



Department
of Energy &
Climate Change

Evaluation of the Renewable Heat Incentive (RHI)

Technical report of MCS installers survey

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Introduction

This technical report describes the approach taken to the survey of installers of renewable heat technologies, providing details of the survey methodology, implementation, and data analysis. The findings of this research are available from <https://www.gov.uk/government/collections/renewable-heat-incentive-evaluation>.

Evaluation of the Renewable Heat Incentive (RHI)

An independent evaluation of the RHI was commissioned by the Department of Energy and Climate Change (DECC) and undertaken by NatCen Social Research, Eunomia Research and Consulting, the Centre for Sustainable Energy and Frontier Economics (the evaluation consortium).

The evaluation comprised three key strands of activity, focusing on:

- Non-domestic RHI applicants and possible applicants;
- Renewable heat supply chain¹; and
- Domestic RHI applicants and social housing providers on and off the RHI scheme.

The outputs from the evaluation will help DECC to understand and assess how the domestic RHI is delivering relative to its objectives and to support development of the scheme. This evaluation will also help ensure that DECC is conforming to principles of accountability, transparency and openness to scrutiny in policy-making.

To achieve these objectives a series of research projects focused on the renewable heat supply chain were designed and delivered by the evaluation consortium. These were:

- Qualitative research with Microgeneration Certification Scheme (MCS) renewable heat installers;
- A survey of MCS renewable heat installers; and
- Qualitative research with the non-domestic supply chain for large biomass installations.

This technical report focuses specifically on the methodology of the survey of renewable heat installers. The evaluation consortium contributed to the survey in the following ways:

- NatCen Social Research, with extensive experience of conducting policy evaluations, led the consortium and provided a main point of contact for DECC. They took overall responsibility for project management, research design, fieldwork, and analysis and reporting of research findings.
- Eunomia Research and Consulting, specialists in strategic and policy-related work around complex technologies in the energy sector, led on this strand.
- Peak Answers, specialist providers in telephone data collection services, were subcontracted to conduct the fieldwork. This included the programming of and conducting of telephone interviews and day to day fieldwork management.

¹ The renewable heat supply chain includes manufacturers, sellers and installers of renewable heating technologies and suppliers of biomass fuel

Background and aims

Qualitative research with MCS installers was carried out to inform the survey by improving understanding of how the installer market was adapting to the RHI.

The survey aimed to elicit the views of renewable heat installers, focusing on opinions of the heating market and installers' interactions with their customers; installers' understanding of the impact of the RHI on the installer market; and installers' understanding the impact of the Microgeneration Certification Scheme (MCS) scheme.

Sample design

There exists no central register of all installers of renewable heating technology in Great Britain. However, the publically available MCS scheme, which we used in this survey, is a good proxy. Renewable heating systems eligible for the domestic RHI must be certified by MCS and their installers registered on the scheme. In addition, to be eligible for the non-domestic RHI scheme, installations with a capacity of 45kWth or below are typically required to have an MCS or equivalent certification. A number of installers responsible for non-domestic schemes larger than 45kWth are also registered on the MCS database. However, the database does not contain data on the proportion of installers that install solely in the domestic, non-domestic or both markets.

Sample frame

The version of the MCS database used was current on 3 October 2014, and contained 7,368 installers. Of these, 5,581 were removed during a process of data cleaning (see [Figure 1](#)):

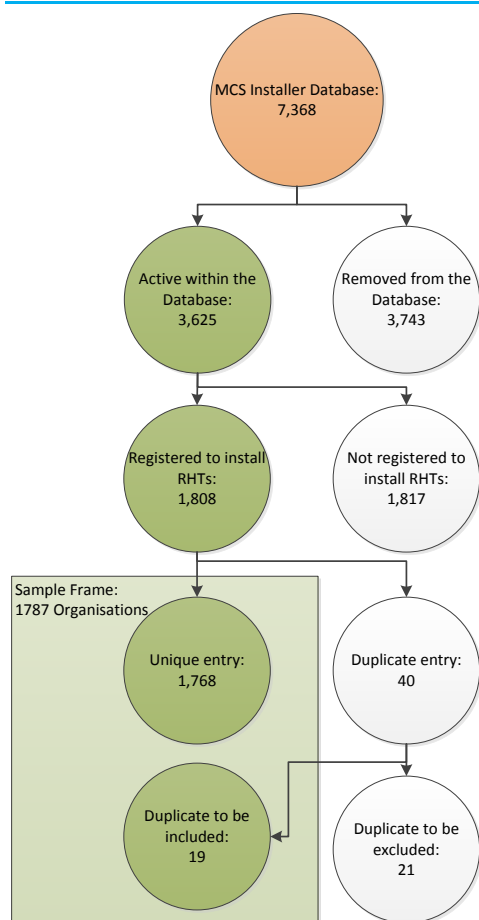
- i. 3,743 organisations were marked as deleted²;
- ii. 1,817 were registered only to install renewable electricity, rather than renewable heating technologies; and
- iii. 21 were duplicate entries, where the same organisation held multiple MCS registrations³.

The final sample frame consisted of 1,787 organisations.

² The database does not record a reason for the delete-marking, but a common reason is likely to be that the company's registration has expired.

³ Of the 40 entries, 17 appeared twice and two three times.

Figure 1: Development of the sample frame



Technology Coverage

Table 1 sets out the coverage of renewable heat technologies within the sample frame. It shows that, among the installers in the MCS database, the most common technologies being installed were solar thermal installations and air source heat pumps (ASHP). **Table 2** shows companies by the number of renewable heat technologies they offered to install. Finally, **Table 3** shows a detailed breakdown of the sample frame by technology.

Table 1: Technology Coverage (multiple selections per installer company are possible)

Technology	Frequency	% of Sample Frame
Solar thermal	1,212	68
GSHP	901	50
ASHP	1,150	64
Biomass	622	35
Total no of installers	1,787	100

Table 2: Number of technologies installed by installer companies

Number of technologies installed	Frequency	% of Sample Frame
1	625	35
2	456	26
3	472	26
4	234	13
TOTAL	1,787	100

Table 3: Technology Combinations⁴

Single Technology	Frequency	% of Sample Frame
Solar thermal only	330	18
ASHP or GSHP only	107	6
Biomass only	188	11
Two Technologies		
Solar thermal + ASHP or GSHP	106	6
Solar thermal + Biomass	116	6
Biomass + ASHP	10	1
Biomass + GSHP	0	0
ASHP + GSHP	224	13
Three Technologies		
Biomass + ASHP + GSHP	45	3
Solar thermal + ASHP + GSHP	397	22
Solar thermal + ASHP + Biomass	30	2

⁴ Some categories have been combined to protect anonymity.

Solar thermal + GSHP + Biomass	0	0
All Technologies		
Solar thermal + GSHP + ASHP + Biomass	234	13
Total	1,787	100

Regional Coverage

As shown in [Table 4](#)^{Error! Reference source not found.}, every region in England, Scotland and Wales is covered by at least half of the installers in the MCS database. Examining the number of regions covered by each company (

[Table 5](#)), the majority of organisations are registered as being able to service more than five regions.

Table 4: Regional Coverage (multiple selections possible)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire & Humber	Scotland	Wales
Freq.	1,106	1,132	1,127	1,066	1,106	1,194	1,189	1,154	1,076	1,027	1,067
% of sample frame	62	63	63	60	62	67	67	65	60	57	60

Table 5: Regional Combinations

	No Region ⁵	1-2 Regions	3-5 Regions	Over 5 Regions	Total
Frequency	74	480	219	1,014	1,787
% of sample frame	4	27	12	57	100

⁵ No region refers to organisations not identifying any of the regions in England, Scotland and Wales. In some cases this may be because they have only identified Northern Ireland, and in others it is because no region has been identified.

Date of registration on the MCS Database

As a proxy for the age of the organisation, the first registration date on the MCS database can be observed. As shown in [Table 6](#) the distribution per annum is broadly equal each year, apart from the first two years.

Table 6: MCS Registration Date

	2008	2009	2010	2011	2012	2013	2014	Total
Frequency	2	111	399	480	266	286	243	1,787
% of sample frame	0	6	22	27	15	16	14	100

Sampling strategy

Previous research with this target group led to concerns about low response rates. As a result, we used a phased sampling strategy, designed to give us flexibility in our recruitment and interviewing approach depending on the achieved response rate⁶. The 1787 companies in the sample frame were divided as follows:

- **Pilot phase:** 99 organisations were selected using simple random sampling and approached to take part in a short pilot which tested response rates and completion time. Because the survey was not changed as a result of the pilot, we decided to consider these cases part of the issued sample.
- **Phase 1:** Half the remaining sample frame was selected for Phase 1 (844 organisations) using systematic random sampling. Selected participants were sent an initial letter and email inviting them to complete the survey online. Non-responders were then followed up by telephone with the aim of encouraging an online response.
- **Phase 2:** The remaining 844 organisations were split into three parts of 300, 300 and 244 organisations, respectively, using systematic random sampling. Installers in the first two parts were approached, sequentially, with an initial letter and an email inviting them to complete the survey online. Non-responders were then chased by telephone, with the option of completing the interview over the telephone. Installers in the third part were not asked to take part in the survey because the required response rate and interviews had been achieved.

To carry out the systematic random sampling employed in phases 1 and 2, we chose three stratifiers to ensure the sample was representative of the population in key characteristics and to maximise statistical efficiency (see [Table 7](#) for the distribution of companies across stratification variables):

1. **Technology installed, including coverage and combinations of technologies:** demonstrates the range of combinations present in the population – these were collapsed to form discrete groupings in order to ensure sufficiently sized strata, while maintaining as much as possible the full differentiation between installers that install

⁶ At various points this study utilised; advance letters, advance emails, chasing emails, and chasing calls with and without the option of an over the telephone interview

different types and ranges of technologies. This is shown in [Table 7](#)**Error! Reference source not found.**;

2. **Regional Coverage:** given the wide range of regions covered by most suppliers, the stratification used the number of regions covered by a company to provide an indication of scale of operation (
3. [Table 5](#));
4. **Length of time as an installer registered on the MCS database:** the MCS database holds information on how long each company has been accredited under the MCS which, although not an exact measure of their time as an installer, provides us with some indication of how long the company has been in the industry.

Table 7: Technology combinations used in sampling

Technology	Frequency	% of Sample Frame
Solar thermal only	330	19
ASHP only	106	6
GSHP only (1), or Solar thermal + ASHP + GSHP (397)	398	22
Biomass only (188)	188	11
Solar thermal + ASHP (105), or Solar thermal + GSHP (1)	106	6
Solar thermal + Biomass (116), Solar thermal + ASHP + Biomass (30), or Solar thermal + GSHP + Biomass (0)	146	8
Biomass + ASHP (10), Biomass + GSHP (0), or Biomass + ASHP + GSHP (45)	55	3
ASHP + GSHP	224	13
Solar thermal + GSHP + ASHP + Biomass	234	13
Total	1,787	100

Fieldwork

Fieldwork was conducted between 12 January and 3 February 2015, around three months after the snapshot was taken of the MCS database for sampling purposes. The survey was conducted using an online questionnaire (CAWI)⁷ for the pilot and phase 1 and mixed online (CAWI) and telephone modes (CATI⁸) for phase 2.

⁷ Computer-assisted web interviewing is a survey technique involving participants answering a questionnaire online.

⁸ Computer-assisted telephone interviewing is a telephone surveying technique.

Fieldwork procedures

Prior to the start of fieldwork, interviewers were verbally briefed by the survey company conducting the survey, Peak Answers, about the survey background and questionnaire. Interviewers were also provided with briefing documents put together by NatCen and Eunomia, providing further background information on the survey and questionnaire, the sample, making contact with respondents and the fieldwork timetable. Interviewers then went through the survey in test mode several times prior to interviewing, and any questions were dealt with by supervisors on an ad-hoc basis.

We also offered an incentive to take part in the research. Participants of the survey were given the opportunity to take part in a prize draw for £50 of high street shopping vouchers.

Quality assurance

Peak Answers carried out fieldwork quality assurance procedures to ensure that the telephone interviewers adhered to the questionnaire script and that responses were correctly coded. These procedures are set out below:

- A minimum of 5% of the interviews were monitored by a supervisor. This involved the supervisor listening live to the interview as well as to a selection of the interviewers' attempts to recruit respondents.
- A report was compiled for each interviewer based on the monitoring of their work, with feedback to the interviewer as relevant. The monitoring was spread across the interviewers to reflect the proportion of interviews each has completed.
- Open questions were reviewed by the interviewer at the end of the survey, once the respondent was off the line and before the data was submitted to the system.
- Upon completion of fieldwork (and sometimes during it), the open responses were reviewed by the project manager with basic spelling and punctuation errors corrected.
- Closed question data was checked against the questionnaire and the CATI specification to ensure that all questions had been answered and that, for example, multi/single coded questions had been entered correctly.

Confidentiality

All potential respondents received an advance letter outlining that survey participation was voluntary and that any information they provided would remain confidential and would not be passed on to anyone outside NatCen in a form that could be used to identify them. Respondents were provided with a dedicated email address that they could contact if they had queries.

Data used and collected in this study was treated as personal and confidential data, and transferred and stored in accordance with ISO 27001:2005 Information Security Management. Robust procedures governing the storage, access and handling of information were adhered to by the research team. Compliance with procedures was monitored through reporting of issues, internal audits and ISO surveillance visits every six months.

The pilot

A pilot was carried with 99 installers, of which 9 completed the survey. The pilot allowed us to test the length of the survey and confirm that question design and routing were correct. It also provided an indication of response rate. As a result of the pilot recruitment experience, the main

stage survey used both advance letters and emails to recruit participants. The questionnaire was not changed as a result of the pilot.

The questionnaire

The questionnaire was developed by Eunomia, NatGen and CSE, with input from DECC policy officials.

The survey consists of up to 71 questions⁹ in four broad sections:

- Background – covering the background of the installer organisation and views on training and skills;
- Market situation – including views on costs, demand and customer journeys;
- Renewable Heat Incentive – views on the application process and the impact of the scheme; and
- Microgeneration Certification Scheme – views on the impact of the scheme.

To help us assess the potential for non-response bias an optional single question was asked of non-respondents who did not wish to take part:

How many full time equivalents work within your organisation on renewable heat technologies?

Response rates

The survey resulted in 327 responses, with a response rate of 21 per cent. The breakdown of responses can be seen in the tables below.

Table 8: Overall fieldwork response

	N	% of total
Issued	1,544	100
Productive	327	21
Refusal ¹⁰	40	0.02%

⁹ Many questions are conditional follow-up questions.

¹⁰ This figure is based on the number of potential respondents who declined to take part in the survey when followed by telephone. Of the remaining potential respondents, it is not known how many declined to take part vs. the number who did not receive the recruitment email.

Table 9: Fieldwork response by key characteristics

	Number in issued sample	Number in achieved sample	Response rate %
By Fieldwork phase			
- Pilot	99	9	9
- Phase 1	844	229	27
- Phase 2	600	98	16
Technologies installed			
- Solar thermal only	330	34	10
- ASHP only	106	21	20
- GSHP only, or Solar thermal + ASHP + GSHP	398	70	18
- Biomass only	188	42	22
- Solar thermal + ASHP, or Solar thermal + GSHP	106	19	18
- Solar thermal + Biomass, Solar thermal + ASHP + Biomass, or Solar thermal + GSHP + Biomass	146	46	32
- Biomass + ASHP, Biomass + GSHP, or Biomass + ASHP + GSHP	55	11	20
- ASHP + GSHP	224	37	17
- Solar thermal + GSHP + ASHP + Biomass	234	47	20
Number of regions covered by companies (grouped)			
- 0 ¹¹	54	8	15
- 1-2	498	85	17
- 3-5	221	41	19

¹¹ For some companies no regions were reported in the MCS database. While this is not in itself meaningful, it was safer to retain this assignment than to impute what number of regions each company covered.

- 6+	1014	193	19
Length of time companies are registered on the MCS database (grouped)			
- Less than 18 months	254	54	21
- 18 months to 35 months	402	74	18
- 36 months to 53 months	628	105	17
- 54 months or more	503	94	19
Overall	1543	336	22

Full-time equivalent (FTE) data

Only 13 of the non-participants that did not wish to take part in the survey gave information on the number of FTE staff working on renewable heat. As a result, we were not able to use this data to assess the impact of non-response on non-response bias.

Weighting Strategy

Weighting is used to ensure that the responses achieved through the survey are representative of the population from which the sample is drawn. First, a selection weight is used to offset the effect of unequal selection probabilities which may result, for example, from oversampling. Then, a calibration weight is calculated to ensure that the weighted sampling distribution matches the population totals on key variables.

Selection weights

1,543 of the total 1,787 organisations were selected to be invited to take part in the survey, each with an equal probability. Based on this, a starting weight equal to the inverse of the probability of selection was computed.

Calibration weights

The calibration weighting made use of the three variables that were used in the sampling stratification. These are:

- The types of technologies a company installs (grouped);
- The number of regions covered by a company; and
- The time that the companies have been in the data base.

Table 10 shows the shows the weighted and unweighted distribution of key characteristics.

Table 10: Weighted and unweighted sample distribution by key characteristics

	Population %	Achieved sample % (unweighted)	Achieved sample % (weighted)
Technologies installed			
- Solar thermal only	18	10	18
- ASHP only	6	6	6
- GSHP only, or Solar thermal + ASHP + GSHP	22	21	22
- Biomass only	11	13	11
- Solar thermal + ASHP, or Solar thermal + GSHP	6	6	6
- Solar thermal + Biomass, Solar thermal + ASHP + Biomass, or Solar thermal + GSHP + Biomass	8	14	8
- Biomass + ASHP, Biomass + GSHP, or Biomass + ASHP + GSHP	3	3	3
- ASHP + GSHP	13	11	13
- Solar thermal + GSHP + ASHP + Biomass	13	14	13
Number of regions covered by companies (grouped)			
- 012	3	2	3
- 1-2	28	26	28
- 3-5	12	13	12
- 6+	57	59	57
Length of time companies are registered on the MCS database (grouped)			
- Less than 18 months	14	17	14
- 18 months to 35 months	22	23	22

¹² For some companies no regions were reported in the MCS database. While this is not in itself meaningful, it was safer to retain this assignment than to impute what number of regions each company covered.

- 36 months to 53 months	35	32	35
- 54 months or more	28	29	28

Analysis

Coding and data editing

The survey included a number of questions that allowed the submission of a free text “Other” option. These answers were reviewed by Eunomia researchers and where the text was similar to one of the existing question options, the free text response was coded back to the appropriate answer category. Responses that did not align with existing answer categories remained coded as “Other.”

No other data editing took place.

Significance Testing

Differences between sub-groups are reported where significance tests carried out in SPSS 18.0 found the differences to be statistically significant at the 95% or above confidence level. Significance tests measure whether or not differences between groups reflect actual differences in the populations from which the sample was drawn.

Limitations

The survey achieved a response rate of 22 per cent. While calibration weighting allows adjustments to make the resulting representative of the original population from which it was drawn, the calibration weighting was limited by the small number of variables available in the population data/sample frame. In addition, any attitudinal non-response bias cannot be accounted for through weighting. The low response to the question asked of suppliers that did not want to take part in the survey means that we are not able to assess the impact of any non-response bias.

The survey was conducted based on an October 2014 snapshot of the MCS database. Our survey results are thus not entirely representative of the current population of MCS-registered installers, but it is of the population of MCS-registered installers in October 2014.

Annex A: Questionnaire

1. Which of the following technologies has your organisation installed?

[This is a multi-response item]

- Biomass boilers
- Solar thermal
- Air source heat pumps
- Ground source heat pumps
- Water source heat pumps
- Gas boilers
- Oil boilers
- Other [text input]
- None

2. What services does your organisation offer in respect of renewable heat technologies?

[This is a multi-response item]

- Manufacture the equipment
- Distribute the equipment
- Provide finance for the equipment
- Calculate the size of the equipment needed by customers
- Help decide the type of equipment needed by customers
- Install the equipment
- Operate the equipment
- Own the equipment
- Maintain and service the equipment
- Provide RHI application support
- Provide feedstock for the equipment
- Other [text input]
- None

3. Beyond heating, does your organisation offer any of the following services?

[This is a multi-response item]

- Install energy efficiency measures
- Undertake Green Deal assessments
- Install solar PV
- Install wind power
- Install hydroelectric power
- Other [text input]
- Don't know
- None

4. Which customer types does your organisation offer services to?

By **domestic** installations, we mean installations where a renewable heating installation serves a single private residential dwelling only. This does not include multiple residential dwellings served by one renewable heating installation (e.g. district heating) nor single residential dwellings which have been significantly adapted

for non-residential use.

All other installations would be classed as **non-domestic**, as per the definitions provided in the RHI regulations.

[This is a multi-response item]

- Domestic - individual householder
- Domestic - social landlord
- Domestic - private landlord
- Non-Domestic - units less than 45kW
- Non-Domestic - units greater than 45kW

[NON-DOMESTIC ONLY]

5. Which **non-domestic** sectors do you offer services to?

[This is a multi-response item]

- Agriculture
- Commercial
- Industrial
- Leisure
- Public

[NON-DOMESTIC UNITS GREATER THAN 45kW ONLY]

6. What is the largest sized installation your organization has installed in the **non-domestic** sector?

[This question requires input of a number]

7. How long has your organisation been installing renewable heat technologies?

[This is a single response item]

- Less than a year
- 1-2 years
- 3-5 years
- 6-10 years
- Over 10 years

8. How many employees (full time equivalents) work within your organisation on renewable heat technologies?

[This question requires input of a number]

[IF Q4 = ANY 'DOMESTIC']

9. How many renewable heat installations did your organisation install in 2014 in the **domestic** sector?

[This question requires input of a number]

[IF Q4 = AT LEAST ANY ONE 'NON-DOMESTIC' AND AT LEAST ANY ONE 'DOMESTIC']

10. How many renewable heat installations did your organisation install in 2014 in the **non-domestic** sector?

[This question requires input of a number]

11. How do you view the general level of skills in the renewable heat market?

[This is a single response item]

- Excellent
- Good
- Satisfactory
- Poor
- Don't know

[IF Q1='SOLAR THERMAL']

12. How do you view the availability of training (e.g. with regards to the installation and maintenance of technologies) for solar thermal technologies in the renewable heat market?

[This is a single response item]

- Excellent
- Good
- Satisfactory
- Poor
- Don't know

[IF Q1='BIOMASS BOILERS']

13. How do you view the availability of training (e.g. with regards to the installation and maintenance of technologies) for biomass technologies in the renewable heat market?

[This is a single response item]

- Excellent
- Good
- Satisfactory
- Poor
- Don't know

[IF Q1='GROUNDSOURCE HEAT PUMPS' OR 'WATER SOURCE HEAT PUMPS']

14. How do you view the availability of training (e.g. with regards to the installation and maintenance of technologies) for ground-source and/or water-source heat pump technologies in the renewable heat market?

[This is a single response item]

- Excellent
- Good
- Satisfactory
- Poor
- Don't know

[IF Q1='AIR SOURCE HEAT PUMPS']

15. How do you view the availability of training (e.g. with regards to the installation and maintenance of technologies) for air-source heat pump technologies in the renewable heat market?

[This is a single response item]

- Excellent
- Good

- Satisfactory
- Poor
- Don't know

16. What training have you completed on installing renewable heat technologies?

[This is a multi-response item]

- Practical training delivered in house
- Practical training delivered by an external agency
- Training provided by a manufacturer
- Academic qualification
- Vocational
- On the job
- Other [text input]
- None

[IF Q15= ANYTHING BUT 'NONE']

17. How confident does the training you have completed make you feel in respect to installing renewable heat technologies?

[This is a single response item]

- Very confident
- Confident
- Neither confident or unconfident
- Unconfident
- Very unconfident
- Don't know

[IF Q14= ANY 'DOMESTIC']

18. How has the overall demand for renewable heat technologies in the **domestic** sector changed since the start of 2013?

[This is a single response item]

- Increased significantly
- Increased slightly
- Neither increased or decreased

- Decreased slightly
- Decreased significantly
- Don't know

[IF Q18= 'INCREASED SLIGHTLY' OR 'INCREASED SIGNIFICANTLY']

19. How has your organisation responded to this change in demand?

[This is a multi-response item]

- Employed more people
- Trained more people
- Installed new technologies
- Absorbed the workload with existing spare capacity
- Worked harder
- Moved resource from other areas of the business
- Referred work to other organisations
- Other [text input]
- None
- It didn't impact our company directly

[IF Q14= ANY 'DOMESTIC' AND IF Q1='SOLAR THERMAL']

20. How do you envisage the demand for solar thermal technologies in the **domestic** market changing in the next two years?

[This is a single response item]

- Increase significantly
- Increase slightly
- Neither increase or decrease
- Decrease slightly
- Decrease significantly
- Don't know

[IF Q4 = ANY 'DOMESTIC' AND IF Q1= BIOMASS BOILERS']

21. How do you envisage the demand for biomass technologies in the **domestic** market changing in the next two years?

[This is a single response item]

- Increase significantly
- Increase slightly
- Neither increase or decrease
- Decrease slightly
- Decrease significantly
- Don't know

[IF Q4 = ANY 'DOMESTIC' AND IF Q1=GROUND SOURCE HEAT PUMPS' OR 'WATER SOURCE HEAT PUMPS']

22. How do you envisage the demand for ground-source and/or water-source heat pump technologies in the **domestic** market changing in the next two years?

[This is a single response item]

- Increase significantly
- Increase slightly
- Neither increase or decrease
- Decrease slightly
- Decrease significantly
- Don't know

[IF Q4 = ANY 'DOMESTIC' AND IF Q1=AIR SOURCE HEAT PUMPS']

23. How do you envisage the demand for air-source heat pump technologies in the **domestic** market changing in the next two years?

[This is a single response item]

- Increase significantly
- Increase slightly
- Neither increase or decrease
- Decrease slightly
- Decrease significantly
- Don't know

[IF ANSWERED 'INCREASED SLIGHTLY' OR 'INCREASED SIGNIFICANTLY' TO ANY OF Q20 - Q23]

24. How does your organisation plan to respond to this change in demand?

[This is a multi-response item]

- Employ more people
- Train more people
- Install new technologies
- Absorb the workload with existing spare capacity
- Work harder
- Move resource from other areas of the business
- Refer work to other organisations
- Other [text input]
- None

[IF Q4 = ANY 'NON-DOMESTIC']

25. How has the overall demand for renewable heat technologies in the **non-domestic** sector changed since the start of 2013?

[This is a single response item]

- Increased significantly
- Increased slightly
- Neither increased or decreased
- Decreased slightly
- Decreased significantly
- Don't know

[IF Q25 = 'INCREASED SLIGHTLY' OR 'INCREASED SIGNIFICANTLY']

26. How has your organisation responded to this change in demand?

[This is a multi-response item]

- Employed more people
- Trained more people
- Installed new technologies
- Absorbed the workload with existing spare capacity

- Worked harder
- Moved resource from other areas of the business
- Referred work to other organisations
- Other [text input]
- None

[IF Q4 = ANY 'NON-DOMESTIC']

27. How do you envisage the demand for renewable heating systems in the **non-domestic** market changing in the next two years?

[This is a single response item]

- Increase significantly
- Increase slightly
- Neither increase or decrease
- Decrease slightly
- Decrease significantly
- Don't know

[IF Q27 = 'INCREASED SLIGHTLY' OR 'INCREASED SIGNIFICANTLY']

28. How does your organisation plan to respond to this change in demand?

[This is a multi-response item]

- Employ more people
- Train more people
- Install new technologies
- Absorb the workload with existing spare capacity
- Work harder
- Move resource from other areas of the business
- Refer work to other organisations
- Other [text input]
- None

[IF Q4 = ANY 'DOMESTIC']

29. For the **domestic** sector, has the overall cost of installation changed over the past two years?

This includes the costs of equipment and installation.

[This is a single response item]

- Increased significantly
- Increased slightly
- Neither increased or decreased
- Decreased slightly
- Decreased significantly
- Don't know

[IF Q29 = 'ANY INCREASED']

30. What aspect has experienced the most significant change?

[This is a single response item]

- Costs of equipment
- Cost of labour
- Cost of finance
- Cost of travel
- Cost of accreditation under the MCS
- Cost of accreditation under other schemes
- Other [text input]
- Don't know

[IF Q29 = 'ANY DECREASED']

31. What aspect has experienced the most significant change?

[This is a single response item]

- Costs of equipment
- Cost of labour
- Cost of finance
- Cost of travel
- Cost of accreditation under the MCS
- Cost of accreditation under other schemes
- Other [text input]

- Don't know

[IF Q4 = ANY 'NON-DOMESTIC']

32. For the **non-domestic** sector, has the overall cost of installation changed over the past two years?

This includes the costs of equipment and installation.

[This is a single response item]

- Increased significantly
- Increased slightly
- Neither increased or decreased
- Decreased slightly
- Decreased significantly
- Don't know

[IF Q32 = 'ANY INCREASED']

33. What aspect has experienced the most significant change?

[This is a single response item]

- Costs of equipment
- Cost of labour
- Cost of finance
- Cost of travel
- Cost of accreditation under the MCS
- Cost of accreditation under other schemes
- Other [text input]
- Don't know

[IF Q32 = 'ANY DECREASED']

34. What aspect has experienced the most significant change?

[This is a single response item]

- Costs of equipment
- Cost of labour
- Cost of finance
- Cost of travel
- Cost of accreditation under the MCS

- Cost of accreditation under other schemes
- Other [text input]
- Don't know

[IF Q4 = ANY 'DOMESTIC']

35. The next few questions focus on the customer journey. That is, the steps involved from the initial requirement for a new heating system to the process of choosing and installing one.

Which would you say is the most common motivation behind domestic customers' demand for renewable heat technologies?

[This is a single response item]

- Technical suitability of the technologies
- Financial impact of the technologies, irrespective of the RHI
- Financial impact of the technologies, including RHI payments
- Legislative requirements
- Environmental motivations
- Other [text input]
- Don't know

[IF Q4 = ANY 'DOMESTIC']

36. How do most potential **domestic** customers hear about the renewable heat services that you offer?

[This is a single response item]

- Advertising (e.g. flyers, newspaper/radio adverts)
- Sales call
- Online search engine
- MCS register
- Business directory
- Recommendation by another customer
- Trade shows
- Via a Green Deal assessment
- Via another aspect of your work
- Recommendation by another installer
- Recommendation by a manufacturer
- Having driven/walked past your premises
- Through your website

- Other [text input]
- Don't know

[IF Q4 = ANY 'DOMESTIC']

37. What proportion of potential **domestic** customers do **not** go on to install renewable heat technologies from your organisation?

[This is a single response item]

- A lot
- Some
- A few
- None
- Don't know

[IF Q4 = ANY 'DOMESTIC']

38. Out of the potential **domestic** customers that didn't install a renewable heat technology, how many had knowledge of the RHI?

[This is a single response item]

- A lot
- Some
- A few
- None
- Don't know

[IF Q4 = ANY 'DOMESTIC']

39. For those potential **domestic** customers who enquire about renewable heat technologies but do not go on to install them, how do they fall into the following categories?

[This item requests a list of numbers]

- Enquire with no site visit
- Receive a site visit with no quotation and have no knowledge of the RHI
- Receive a site visit and a quotation

- Other [text input]
- Don't know

[IF Q4 = ANY 'DOMESTIC']

40. In your opinion, what are the issues that prevent these potential **domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- Financial
- Knowledge and understanding
- Technical (e.g. suitability of technology for property)
- Legislative (e.g. planning permission)
- RHI (e.g. low tariff payments)
- Other [text input]
- Don't know

[IF Q40 = 'FINANCIAL']

41. In your opinion, what types of financial barriers prevent these potential **domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- Upfront costs of renewable heating technologies are too expensive
- Running costs of renewable heating technologies are too expensive
- Unable to gain access to suitable finance
- Other [text input]
- Don't know

[IF Q40 = 'KNOWLEDGE AND UNDERSTANDING']

42. In your opinion, what types of knowledge and awareness barriers prevents these potential **domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- A lack of knowledge about how to operate renewable heat technologies
- A lack of awareness of how reliable renewable heat technologies will be
- A lack of awareness of whether the renewable heat technologies will heat the building

- A lack of awareness of system costs
- A lack of confidence in the supply chain (for biomass)
- A lack of confidence in after sales service and maintenance
- Other [text input]
- Don't know

[IF Q40 = 'TECHNICAL']

43. In your opinion, what types of technical barriers prevent these potential **domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- Alternatives are technically more suitable for potential customers' premises.
- The maintenance associated with renewable heat technologies is too burdensome
- Installing a renewable heat technology creates too much upheaval and disruption
- Space requirements are too large
- Other [text input]
- Don't know

[IF Q40 = 'LEGISLATIVE ']

44. In your opinion, what types of legislative barriers prevents these potential **domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- A requirement for planning permission
- A requirement for a Building Control Notice
- A requirement for District Network Operator (DNO) approval
- Other [text input]
- Don't know

[IF Q40 = 'RHI ']

45. In your opinion, what types of RHI-related barriers prevents these potential **domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- Administrative effort associated with the RHI is too burdensome
- Uncertainties associated with receiving RHI payments
- A lack of knowledge about the RHI

- Other [text input]
- Don't know

[IF Q4 = ANY 'NON-DOMESTIC']

46. Which would you say is the most common motivation behind **non-domestic** customers' demand for renewable heat technologies?

[This is a single response item]

- Technical suitability of the technologies
- Financial impact of the technologies, irrespective of the RHI
- Financial impact of the technologies, including possible RHI payments
- Legislative requirements
- Environmental motivations
- Other [text input]
- Don't know

[IF Q4 = ANY 'NON-DOMESTIC']

47. How do most potential **non-domestic** customers hear about the renewable heat services that you offer?

[This is a single response item]

- Advertising (e.g. flyers, newspaper/radio adverts)
- Sales call
- Online search engine
- MCS register
- Business directory
- Recommendation by another customer
- Trade shows
- Via another aspect of your work
- Recommendation by another installer
- Recommendation by a manufacturer
- Having driven/walked past your premises
- Through your website
- Other [text input]

- Don't know

[IF Q4 = ANY 'NON-DOMESTIC']

48. What proportion of potential **non-domestic** customers do not go on to install renewable heat technologies from your organisation?

[This is a single response item]

- A lot
- Some
- A few
- None
- Don't know

[IF Q4 = ANY 'NON-DOMESTIC']

49. Out of the potential **non-domestic** customers that didn't install a renewable heat technology, how many had knowledge of the RHI?

[This is a single response item]

- A lot
- Some
- A few
- None
- Don't know

[IF Q4 = ANY 'NON-DOMESTIC']

50. For those potential **non-domestic** customers who enquire about renewable heat technologies but do not go on to install them, how do they fall into the following categories?

[This item requests a list of numbers]

- Enquire with no site visit
- Receive a site visit with no quotation
- Receive a site visit and a quotation
- Other [text input]
- Don't know

[IF Q4 = ANY 'NON-DOMESTIC']

51. In your opinion, what is it that prevents these potential **non-domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- Financial
- Knowledge and understanding
- Technical (e.g. suitability of technology for property)
- Legislative (e.g. planning permission)
- RHI (e.g. low tariff payments)
- Other [text input]
- Don't know

[IF Q51 = 'FINANCIAL']

52. In your opinion, what types of financial barriers prevents these potential **non-domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- Upfront costs of renewable heating technologies are too expensive
- Overall costs of renewable heating technologies are too expensive
- Unable to gain access to suitable finance
- Other [text input]
- Don't know

[IF Q51 ='KNOWLEDGE AND UNDERSTANDING']

53. In your opinion, what types of knowledge and awareness barriers prevents these potential **non-domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- A lack of knowledge about how to operate renewable heat technologies
- A lack of awareness of how reliable renewable heat technologies will be
- A lack of confidence in the ability of renewable heat technologies to heat the building
- A lack of awareness of system costs
- A lack of confidence in the supply chain (for biomass)
- A lack of confidence in after sales service and maintenance
- Other [text input]
- Don't know

[IF Q51 = 'TECHNICAL']

54. In your opinion, what types of technical barriers prevents these potential **non-domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- Alternatives are technically more suitable for potential customers' premises.
- The maintenance associated with renewable heat technologies is too burdensome
- Installing a renewable heat technology creates too much upheaval and disruption
- Space requirements are too large
- Other [text input]
- Don't know

[IF Q51 = 'LEGISLATIVE']

55. In your opinion, what types of legislative barriers prevents these potential **non-domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- A requirement for planning permission
- A requirement for a Building Control Notice
- A requirement for District Network Operator (DNO) approval
- Other [text input]
- Don't know

[IF Q51 = 'RHI ']

56. In your opinion, what types of RHI-related barriers prevents these potential **non-domestic** customers from installing renewable heating technologies?

[This is a multi-response item]

- Administrative effort associated with the RHI is too burdensome
- Uncertainties associated with receiving RHI payments
- A lack of knowledge about the RHI
- Lower tariff payments for some technologies than others
- Other [text input]
- Don't know

57. Why do you feel this in the case?

[This is a multi-response item]

- No contractual disputes
- Good quality units supplied
- Fair pricing
- Helpful sales support
- Equipment delivered on time
- Good communication between parties
- Other [text input]
- Don't know

58. The following question relates to other installers of renewable heat technologies.

To what extent do you feel the renewable heat technology installer market is competitive?

[This is a single response item]

- Very competitive
- Competitive
- Neither competitive or uncompetitive
- Uncompetitive
- Very uncompetitive
- Don't know

[IF Q58 = 'VERY COMPETITIVE' OR 'COMPETITIVE']

59. What is the impact of this competition?

[This is a multi-response item]

- Installers have been required to offer additional services beyond renewable heat
- Installers have lowered their costs
- Installers sometimes provide a worse service

- Installers have provided better after installation service
- Installers have provided a wider variety of technologies
- Installers have marketed themselves more
- Installers have gone out of business
- Installers have moved out of the local area
- Other [text input]
- Don't know

[IF Q58 = 'VERY COMPETITIVE' OR 'COMPETITIVE']

60. To what would you say that this competition is attributable to?

[This is a multi-response item]

- Selling the same technologies as other installers
- An increasing number of installers
- Market domination by a small number of organisations
- Decreasing levels of demand in the sector
- Increasing levels of demand in the sector
- The RHI
- Other [text input]
- Don't know

[IF Q4 = ANY 'DOMESTIC']

61. These next questions are focussed on the Renewable Heat Incentive.

Which aspects of the domestic RHI process does your organisation typically help customers with?

[This is a multi-response item]

- Make the customer aware of the scheme
- Calculate the benefits of the scheme
- Help complete the application forms
- Provide information relating to the eligibility of the scheme
- Provide metering instructions
- Provide an EPC
- Provide a Green Deal Advice Report
- Provide a heat emitter guide
- Other [text input]

- Don't know

[IF Q4 = ANY 'NON-DOMESTIC']

62. Which aspects of the **non-domestic** RHI process does your organisation typically help with?

[This is a multi-response item]

- Make the customer aware of the scheme
- Calculate the benefits of the scheme
- Help complete the application forms
- Help identify the location of the meter
- Provide meter readings
- Help complete the annual declaration
- Other [text input]
- Don't know

[IF Q12 = IS NOT 'DON'T KNOW']

63. How do you feel the general level of skills in the renewable heat market has changed since the start of the RHI?

[This is a single response item]

- Increased significantly
- Increased slightly
- Neither increased or decreased
- Decreased slightly
- Decreased significantly
- Don't know

[IF Q13-16 = ARE NOT ALL 'DON'T KNOW']

64. How do you feel the general level of training in the renewable heat market has changed since the start of the RHI?

[This is a single response item]

- Increased significantly
- Increased slightly
- Neither increased or decreased
- Decreased slightly
- Decreased significantly
- Don't know

[IF Q4 = ANY 'DOMESTIC']

65. Can you estimate how many of the units you have installed over the past two years would have gone ahead without the **domestic** RHI?

[This is a single response item]

- All
- The majority
- About half
- A minority
- None
- Don't know

[IF Q4 = ANY 'NON-DOMESTIC']

66. How many of the units you have installed over the past two years would have gone ahead without the **non-domestic** RHI?

[This is a single response item]

- All
- The majority
- About half
- A minority
- None
- Don't know

67. In your opinion, what has the impact of the RHI been?

[This is a single response item]

- Positive
- Negative
- Positive and negative
- Don't know

[IF Q67 = 'POSITIVE' OR 'POSITIVE AND NEGATIVE']

68. What types of positive impacts have been observed?

[This is a multi-response item]

- Increase in enquiries for renewable heating technologies
- Increase in sales
- Greater range of models available
- Opened new markets
- Improved quality of installations
- Improved quality of technologies
- Other [text input]
- Don't know

[IF Q67 = 'NEGATIVE' OR 'POSITIVE AND NEGATIVE']

69. What types of negative impacts have been observed?

[This is a multi-response item]

- Generation of heat where it wasn't previously required
- Increased unwanted sales approaches
- An increase in the number of lower quality technologies on the market
- Sizing of installations at top of RHI tariff bands'
- A decrease in the quality of service that installers are offering customers
- Uncertainty due to the nature of the degression mechanism.
- A decrease in the market share of some technologies due to lower tariff payments
- Other [text input]
- Don't know

70. To what extent do you feel that the MCS has changed the quality of installations?

[This is a single response item]

- Significantly improved
- Slightly improved
- Neither improved or deteriorated
- Slightly deteriorated
- Significantly deteriorated
- Don't know

71. Do you think that the costs and effort of being MCS accredited are proportional to the volume of renewable heating technology installations that it brings to your organisation?

[This is a single response item]

- Yes
- No
- Don't know

72. Do you think that the costs and effort associated with gaining MCS accreditation are a significant barrier to new installers?

[This is a single response item]

- Yes
- No
- Don't know

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