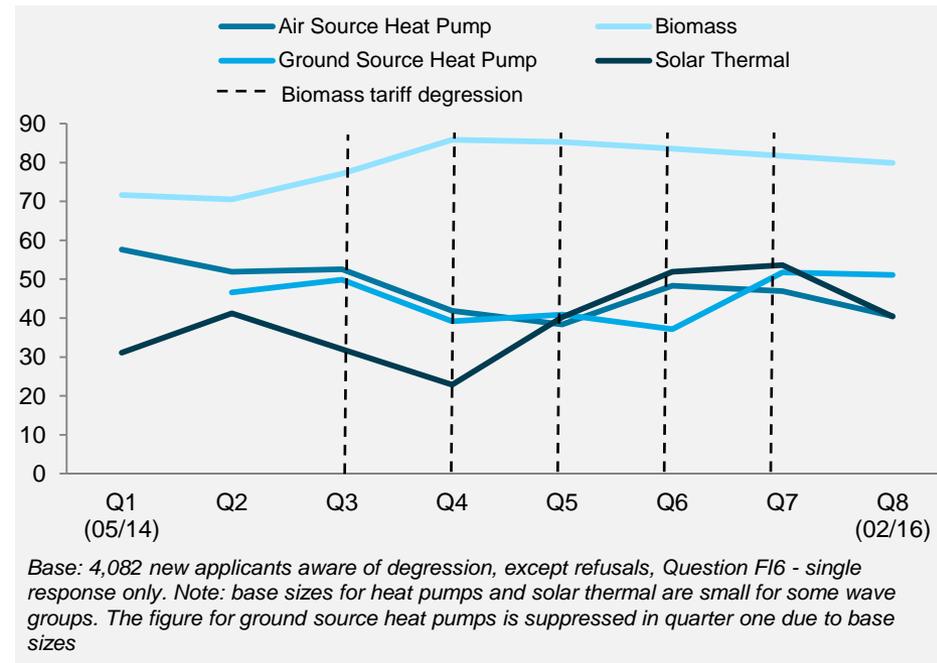
Applicants' awareness that degression may reduce tariffs (%)



Over six in ten (63%) of those aware of degression say they installed their technology more quickly to avoid a lowering of tariffs.

The impact of degression on actual installations has been particularly pronounced for biomass applicants, for whom it rose steadily over the first four quarters of the survey before levelling off. Air source heat pump applicants were decreasingly influenced by the risk of degression during the first four quarters and fluctuating in the final four quarters.

Applicants who believe they installed more quickly as a result of degression (%)



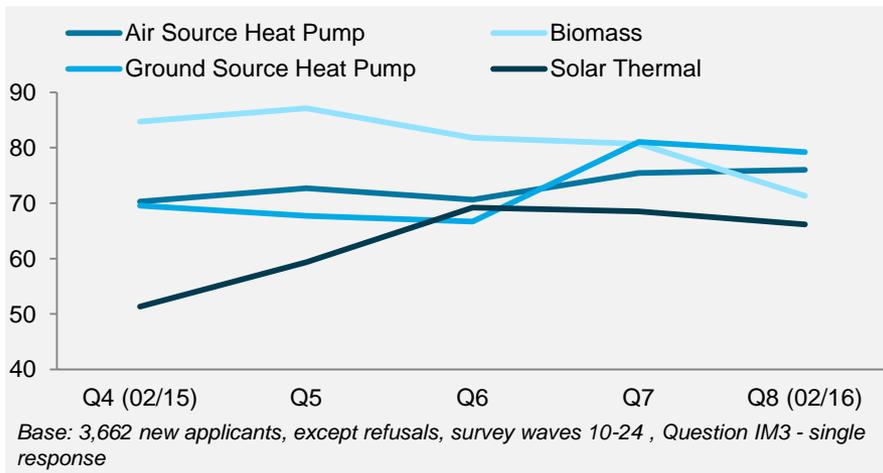
Influence of tariff band on applicants' technology choice

The tariffs payable influenced the technology choice of over three in four (76%) applicants, and of **over eight in ten (84%) biomass applicants**.

58% of biomass applicants say that the tariffs payable under the Renewable Heat Incentive (RHI) influenced their choice of renewable heating technology "a great deal". A further quarter (26%) of biomass applicants say they were influenced "a little". Solar thermal applicants saw themselves as least influenced by RHI tariffs, with a quarter (26%) believing they were influenced 'a great deal', and a third (36%) 'a little'.

Over time the impact of tariff bands on technology choice has decreased among biomass applicants and increased among ground source heat pump and solar thermal applicants.

Applicants reporting their technology choice was influenced by the tariffs payable under the RHI (%) by quarter¹



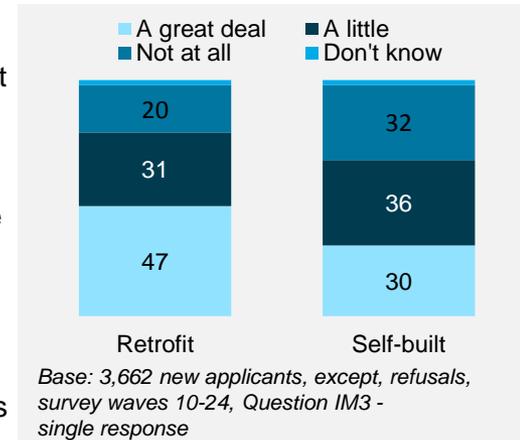
¹ Question IM3 was amended after wave 9 and results from wave 1-9 are not comparable.

Applicants with retrofit properties and those switching from oil or LPG were more influenced by tariffs than others.

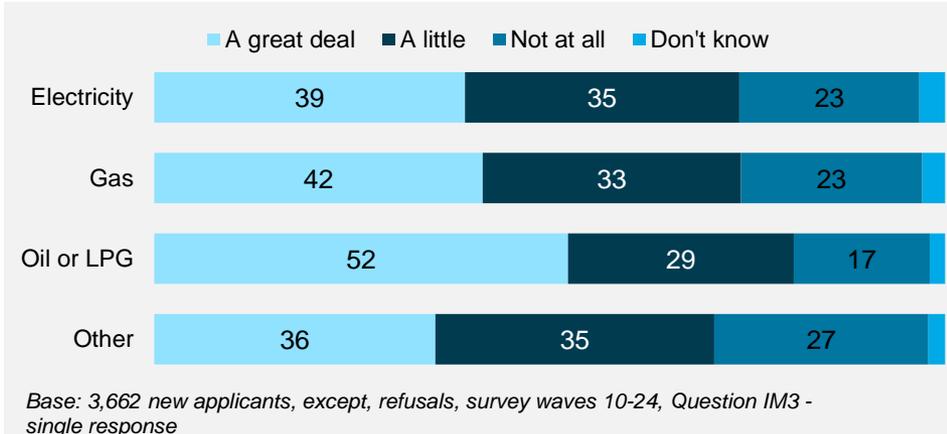
Only 30% of those who self-built their homes said they were influenced 'a great deal' in their technology choice by the RHI tariff, compared to 47% of those in retrofit homes.

While 52% of those switching from oil or LPG were influenced a great deal, only 36%-42% of those switching from other types of fuels were.

Influence of RHI tariffs on technology choice (%), by whether self-built



Influence of RHI tariffs on technology choice (%), by previous fuel



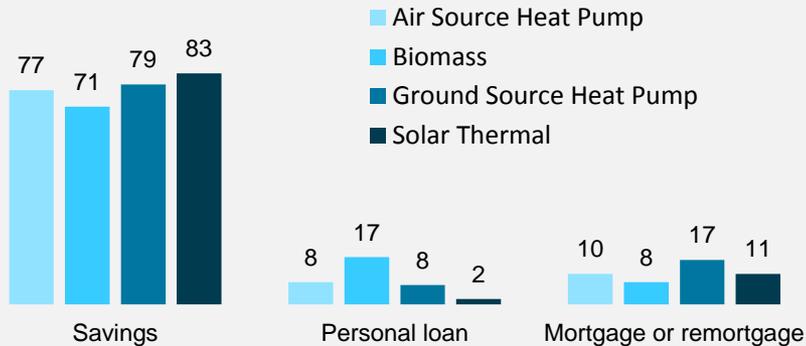
Financing renewable heat technology installations

Most applicants to the Renewable Heat Incentive (RHI) scheme funded the installation of their renewable heat technology through their own savings (76%).

Around one in ten used a personal loan (11%) or funding from a mortgage or re-mortgage on their home (10%). Note that some applicants used multiple funding sources.

While savings were the most common source of funding across technology types, personal loans were more prevalent among those installing biomass boilers (17%) compared with other technology types (2%-8%). Mortgages were more prevalent among those installing ground source heat pumps (17%) compared to other technology types (8%-11%).

Funding sources by technology type (%)



Base: 5,521 new applicant respondents, Question FI1 - multiple responses possible

Mortgages were a significant source of funding for applicants in self-built properties. Over a quarter (25%) of those in a self-built home used a mortgage or re-mortgage, compared with 8% of those in other properties. Only 6% of those installing a renewable heat technology in self-built homes used personal loans, compared to 12% of those in other homes.

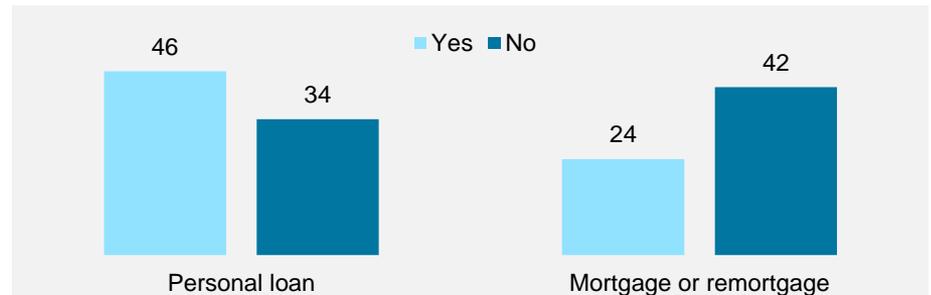
Over time, savings have become less common as a funding source for some technologies but not others.

The proportion of biomass and air source heat pump applicants using savings to finance their renewable technologies decreased over time, falling from 80% in the first quarter to 60% among biomass applicants and from 83% to 73% among air source heat pump applicants. There were small increases in the use of other types of funding at this time, however none were statistically significant.

Almost half (46%) of those financing their renewable heat technology through a personal loan said that the RHI scheme made it easier to secure funding for their installation.

The RHI also made it easier for 24% of those who used a mortgage to secure their funding (although 42% of this group said that it did not help secure their funding).

Has the Renewable Heat Incentive scheme made it easier for the respondents to secure finance to install your renewable heat technology? (%)



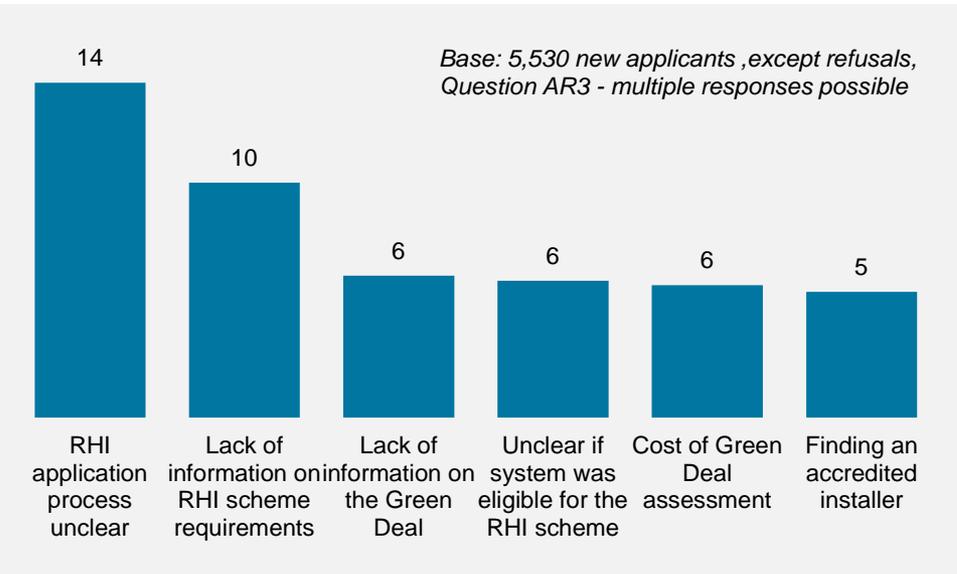
Base: New applicant respondents who funded their renewable heat technology using a personal loan (597) or through a mortgage/re-mortgage (515); Question IM2 - single response

Applicants' experiences – Difficulties faced in meeting the requirements of the Renewable Heat Incentive scheme

Two-thirds (67%) of applicants did not face any **difficulties in meeting the initial requirements** of the Renewable Heat Incentive (RHI) scheme.¹

Where difficulties were cited, the one mentioned most often (by applicants across all technology types) was an unclear RHI application process (mentioned by 14% of all applicants).

Did you face any of the following difficulties in meeting the requirements of the Renewable Heat Incentive scheme? (% of applicants who said they experienced each of the most commonly cited problems)



Applicants who installed biomass systems were least likely to say they encountered any difficulties in meeting the requirements of the RHI scheme (28%, compared to 36%-42% for other technology types).

Biomass applicants were also least likely to report difficulties with an unclear RHI application process (9% of biomass applicants compared to 17%-22% for other technologies).

Those who installed solar thermal systems were most likely to report difficulties (42%). Over a third (36%) of air source heat pump applicants encountered difficulties, as did the same proportion of ground source heat pump applicants.

Those installing solar thermal systems were more likely than those installing other technologies to cite the cost of the Green Deal Assessment as a difficulty (11% of solar thermal applicants, compared to 4%-6% for other technologies).

There were no significant differences over time in the proportions of applicants reporting difficulties in meeting the RHI scheme requirements, either overall or within technology types.

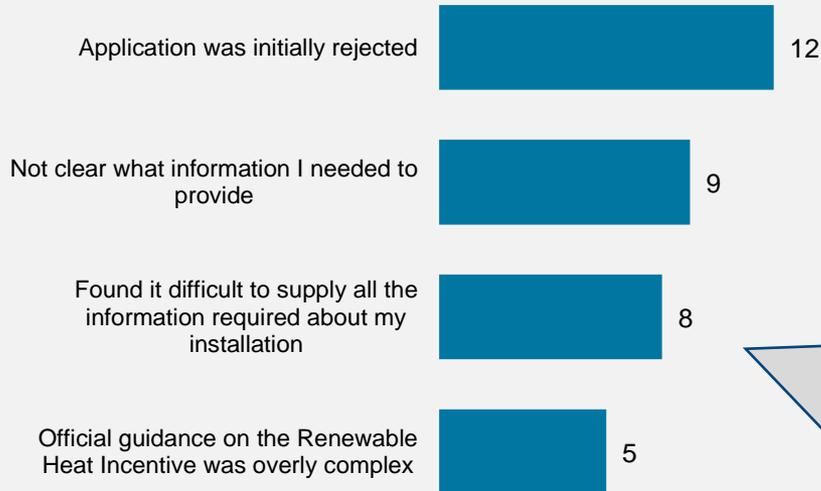
¹ This stage covers applicants' preparations prior to installing the renewable heat technology. They can only apply for the Renewable Heat Incentive once the new heat system has been installed.

Applicants' experiences – Difficulties faced with the Renewable Heat Incentive application process

Seven in ten (71%) of applicants did not have any problems in completing the Renewable Heat Incentive (RHI) application.

A quarter (27%) said they did experience problems with the application (3% said they did not know). The most common problem was respondents' applications being rejected.

What problems did you have in completing the Renewable Heat Incentive application? (%)



Base: 5,218 new applicants, except refusals ; Question APP2 - multiple responses possible

12% of new applicants reported having their application initially rejected. This was the most common problem encountered by applicants for all four technology types. One in ten (9%) were not clear what information they needed to provide; 8% found it difficult to supply all the information required.

Applicants who installed biomass heat systems were least likely to report problems with the RHI application. Only 20% of biomass applicants said they had encountered any problem compared to 33% for other technologies.

Almost half (48%) of applicants with self-built homes said they had problems with the RHI application compared to 24% of other applicants.

- For all application difficulties covered, biomass applicants experienced them less often than applicants for other technologies. For example:
- 9% of biomass applicants reported that their application was initially rejected, compared to 14% -15% for other technology types;
 - 5% of biomass applicants said it was not clear what information they needed to provide, compared to 8%-15% for other technologies;
 - 5% of biomass applicants found it difficult to supply all the information needed about their installation, compared to 8%-11% for other technologies;
 - Only 4% of biomass applicants said the official guidance on RHI was too complex, compared to 5%-8% for other technology types;

The proportion of applicants reporting problems with the RHI application fell from 35% in the first quarter to 29% in the eighth. This was mainly driven by a fall in the proportion of people saying their application was initially rejected, from 23% to 9% during this period.

Satisfaction with aspects of the Renewable Heat Incentive and renewable heat technologies (1)

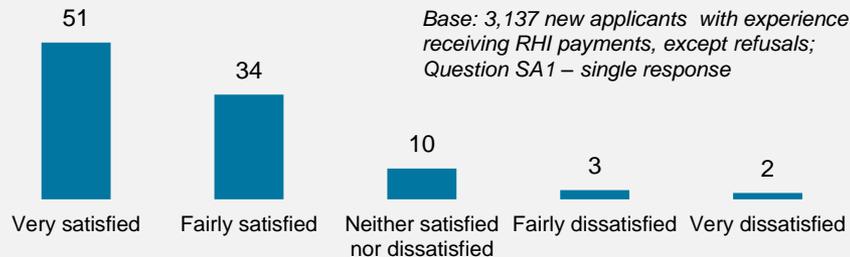
Overall levels of satisfaction with the **ease of applying** for the Renewable Heat Incentive (RHI) were very high – 81% of applicants were ‘very’ or ‘fairly’ satisfied.

Applicants who installed biomass heating systems were more likely to report being ‘very’ satisfied with the ease of applying for the RHI (54%) than applicants installing other technologies (38-44%).

Self-building applicants were much less likely to say they were ‘very’ satisfied with the ease of applying – 24% compared to 49% of other applicants.

A large minority of applicants (42%) had not yet experienced **the RHI payment process**. Out of those who had experienced the process, the majority of all applicants (86%) were satisfied (51% very satisfied, 34% fairly satisfied) and only 5% of applicants were dissatisfied with the RHI payment process.

How satisfied are you with the process for receiving the RHI payment? (% of those with experience)



Of applicants with experience of the payment process, biomass applicants were most likely to say they were ‘very’ satisfied (56%); air source applicants were least likely to be ‘very’ satisfied (46%).

Looking at overall satisfaction (very or fairly satisfied), biomass and ground source heat pump applicants were most likely to be satisfied (89% and 89%, respectively) and air source applicants least satisfied (82%).

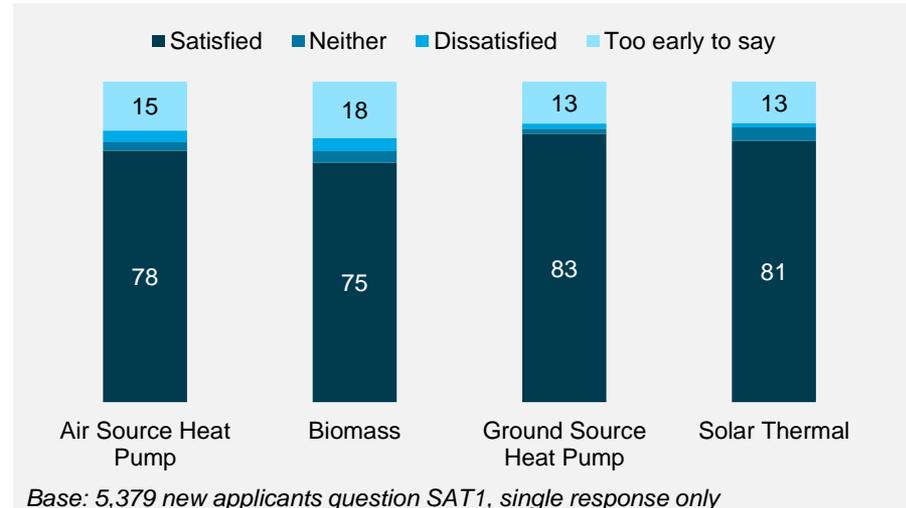
There were no significant changes over time in satisfaction with the process for receiving RHI payments.

A majority (78%) of applicants to the Renewable Heat Incentive (RHI) scheme were satisfied overall with their technology (49% ‘very satisfied’, 29% ‘fairly satisfied’).

A few (3%) were dissatisfied; 16% said it was ‘too early to say’.

Applicants who installed a ground source heat pump were most likely to report satisfaction (83% were ‘very’ or ‘fairly’ satisfied). Ground source heat pump applicants were also most satisfied when discounting those with too little experience and considering the amount of experience with the installation.

Satisfaction with renewable heat technology, by technology type (%)



Satisfaction with aspects of the Renewable Heat Incentive and renewable heat technologies (2)

New applicants' levels of satisfaction varied across different aspects of their renewable heat technology.

- 87% were satisfied (very or fairly) with how reliable the technology was so far (excluding those who reported that it was too early to tell);
- 85% were satisfied with the noise level of their installation;
- 83% were satisfied with how their installation looked;
- 73% were confident in understanding the system controls;
- 72% were satisfied with the ease of adjusting the controls;

Proportion of applicants 'very satisfied' with different aspects of their installation (%), by technology

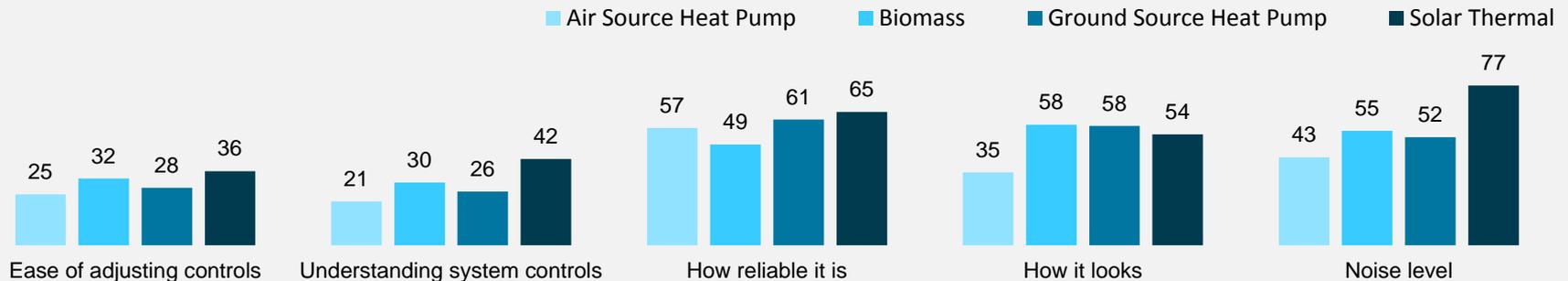
Applicants for air source heat pumps were least satisfied with aspects of their technologies while solar thermal applicants were most satisfied.

Air source heat pump applicants were less satisfied with their installation's noise (excluding those that felt it was too early to say, 79% were very or fairly satisfied compared to 88% for other technologies), its looks (76% vs. 87%), understanding the system controls (65% vs. 87%) and ease of adjusting controls (67% vs. 74%).

Solar thermal applicants were happier with the installations' noise (92% vs. 84%), reliability (91% vs. 86%), and understanding system controls (80% vs. 71%).

Across technology types, applicants' satisfaction with their technologies did not vary significantly over time.

Air source heat pump applicants tended to be less often 'very satisfied' than other applicants. Solar thermal applicants were most satisfied overall.



Base: 3,851- 5,322 new applicants, excluding those who felt it was 'too early to say' Question EB5 - single response only

Summary of additional analysis reports

Presentation of summary findings from additional analysis projects delivered during the census period

Additional analysis reports were carried out for BEIS to explore specific topics of interest. The results are summarised in the slides.

The analysis projects were carried out at various points throughout the survey. As a result they made use of the data available at the time, rather than the full dataset.

The additional analysis **findings cannot be compared directly to the overall census results**. In addition to using data from varying time points, the data are not weighted prior to the additional analysis¹.

¹ Response rates by different sub-populations did not differ markedly. As a result, the weights calculated for the main analysis were not large and unweighted results differ only marginally from weighted results. Methodologies for these analyses are provided in the technical report annex.

The five reports cover:

- Applicants least able to pay (using data from waves 1-15)
- Applicants on the gas network (using data from waves 1-18)
- Differences and similarities between Scotland, Wales and England (using data from waves 1-21)
- Determinants of technology choice (using data from waves 1-18), and
- Factors influencing satisfaction (using data from legacy applicants in waves 1-18)

Summary 1: Applicants least able to pay

Using data from waves 1-15, this report explored the characteristics of new owner-occupier applicants to the domestic RHI who were least able to pay for their installation.

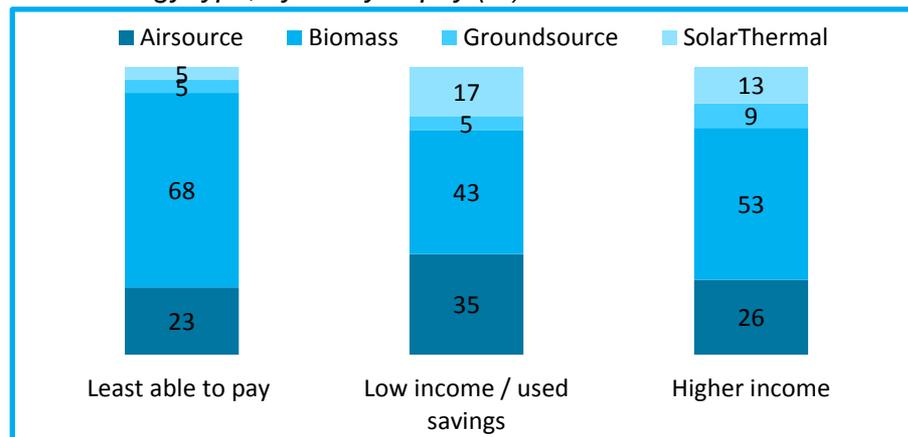
	Income <£26,000	Income >=£26,000
Used savings to fund installation of renewable heat technology	15%	81%
Did not use savings	4%	

The “least able to pay” (LAP, blue box in chart) group had household incomes of less than £26,000 per year and did not use savings to fund their installation. The remaining applicants had either used savings to fund their application (LIUS) or had higher incomes (HI). Key findings from this analysis were:

- LAP applicants were more likely than LIUS or HI applicants to apply for biomass (68% vs. 43%-53%), while solar thermal installations were less common among LAP applicants (5% vs. 13%-17%).
- LAP applicants were more varied than LIUS applicants in terms of age and household size, while LIUS applicants were more likely to be from households in which the youngest person was at least 55 years of age (69% compared with 44% of LAPs), and small households of 1-2 people (79% compared with 50% of LAPs).
- While primarily relying on installers for information, LAP applicants were less likely to hear about the RHI from installers (54%) than were applicants more able to pay (59%-64%), and accessed fewer sources of information overall.

- There is no evidence of a relationship between an applicant’s ability to pay for their installation and the trigger for installing a new heating system, or the main reason for choosing renewable rather than conventional technology.
- The influence of the RHI on the decision to install a renewable technology appears to be particularly strong for applicants who are least able to pay for their installation (70% would not have installed a new system without RHI, compared with 53% LIUS and 58% HI).
- LAP applicants (who by definition did not use savings) were most likely to fund their installation using a personal loan (42%). They were more likely than those more able to pay to use installer finance agreements (9%, compared with 1%-2%) and “other” finance agreements (15%, compared with 1%-2%)

Technology type, by ability to pay (%)



Summary 2: Applicants on the gas network

The report used responses from new applicants to waves 1-18 of the domestic RHI applicant survey to compare applicants on with applicants off the gas grid.

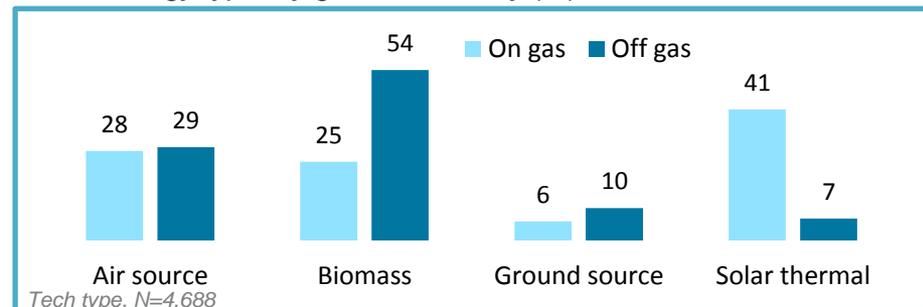
The on- or off-gas status of applicants was determined using survey responses rather than Ofgem administrative data, as the administrative data is based on geographical clusters that may be incorrect for individual applicants.

The report's key findings were:

- 81% of RHI applicants are not connected to the national gas grid. These proportions are similar for applicants of all technologies except solar thermal, where only 42% are not connected.
- Differences across survey items between on and off-gas applicants were greatest for solar thermal applicants, then air source heat pump applicants, and smaller for biomass.
- Off-gas applicants were more cost-driven than on-gas applicants. Off-gas applicants were more likely than on-gas applicants to be prompted by the availability of grant funding and more motivated and driven by financial reasons, including the RHI (67% off- vs. 58% on-gas said the RHI was a motivation).
- Off-gas applicants were more likely than on-gas applicants to use a loan to fund their installation (12 vs. 6%).
- Off-gas applicants were more likely than on-gas applicants to have decided to install renewable heating while considering a range of renewable technology options (32 vs. 25%).

- Off-gas applicants were more likely to install additional measures alongside their technology than on-gas applicants (77 vs. 66%).
- Off- and on-gas regional patterns roughly follow urbanity patterns, with on-gas applicants most common in London (78%) and the South East (34%) and least common in Scotland (11%) and Wales (11%).
- On-gas applicants were more likely to replace an existing heating system than off-gas applicants (92% on-gas vs. 85% off-gas), particularly if they were air source heat pump (88 vs. 77%) or solar thermal applicants (95 vs. 85%).
- The difference between on- and off-gas applicants in relation to the applicant's perceptions of the impact of the RHI is greatest for air source heat pump applicants. Two thirds of air source heat pump applicants on the gas network said the RHI encouraged them to install a new system or a renewable instead of a conventional, compared to half of air source heat pump applicants off the gas network.

Technology type, by gas connectivity (%)



Summary 3: Comparing England, Scotland and Wales

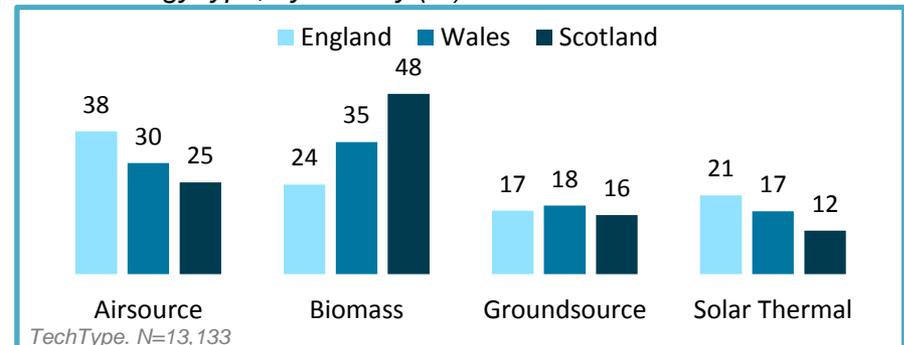
Using data from waves 1-21, this report examined differences in applicants and their views and experiences between England, Scotland and Wales. The report considered differences overall, by technology type and by the capacity of the installed technology.

Key findings from this analysis were:

- 74% of domestic RHI applicants live in England, 8% live in Wales and 18% live in Scotland. The most common type of technology installed among English applicants was air source heat pumps while biomass systems were more common among Scottish applicants.
- Applicants from Scotland were more likely to live in a self-built home (22% vs. 17 and 19% in England and Wales) and more likely to install their renewable technology as their home's first heating system (61%) compared with applicants from England (44%) and Wales (46%). They are also more likely to have been motivated to install their system because they were building a new home.
- Air source heat pump, biomass and ground source heat pump applicants from England were more likely to live in larger homes, while solar thermal applicants from Scotland were most likely to live in larger homes.
- Scottish applicants consulted a greater number of information sources on their technology (3.7 vs. 3.3 and 3.4 sources for England and Wales), were more likely to have consulted Home Energy Scotland than other applicants their national equivalent (32% vs. 6% overall), and less likely to have consulted national government (15% vs. 22% and 19% in England and Wales, respectively) or heating system manufacturers (18% vs. 24% and 23%).

- Biomass applicants from Scotland were more likely to cite financial considerations and the availability of grant funding as key motivations for installing their RHT (54% vs. 48% and 42% in England and Wales). Applicants from England and Wales were more likely to report being motivated by self-sufficiency (18% and 20% vs. 15% in Scotland).
- Scottish applicants for air source heat pumps, biomass and solar thermal systems were less likely to finance their RHT through personal savings (73% vs. 82% of English and 78% of Welsh applicants), with Scottish air source heat pump applicants most likely to fund their RHT through a personal loan (8% vs. 5% of English and 6% of Welsh applicants).
- Scottish applicants reported a greater impact of the RHI on their decision to install a RHT, with 72% reporting they would not have installed their RHT without the scheme compared to 63% of English and Welsh applicants (jointly considered).

Technology type, by country (%)



Summary 4: Determining technology choice

Using data from waves 1-18, this analysis used multinomial logistic regression to explore the association between technology choice and a range of demographic and heating-related factors. This type of analysis explores the role of individual factors while holding others at their average level. It is the same type of analysis presented previously on satisfaction, but aims to explore technology choices among applicants.

Those most likely to choose air source heat pump:

- Switch from oil or LPG (rather than gas, electricity, coal or biomass)
- Are older applicants, with smaller households
- Live in smaller homes
- Are less motivated by environmental impact, but likely to have other renewable technologies
- Are unlikely to have commissioned prior to tariff depression
- Live in the South East of England, East England or London

Those most likely to choose a biomass system:

- Are likely to have commissioned their technology before a tariff depression
- Are off the gas grid
- Are replacing an existing heating system
- Have no other renewable technology installed
- Live in Scotland, North England or Wales
- Have larger homes, larger households and lower incomes
- Are less likely to have older inhabitants in the home

Those most likely to choose ground source heat pump:

- Are installing a renewable technology as the home's first heating system
- Have larger house and higher incomes
- Live in North England or the Midlands
- Are more likely to be off the gas grid
- Are environmentally motivated

Those most likely to choose solar thermal:

- Are on the gas grid
- Live in South West England or Wales
- Have smaller, semi-detached or detached homes, in which they have lived for many years
- Have larger households
- Are motivated by the environment and have other renewable heating technologies installed

Summary 5: Factors influencing satisfaction

Using data from waves 1-18, this analysis used ordinary least squares (OLS) regression to explore factors that drive satisfaction with aspects of applicants' renewable heat technology.

The analysis included legacy applicants only, as these were likely to have more extensive experience of their technology (29 months compared to 2.5 months for new applicants).

The key findings were:

- Overall, satisfaction is high with all aspects of renewable heat technologies explored in the survey (overall, noise level, looks, reliability, understanding system controls, ease of adjusting controls, performance in coldest days and nights).
- Difficulties experienced during installation – especially unclear information or advice – are the primary drivers of dissatisfaction across all models analysed.
- Increasing familiarity with the technology prior to installation and providing greater access to information on how to operate the technology may be key opportunities for improving satisfaction further.

Motivations for installation	Marginal effect (points satisfaction)
Had seen RHT in operation and knew how it worked prior to installation	0.17 increase
RHT is easier to use/control	0.16 increase
RTH more efficient than conventional systems	0.16 increase
RHT provides more constant temperature	0.15 increase
Likes the technology	0.10 increase
RHT complements lifestyle	0.07 increase
RHTs are more reliable	0.06 increase

Factors that increase satisfaction with renewable heat technologies:

- Familiarity with RHT prior to installation
- Preference for RHT prior to installation
- Problem-free installation experience
- Greater exposure to cold weather¹

Factors that decrease satisfaction with renewable heat technologies :

- Lack of trusted installers
- Disruptions during the installation process
- Information issues, particularly in relation to understanding and using controls
- Larger homes

Barriers to installation	Marginal effect (points satisfaction)
Did not face any barriers to installation	0.16 increase
Had trouble identifying an installer	0.12 increase
Disruption caused during installation	0.10 decrease
Lack of trusted installers	0.15 decrease
Difficult to integrate RHT into existing system	0.15 decrease
Unclear information or advice at installation	0.28 decrease

¹ Measured as number of air frost days experienced per month since installation, obtained via Met Office regional historical data

Appendices

Appendix A: Question index

Appendix A: Question index (1)

	Question reference	Question	Asked in Waves
Sources of information about renewable heat technologies and the Renewable Heat Incentive	AW1	Did you access information on installing renewable heating systems in your home, from any of the following sources?	1-24
	AW6	Which of the following did you trust the most to provide information about the renewable heat technology you installed in your home?	10-24
	AR1	How did you find out about the Renewable Heat Incentive (RHI) scheme?	1-24
	AR2	Overall, how would you rate the usefulness of information on the Renewable Heat Incentive (RHI) provided by each of the following?	1-24
Procurement and installation of renewable heat technology	MO3	Did any of the following prompt your decision to install a new heating system at the time that you did?	10-24
	MO2	What was the main reason you decided to install a renewable heat technology rather than a conventional heating system in your home?	1-24
	MO1	Why did you decide to install a renewable heating system rather than a conventional heating system?	1-24
	IM1	Without the Renewable Heat Incentive (RHI), would you have installed a new heating system?	1-24
	IM4	Without the Renewable Heat Incentive (RHI), would you have chosen to install a different technology to the renewable heat technology?	1-24
	IM5	Which heating technology type would you have chosen instead?	1-24
	FI5	Are you aware that the Renewable Heat Incentive (RHI) tariff may reduce (degress) in the future?	1-24
	FI6	Did the possible reduction in the Renewable Heat Incentive (RHI) tariff payable, encourage you to install your renewable heat technology more quickly?	1-24
	IM3	To what extent did the tariffs payable under RHI influence your choice of renewable heating technology?	10-24
	FI1	How did you fund the installation of your renewable heat technology?	1-24
	IM2	Has the Renewable Heat Incentive (RHI) scheme made it easier for you to secure finance to install your renewable heat technology?	1-24
	IN6	How did you identify an installer for your renewable heat technology?	1-24
IN7	How easy or difficult was it for you to find an installer whom you believed would fit your renewable heat technology correctly?	1-24	

Question index (2)

Procurement and installation of renewable heat technology	IN8	How easy was the installation process for your renewable heat technology?	1-24
	BA2	Did you face any of the following difficulties in the overall process of installing the renewable heat technology in your home?	1-24
	IN9	Did you receive any of these services from the installer of your renewable heat technology?	1-24
Renewable Heat Incentive	AR3	Did you face any of the following difficulties in meeting the requirements of the Renewable Heat Incentive (RHI) scheme?	1-24
	APP1	Did you have any problems completing the Renewable Heat Incentive application?	1-24
	APP2	What problems did you have in completing the Renewable Heat Incentive application?	1-24
	AP1	Please rate your overall satisfaction with the ease of applying for the Renewable Heat Incentive?	1-24
	SA1	How satisfied are you with the process for receiving the Renewable Heat Incentive (RHI) payment?	1-24
Satisfaction with renewable heat technologies	SAT1	How satisfied overall are you with your renewable heat technology?	1-24
	EB5	How satisfied are you with these different aspects of your renewable heat technology?	1-24