



Department  
of Energy &  
Climate Change

# CRC Energy Efficiency Scheme Evaluation

Appendix 1: Stage 2 report on quantitative research

July 2015

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URN 15D/369

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# Executive summary

## Introduction

Databuild are part of a consortium, led by CAG Consultants, that was commissioned by DECC to undertake research on the non-domestic energy efficiency landscape for medium to large scale organisations across the UK. The evaluation examined a number of areas including: how energy use is managed by organisations, what steps they may have taken or considered to improve energy efficiency in recent years and which factors influenced their decision making processes. One specific use of this research has been to evaluate phase 1 of the CRC Energy Efficiency Scheme, but the research may be used to inform other areas of policy in future.

Databuild led the quantitative workstream within this research, comprising data collection and analysis. This report presents the findings of the quantitative workstream, and forms an appendix to the overall synthesis report on the CRC evaluation. There are two further appendices presenting the findings of qualitative research undertaken by CAG Consultants and econometric research undertaken by Imperial College Business School.

The quantitative research had a number of key aims:

- to investigate attitudes to energy management;
- to examine any steps taken or considered to improve energy efficiency over recent years, and any factors influencing the decision making process
- to support the CRC evaluation, by examining whether there were significant differences in behaviour and awareness between CRC and non-CRC organisations, and;
- to gather evidence on CRC participants' experiences of the CRC scheme.

The CRC evaluation aimed to assess the impact of CRC phase 1, while also evaluating the delivery process for the final part of phase 1. It was therefore both a formative and a summative evaluation, with four main objectives:

A: Assess the extent that the CRC has delivered reductions in emissions by the take-up of energy efficiency measures.

B: Identify the barriers and drivers to energy efficiency and assess the extent to which the CRC has overcome barriers and delivered drivers.

C: Assess whether the CRC has delivered abatement in a cost-effective manner.

D: Identify how the CRC has been delivered and whether it has been administered effectively.

The quantitative survey generated data on both the 'hard' (for example the introduction of energy efficient technologies) and 'soft' (behavioural focus) measures, taken by the surveyed organisations. The quantitative survey will, to varying degrees, help address each of the four research objectives of the CRC evaluation.

The quantitative research involved Databuild staff undertaking 904 quantitative interviews with energy managers (or their equivalent). These included approximately 500 organisations covered by the CRC, 100 covered by full CCA and EU ETS exemptions, and 300 information declarers<sup>1</sup> outside these schemes. The sampling frame was based on a database provided by the Environment Agency (EA) of organisations which had half-hourly electricity meters in 2008. Interviews lasted 26 minutes on average. Fieldwork was undertaken between September and November 2014.

As many of the question areas in the survey were designed to contribute evidence towards multiple research objectives, and have been used in conjunction with evidence from other work streams, we have structured the main findings and analysis section of the report around the survey questions. The implications for each evaluation objective are summarised below, and discussed further in section 4 of the report.

## Findings and analysis

The findings of quantitative research in relation to the four evaluation objectives are summarised below. Where differences between groups are highlighted they are statistically significant at the 5% significance level unless otherwise noted.

### **A: Assess the extent that the CRC has delivered reductions in emissions by the take-up of energy efficiency measures.**

There was robust<sup>2</sup> evidence from the quantitative data collected, to support the view that the CRC scheme had led to an increased level of take-up of some energy efficiency measures. Specifically:

- more private sector participants from the CRC scheme appeared to be taking increased action on energy efficiency compared to information declarers; and
- the CRC was mentioned as one of a range of influences that have contributed to an increased amount of action organisations, both private and public sector, take on energy efficiency.<sup>3</sup>

There was evidence from the quantitative data collected, to support the view that some observed improvements in energy management practices and capacity could be attributed to the scheme. Specifically:

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<sup>1</sup> Organisations which, in 2008, had one or more Half Hourly electricity Meters settled on the half hourly market, but consumed less than 6,000 MWh per year (the threshold for CRC participation). These organisations were required to register and perform an information disclosure, but were not required to participate in the CRC. Information declarers were included in the survey to provide a comparison group for CRC participants.

<sup>2</sup> Throughout this report, the term 'robust' means 'statistically robust' at the 95% confidence level.

<sup>3</sup> Where not stated as either private or public sectors, the results apply to both sectors.

- more CRC participants were undertaking both carbon management and reporting activities compared to information declarers;
- more private sector CRC participants had carried out an energy audit compared to private sector information declarers;
- more CRC participant organisations reported that they forecast energy use routinely than information declarers; and
- more private sector CRC participants than information declarers reported having staff with performance metrics or objectives related to energy efficiency (e.g. staff bonuses).

There was robust evidence to support the view that observed increases in the strategic board level awareness of energy efficiency, and the priority attributed to this issue, could be attributed to the CRC scheme:

- more CRC participants in the private sector reported that energy efficiency had become a higher priority since 2010;
- board/senior management members in private sector participant organisations were reported to be considering energy efficiency more often now (compared with four years ago) than those in organisations outside of the CRC; and
- more private sector participants were finding it easier to secure board/senior management approval for investments in energy efficient measures (compared to four years ago) compared with private sector information declarers.

**B: Identify the barriers and drivers to energy efficiency and assess the extent to which the CRC has overcome barriers and delivered drivers.**

The cost of energy and energy prices was the most mentioned factor, across all organisations, influencing investment in energy efficiency.

When looking at all types of organisation, the CRC scheme was mentioned, when prompted, by 56% of energy managers as having had a positive influence on investment in energy efficiency.

The CRC scheme played an important role in the reported increase in investment in energy efficiency for participants: it was mentioned by 74% of private sector participants, and 81% of public sector participants.

There was robust evidence to suggest that those private sector participants who were most influenced by the CRC behavioural drivers for change (cost, awareness, and reputation) were significantly more likely to be implementing energy efficiency measures, with positive changes in the priority of energy efficiency at board level, than those private sector participants not influenced by the CRC behavioural drivers.

There were common barriers reported by all types of participant but there were pronounced differences in the scale with which they applied to public and private sector organisations, irrespective of their CRC status.



**C: Assess whether the CRC has delivered abatement in a cost-effective manner.**

This objective is addressed in the synthesis report, using quantitative survey data on the take-up of different energy efficiency measures in combination with data from other sources.

**D: Identify how the CRC has been delivered and whether it has been administered effectively.**

There were mixed messages about the effectiveness of CRC delivery and administration.

Just under half of CRC participants thought that the scheme was delivered efficiently and consistently. More than 60% of participants found reporting of energy use data for the CRC straightforward, and just under two-thirds of CRC participants found the process of reporting on the CRC straightforward and find buying and surrendering allowances clear.

However, 60% of energy managers across both public and private sectors disagreed that the CRC requirements were easy to understand. This may relate more to the design of the scheme than to the effectiveness of administration.

# 1. Introduction

Databuild are part of a consortium, led by CAG Consultants, that was commissioned by DECC to undertake research on the non-domestic energy efficiency landscape for medium to large scale organisations across the UK. The research examined a number of areas including: how energy use is managed by organisations, what steps they may have taken or considered to improve energy efficiency in recent years and which factors influenced their decision making processes. One specific use of this research has been to evaluate phase 1 of the CRC Energy Efficiency Scheme, but the research may be used to inform other areas of policy in future.

Databuild led the quantitative workstream within this research, comprising data collection and analysis. This report presents the findings of the quantitative workstream, and forms an appendix to the overall synthesis report on the CRC evaluation. There are two further appendices presenting the findings of qualitative research undertaken by CAG Consultants and econometric research undertaken by Imperial College Business School.

The CRC was designed to drive energy efficiency and reduce carbon emissions in large non-intensive energy users, both public and private sector, across the UK. Collectively these are estimated to be responsible for around 10% of the UK's greenhouse gas emissions. The CRC aimed to encourage take-up of cost-effective energy efficiency opportunities through the application of a tailored combination of drivers.

Qualification for CRC was based on electricity usage. Organisations were subject to the scheme if during 2008 they had at least one meter settled on the half-hourly market and consumed over 6,000 megawatt-hours (MWh) of qualifying electricity through half-hourly meters or dynamic supplies. Qualifying organisations have to comply legally with the scheme or face financial and other penalties.

To assess the impact of the CRC on energy use and carbon emissions, it was important to explore what would have happened in the absence of the CRC. This evaluation developed a counterfactual group comprising 'information-declarers'. These were organisations with half-hourly electricity meters which were obliged to report their electricity consumption in 2008 but which fell below the 6,000 MWh threshold in that year and were therefore not included in the CRC.

The evaluation of the CRC was commissioned to establish the impact of the CRC and specifically to address the following objectives:

- A: Assess the extent that the CRC has delivered reductions in emissions by the take-up of energy efficiency measures.
- B: Identify the barriers and drivers to energy efficiency and assess the extent to which the CRC has overcome barriers and delivered drivers.
- C: Assess whether the CRC delivered abatement in a cost-effective manner.
- D: Identify how the CRC has been delivered and whether it has been administered effectively.

This report details the findings of the quantitative research undertaken in stage 2<sup>4</sup> of the evaluation, which explored CRC influences in the context of wider behaviour on energy efficiency. The quantitative research has been undertaken in parallel with two other workstreams, namely qualitative research and econometric research. The findings of these workstreams are presented in separate appendices. An overall synthesis of findings from all the workstreams is presented in the main synthesis report.

The quantitative research had a number of key aims:

- to investigate attitudes to energy management;
- to examine any steps taken or considered to improve energy efficiency over recent years, and any factors influencing the decision making process;
- to support the CRC evaluation, by examining whether there were significant differences in behaviour and awareness between CRC and non-CRC organisations; and
- to gather evidence on CRC participants' experiences of the CRC scheme.

The quantitative survey generated data on both the 'hard' (for example the introduction of energy efficient technologies) and 'soft' (behavioural focus) measures taken by the surveyed organisations.

The remainder of this report is split into the following key sections:

- Section 2 presents an overview of the methodology
- Section 3 presents key findings from the quantitative survey and details the analysis undertaken
- Section 4 presents the conclusions of the research

This report also includes the following annexes:

- Annex 1 – A table summarising the actions taken, planned and considered by organisations interviewed in the quantitative survey
- Annex 2 – presents the survey script used.

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<sup>4</sup> See 'Final Report on Scoping Stage' for full description of the different evaluation stages, and how the quantitative research fits the wider evaluation

## 2. Methodology

### 2.1 Overview

The quantitative research involved Databuild staff undertaking 904 quantitative telephone interviews with energy managers (or their equivalent) within a range of private and public organisations, including CRC and non-CRC organisations. Interviews lasted 26 minutes on average. The questionnaire was developed in collaboration with DECC and the evaluation consortium, and was piloted during August 2014. No interviews from the pilot study were included in any of the results presented in this report, as the survey questionnaire was revised after the pilot. The main phase of fieldwork was undertaken between September and November 2014.

The CRC evaluation was a key purpose<sup>5</sup> for this survey, so a stratified random sample designed to include CRC and non-CRC organisations was drawn from databases supplied by the Environment Agency. The databases listed all half-hourly electricity meters in the UK in 2008, including those belonging to organisations which were required to register for phase 1 of the CRC (because they exceeded the threshold of 6,000 MWh of electricity consumption in that year) and those belonging to organisations which were below this threshold (known as 'information declarers'<sup>6</sup>). Some of the organisations which were required to register for phase 1 of the CRC were given exemptions from CRC payments, provided that a certain proportion of their carbon emissions were covered by a Climate Change Agreement (CCA) or the EU Emissions Trading Scheme (EU ETS). These tended to be organisations which used energy more intensively.

The rationale for the overall sampling approach was as follows:

- initial discussions with DECC, prior to the commencement of the quantitative research, suggested that the telephone survey design must (as a minimum) allow for separate conclusions to be drawn for private and public sector organisations. Therefore the sample was stratified into public and non-public sector organisations to ensure sufficient levels of representation of each, and to boost representation of subgroups of particular interest to DECC;
- as evaluation of the CRC was a key purpose for this survey, and previous research with CRC participants, conducted by Ipsos MORI<sup>7</sup>, identified clear differences between participants with relatively high electricity usage and those with lower usage. Therefore,

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<sup>5</sup> While the general research on energy efficiency has been used for CRC research purposes in the first instance, it may be used to inform other areas of policy in future.

<sup>6</sup> Organisations which, in 2008, had one or more Half Hourly electricity Meters settled on the half hourly market, but consumed less than 6,000 MWh per year (the threshold for CRC participation). These organisations were required to register and perform an information disclosure, but were not required to participate in the CRC. Information declarers were included in the survey to provide a comparison group for CRC participants.

<sup>7</sup> Ipsos MORI, Survey of Energy Efficiency among Businesses 2011, DECC. (unpublished)

to ensure good representation within the sample of organisations across the spectrum of total electricity use:

- The sample of private sector participants was split into quartiles based on total electricity consumption in 2008<sup>8</sup> using the half hourly meter (HHM) database as an approximation for qualifying CRC consumption’;
- The sample of public sector participants was split into two groups, again based on the median electricity consumption in 2008<sup>9</sup> using the HHM database as an approximation for qualifying CRC consumption’.
- to ensure the sample included adequate representation for all CRC participants, it was agreed that a separate sample should be drawn from those organisations for which electricity consumption data were not available.

In order to obtain evidence regarding the impact of the CRC, it was agreed that the methodology should include the use of comparison groups to help explain the counterfactual (as far as possible). It is not possible to devise a perfect comparison group for CRC participants – as all organisations meeting the criteria for phase 1 were required to participate in the scheme (so by definition any organisations falling outside are different in some respect to participants).

To construct the sample for the core comparison group it was decided to approach a random selection of information declarers whose electricity consumption in 2008 was at least 3,000 MWh for private sector and 2,000 MWh for public sector. The reason for selecting consumption thresholds was to ensure that information declarers with relatively low energy consumption were not included in the comparison group, as they might be expected to behave differently from CRC participants on these grounds alone<sup>10</sup>.

It was also agreed that a separate sample of organisations which registered for CRC but have exemptions from allowances owing to CCA (Group/General) or EU ETS participation should be drawn and provide some information on behaviours within these schemes. A feature of this additional comparison group is that they tend to be more intensive energy users than many CRC participants. Organisations with partial exemptions from CRC owing to CCAs (i.e. ‘member only’ CCAs) were included in the CRC sample.

The sample was divided into ten strata as illustrated in the table below, which also includes the population of organisations within each stratum and number of interviews conducted. As a key use of this research was evaluation of phase 1 of the CRC scheme, the sample was adjusted to exclude organisations which did not participate in phase 1 but became participants in phase 2 of the CRC.

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<sup>8</sup> Based on analysis of half hourly meter database supplied by DECC and the Environment Agency, the median HHM electricity consumption was used as a proxy for CRC qualifying consumption. In 2008, HHM electricity consumption for non-public sector participants was 21,049 MWh. The first quartile of electricity consumption was 9,332 MWh. The third quartile was 50,978 MWh. NB Phase 2 meter data was matched with the HHM data and used in instances where supply was not available from the information supplied for phase 1.

<sup>9</sup> Based on analysis of HHM data supplied by DECC and the Environment Agency, the median HHM electricity consumption in 2008 for public sector participants was 14,792.5 MWh.

<sup>10</sup> The reason the threshold was lowered to 2,000 MWh for the public sector was to provide us with a sample size that was sufficient to achieve a robust sample size. Using 3,000 MWh would have limited the available sample to such an extent that we would not have enough to carry out a sufficient number of interviews to provide for robust analysis.

CCA / EU ETS exempt?	Sector	CRC status	'Total Supply - matched with HHM database (MWh) in 2008' <sup>11</sup>	Population	Number of interviews conducted	% of pop. interviewed
<b>No or CCA member only exemptions</b>	Private/ Public	Participant	Not available	61	20	33%
	Private	Participant	At or above third quartile (i.e. top 25%)	402	102	25%
			At or above median, but below upper quartile	381	100	26%
			At or above first quartile, but below median	374	93	25%
			Below first quartile (i.e. bottom 25%)	274	88	32%
		Information declarers	More than 3,000 MWh	1227	214	17%
	Public	Participant	At or above median consumption for public sector participants	312	57	18%
			Below median consumption for public sector participants	288	52	18%
		Information declarers	More than 2,000 MWh <sup>12</sup>	247	79	32%
	<b>Organisations which registered for CRC but have exemptions from allowances owing to CCA (Group/General) or EU ETS participation</b>				657	99

**Table 1 - Population and number of interviews achieved in each stratum covered in the quantitative survey (after removal of organisations that became participants in phase 2<sup>13</sup>)**

Organisations included in the sample were selected at random from within each of the categories described in column 3 of Table 1. The proportion of the population interviewed ranged from 15% for CRC registrants with CCA or EU ETS exemptions to 32% for CRC participants in the lowest quartile of electricity use.

To assess the suitability of our comparison groups we requested that Imperial College conduct analysis on our behalf looking at the average electricity intensity of each stratum covered in the survey. Using number of employees and establishment level electricity consumption in 2008 to provide an estimate of electricity intensity, we found that there is little difference in the electricity intensities of CRC participants and information declarers, as illustrated in Table 2.

The electricity intensity analysis also confirms that organisations which registered for CRC but have exemptions from allowances have a significantly higher electricity intensity than other groups covered in the survey. This should be kept in mind when interpreting the results presented in this report.

<sup>11</sup> Phase 2 meter data was matched with the half hourly meter database and used in instances where supply was not available from the information supplied for phase 1. NB Differences between the population figures for sub-groups split by electricity consumption (private & public sector participants) are due to the removal of phase 2 only participants from the population and the inclusion of organisations covered in stage 1 of the quantitative and qualitative research.

<sup>12</sup> Only 145 public sector information declarers were recorded as having more than 3,000 MWh, so we extended this category to include those with 2,000-3,000 MWh of consumption.

<sup>13</sup> It was identified that some organisations that were non-participants in phase 1 (information declarers and those with exemptions due to CCA or EU ETS participation) became participants in phase 2. A small number of these organisations were interviewed during the fieldwork (22) and removed from the survey sample and populations prior to analysis.

Electricity intensity in 2008 (GWh per employee)					
		Mean	Median	p95	Establishments
<b>All data</b>		0.09	0.01	0.25	20,302
<b>CRC establishment</b>		0.11	0.01	0.30	14,469
Quantitative strata	Private Sector CRC above 75th percentile	0.08	0.01	0.21	6,998
	Private Sector CRC 50-75th percentile	0.06	0.01	0.17	1,181
	Private Sector 25th to 50th percentile	0.04	0.01	0.12	789
	Private Sector 0 to 25th percentile	0.05	0.01	0.18	409
	Private sector information declarers above 3GWh in 2008	0.07	0.01	0.19	1,079
	Public sector above 50 percentile	0.15	0.01	0.57	742
	Public sector below 50 percentile	0.11	0.00	0.47	167
	Public sector information declarers above 2GWh in 2008	0.18	0.01	1.33	55
	CRC exemptions due to CCA/EU ETS participation	0.25	0.05	0.58	2,364
Interviewed Quant Strata	Private Sector CRC above 75th percentile	0.16	0.01	0.57	1,434
	Private Sector CRC 50-75th percentile	0.03	0.01	0.13	340
	Private Sector 25th to 50th percentile	0.06	0.01	0.25	259
	Private Sector 0 to 25th percentile	0.05	0.01	0.20	113
	Private sector information declarers above 3GWh in 2008	0.07	0.02	0.18	227
	Public sector above 50 percentile	0.06	0.01	0.25	136
	Public sector below 50 percentile	0.10	0.01	0.51	33
	Public sector information declarers above 2GWh in 2008	0.17	0.01	1.33	29
	CRC exemptions due to CCA/EU ETS participation	1.25	0.06	2.14	164

**Table 2: Electrical intensity of CRC participants, information declarers and organisations with exemptions**

## 2.2 Response rate

Table 3 outlines the response rates achieved in each of the stratum covered in the survey. The response rate was calculated in the following way:

Number of completed interviews in each stratum

Total number of organisations within each stratum minus the number of unusable<sup>14</sup> contacts

CCA / EU ETS exempt?	Sector	CRC status	'Total Supply - matched with HHM database (MWh) in 2008'	Number of organisations approached for interview <sup>15</sup>	Response rate (%)
<b>No or CCA member only exemptions</b>	Private/public	Participant	Not available	55	36%
	Private	Participant	At or above third quartile (i.e. top 25%)	222	46%
			At or above median, but below upper quartile	218	46%
			At or above first quartile, but below median	216	43%
			Below first quartile (i.e. bottom 25%)	219	40%
		Information declarers	More than 3,000 MWh	852	26%
	Public	Participant	At or above median consumption for public sector participants	93	61%
			Below median consumption for public sector participants	89	58%
		Information declarers	More than 2,000 MWh	220	38%
	<b>Organisations which registered for CRC but have exemptions from allowances owing to CCA (Group/General) or EU ETS participation</b>				275

**Table 3: Response rates achieved in each stratum covered in the quantitative survey**

<sup>14</sup> Unusable contacts include those businesses that were no longer in operation.

<sup>15</sup> After unusable records had been removed



## 2.3 Respondent

The decision to survey energy managers (or equivalents) was informed by the outcomes of a pilot phase of research in August 2014. During the pilot it was found to be very difficult to secure the details of senior managers. On those occasions where it was possible to obtain contact details, the senior level managers were very difficult to engage with. In other cases it also became apparent that the energy manager was often the most senior person with energy management responsibility and more senior respondents would be unable to respond to some of the detailed questions about specific actions taken to improve energy efficiency. For these reasons DECC agreed to focus the quantitative element of the research solely on energy managers.

## 2.4 Questionnaire

Using a prepared questionnaire script, the telephone survey approach allowed the research team to gather information on energy management behaviour, energy efficiency measures taken, the drivers and barriers to energy efficiency faced by organisations (including the role of the CRC) and for the purposes of CRC evaluation, perspectives on the CRC scheme's administration. The use of a telephone survey, as opposed to an online survey, was chosen as it provided the opportunity to secure higher response rates and a higher quality of information. Selected verbatim from the interviews are included in the analysis section of this report. The questionnaire script used for the survey can be found in Annex 2.

## 2.5 Analysis and weighting

The survey data was weighted prior to analysis to adjust for under and over representation of particular sub-groups within the sample, and to enable us to draw conclusions for the population of participants as a whole.

Each interview was given a weight according to the sub-group from which it was drawn. The weight was calculated as follows:

Population of organisations in stratum X after removal of organisations that became participants in phase 2 (N)

Divided by

Number of organisations interviewed in stratum X, also after removal of organisations that became participants in phase 2<sup>16</sup> (n)

Table 4 overleaf summarises the population of each stratum covered in the survey, after the removal of organisations that were not participants in phase 1, but became participants in phase 2 (N), the number of interviews we completed with members of that population (n), and the weights we have applied to each group (N/n)

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<sup>16</sup> 22 interviews were excluded from the core analysis for this reason: ten private sector and five public sector organisations that were information declarers in phase 1, but became CRC participants in phase 2, and seven organisations that registered for CRC in phase 1 and received full exemptions from allowances owing to CCA (Group/General) or EU ETS participation, but subsequently became participants in phase 2 with reduced exemptions.

## 2. Methodology

CCA / EU ETS exempt?	Sector	CRC status	'Total Supply - matched with HHM database (MWh) in 2008' <sup>17</sup>	Population (after removal of organisations that became participants in phase 2)	Number of interviews conducted (after removal of orgs that became participant in phase 2)	Un-scaled weight
No or CCA member only exemptions	Private/public	Participant	Not available	61	20	0.65
	Private	Participant	At or above third quartile (i.e. top 25%)	402	102	0.84
			At or above median, but below upper quartile	381	100	0.82
			At or above first quartile, but below median	374	93	0.86
			Below first quartile (i.e. bottom 25%)	274	88	0.67
		Information declarers	More than 3,000 MWh	1227	214	1.23
	Public	Participant	At or above median consumption for public sector participants	312	57	1.17
			Below median consumption for public sector participants	288	52	1.19
		Information declarers	More than 2,000 MWh <sup>18</sup>	247	79	0.67
	<b>Organisations which registered for CRC but have exemptions from allowances owing to CCA (Group/General) or EU ETS participation</b>				657	99

**Table 4: Summary of the population of each stratum, number of completed interviews and weight applied to each stratum**

## 2.6 Limitations of the methodology

### 2.6.1 Energy managers

As we were only able to interview energy managers, responses and therefore findings are likely to have been different from those obtained if we had approached other people in the organisation. For example, energy managers may view energy efficiency initiatives more positively than other staff in their organisation, owing to their professional commitment to this field. We tried to overcome this problem by interviewing senior managers but found out at the pilot stage that this was not feasible. However, senior manager interviews have formed part of the qualitative research stream, which has allowed exploration of this issue.

<sup>17</sup> Phase 2 meter data was matched with the half hourly meter database and used in instances where supply was not available from the information supplied for phase 1. NB Differences between the population figures for sub-groups split by electricity consumption (private and public sector participants) are due to the removal of phase 2 only participants from the population and the inclusion of organisations covered in stage 1 of the quantitative and qualitative research.

<sup>18</sup> Only 145 public sector information declarers were recorded as having more than 3,000 MWh, so we extended this category to include those with 2,000-3,000 MWh of consumption.

## 2.6.2 Comparison groups for CRC Evaluation

The comparison groups used for CRC evaluation purposes so far are not perfect. It is difficult to assess the extent to which differences in behaviour between CRC participants and information declarers, or between CRC participants and organisations with CCA/EU ETS exemptions, are attributable to the influence of the CRC or to intrinsic differences between the different sample groups (e.g. differences arising from the scale of the organisation or the energy intensity of their activities).

We would ideally like to analyse the quantitative findings for organisations with similar electricity intensities across different sector groups, to explore the influence of energy intensity on behaviour. The data presented in Table 2 suggests that CRC participants and information declarers have similar electricity intensities in terms of electricity consumption per employee, while those with CCA and EU ETS exemptions have higher electricity intensity. However, we do not have reliable data on the energy intensity of each respondent, as would be needed to analyse findings by energy intensity. And the sample sizes are not large enough to permit reliable analysis for detailed sector groupings.

## 2.6.3 Information declarers possibly paying for CRC allowances

Following the initial core analysis, further investigation of qualitative responses highlighted that a few organisations (n=4) who were marked as 'information declarers' on the Environment Agency database may have actually been paying for CRC allowances.

As this conclusion is based on feedback to one question, which may have been misinterpreted by the respondents, we retained them as part of the information declarer group, as defined by the Environment Agency database. The small number of organisations potentially affected by this issue would not change any overall results.

We have provided DECC with details on the organisations identified for further investigation.

## 2.6.4 Treatment of 'member only' CCA exemptions from CRC

Organisations which had partial exemptions from paying CRC allowances because of 'member only' CCA exemptions were included in the CRC group because they had experienced all elements of the CRC scheme and paid CRC allowances on some of their emissions. But there is a possibility that the 'CRC effect' might be conflated with a 'CCA effect' for this group. This group represented a modest proportion of the private sector CRC sample: 61 of the 383 organisations, slightly skewed towards the higher electricity consumption bands. We tested the sensitivity of key results to the exclusion of this group from the private sector CRC sample and found that there was little change. For example, the proportion of CRC respondents reporting an increase in energy efficiency action over the last four years barely changed, and there was a slight increase in the proportion of CRC respondents reporting an increase in awareness over the last four years. This may suggest that organisations with 'member only' CCAs had already been influenced by the CCA scheme prior to 2010 (which is plausible since the CCA scheme began in 2001), or that they were less influenced by the CRC owing to some parts of their business being exempt from the scheme. Whatever the explanation, we are confident that treating these organisations as part of the CRC group has not had a significant impact on our findings and may even be slightly conservative.

## 3. Findings and analysis

### 3.1 Introduction

As many of the question areas in the survey are designed to contribute evidence towards multiple research objectives, and used in conjunction with evidence from other work streams, we have structured this section of the report according to the questions asked in the survey.

Each question area has been analysed by comparison groups, with an examination of follow up questions as a means of exploring the impact of the CRC. Section 4 presents a final, deeper analysis for CRC evaluation purposes, which considers differences between the behaviour of CRC participants and comparison groups.

#### 3.1.1 Comparison groups and stratum

The main comparison groups used throughout the analysis are organisations who participated fully in the CRC scheme and those who were only information declarers. Organisations which registered for CRC but have exemptions (because of their level of CCA (Group/General) or EU ETS participation) have been shown as a separate group for reference.

A further level of analysis used the 10 strata as illustrated in Table 1, and are referenced throughout the analysis as 'DREA2' categories or sub-groups. These sub-groups help to identify differences between organisations within the same headline comparison group, based on their overall electricity consumption in 2008.

#### 3.1.2 Development of a comparison variable for deeper level of analysis

There are several ways by which the CRC scheme aims to affect organisational energy practices:

- by requiring reporting of energy use, so raising awareness of this information and encouraging energy management;
- by requiring this at a whole organisation level;
- through imposing additional cost on energy use; and,
- by creating reputational drivers for improved energy performance and for regulatory compliance.

The questionnaire included a number of key questions designed to investigate whether the key cost, awareness and reputational drivers of the CRC had any effect on participants. The answers to these questions were then used to create a proxy variable (BEH) for CRC participants which was used to conduct deeper analysis across relevant sections of the survey.

The questions used to create the proxies were related to whether the costs associated with CRC have a significant impact on the profitability of the organisation, what level of importance the organisation attaches to publicly available reports from the CRC (annual report publications)<sup>19</sup>, and whether the CRC had been mentioned as a factor for influencing increased awareness of energy efficiency. While these were not the only reputational drivers created by the CRC, it provides some measure of an organisation's perception of the CRC. Responses were coded into two groups:

- **BEH Group 1:** those who reported CRC costs having a significant or very significant impact on profitability, or, those who placed some or a high level of importance on reports from the CRC, or those who reported that the CRC had been a factor of increased organisational awareness of energy efficiency, or a combination of some or all of these drivers.
- **BEH Group 2:** all other participants (i.e. those who placed low significance to CRC costs and low importance to CRC reports, and did not mention CRC as a factor for increased awareness of energy efficiency).

### 3.1.3 Profile of organisations using comparison variable

The profile of CRC participants by each BEH group shows a good distribution across both public and private sector organisations: with 60% of CRC participants reporting a level of importance placed on CRC annual report publications or costs or mentioning CRC as a factor for increased awareness of energy efficiency, compared with 40% of those who do not; (61%; n=239, compared with 39%; n=152 for private sector), and (56%; n=68, compared with 44%; n=53 for public sector).

The profile of organisations by DREA2 strata, as illustrated in Figure 3.1 below, highlights that private sector organisations with smaller electricity consumption (i.e. strata 2d (private sector participants with electricity consumption below the first quartile in 2008) and private sector organisations with higher electricity consumption (i.e. strata 4a (public sector participants with electricity consumption at or above median consumption for public sector participants in 2008)) are more likely to suggest that CRC costs have a significant impact on their profitability<sup>20</sup> or to attach high importance to publicly available CRC documents or mention CRC as a reason for increased organisational energy awareness.

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<sup>19</sup> Questions 49 and 51.

<sup>20</sup> 'Profitability' – for public sector organisations our researchers translated to respondents that the question referred to the impact on costs, rather than profits.

### 3. Findings and analysis

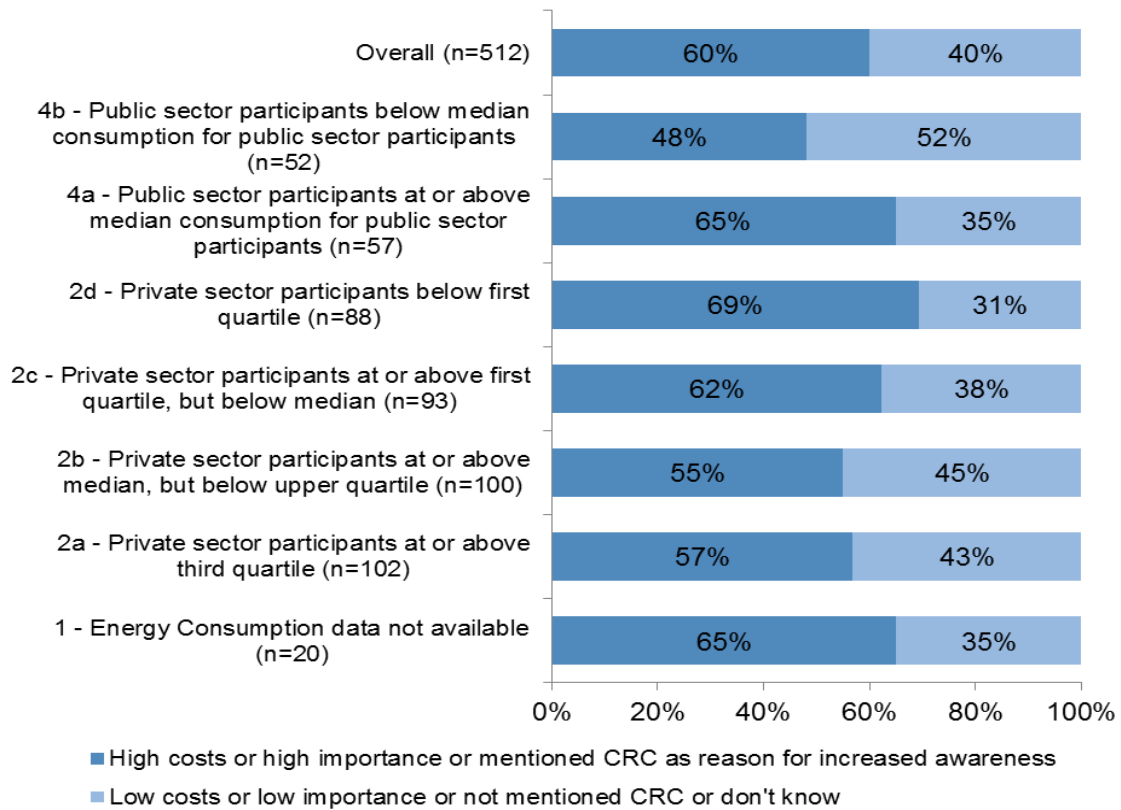


Figure 3.1: Participant organisation DREA2 category by comparison variable

## 3.2 Level of strategic priority attached to energy efficiency?

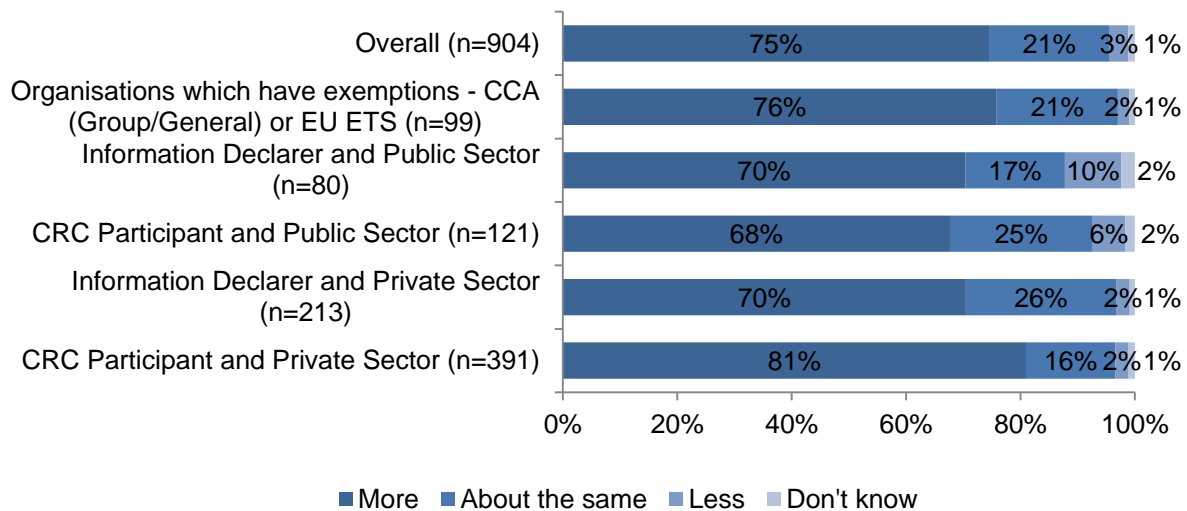
Energy managers were asked to rate the level of priority attributed to energy efficiency within their organisation as a whole, and whether this level of priority was the same at board/ senior management level. They were then asked whether they felt energy efficiency takes more or less priority in their organisation compared to four years ago. A final question probed energy managers as to why the level of priority had changed in their organisation.

There were no significant differences between groups when looking at the priority given to energy efficiency in organisations, and priority given to energy efficiency at board/ senior management level.

### 3.2.1 Changes in priority since 2010

**Error! Reference source not found.** illustrates the level of priority assigned to energy efficiency in organisations as a whole compared to four years ago. The majority of energy managers reported that the priority given to energy efficiency within their organisation had increased since 2010.

A greater percentage of CRC participants in the private sector reported an increase in priority since 2010 (81%; n=391) compared to information declarers in the private sector (70%; n=213).

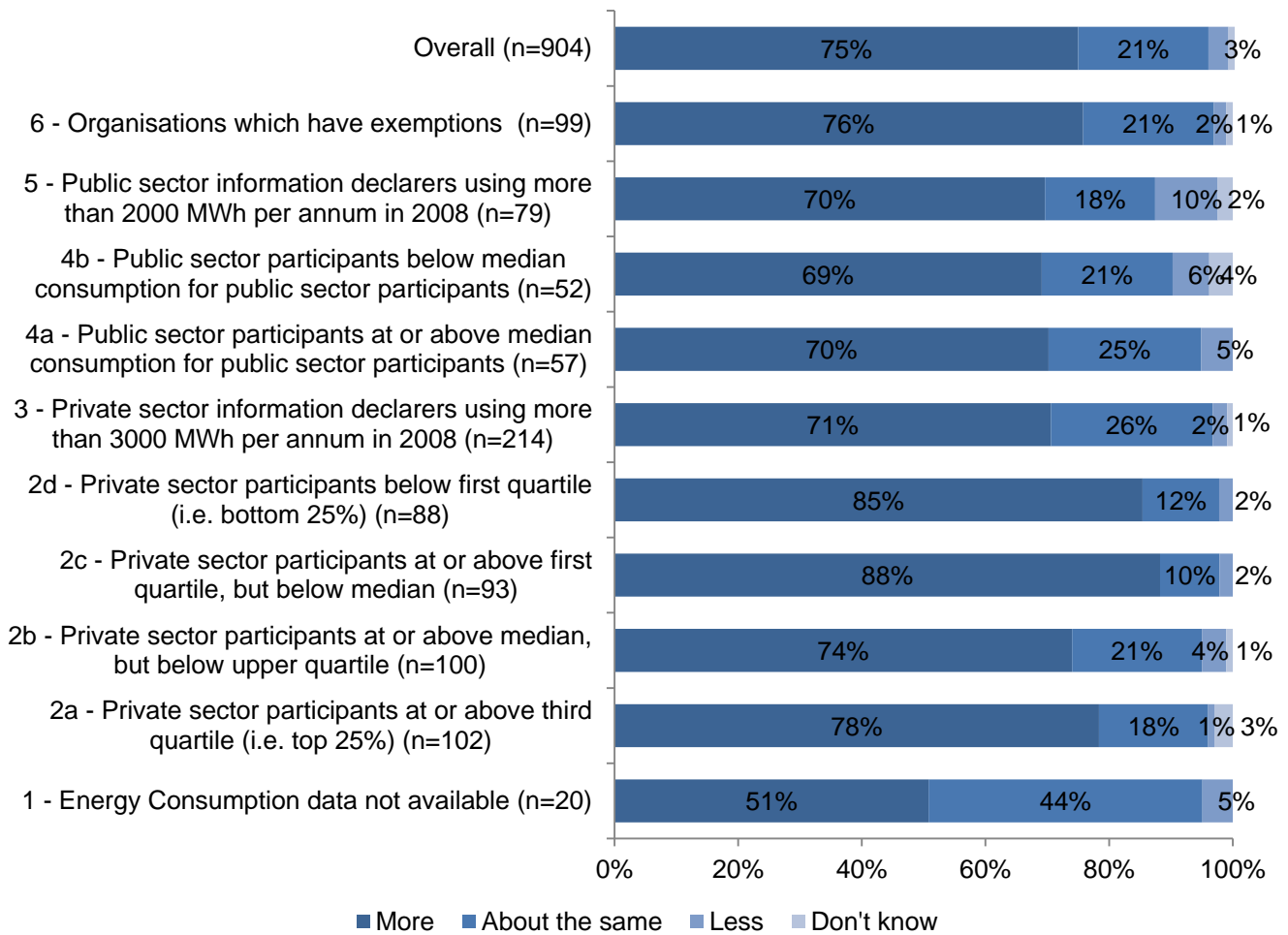


**Figure 3.2: Level of priority energy efficiency takes in organisations as a whole compared to four years ago**

Further analysis (as illustrated in Figure 3.3) indicates a high percentage of private sector participants with lower total electricity consumption (as indicated by their electricity consumption in 2008 being below the median for private sector participants) reporting that the priority given to energy efficiency had increased since 2010 compared to organisations with consumption at or above the median.

**Error! Reference source not found.** illustrates the level of priority energy efficiency takes in organisations as a whole compared to four years ago by DREA2 strata.

### 3. Findings and analysis



**Figure 3.3: Level of priority energy efficiency takes in organisations as a whole compared to four years ago by DREA2 group**

The percentage of energy managers reporting that the priority given to energy efficiency had increased was higher for private sector participants with electricity consumption at or above the median. This suggests that, whilst priority given to energy efficiency has increased for most organisations, it has increased more noticeably in private sector CRC participants with lower electricity consumption.

#### 3.2.3 Reason for change and influence of the CRC scheme

Energy managers suggested a number of reasons for the change in priority of energy efficiency within their organisations. The most important and frequently mentioned were: energy prices/costs, government policies/legislation other than the CRC, and external and internal demand for increased energy efficiency.

It is not possible to be precise about the influence of CRC compared to other factors. However the survey provides evidence that the CRC has played a role in contributing to the raised priority being given to energy efficiency. For example, where respondents say more priority is being given to energy efficiency compared to four years ago, 30% of private sector and 23% of public sector participants made some mention of the CRC scheme.



There were very few mentions of the CRC being the only reason for an increase in priority, with most comments focusing on the cost of CRC combined with other factors – for example, complying with the CRC and energy costs in general, other government legislation, or increased reporting requirements. This is illustrated by the following verbatim quotes:

- *I guess it's been driven by a number of things, one of which is the CRC, but also rising energy costs and just generally within the real estate industry sustainability has crept up the agenda.* (Participant, group 2c – Private sector participants at or above first quartile, but below median)
- *Partly CRC and the cost we incur with it, partly energy prices and their impact on profitability* (Participant, group 2c – Private sector participants at or above first quartile, but below median)
- *CRC brought it to the fore as well as the price increase in electricity* (Participant, group 2b – Private sector participants at or above median, but below upper quartile)

A number of respondents mentioned that the priority of energy efficiency had changed due to CRC and other legislation/ government policy:

- *Regulatory demands - the CRC scheme acted as a definite influence. We have taken the opportunities which have arisen from that to reduce our consumption and hence our costs.* (Participant, group 2c – Private sector participants at or above first quartile, but below median)
- *The most significant driver is the introduction of new legislation- for CRC so its cost avoidance. Spent £70,000 in one off invoice for CRC on top of what they have already paid.* (Participant, group 2c – Private sector participants at or above first quartile, but below median)
- *Increased legislation and increased cost. New phase of emissions trading scheme and CCA and CRC.* (Participant, group 2a – Private sector participants at or above third quartile (i.e. top 25%))

Other participants mentioned CRC requiring better reporting procedures:

- *CRC reporting requirements meant an awful lot more work to a verifiable standard.* (Participant, group 2b – Private sector participants at or above median, but below upper quartile)
- *More visible now largely due to CRC. CRC has driven that and responsible directors. Now understanding the need for correct reporting.* (Participant, group 2a – Private sector participants at or above third quartile (i.e. top 25%))

### 3. Findings and analysis

- *Probably since we have to do the carbon reporting for CRC and energy saving opportunity schemes, although we were trying to look at reducing.* (Participant, group 2c – Private sector participants at or above first quartile, but below median)

It appears that the process of declaring information prior to phase 1 of the CRC has contributed towards increased priority being given to energy efficiency by some information declarers in the private sector, in conjunction with other influences such as energy costs, other government policies, external and internal demand for increased energy efficiency. Seven per cent of private sector information declarers mentioned the CRC as a reason why the priority of energy efficiency had increased. These respondents focused on the CRC raising awareness internally and externally, and the associated costs the scheme would bring to their organisation.

Finally, there were a few (n=33) respondents who thought energy efficiency had reduced as a priority since 2010. All reductions of priority were to do with change in business or energy costs (with only a passing mention of CRC).

#### 3.2.4 Further analysis

Using the comparison variable (BEH) which utilises proxy questions for the behavioural drivers of the CRC scheme, we analysed whether energy efficiency takes more or less priority in CRC organisations compared to four years ago. More private sector participants in BEH group 1 (organisations that attach high importance to publicly available CRC documents or those that reported CRC costs have a significant impact on profitability or reported CRC as a reason for increased awareness in energy efficiency), reported that energy efficiency does take more priority in their organisation (87%; n=239), compared to those in BEH group 2 (71%; n=152).

### 3.3 Organisation's level of awareness of energy efficiency

Energy managers were asked, in their opinion, whether the level or awareness of energy efficiency had increased, decreased or stayed the same in their organisation. Energy managers with longer experience managing energy efficiency within the organisation were asked to rate changes since before 2007, those who assumed responsibility later were asked to rate the level of change since 2010. The analysis below combines all responses. A final question probed what respondents felt were the main factors that had led to these changes.

#### 3.3.1 Change in level of awareness of energy efficiency in organisations

The level of organisational awareness of energy efficiency, as perceived by energy managers, has increased across all subgroups of participant and information declarers.

Figure 3.4 illustrates how organisations' awareness of energy efficiency has changed since 2007 or 2010. The diagram shows a combined analysis for those energy managers able to comment on changes since 2007, and for those who were only able to comment on changes since 2010.

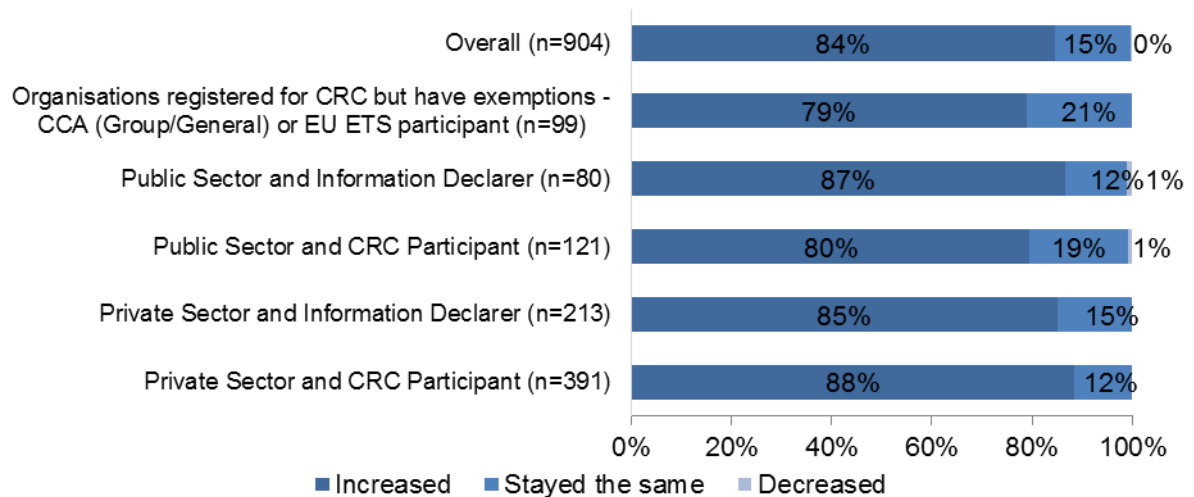


Figure 3.1 – How has the organisation’s awareness of energy efficiency changed since 2007 or 2010? **Error! Reference source not found.** illustrates how organisations’ awareness of energy efficiency has changed since 2007 or 2010, using a combined analysis for those able to comment since 2007, and for everyone else since 2010, by DREA2 groups.

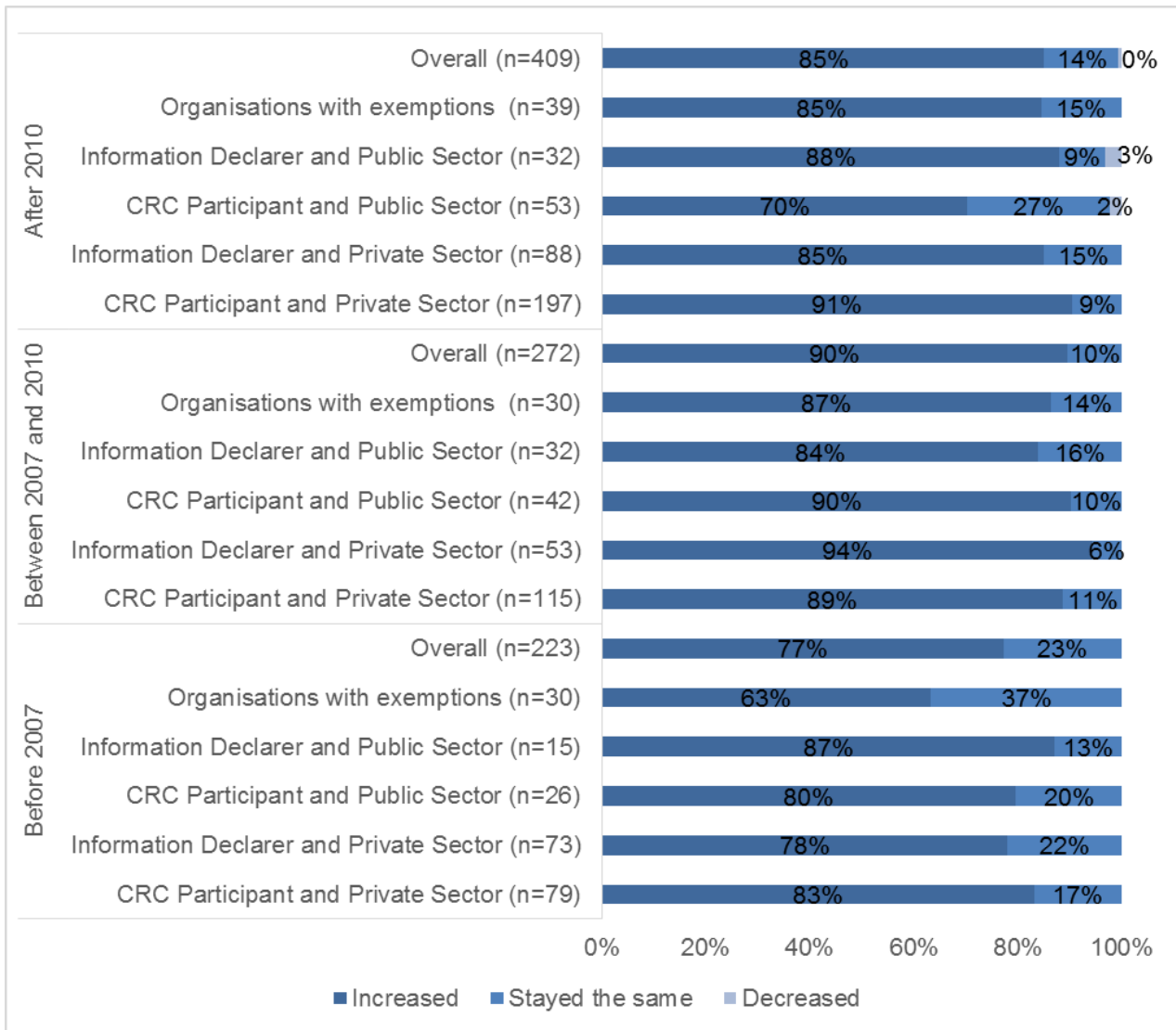
**Figure 3.5: How has the organisation’s awareness of energy efficiency changed since 2007 or 2010 by DREA2 groups?**

**3.3.2 Changes in awareness compared to when energy manager assumed responsibility for energy efficiency matters within the organisation**

We undertook further analysis across a number of variables, looking at how the level of awareness energy efficiency has changed in organisations, against when the energy manager took responsibility for energy efficiency matters within their organisation. We found that those who have taken responsibility more recently (after 2010, 85%; n=409) have reported a larger percentage increase in awareness compared to those who started earlier (before 2007, 77%, n=223).

Figure 3.6 illustrates how organisational awareness of energy efficiency has changed since 2007, dependent on when the energy manager became responsible for energy efficiency related matters within the organisation.

### 3. Findings and analysis



**Figure 3.6: How has organisation awareness of energy efficiency changed since 2007, dependent on when the respondent started working for the organisation?**

#### 3.3.3 Influence of the CRC scheme on awareness of energy efficiency

As with the previous section there is evidence for suggesting that the CRC is one of a range of influences that have contributed to more awareness of energy efficiency by organisations covered in the survey. Where respondents say awareness of energy efficiency compared to four years ago has increased, 21% of private sector and 24% of public sector participants made some mention of the CRC scheme.

There were very few mentions of the CRC being the only reason for an increase in energy awareness within organisations. The majority of comments focused on the cost of CRC combined with other factors including: energy costs in general, financial pressures, other government legislation, or increased awareness of energy efficiency matters, as the following verbatim responses illustrate.

- *Firstly the employment of my role, which came in place 2009, one of my jobs is to raise awareness across the business on all levels. External legislation has also had an effect,*

*CRC has also made sure we had to take a lead on improving our energy efficiency. (Participant, group 2b – Private sector participants at or above median, but below upper quartile)*

- *Combination of all those things, staff engagement and promotional things around energy to hopefully raise awareness. (Participant, group 4a – Public sector participants at or above median consumption for public sector participants)*
- *CRC coming in and everything else, we've been forced to make savings as best we can, increased the level of buy in from staff trying to make savings without any investment. (Participant, group 4a – Public sector participants at or above median consumption for public sector participants)*

5% of private sector information declarers, and 1% of public sector information declarers mentioned the CRC as a reason why awareness of energy efficiency had increased within their organisation. These respondents focused on: the CRC raising awareness of legislation, sustainability and energy efficiency internally and externally, and the associated costs this would bring to their organisation.

- *Awareness of legislation, CRC's energy acts [sic], ESOS. (Information declarer, group 3 – Private sector information declarers using more than 3000 MWh per annum in 2008)*
- *Commercially people are aware. The CRC put it on people's radars. Because of the cost to the business people wanted to minimise energy. A lot of education required in raising the profile of what we do running out staff initiatives. (Information declarer, group 3 – Private sector information declarers using more than 3000 MWh per annum in 2008)*
- *Creation of my job role, new engineering manager introduced with bigger interest and awareness. Triggered by cost reduction we were spending huge amounts and if it increased more we would be meeting CRC regulations so would have to pay extra carbon tax. (Information declarer, group 3 – Private sector information declarers using more than 3,000 MWh per annum in 2008)*
- *Combination - growing recognition of impact of climate change, of importance of sustainability, the fact that energy costs us money which if we minimise the energy usage we can reduce operating costs. (Information declarer, group 5 – Public sector information declarers using more than 2,000 MWh per annum in 2008)*

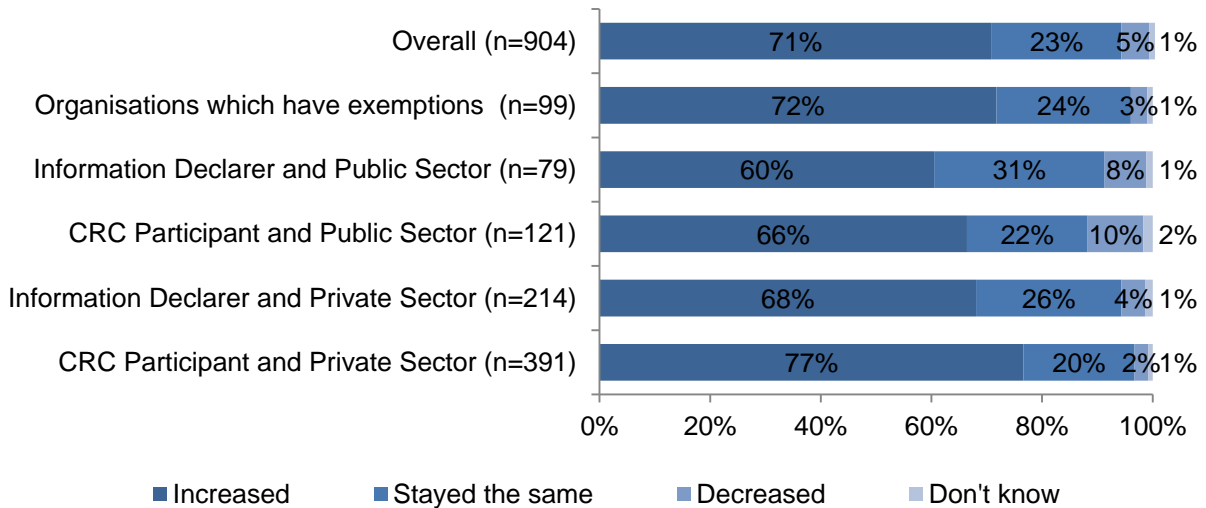
### 3.4 Amount of action organisations take on energy efficiency

All energy managers were asked whether they felt, compared to four years ago, the amount of action their organisation took on energy efficiency had increased, decreased, or stayed the same. They were also asked to explain their answers.

### 3. Findings and analysis

#### 3.4.1 Change in amount of action organisations take on energy efficiency

More private sector participants in the CRC appear to be taking increased action on energy efficiency compared to information declarers (77%; n=391 compared to 68%; n=214). More public sector participants also appear to be taking increased action, although the difference between public sector CRC participants and information declarer groups is not statistically significant.

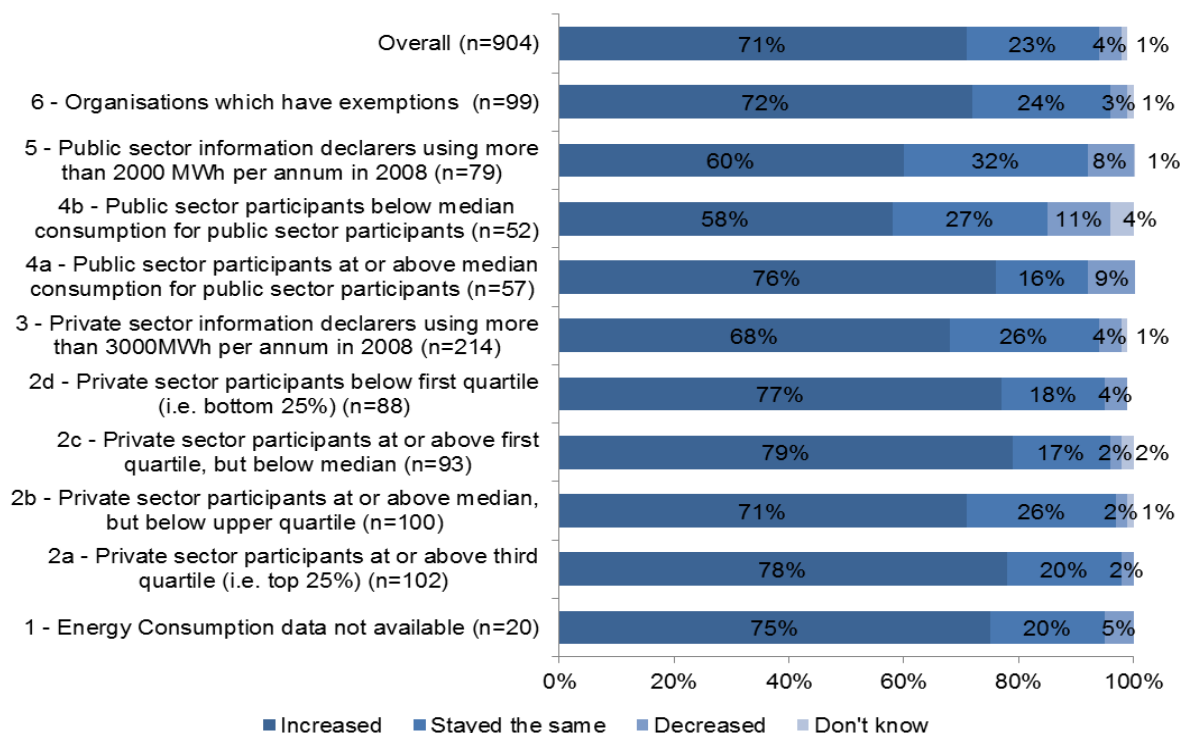


**Figure 3.7: Compared to four years ago, has the amount of action taken on energy efficiency by the organisation, increased, decreased or stayed the same?**

Further analysis, illustrated in Figure 3.8, highlights that within public sector organisations, there is a difference in the increase in action taken on energy efficiency between CRC participants: organisations whose electricity consumption is at or above the median level report having taken more action than those below median consumption (76%; n=57, compared with 58%; n=52). Further, it appears the increase in the amount of action taken on energy efficiency by public sector participants whose electricity consumption is below the median level, is similar to public sector information declarers.

Within private sector organisations more CRC participants have undertaken increased action than information declarers in all strata, except for CRC participants in strata 2b (organisations with electricity consumption at or above the median level but below the upper quartile).

**Error! Reference source not found.** illustrates the difference amount of action taken on energy efficiency by DREA2 groups.



**Figure 3.8: Compared to four years ago, has the amount of action taken on energy efficiency by the organisation, increased, decreased or stayed the same, by DREA2 group**

### 3.4.2 Reasons for change in amount of action taken on energy efficiency

The most common reasons cited for increased action on energy efficiency, across all groups of respondents were: to reduce energy expenditure, increasing energy prices, reducing costs/ making savings and carbon footprint /sustainability/climate change/environmental concerns/ to reduce carbon emissions.

The CRC is again mentioned as one of a range of influences that have contributed to an increased amount of action organisations take on energy efficiency. Compared with changes in priority and awareness, the percentage of energy managers attributing the change to CRC is far fewer - only 6% of private sector participants and only 8% of public sector participants. These responses focused specifically on reducing the costs of CRC allowances.

There was further evidence that the process of declaring information prior to phase 1 of the CRC has had an effect on a small number of information declarers; 4% made reference to registering for phase 1 of the CRC having an impact on the amount of action their organisation takes on energy efficiency.

### 3.4.3 Further analysis

Further analysis of this question using the behaviour proxy variable reveals that a larger percentage of participants who have been most affected by the CRC scheme (defined as BEH group 1), have seen an increase in the amount of action taken on energy efficiency within their organisations, compared with those in BEH group 2.

### 3. Findings and analysis

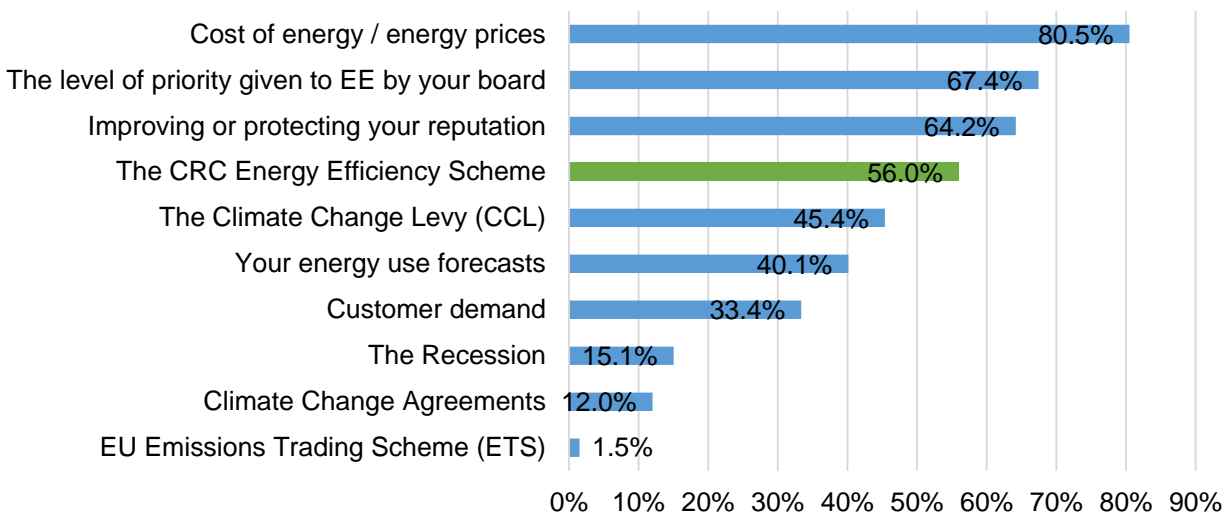
More BEH group 1 private sector participants have seen an increase in action taken compared to those in BEH group 2 (84%; n=239) compared with (66%; n=152).

## 3.5 Factors affecting the amount invested in energy efficiency

All respondents were read a list of factors that may have affected the amount their organisation invested in energy efficiency, and asked to state whether that factor had led to more investment, less investment or had no influence. Where they mentioned it had an influence they were asked to describe in what way.

### 3.5.1 Factors affecting the amount invested in energy efficiency

Energy managers indicated that a number of factors have affected the amount their organisation invests in energy efficiency. **Error! Reference source not found.** illustrates a list of prompted factors that were asked to all energy managers, with the percentage of energy managers confirming that it had influenced more investment in energy efficiency.



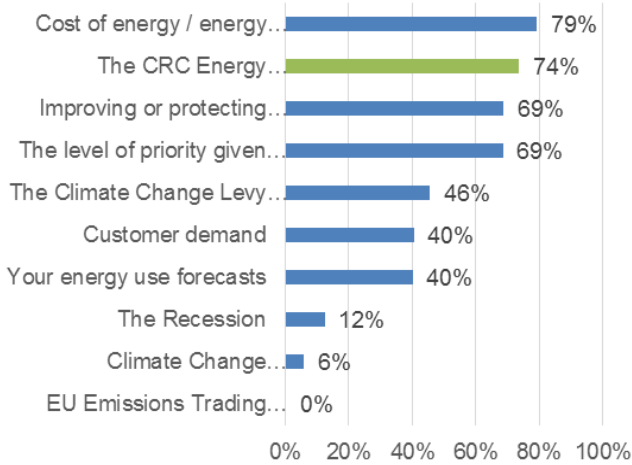
**Figure 3.9: Factors that have affected more investment in energy efficiency (prompted, all respondents n=904, multiple response % within factor saying it has had an effect)**

The cost of energy and energy prices was the most mentioned factor for influencing more investment in energy efficiency overall. When looking at all groups, the CRC scheme was mentioned by 56% of energy managers as having a positive influence on investment in energy efficiency. Only organisations participating in other policies (such as EU ETS, and Climate Change Agreements) mentioned these policies as an influencing factor for more investment in energy efficiency.

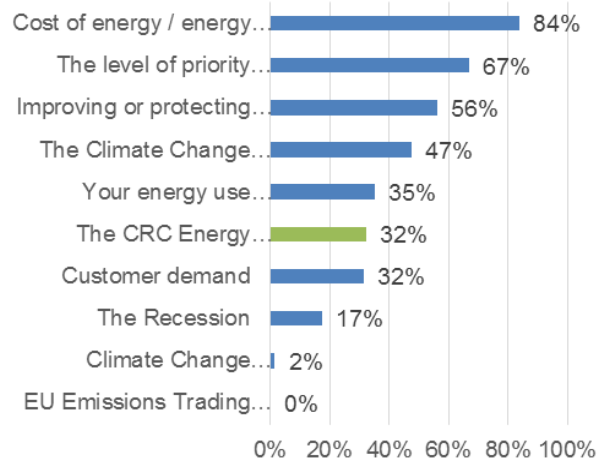
Further analysis shows that the CRC scheme was reported to be a more influential factor for different types of organisations. Figure 3.10 illustrates that for public sector CRC participants this was the highest factor mentioned (81%), and for private sector CRC participants it was the second highest factor mentioned.



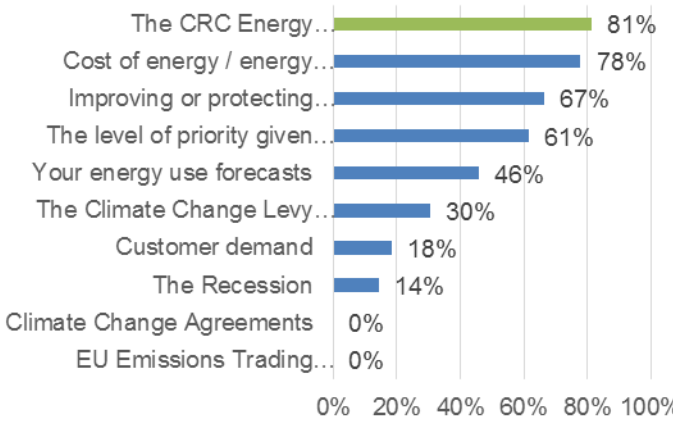
Factors affecting amount invested in energy efficiency - CRC Participant and Private Sector (n=391)



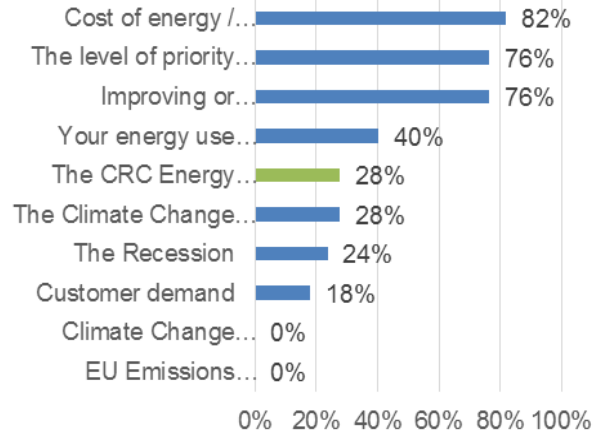
Factors affecting amount invested in energy efficiency - Information Declarer and Private Sector (n=214)



Factors affecting amount invested in energy efficiency - CRC Participant and Public Sector (n=121)



Factors affecting amount invested in energy efficiency - Information Declarer and Public Sector (n=79)



Factors affecting amount invested in energy efficiency - Organisations registered for CRC but have exemptions (n=98)

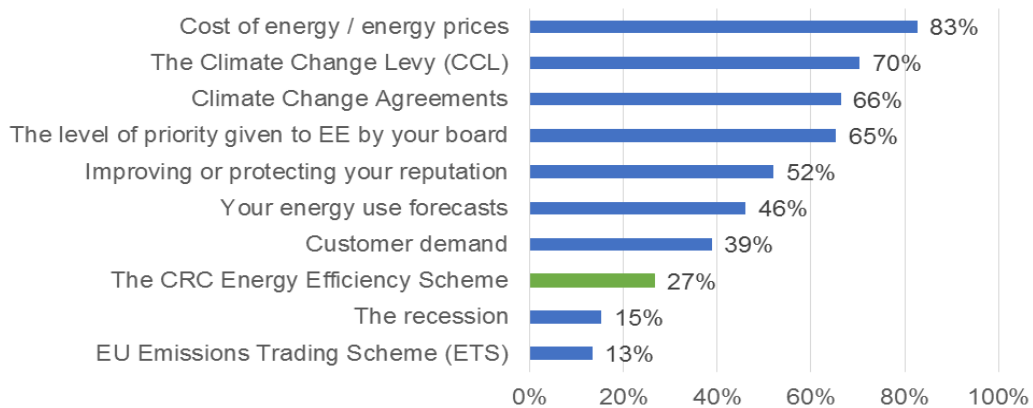


Figure 3.10: Factors that have affected more investment in energy efficiency (prompted, multiple response % within factor saying it has had an effect)

### 3. Findings and analysis

#### 3.5.2 Influence of CRC scheme on information declarers

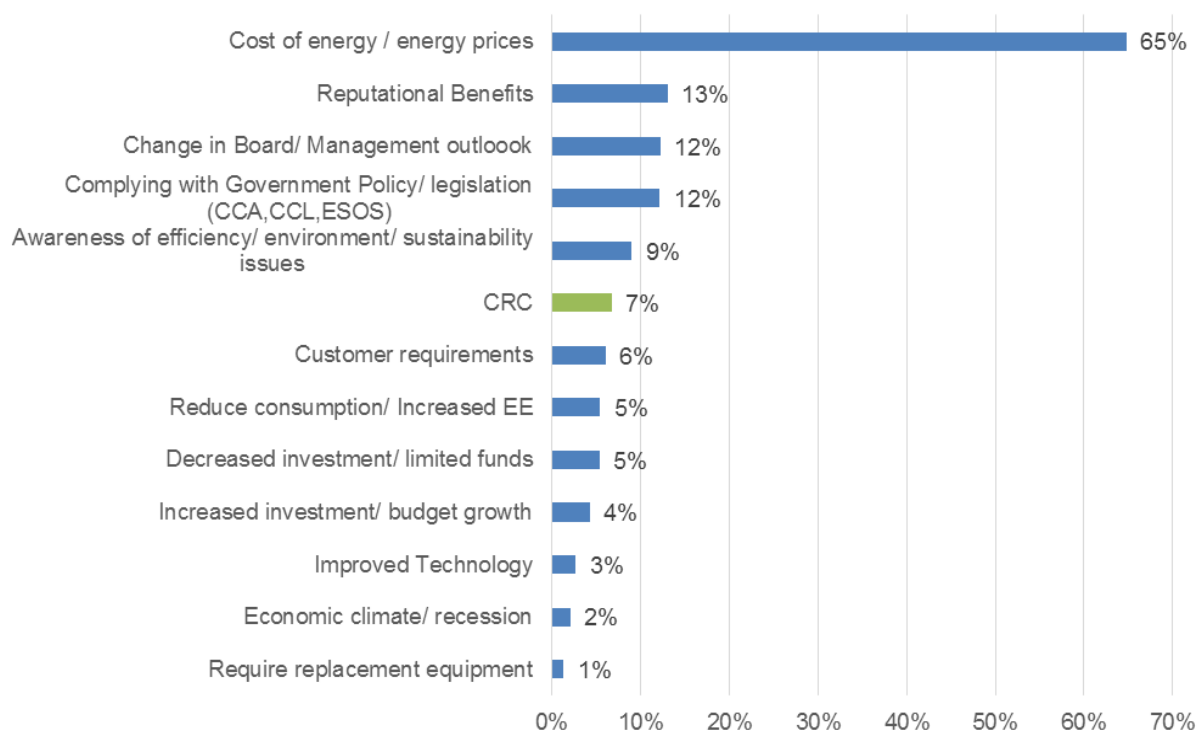
The CRC scheme was also mentioned as having a positive influence on energy investment by approximately one third of information declarers (32% - private sector information declarers, 28% of public sector information declarers). Respondents offered three main reasons as to why the CRC scheme has led to more investment on energy efficiency within this group.

The comments below apply to both private and public sector information declarers:

- i. Approaching the threshold to join the scheme, want to avoid becoming participants.
  - *Very close to threshold of joining CRC scheme, measures in place to reduce electricity consumption e.g. technology – LED lighting.*
  - *It initially made us more aware of energy use. We made sure we dropped below the threshold.*
  - *We thought we were going to be in CRC and would have to pay £70,000. Luckily the rules changed and we are not in the scheme but it did stimulate investment.*
  - *We were close to threshold. It caused a restructuring with the contracts with our energy suppliers. The implication of passing the threshold made a difference. If we had to pay for CRC it would make a big difference.*
  - *Again we don't want to go above the limit so we try to reduce it as much as possible.*
  - *Very near limit 4/5-5 megawatts, so near and don't want to increase towards that and start paying the CRC.*
  - *It has significantly affected it because we don't want to go above the CRC limits.*
- ii. Reducing energy costs
  - *As with Climate Change Levy getting really expensive, taxation and money pressure on us have spent a quarter of a million on the scheme itself.*
  - *The CRC has had a positive benefit; we receive a reduction in our energy costs and CCL as a result of being a member of the CRC with expectation of using savings to invest in more Energy Efficiency measures. It's part of the reasons we have set the target.*
  - *The CRC is another cost we're trying to minimise as much as possible through energy efficiency.*
- iii. Increased awareness of energy efficiency within the organisation
  - *The CRC came in at the right time to focus on energy efficiency as it gave us some weight to throw at the directors and the senior management committee. It was something they could read about and then they would understand how important it was to manage energy.*
  - *It's a matter of awareness, the whole thing raises awareness. It helps us to take the matter forward.*

### 3.5.3 The most important factor influencing the amount invested in energy efficiency

Energy managers found it difficult to identify one stand-alone factor that influenced investment in energy efficiency: in their responses, many mentioned more than one factor as being 'the most important'. However, when all the responses were analysed, the cost of energy/ energy prices and the implications these had on business operations was mentioned most frequently as 'most important factor' (65% of all mentions made), as illustrated in Figure 3.11.



**Figure 3.11: The most important factor that has affected more investment in energy efficiency (unprompted, all respondents, multiple response % within factor saying it has had an effect)**

The CRC scheme was described as the most important factor in 7% of all cases, of which the majority were private sector participants. Energy managers who mentioned CRC as the most important factor incorporated it with two other key drivers:

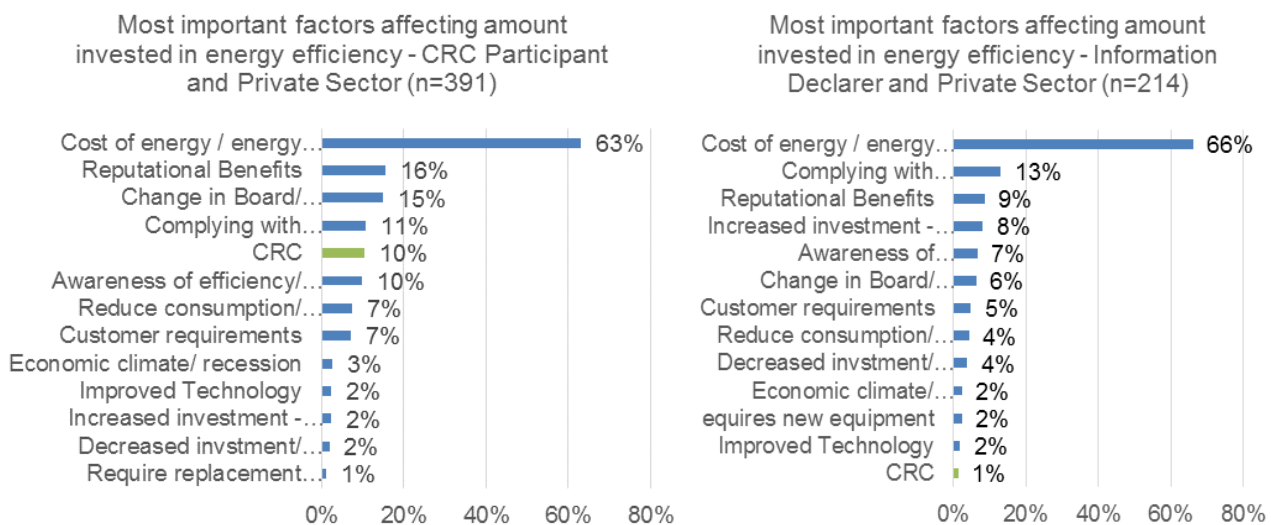
- i. Cost – and perceiving the CRC scheme as tax
  - *I'd say the CRC has been the biggest driver by basically being a tax that galvanizes you into action.*
  - *Probably the CRC, the cost of buying the credits, not the carbon footprint.*
  - *CRC; the scale of the CRC charges force business to look into it.*
  - *Energy costs – end cost climate levy, CRC – being taxed.*

3. Findings and analysis

ii. Other government legislation

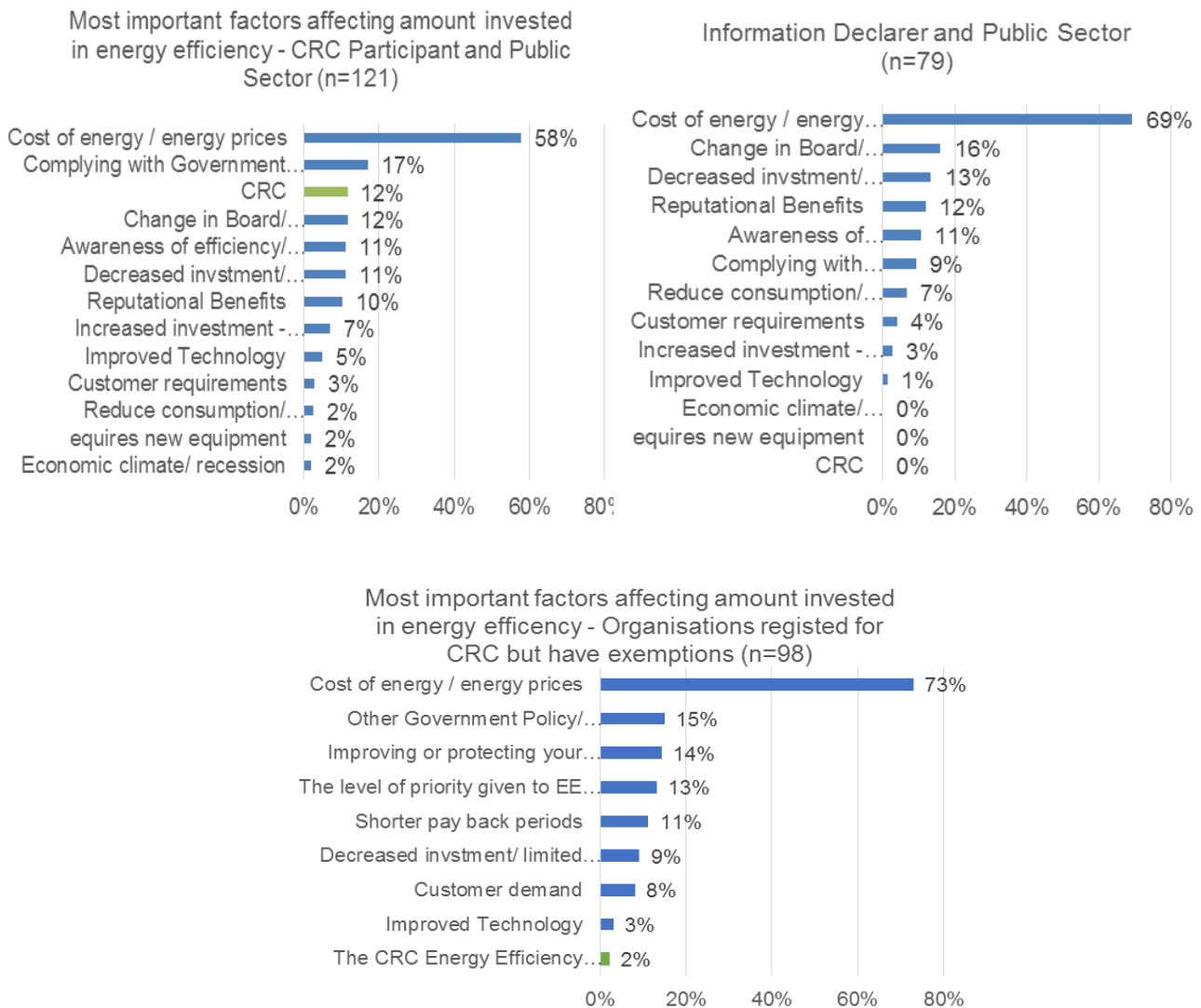
- *Again legislation, ESOS21, CRC, and Energy Act.*
- *Legislations are a big driver, without that, particularly the CRC, the energy efficiency would have a different profile in organisation. It's quite important.*
- *The CRC scheme, also the fact that we're going into ESOS legislation trying to obtain the ISO 50001 accreditation.*
- *The introduction of schemes like the CRC and now ESOS, so there is more attention on energy at board level and greater awareness of energy as an input and cost to the business. It is quite important that the board have the information to make decisions.*
- *The Climate Change Agreements, and I would say the coming out of the CRC, not paying the CRC tax to the government.*

Further analysis of the most important factor by each group, illustrated in Figure 3.12 and 3.13 highlights that the cost of energy/ energy prices is the most important factor influencing the amount invested in energy efficiency. The CRC scheme was defined as the most important factor by 10% of private sector participants and 12% of public sector participants.



**Figure 3.12: The most important factor that has affected more investment in energy efficiency (un-prompted, multiple response % within group saying it has had an effect)**

<sup>21</sup> Although ESOS was not yet in force at the time of the research, some respondents mentioned the influence of ESOS as they were preparing to meet the upcoming requirements of the ESOS scheme.



**Figure 3.13: The most important factor that has affected more investment in energy efficiency (un-prompted, all respondents, multiple response % within group saying it has had an effect)**

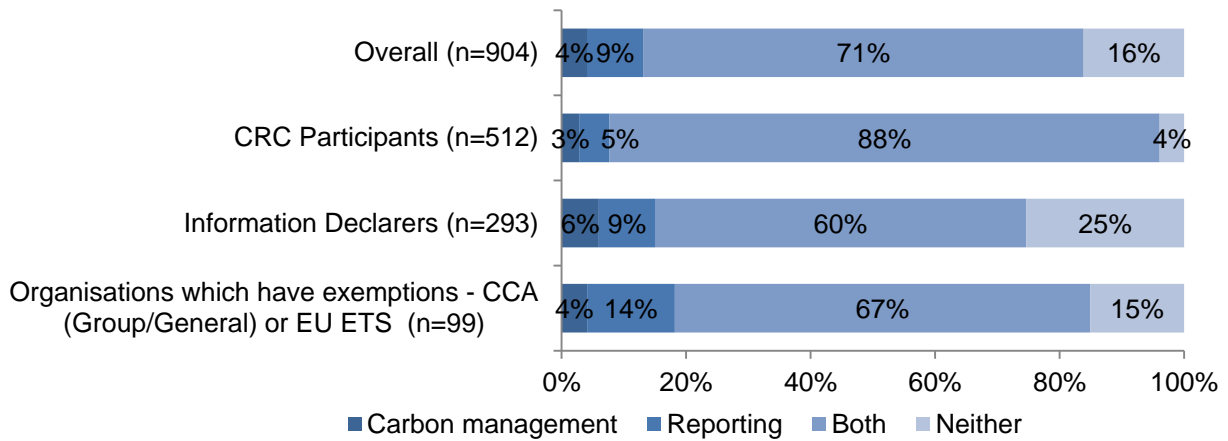
### 3.6 Do organisations carry out carbon management or reporting activities?

All energy managers were asked whether their organisation carried out carbon management, reporting activities, or both.

#### 3.6.1 Analysis of carbon management reporting by comparison group and stratum

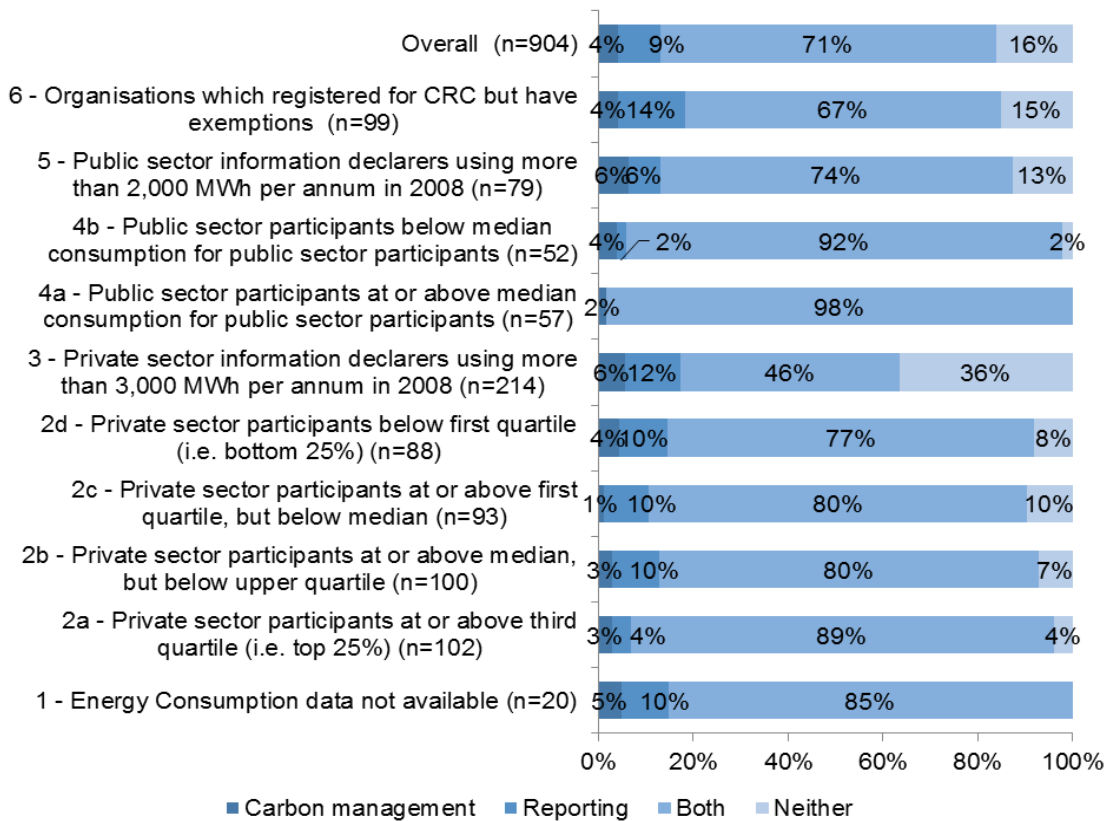
Almost 85% of all energy managers reported that their organisation conducts some form of energy management or reporting activity. **Error! Reference source not found.** illustrates that there are more CRC participants undertaking both carbon management and reporting activities compared to information declarers (88%, n=512; compared with 60%, n=293).

### 3. Findings and analysis



**Figure 3.14: Do organisations conduct carbon management or reporting activities?**

Analysis by strata, illustrated in **Error! Reference source not found.**, further highlights the differences in undertaking carbon management and reporting activities between participants of the CRC scheme and information declarers. Almost all public sector participants undertake both carbon management and reporting activities, compared to only three quarters of information declarers. Around 80% of private sector participants conduct both carbon management and reporting activities (almost 90% for those at or above the upper quartile of electricity consumption) compared with under half of the information declarer group.



**Figure 3.15: Do organisations conduct carbon management or reporting activities by DREA2 group?**

### 3.7 Do organisations ever undertake energy audits?

All respondents were asked if they have ever undertaken an energy audit, and if so, could they remember when it last took place.

#### 3.7.1 Analysis of whether organisations undertake energy audits by comparison groups and stratum

Over 80% of energy managers said their organisation had previously carried out an energy audit, with over a third reporting that these had been undertaken within the last 12 months.

**Error! Reference source not found.** illustrates that fewer private sector participants have not previously carried out an energy audit compared to private sector information declarers (14%, n=391; compared to 24% n=214).

CRC participants have also undertaken more energy audits in the past year compared to information declarers (43%; n=391, compared with 18%, n=214 for private sector organisations; and 48%, n=121 compared with 36%, n=79 for public sector organisations.)

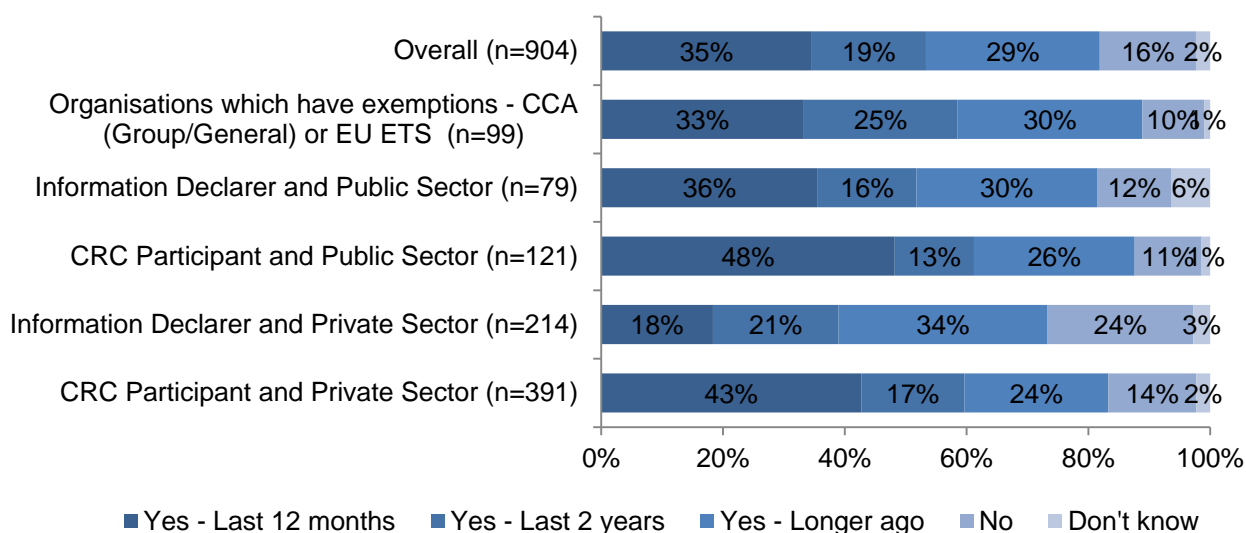


Figure 3.16: Have organisations ever undertaken an energy audit?

Further analysis examining organisations by sub-groups, illustrated in Figure 3.17, identifies that participant organisations, from both the public and private sector, with the highest electricity consumption, have undertaken the highest percentage of energy audits per group in the last 12 months (54% for group 2a; n=102, and 58% for group 4a; n=57).

### 3. Findings and analysis

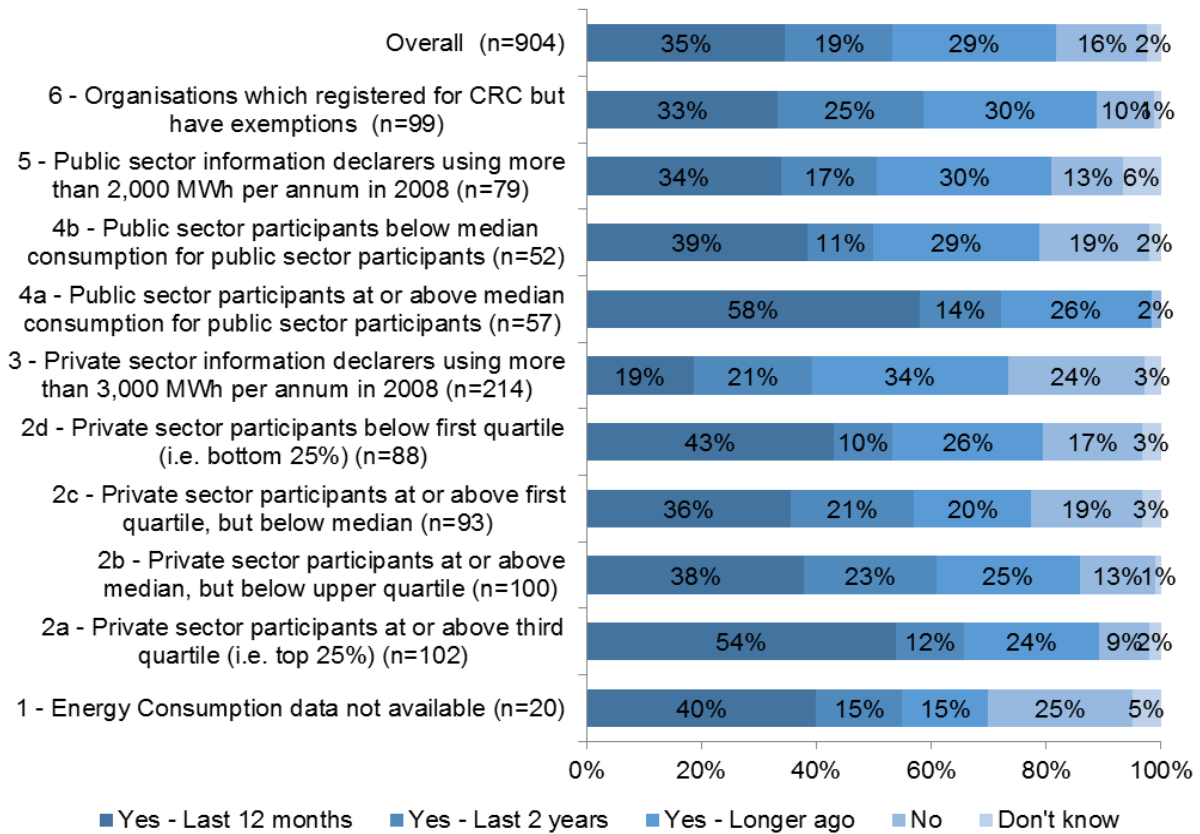


Figure 3.17: Have organisations ever undertaken an energy audit? – by DREA2 group

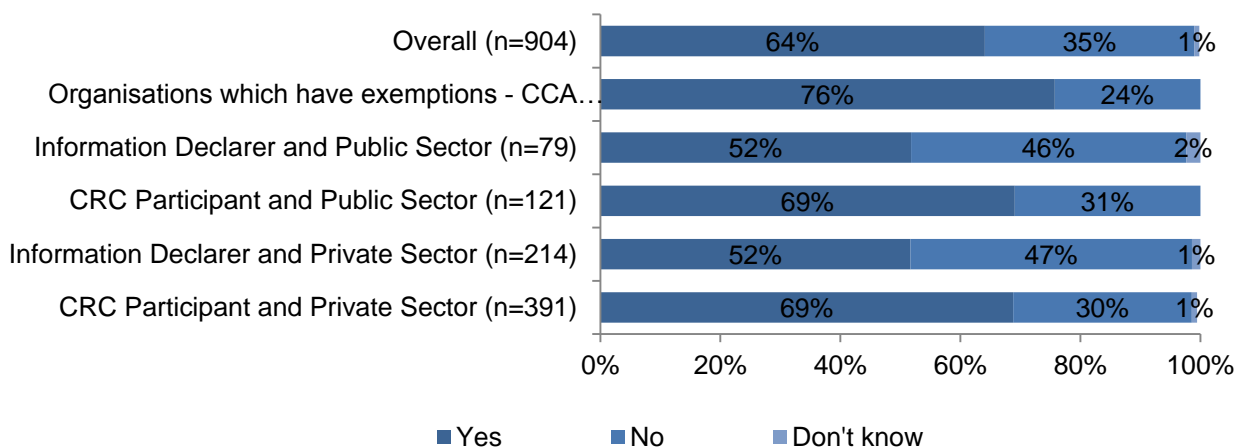
## 3.8 Do organisations forecast future energy usage routinely?

All energy managers were asked if they routinely forecast future energy use.

### 3.8.1 Analysis of whether organisations forecast future energy usage by comparison groups and stratum

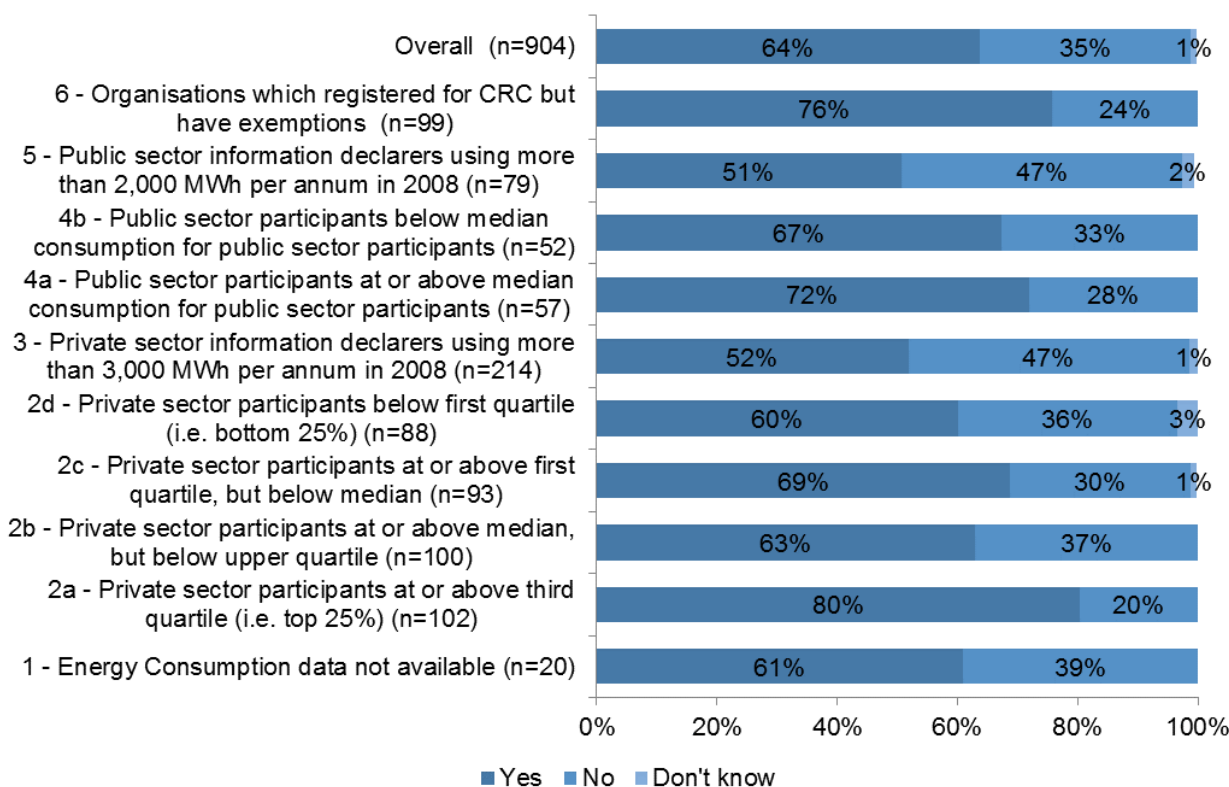
Just under two thirds of energy managers reported that their organisation routinely forecast future energy use. As illustrated by **Error! Reference source not found.**, more organisations, both public and private sector, participating in the CRC scheme reported that they forecast energy use more routinely than information declarers. (69%; n=121 compared with 52%; n=79 for public sector organisations, and similarly, 69%; n=391 compared with 52%; n=214 for private sector organisations).





**Figure 3.18: Do organisations forecast future energy usage routinely (i.e. at regular intervals)?**

**Error! Reference source not found.** illustrates that, as with the types of organisation that are most commonly undertaking energy audits, CRC participants with the largest electricity consumption (private sector group 2a, and public sector group 4a) are the groups most likely to routinely forecast their energy use.



**Figure 3.19: Do organisations forecast future energy usage routinely (i.e. at regular intervals)? – by DREA2**

There is evidence to suggest that the CRC is one of a number of influences that have contributed to CRC participants routinely forecasting future energy use. Ten per cent of private sector participants and 8% of public sector participants mentioned the CRC scheme as a

### 3. Findings and analysis

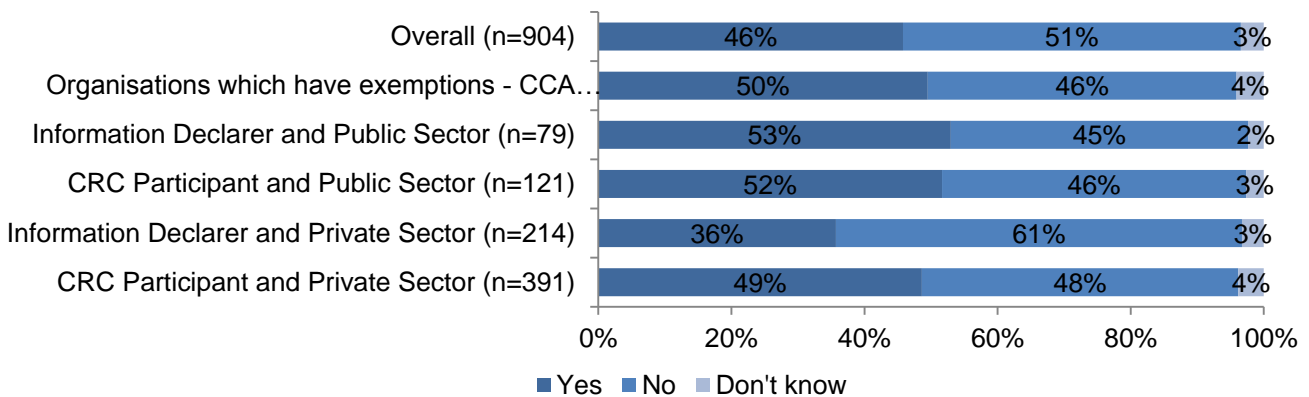
reason why they decided to forecast their energy use. By far the most common reason specified for forecasting future energy use, across all groups, was the need to inform budgeting and financial planning/management.

## 3.9 Do staff have performance metrics or objectives based on meeting energy efficiency targets?

Energy managers were asked if any members of staff within the organisation had performance metrics or objectives based on meeting energy efficiency targets.

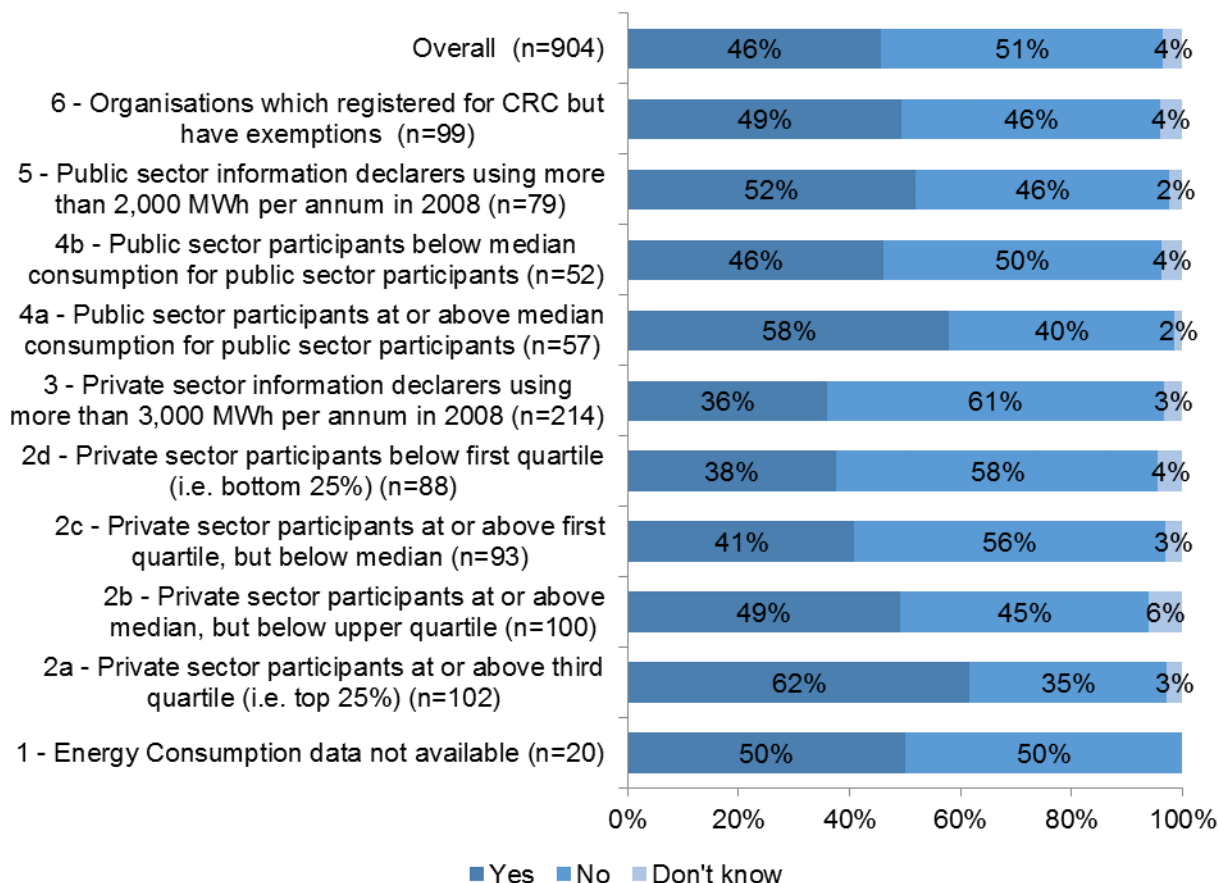
### 3.9.1 Analysis of whether staff have performance metrics or objectives based on meeting energy efficiency targets by comparison groups and stratum

Just under half of energy managers reported that some of their organisation's staff have performance metrics or objectives based on meeting energy efficient targets. **Error! Reference source not found.** illustrates that more private sector CRC participants than information declarers report having staff with performance metrics or objectives related to energy efficiency (49%; n=391, compared with 36%; n=211). There are no significant differences between public sector organisations.



**Figure 3.20: Do organisations' staff have performance metrics or objectives based on Energy Efficiency targets?**

Following on the trend from the previous two sub-group analyses, those organisations with the highest level of electricity consumption have the highest proportion of staff with performance metrics or objectives based on energy efficiency targets, illustrated in Figure 3.21 below (private sector group 2a – 62%, and public sector group 4a – 58%).



**Figure 3.21: Do organisations' staff have performance metrics or objectives based on Energy Efficiency targets?**

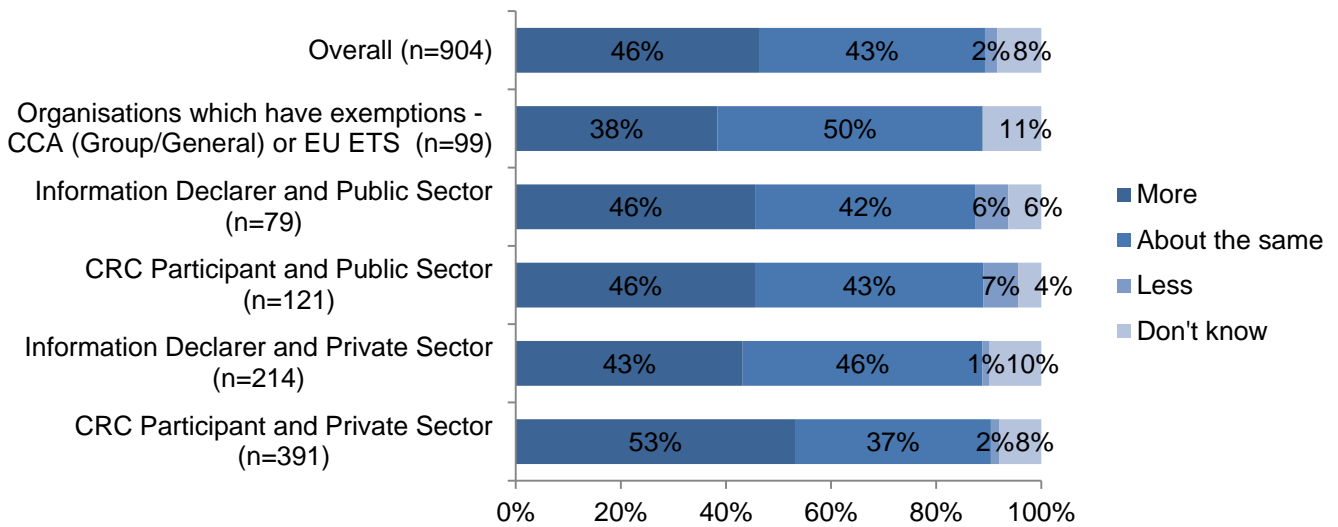
### 3.10 Board/senior management consideration of energy efficiency

All energy managers were asked whether their board/ senior management consider energy efficiency more or less regularly than was the case in the near past (four years ago). Those managers who were not at director level (n=821) were then asked how often the board/ senior management discuss energy matters with them.

#### 3.10.1 Do the board/ senior management consider more, less or about the same, compared to four years ago?

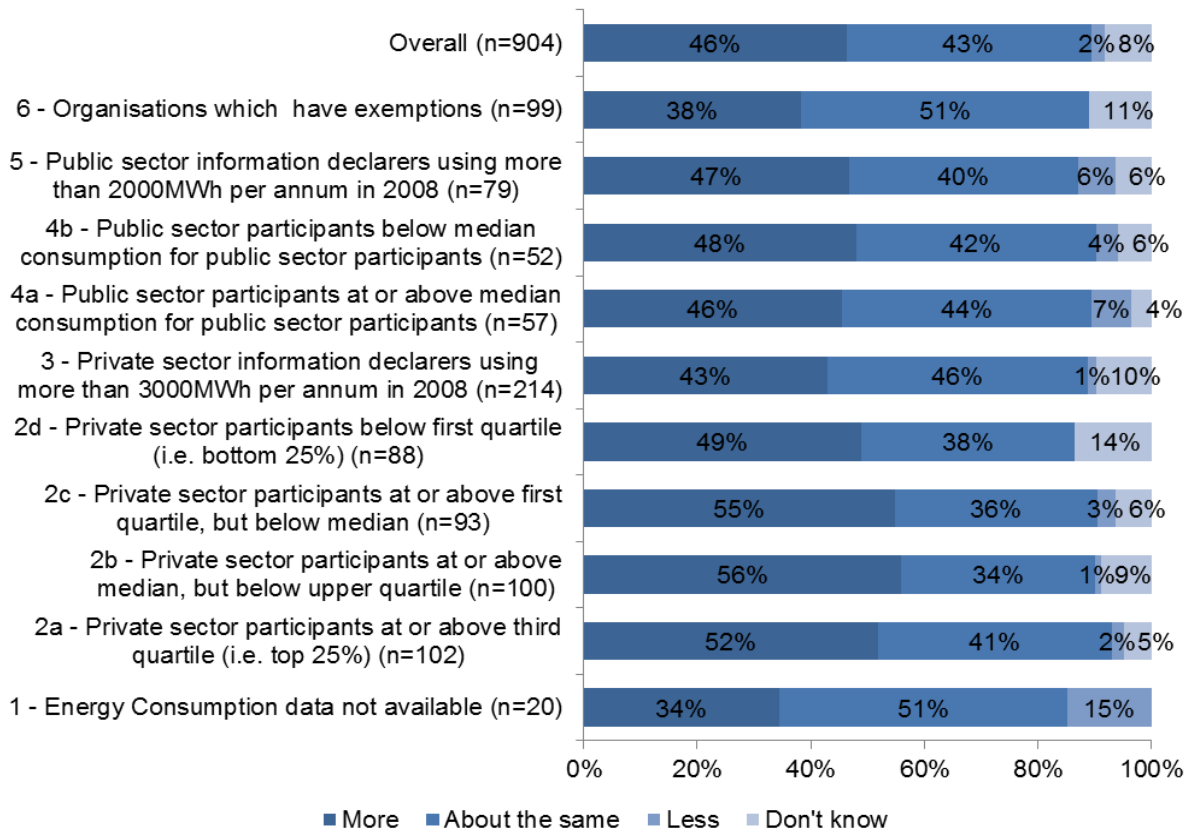
Of all the energy managers interviewed, just under half of them stated that their board/ senior management consider energy efficiency matters more often than they had four years ago. Looking at the public sector, **Error! Reference source not found.** shows that there are no observed differences between participants and information declarers. However, in the private sector it can be seen that board/ senior management members in participant organisations are considering energy efficiency more often now (compared with four years ago) than those in organisations outside of the CRC (53%, n=391; compared with 43%, n=214).

### 3. Findings and analysis



**Figure 3.22: Do board/ senior management consider energy efficiency matters more or less compared to four years ago?**

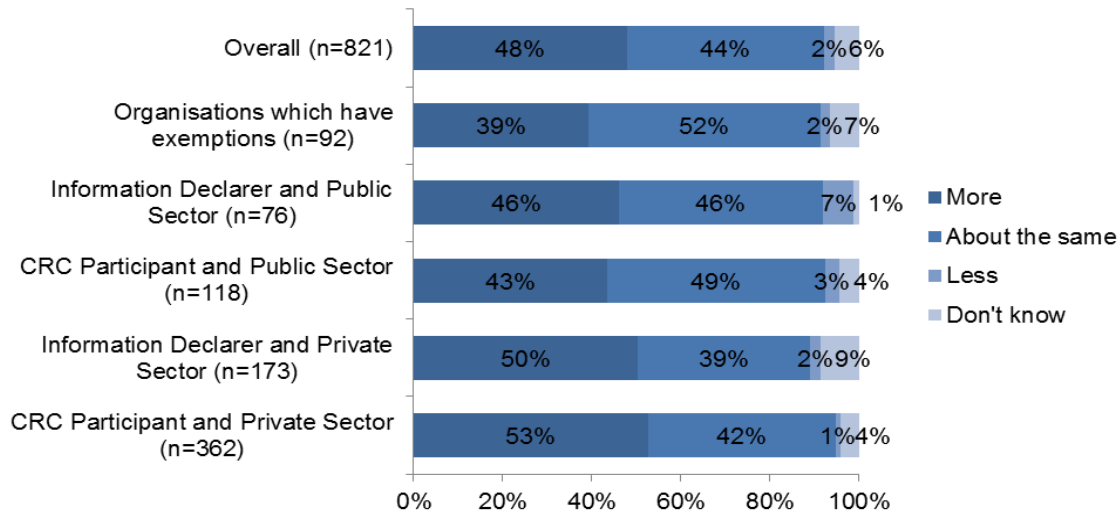
Further analysis of the sub-groups, displayed in Figure 3.23, shows that the public sector groups 4a and 4b exhibit similar trends. In the private sector, participants at or above the first quartile (groups 2a, 2b and 2c) have a higher proportion indicating that energy efficiency considerations occur more often (than four years ago) than the participants below the first quartile (group 2d).



**Figure 3.23: Do board/senior management consider energy efficiency matters more or less compared to four years ago by DREA2 group?**

### 3.10.2 Do the board/senior management discuss energy matters with the energy manager more, less or about the same, compared to four years ago?

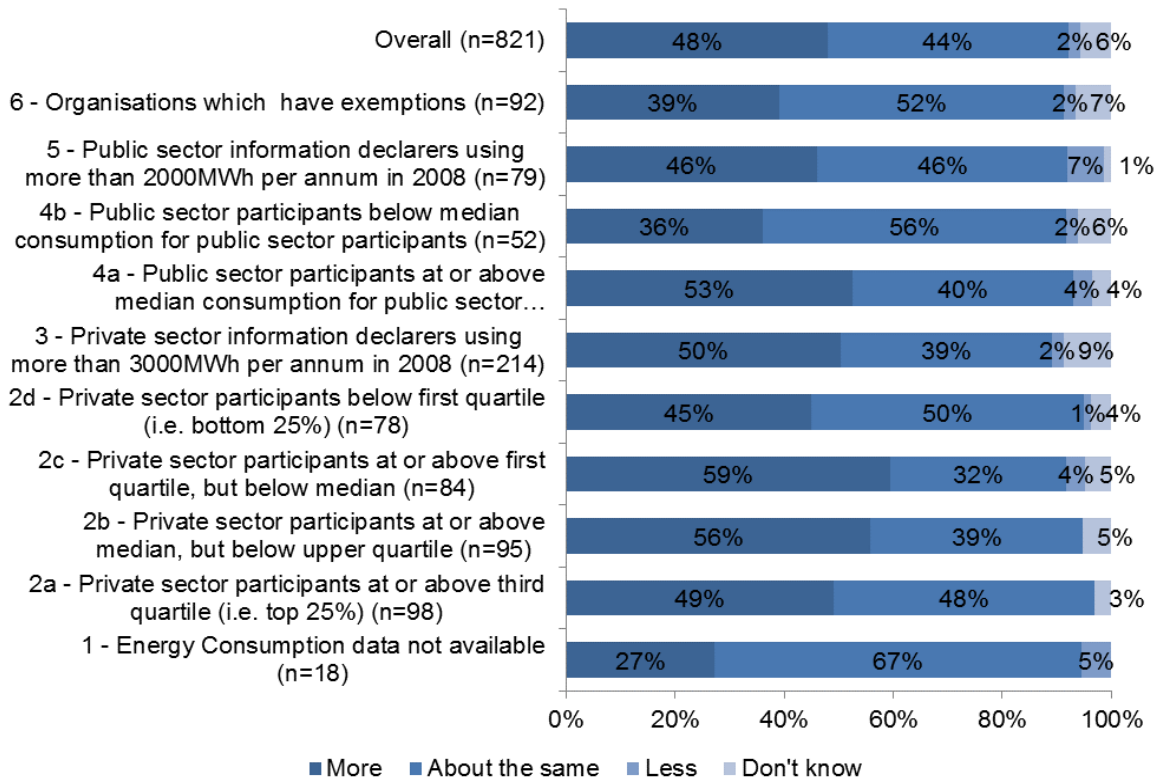
Almost half of respondents (48%) stated that, compared with four years ago, their board/ senior management discuss energy efficiency matters more often with them. There was no difference between CRC participants and information declarers.



**Figure 3.24: Do board/senior management discuss energy efficiency matters with respondent more or less compared to four years ago? (Overall, n=821; not asked to those at director level)**

More detailed analysis of the sub groups, shown in **Error! Reference source not found.** below, highlights some differences within the public sector. Participants at or above the median energy consumption have a higher proportion (53%) of board/ senior management level discussing energy efficiency with energy managers more often than four years ago than participants below the median consumption (36%).

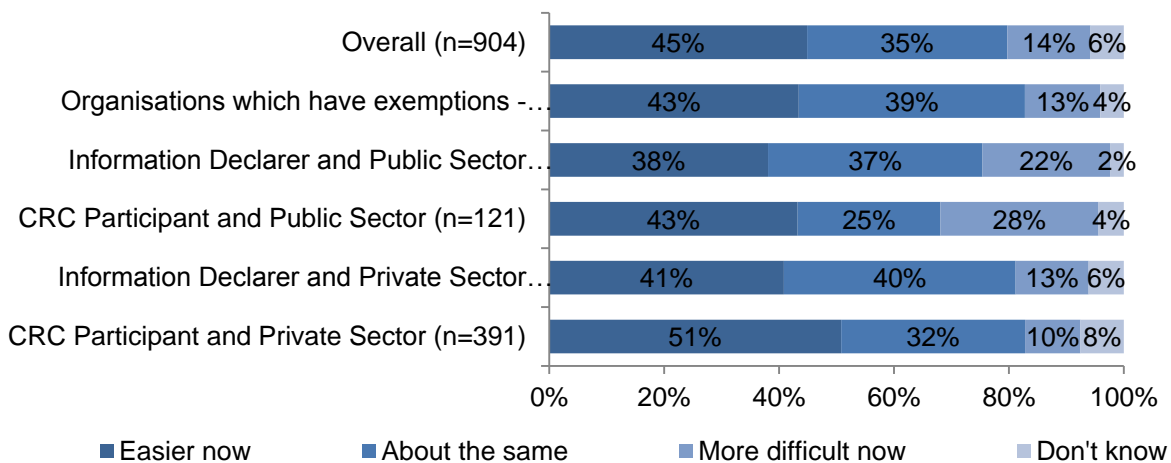
### 3. Findings and analysis



**Figure 3.25: Do board/senior management meet to discuss energy efficiency matters with respondent more or less compared to four years ago, by DREA2 group? (Overall n=821; not asked to those at director level)**

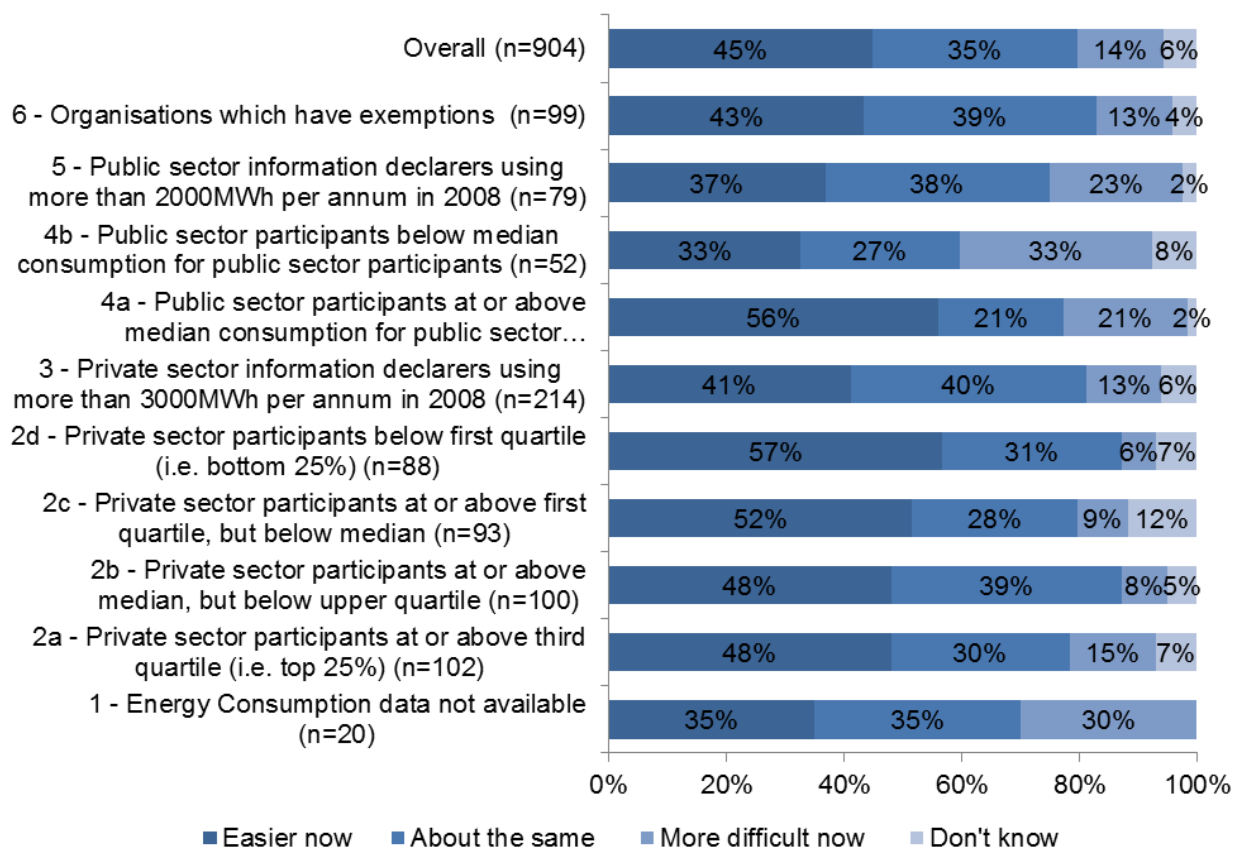
#### 3.10.3 Is it easier or more difficult to secure approval now compared to four years ago?

Just under half of respondents indicated that it is easier to secure board/senior management approval for energy efficient technologies now than it was four years ago. In the private sector, this is more apparent in CRC participant organisations than information declarers. This is shown in **Error! Reference source not found.**, with 51% of private sector participants finding it easier compared with 41% of private sector information declarers. There is similar, but less pronounced, difference in the public sector with 43% of participants finding it easier to secure approval from board/ senior management compared with 38% of information declarers.



**Figure 3.26: Compared to four years ago, is it easier or harder to secure board/senior management approval for energy efficient technologies?**

Additional analysis of the individual sub groups (shown in **Error! Reference source not found.**) highlights a noteworthy difference between the participants in the public sector. Over half (56%) of respondents in organisations at or above the median consumption for the public sector stated that it is easier to secure approval now than four years ago, whereas a third (33%) of respondents in organisations below the median consumption felt the same. This difference is not observed to the same degree in the private sector. Those below the first quartile (group 2d) had the highest proportion, 57%, stating that securing approval is easier now than four years ago. The remaining private sector participant groups (2a, 2b and 2c) all had around half of respondents stating that securing approval from their board/ senior management is easier now than four years ago (48%, 48% and 52% respectively).



**Figure 3.27: Compared to four years ago, is it easier or harder to secure board/senior management approval for energy efficient technologies by DREA2?**

### 3.10.4 Influence of CRC on board/ senior management consideration of energy efficiency

There is some evidence to suggest that the CRC is one of a range of influences that have contributed to it becoming easier to secure board/senior management approval for investment in energy efficient technologies. But this direct influence appears to be weak: only a small percentage of private sector participant energy managers (3%), and slightly more public sector (6%) mentioned the CRC amongst other factors as making it easier to secure investment for energy efficient technologies. The influences most commonly mentioned were the pressure to save money/ increasing return on investment and changing board/ senior management awareness of energy efficiency.

### 3. Findings and analysis

#### 3.10.5 Further analysis

Deeper analysis of this question using the behaviour proxy variable (BEH) reveals that a larger percentage of energy managers who feel their organisation has been most influenced by the CRC scheme (defined as BEH group 1), find it easier to secure board/ senior management approval for investment in energy efficient technologies, compared with those in BEH group 2.

More BEH group 1 private sector participants find it easier to secure board/senior management approval for investment in energy efficient technologies compared to those in BEH group 2 (55%; n=239) compared with (44%; n=152).

#### 3.11 Actions taken or considered in the last four years to improve energy efficiency

All energy managers were read a list of 10 actions they could have possibly taken since 2010, and asked whether they had taken the action, whether it had been planned but not yet implemented, whether it had been considered but rejected, or not considered at all. This section highlights the top 5 actions that have been taken, and then provides an analysis each action.

##### 3.11.1 Top 5 actions taken by organisations over the past four years

Annex 1 of this report presents a table summarising the actions taken, planned and considered by all organisations interviewed (n=904). Overall, the most common actions taken were:

- i. Investing in improved energy efficient technologies (93%)
- ii. Improvements to monitoring (85%)
- iii. Undertaking an external energy audit / bringing in external expertise to assess energy efficiency (79%)
- iv. Staff trained/educated on energy efficient behaviour (79%)
- v. Installation of automatic meter reading systems (77%)

##### 3.11.2 Actions taken or planned to improve energy efficiency over the past four years

The section below highlights 10 ten actions to improve energy efficiency which respondents were asked if they had implemented, planned but not yet implemented, considered but rejected, or not considered.

#### **Invested in improved energy efficient technologies**

Over, 93% of all organisations interviewed had taken this action (and a further 3% planning to do so), making it the most commonly taken action of the possible ten. This was true across both participants and information declarers in both the public and private sector.



## **Improving monitoring**

Improvements in monitoring was one of the most commonly taken actions, with 85% of organisations having already taken this action (and a further 10% planning to do so). There were no observed differences between participants and information declarers in either the public or private sector, despite reporting of energy use being a requirement of CRC participation.

## **Brought in external expertise to assess energy efficiency (energy audit)**

79% of respondents stated that they had undertaken an external energy audit or used an external expert to assess their energy efficiency, with an additional 6% indicating that they were planning to. In the public sector there was no noticeable difference between the participants and the information declarers. In the private sector, a marginally higher proportion of participants had taken this action (81%) than the information declarers (76%).

## **Trained/educated staff on energy efficient behaviour**

Again, this action was one of the most frequently taken actions with 79% of organisations having done so and a further 9% with plans to do so in the future. Participants and information declarers in the public sector responded in very similar ways and no differences were observed. In the private sector, a higher proportion of participants (84%) stated that they had trained staff on energy efficient behaviour compared with 72% of information declarers.

## **Installing automatic meter reading systems**

Just over three-quarters of respondents had already taken action to install automatic meter reading systems with an additional 8% have planning to do so in the future. In both the public and private sector there are distinctions between organisations participating in CRC and the information declarers. In both cases, CRC participants were more likely to have taken this action (83% in the private sector and 90% in the public sector) than information declarers (67% in the private sector and 79% in the public sector). This may be because Automatic Meter Reading systems were one of the 'Early Action Metrics' used in the early design of the CRC.

## **Setting targets to reduce energy use**

Three-quarters of all respondents indicated that, as an organisation, they had set targets to reduce energy use. In the public sector, participants and information declarers responded in a similar way. However, in the private sector there was a significant difference between CRC participants and information declarers, with a much higher proportion of participants (78%) setting such targets compared with information declarers (61%).

In terms of planned actions there were no significant differences between participants and information declarers in either the public or private sector.

## **Installing energy reporting systems and software**

This, along with the following two actions, was one of the less frequently taken actions with 55% of respondents overall having taken this action. Comparing participants with information declarers shows that, in both the private and public sector, participants are more likely to have

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taken this action than information declarers. This is shown in the table in Annex 1: with 63% of participants in the private sector having installed these systems (compared with 43% of information declarers) and 67% of participants in the public sector (compared with 53% of information declarers).

A further 13% of overall respondents suggested that they have plans to install energy reporting systems and software.

#### **Set up dedicated cross organisation working group on energy efficiency**

Just over half (51%) of all organisations had taken this action and a further 12% are planning to do so. In the public sector there are no apparent differences between participants and information declarers. However, in the private sector, there was a pronounced difference between CRC participants taking this action (57%) and the information declarers (36%).

#### **Employed dedicated staff (e.g. energy managers)**

Less than half of all interviewed organisations have employed dedicated staff for energy efficiency and management (43%). A further 46% of the interviewed organisations have not even considered doing so, 3% have plans to do so and 5% have considered employing dedicated staff but have rejected the idea. Focusing on those that have taken this action, it can be seen that participant organisations are much more likely to have employed dedicated staff than information declarers. This is true in both the public and private sector:

- 49% of private sector participants and 70% of public sector participants have taken the action; and
- 26% of private sector information declarers and 51% of public sector information declarers have taken the action.

#### **Applied for/achieved a certified energy efficiency or energy reduction standard**

Of the ten possible actions listed, this was the most uncommon action taken by organisations, with just over a quarter (26%) of organisations overall doing so and an additional 15% planning to do so. Participants in both the public and private sector were more likely to have taken this action (35% in the private sector and 37% in the public sector). This may have been related to the early design of the CRC, which recognised the 'Carbon Trust Standard' as an 'Early Action Metric'. Fewer information declarers have applied for such a standard with 15% and 20% in the private and public sector respectively.

#### **3.11.3 Reasons for taking or planning actions**

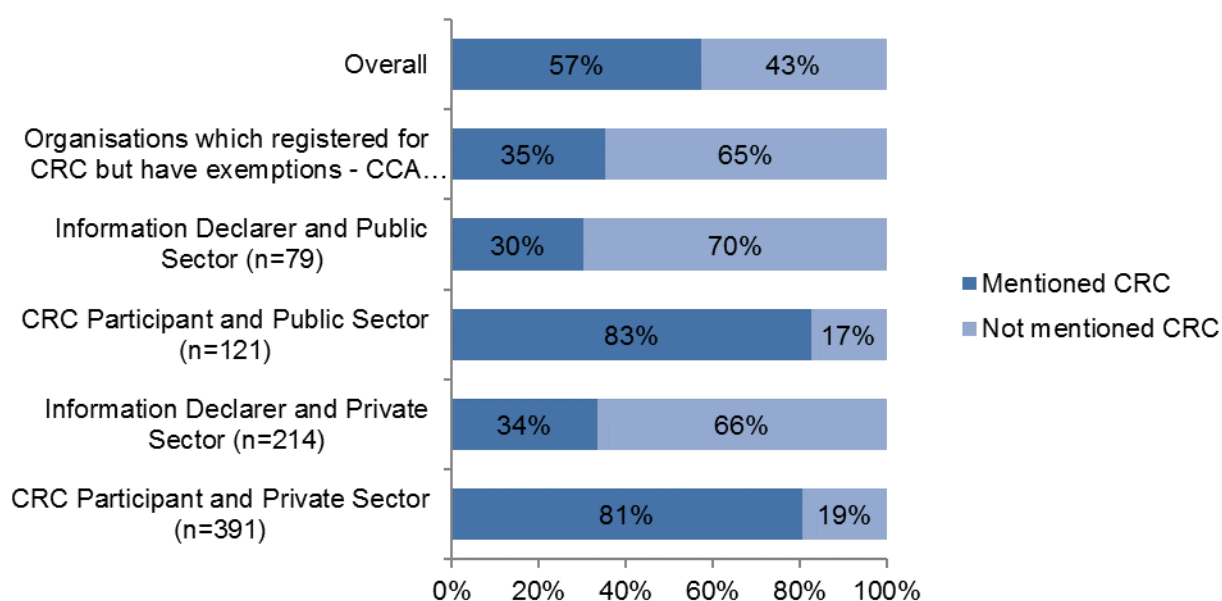
Where energy managers have confirmed that they have taken at least one action in the last four years, there is little evidence that the CRC was an influence. Only 2% of private sector participant and 4% of public sector mentioned that the CRC scheme prompted those actions. The main reason provided from all groups taking action was to reduce energy expenditure and make savings.

There is even less evidence that the CRC scheme has had an influence on actions that organisations are planning to take; with only 1% of private sector participants mentioning

reducing costs of CRC allowances as a reason why actions were planned, but not yet implemented.

To undertake further analysis we created a variable which computed whether the energy manager had made any mention of the CRC throughout the survey<sup>22</sup>. Overall, 57% of energy managers had some mention of CRC throughout the survey. As expected, more participants have mentioned the CRC scheme (83%; n=121 compared with 30%; n=79 for public sector organisations and 81%; n=391 compared with 34%; n=214 for private sector organisations).

Interestingly, approximately a third of both public sector and private sector information declarers had mentioned the CRC scheme. Subject to the limitation raised earlier about the possible misclassification of some information declarers, this provides further evidence that the process of declaring information prior to phase 1 of the CRC may have contributed, in conjunction with other factors, to influencing the behaviours and attitudes of information declarers.



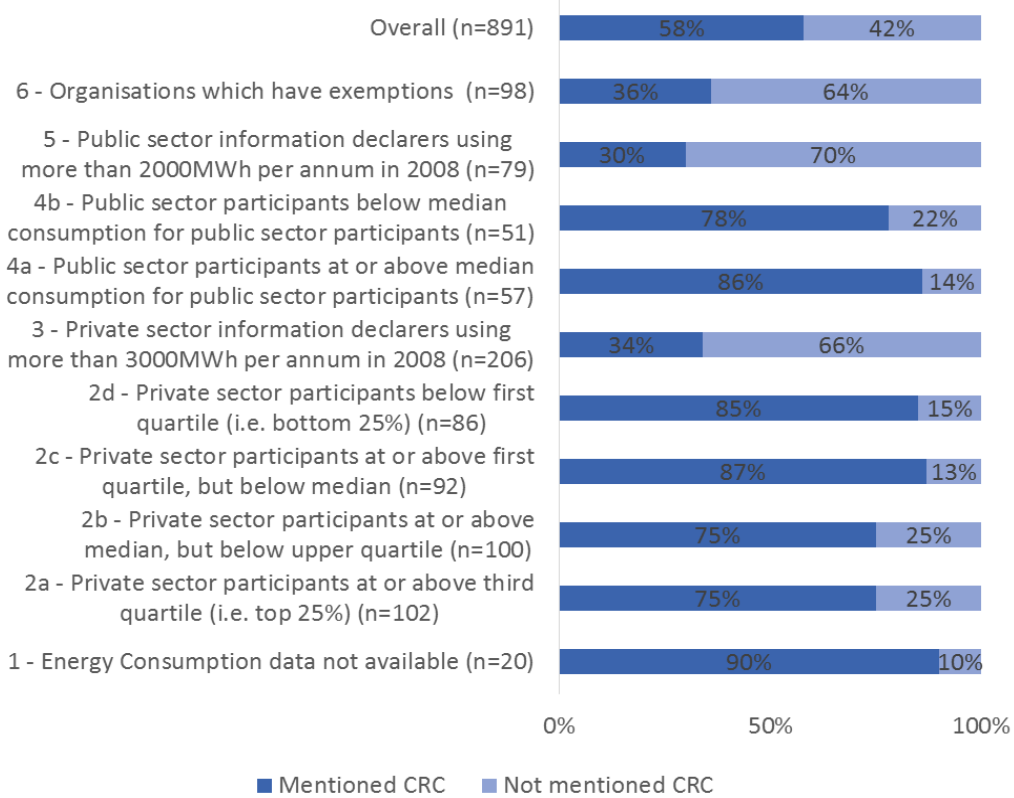
**Figure 3.28: Organisations that have taken at least one action and have mentioned CRC throughout the survey**

We then compared this variable against those who had taken any action in the last four years. As the vast majority of organisations had taken at least one action in the last four years (99%, n=981) the profile between groups is very similar to that illustrated in Figure 3.28 above.

Further analysis sub-groups, as illustrated in **Error! Reference source not found.**, highlights that private sector participants in groups 2d and 2c (those with electricity consumption at or below the median consumption level) are more likely to have mentioned the CRC scheme after taking at least one action. Conversely, public sector organisations, at or above the median level of electricity consumption are more likely to have mentioned the CRC and taken one action.

<sup>22</sup> Mentions of CRC in questions 14, 17, 19, 28, 30

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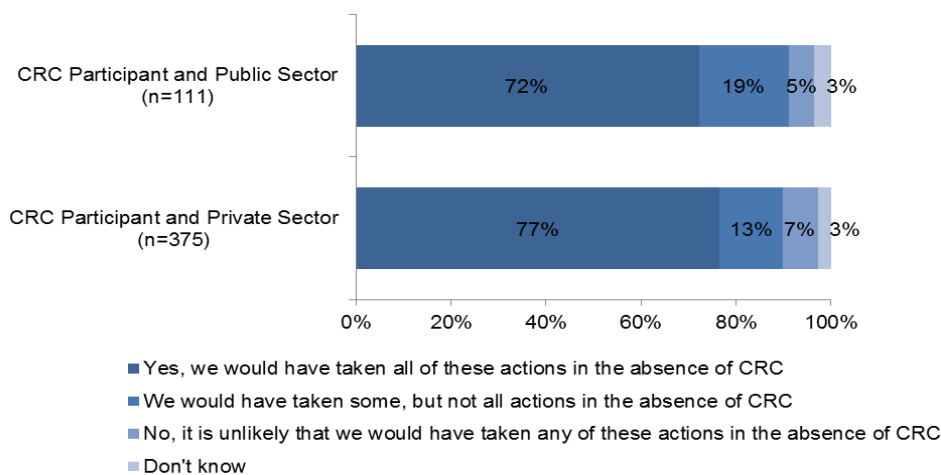


**Figure 3.29: Analysis of organisations who have taken at least one action and mention CRC throughout the survey**

As described above, investing in energy efficient technologies was an action taken by the majority (93%) of all organisations however there were no major differences between groups.

**3.11.4 Would action have been taken in the absence of the CRC?**

**Error! Reference source not found.** below shows that, in the public and private sector, the majority of participants who had taken actions would have done so in the absence of the CRC. Further analysis of the sub groups did not highlight any differences within the public or private



sector.

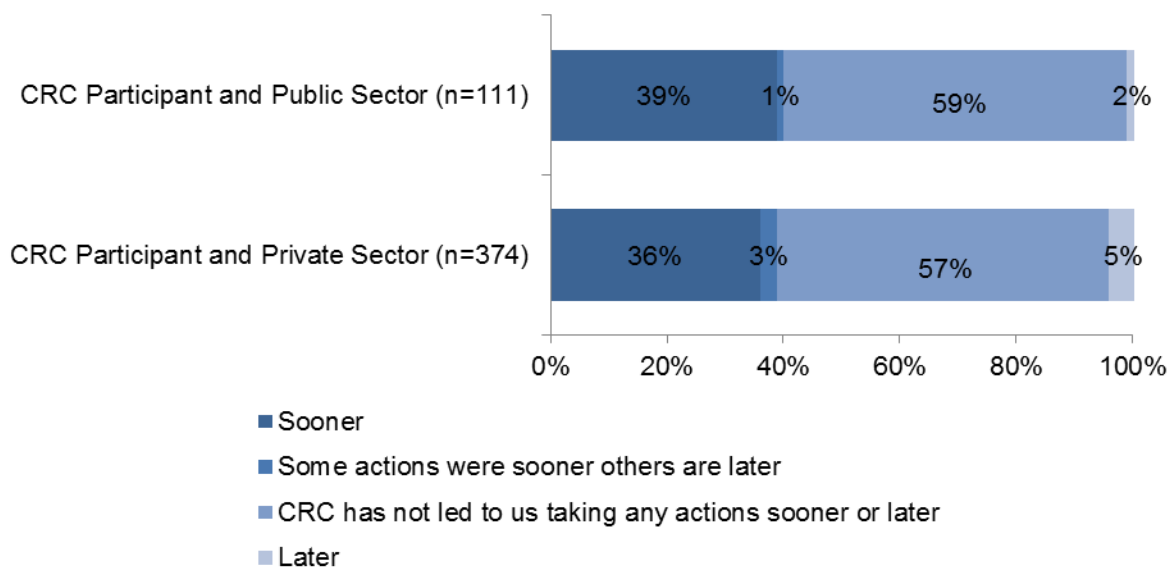
**Figure 3.30: Would your organisation have taken the actions we have been discussing in the absence of CRC? (Applicable to participants who have taken at least one action)**

### 3.11.6 Is the scale of action taken any greater or less that it would have been in absence of the CRC?

The majority of CRC participants (public 58%, n=105 and private 60%, n=347) said the scale of action taken would have been the same in the absence of the CRC. Just under a third said the scale of action taken would have been greater than it would have been in the absence of CRC, with just over 10% mentioning their scale of action was less than it would have been in the absence of the CRC. There were no further differences between sub-groups.

### 3.11.7 Did the organisation take these actions any sooner or later as a result of the CRC scheme?

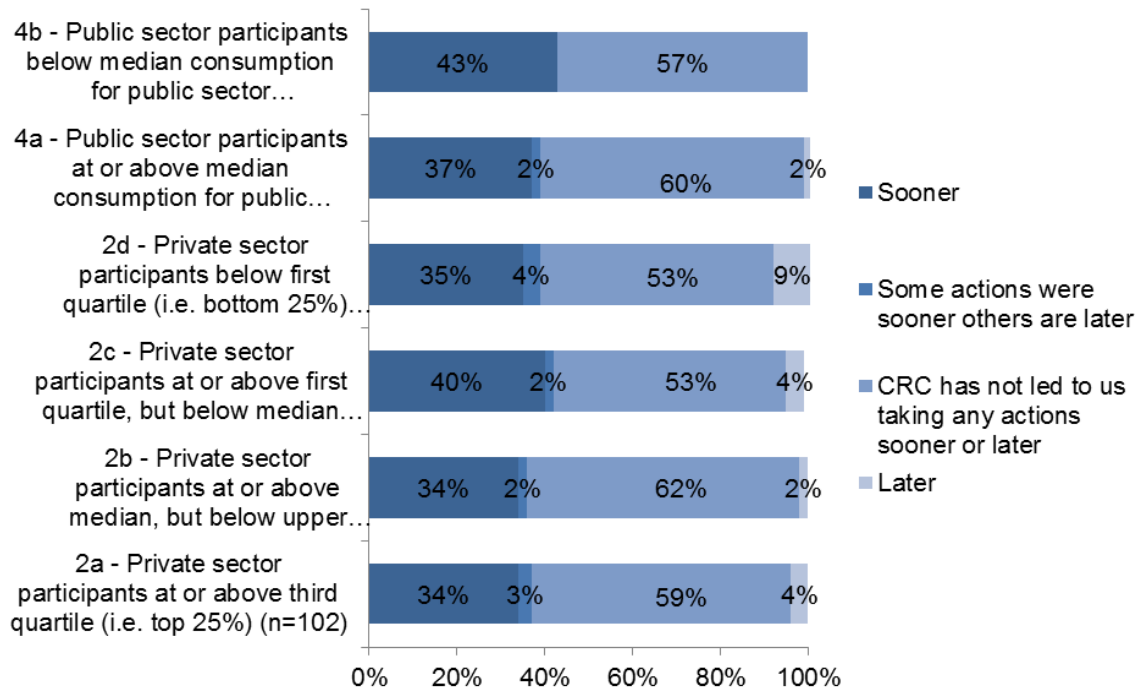
**Error! Reference source not found.** below suggests that in the majority of cases (public sector 59%, n=111 and private sector 57%, n=374), CRC has not led to the actions taken by participating organisations occurring any sooner or later. However, over a third (in both sectors) thought the CRC had led to actions being taken sooner.



**Figure 3.31: Did the organisation take these actions any sooner or later as a result of the CRC scheme?**

Further inspection of the private sector did not reveal any particular differences between groups 2a-2d with the exception of group 2c (those at or above the first quartile but below the median), with a slightly higher proportion (40%) of respondents stating that actions were taken sooner. There were no significant differences between the public sector respondents.

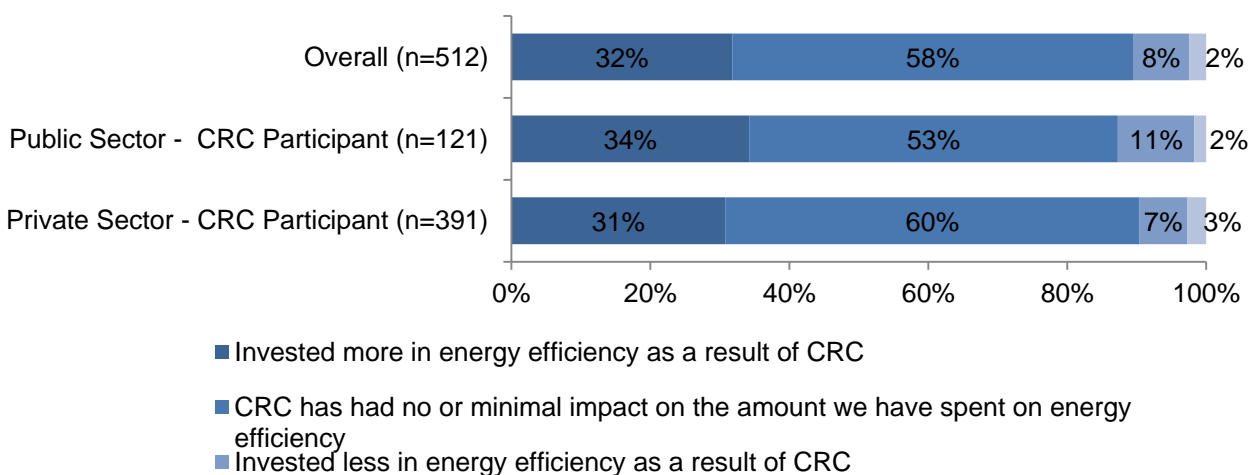
### 3. Findings and analysis



**Figure 3.32: Did the organisation take these actions any sooner or later as a result of the CRC scheme?**

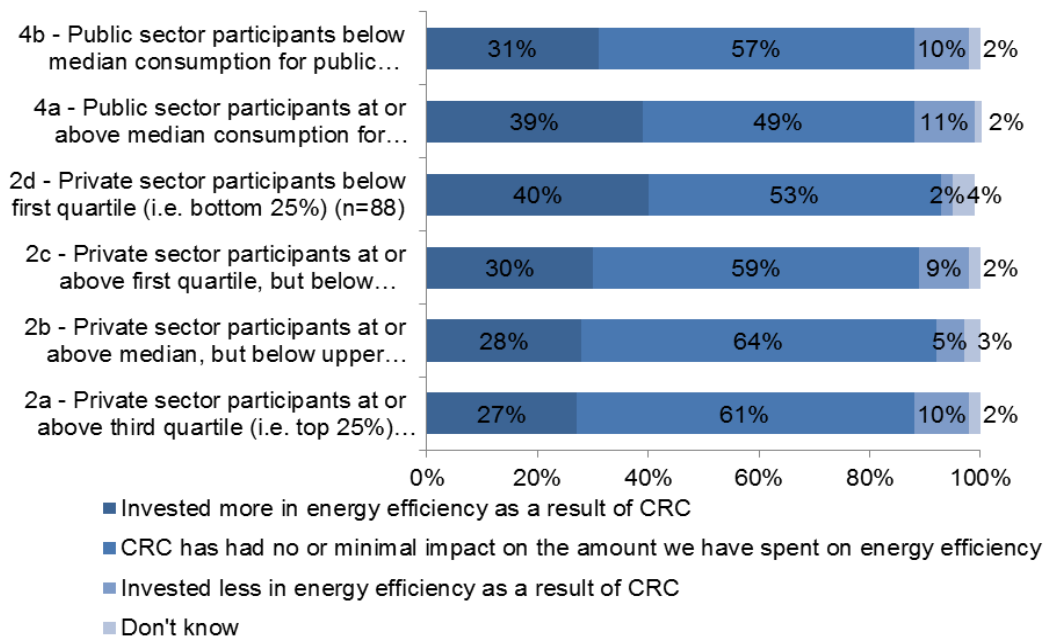
#### 3.11.8 Excluding administration costs, would the amount invested in energy efficiency measures been higher or lower in the absence of the CRC scheme?

Overall, the majority (58%) of respondents suggested that the CRC had no or minimal impact on the amount of expenditure on energy efficiency. This was true of both the public sector (53%) and the private sector (60%). Approximately a third of respondents in both sectors stated that the CRC had resulted in them investing more in energy efficiency; 31% in the private sector and 34% in the public sector.



**Figure 3.33: Excluding the administrative costs of complying with CRC, would the amount of money invested in energy efficiency measures been higher, lower or about the same as it would have been in the absence of CRC?**

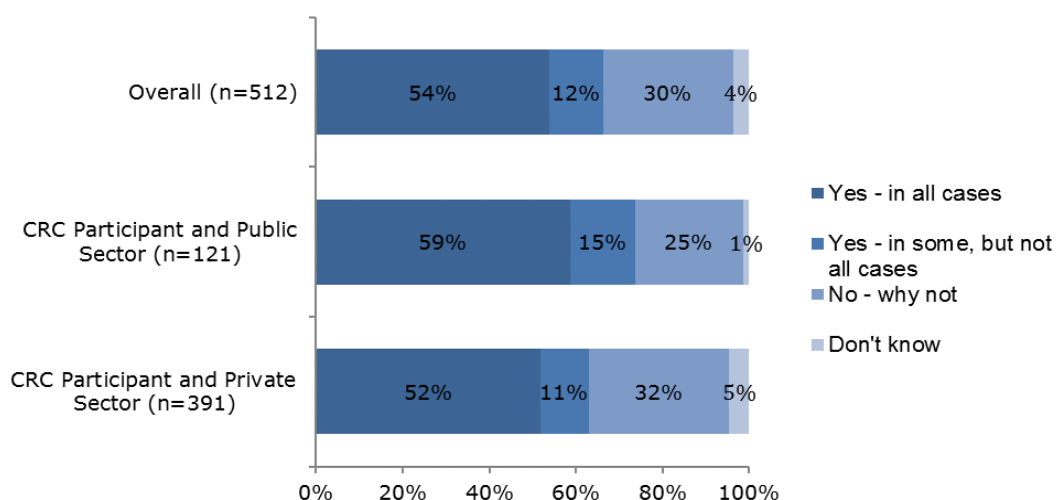
Further examination of the sub groups, illustrated in Figure 3.34, highlights that a higher proportion of group 2d (private sector participants with electricity consumption below the first quartile in 2008) indicated that they had invested more as a result of the CRC compared with the other private sector participant groups.



**Figure 3.34: Excluding the administrative costs of complying with CRC, would the amount of money invested in energy efficiency measures been higher, lower or about the same as it would have been in the absence of CRC?**

### 3.11.9 Do you include the cost of CRC within the business case for Energy Efficiency investments?

Just over half (54%) of respondents stated that they include the cost of CRC within the all business cases for energy efficiency investments. The pattern was similar for both the public sector (59%) and the private sector (52%). This is shown in **Error! Reference source not found.**

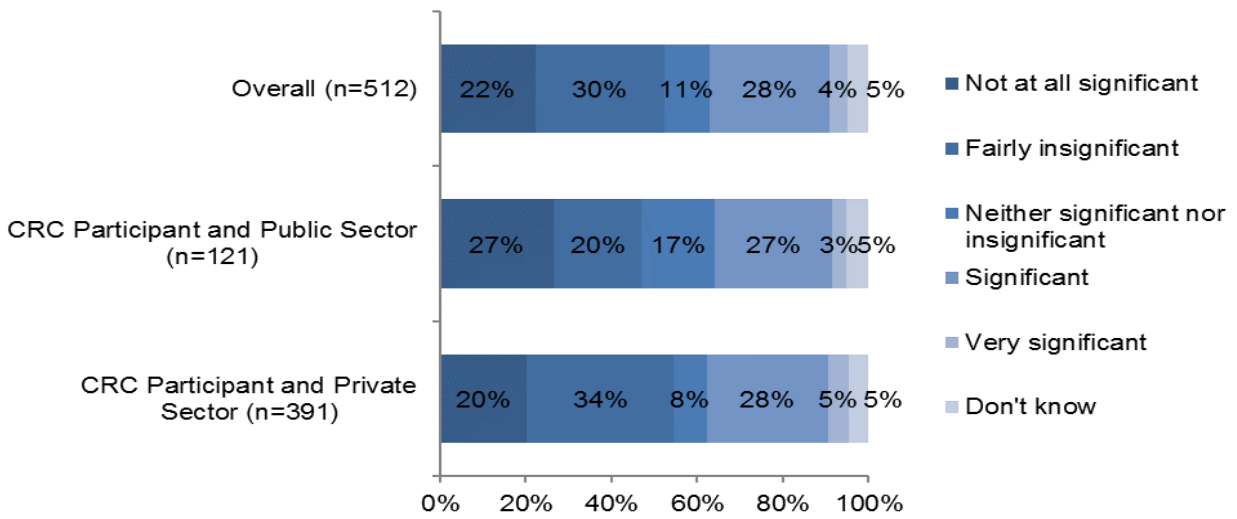


**Figure 3.35: Do you include the cost of CRC within the business case for Energy Efficiency investments?**

Further analysis to examine groups within the public and private sector did not reveal any significant differences between sub groups.

**3.11.10 Do CRC costs have a significant or insignificant impact on profitability?**

Views were mixed on the impact of CRC on profitability or its equivalent in public-sector terms. Just over half of all respondents (52%) felt that its impact was either not at all significant (22%) or fairly insignificant (28%), whereas a total of 32% felt it was at least significant.



**Figure 3.36: Do CRC costs have a significant or insignificant impact on profitability?**

Whilst sample sizes in the quantitative survey were not sufficient to give a full sector breakdown, there was some indication that the impact on profitability was perceived particularly strongly in the water and waste sectors and in accommodation and food sectors. Further analysis of the sub groups did not highlight any observed differences.

**3.12 Wider benefits and barriers to further action**

All respondents were asked whether there were any barriers to their organisation taking further action to improve energy efficiency. Responses have been tabulated, by groups, below.

**3.12.1 Most common barriers to improving energy efficiency cited by organisations**

**Error! Reference source not found.**5 summarises the barriers cited by the organisations interviewed. In most cases the most common barriers were:

- lack of funding / finance;
- uncertainty about long term benefits and costs; and



- limitations of the premises.

Barriers to taking further action on Energy Efficiency (multiple response)	Private sector		Public sector		Organisations which have exemptions - CCA or EU ETS	All respondents
	CRC participant	Info declarer	CRC participant	Info declarer		
<b>Lack of funding/finance</b>	37%	50%	70%	58%	42%	48%
<b>None</b>	25%	27%	5%	11%	20%	21%
<b>Too much uncertainty about long term benefits and costs</b>	10%	8%	7%	11%	18%	10%
<b>Limitations of the premises</b>	10%	10%	12%	14%	6%	8%
<b>There are no further cost effective technologies available to us at the moment</b>	7%	5%	3%	2%	9%	5%
<b>We don't stand to benefit from taking action (e.g. landlord taking action that benefits tenants more than them)</b>	6%	4%	1%	6%	3%	4%
<b>Personnel resources not available to take forward</b>	6%	5%	16%	6%	9%	8%
<b>Lack of support from board/senior management</b>	4%	5%	4%	5%	4%	4%
<b>Lack of information – We don't know what's possible</b>	3%	2%	4%	1%	3%	3%
<b>Lack of support from the workforce</b>	2%	1%	3%	5%	2%	2%
<b>Energy efficiency not an organisational priority</b>	2%	4%	5%	1%	4%	3%
<b>Lack of trusted information – We are aware of options, but advice isn't sufficiently tailored or we get conflicting advice</b>	1%	1%	0%	1%	0%	1%
<b>Reluctance to take action in market that isn't well established – don't want to take action yet in case new and better (cheaper or more effective) options will be available in future</b>	1%	0%	1%	1%	0%	1%

**Table 5: Barriers to further action being taken to improve energy efficiency**

### 3. Findings and analysis

#### 3.12.2 Analysis of barriers to improved energy efficiency

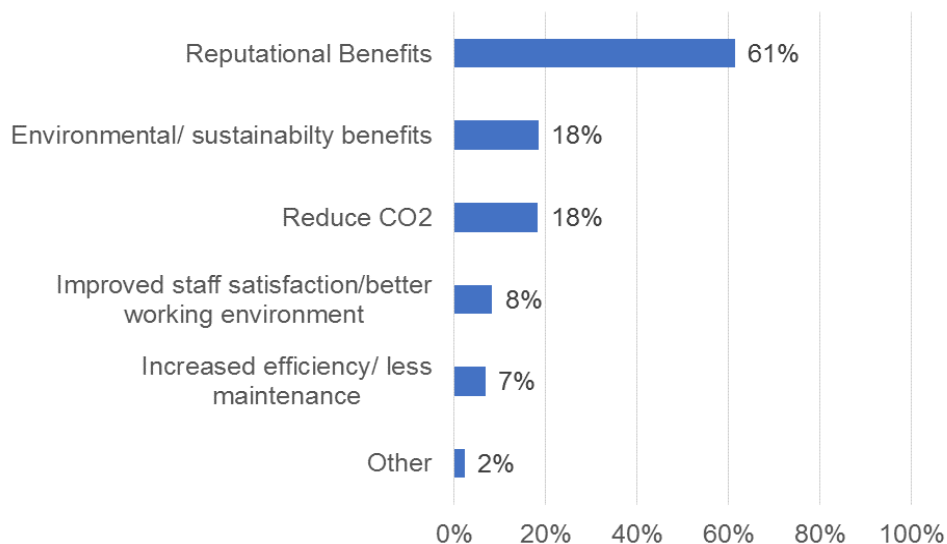
Looking at the finance barrier in Table 5, it is interesting to note that the public and private sectors display opposite trends. In the public sector, 70% of CRC public sector participants cited finance as a significant barrier compared with 37% of the private sector participants. This could be explained by recent reductions in public sector budgets. Information declarers showed a similar, but less pronounced, difference in that 58% of those in the public sector cited finance as a barrier and 50% of the private sector did so.

Uncertainty around long term benefits and costs was cited by both participants and information declarers, in both sectors, and to a similar degree. This is also the case for the barrier about limitations of the premises.

In the private sector, a quarter of both participants (25%) and information declarers (27%) stated that they felt there were no barriers. This is more than the public sector; where only 5% of participants and 11% of information declarers indicated that there were no barriers.

#### 3.12.3 Wider benefits to organisations from taking action to improve energy efficiency

All respondents were asked whether there experienced any benefits to their organisation from taking action to improve energy efficiency other than reducing energy costs; 81% of respondents mentioned at least one benefit, with 'reputational' (61% of cases) the most common. Other benefits mentioned less frequently were 'reduced carbon dioxide emissions', other environmental/sustainability benefits, improved staff satisfaction/ working conditions and improved efficiency/ lower maintenance costs.



**Figure 3.38: Wider benefits to taking action to improve energy efficiency other than reduced energy costs (multiple response, n=821)**

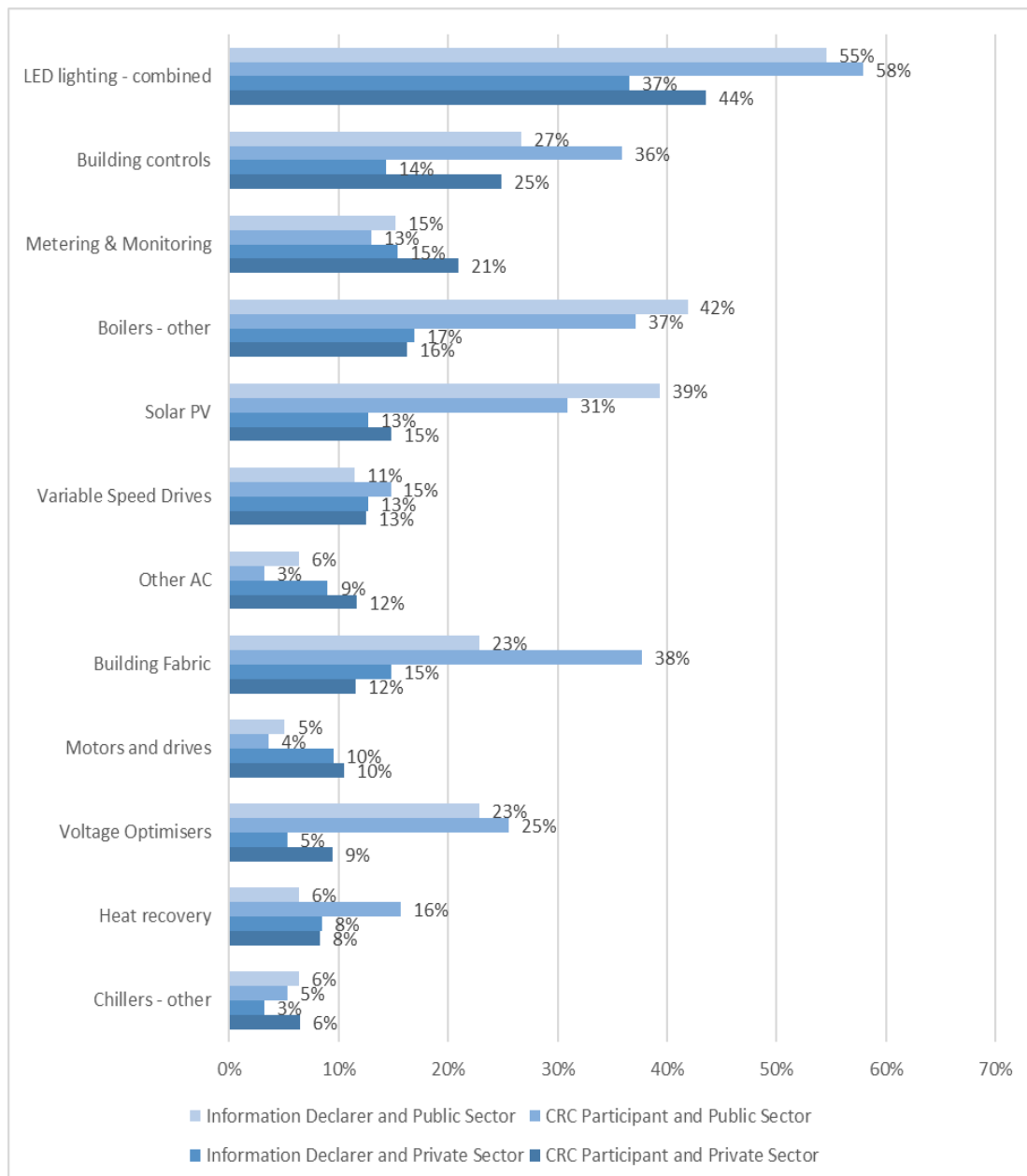
### 3.13 Investment in energy efficient technology

Section 3.11 highlighted that a significant proportion (93%) of organisations had invested in energy efficient technologies. The survey investigated this in more depth by examining which

specific technologies organisations had invested in over the past four years. Figure 3.39 below, illustrates a comprehensive list of the technologies mentioned, listed against a code frame provided by the Carbon Trust. A number of technologies mentioned by energy managers remain un-coded. These will be included in the next stage of the project.

By far the most common form of technology invested in, across all groups, was LED lights. A larger percentage of public sector organisations were investing in a wider range of technologies, such as boilers, and voltage optimisers, compared with private sector organisations.

In the synthesis report, this data is analysed in relation to a standardised set of ‘payback’ periods provided by the Carbon Trust to illustrate the cost benefits of investing in each technology.

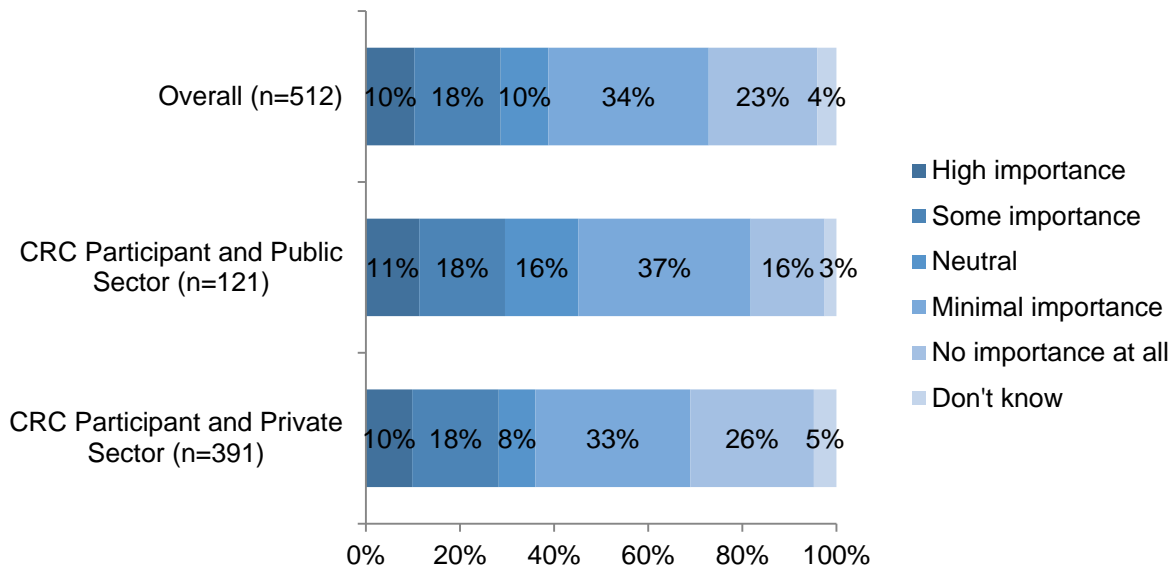


**Figure 3.39<sup>23</sup>: The 12 most common energy efficient technologies organisations invested in the last 4 years**

<sup>23</sup> Responses shown by % of cases within group. Any mentions of LED technology combined.

### 3.14 Level of importance attached to publicly available documents from the CRC

Only 28% of CRC participants reported that they attached ‘high’ or ‘some’ importance to CRC documents, such as the Performance League Table and its successor the Annual Report Publication. A further 10% were neutral about these documents while 57% reported that they attached ‘minimal’ or ‘no’ importance to these documents. There was no significant difference between the proportion of public sector and private sector organisations attaching ‘high’ or ‘some’ importance to CRC publications.



**Figure 3.40: Level of importance CRC participants attach to publicly available reports from the CRC**

### 3.15 CRC participants experience of the scheme

Many CRC participants reported that they found the scheme complex, with around 60% of organisations not finding the CRC requirements easy to understand, as illustrated in Figure 3.41.

However, more than 60% of participants found reporting of energy use data for the CRC straightforward, whilst just two-thirds of CRC participants found the process of reporting on the CRC straightforward and find buying and surrendering allowances clear. Just under half of CRC participants felt that the scheme is delivered efficiently and consistently.

Verbatim comments from respondents who agreed that the scheme was delivered efficiently and consistently reveal that they valued the support provided by the Environment Agency through the helpdesk and other communications, and found the scheme easy to understand and not onerous to comply with. In contrast those who disagreed referenced the many ways the scheme had been changed, its complexity, the level of bureaucracy involved, and the fact that they saw it as tax rather than a scheme from which they could benefit. The comments show that some respondents separated issues related to the scheme’s design and evolution from issues relating to its delivery, and some did not, and this may have influenced whether they assessed its delivery favourably or negatively.

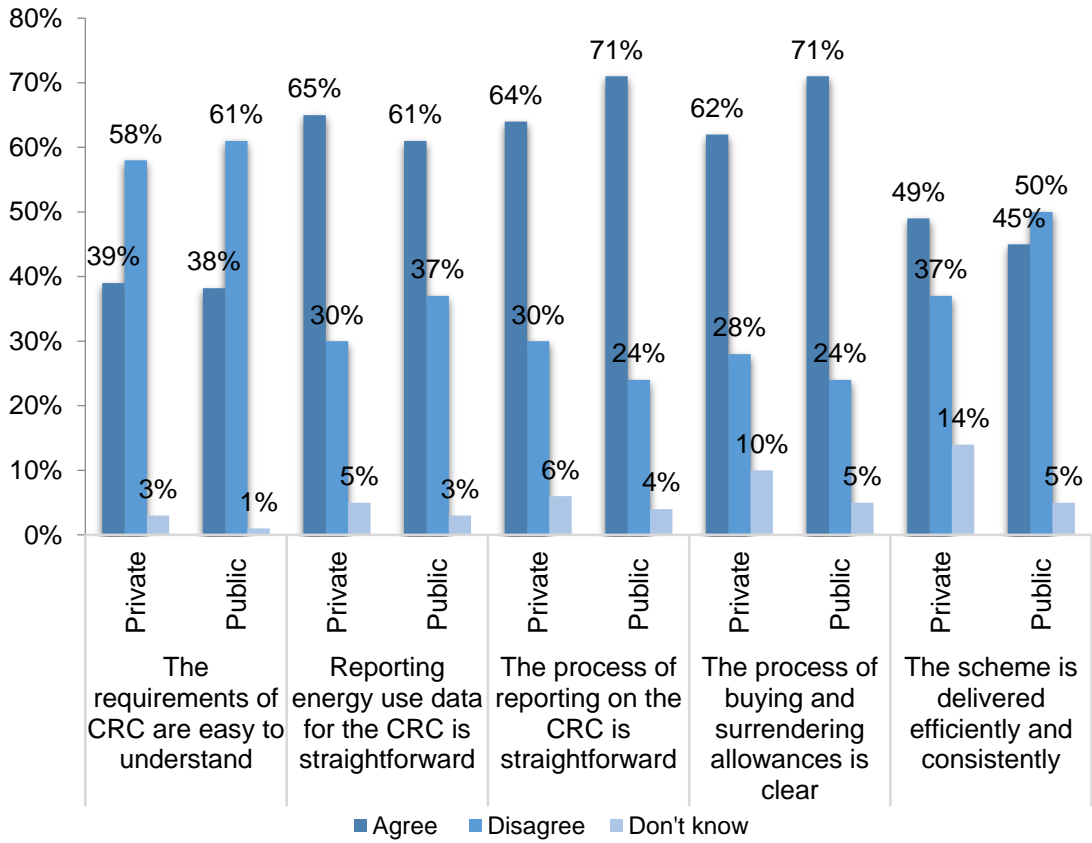


Figure 3.41: CRC participants' rating of the scheme

## 4. Conclusions

The final section of this report examines how the findings and analysis of the quantitative research contribute to answering the research objectives. The synthesis report considers these findings together with those from qualitative research, econometric research and desk research.

### 4.1 Objective A: Assess the extent the CRC has delivered reduction in emissions by the take up of energy efficiency measures

#### 4.1.1 Are there increases in the take-up of energy efficiency measures that can be attributed to the Scheme?

There was robust but indirect evidence from the quantitative data collected, to support the claim that the some take-up of energy efficiency measures could be attributed to the scheme. The evidence was indirect in that it was based on reported behaviour, rather than measured behaviour. Subject to this caveat, there was evidence from the quantitative survey that:

- more private sector participants from the CRC scheme appeared to be taking increased action on energy efficiency compared to information declarers;
- the CRC was mentioned as one of a range of influences that have contributed to an increased amount of action organisations take on energy efficiency. The percentage of energy managers attributing the change to CRC is only 6% of private sector participants and only 8% of public sector participants. These responses focused specifically on reducing the costs of CRC allowances; and
- there was some evidence, albeit weaker, that declaring information prior to phase 1 of the CRC contributed, in conjunction with other influences, towards increased energy efficiency measures being taken by information declarers.

#### 4.1.2 Are there improvements in energy management practices and capacity that can be attributed to the scheme?

There was evidence from the quantitative data collected, to support the claim that the improvements in energy management practices and capacity could be attributed to the scheme. Again, this is based on reported behaviour rather than measured behaviour. Evidence for this was provided by the following findings:

- more CRC participants were undertaking both carbon management and reporting activities compared to information declarers;
- more private sector participants had carried out an energy audit compared to private sector information declarers;
- more CRC participants had undertaken energy audits in the past year compared to information declarers;
- more organisations participating in the CRC scheme reported that they forecast energy use more routinely than information declarers; and
- more private sector CRC participants than information declarers reported having staff with performance metrics or objectives related to energy efficiency.

#### **4.1.3 Are there increases in the strategic priority and board level awareness of energy efficiency that can be attributed to the scheme?**

There was robust evidence, from the quantitative data collected, to support the view that reported increases in the strategic priority and board level awareness of energy efficiency could be attributed to the CRC scheme:

- more CRC participants in the private sector reported that energy efficiency had become a higher priority since 2010;
- board/ senior management members in private sector participant organisations were reported to be considering energy efficiency more often now (compared with four years ago) than those in organisations outside of the CRC; and
- more private sector participants were finding it easier to secure board/senior management approval for energy efficient technologies now compared to four years ago, compared with private sector information declarers.

## **4.2 Objective B: identify the barriers and drivers to energy efficiency and assess the extent to which CRC has overcome barriers and emphasised drivers**

### **4.2.1 What broader factors have been driving changes over the period of the CRC?**

The cost of energy and energy prices was the most mentioned factor for influencing more investment in energy efficiency across all organisations.

When looking at all types of organisation, the CRC scheme was mentioned, when prompted, by 56% of energy managers as having a positive influence on investment in energy efficiency.

The CRC scheme played a role in the reported increase in more investment in energy efficiency for participants: it was mentioned by 74% of private sector participants, and 81% of public sector participants.

#### 4. Conclusions

The CRC scheme was also mentioned as having a positive influence on energy investment by approximately one third of information declarers (32% of private sector information declarers, 28% of public sector information declarers). Reasons mentioned for the CRC having an impact on this group were:

- the organisation was approaching the threshold to join the scheme, and wanted to avoid becoming participants;
- to reduce energy costs; and
- increased awareness of energy efficiency within the organisation.

#### **4.2.2 Are the changes in energy efficiency behaviour attributable to the CRC drivers – the financial cost of CRC payments and reputational importance of publicly available documents?**

There was robust evidence to suggest that those private sector participants who were most influenced by the CRC behavioural drivers for change (cost, awareness, and reputation) were significantly more likely to be implementing energy efficiency measures with positive changes in the priority of energy efficiency at board level, than those private sector participants not influenced by the CRC behavioural drivers. Specifically:

- more private sector participants in BEH group 1 (organisations that placed high importance to publicly available CRC documents and/or reported CRC costs having a significant impact on profitability and/or reported CRC as a factor for increased awareness of energy efficiency), reported that energy efficiency took more priority compared to those in BEH group 2 (i.e. organisations that did not place a high importance on publicly available documents or report that CRC costs had a significant impact on profitability or report CRC as a factor for increased awareness of energy efficiency);
- a larger percentage of participants who have been most influenced by the CRC scheme (defined as BEH group 1), had seen an increase in awareness of energy efficiency within their organisation, compared to those in BEH group 2
- a larger percentage of participants who have been most affected by the CRC scheme (BEH group 1), had seen an increase in the amount of action taken on energy efficiency within their organisations, compared with those in BEH group 2. This difference was larger for private sector participants;
- a larger percentage of energy managers who felt their organisation had been most influenced by the CRC scheme (BEH group 1), reported that they found it easier to secure board/ senior management approval for investment in energy efficient technologies, compared with those in BEH group 2.



### 4.2.3 Are there additional barriers to actions that need to be overcome?

There were common perceived barriers that needed to be overcome by all types of participant but pronounced differences in the scale of the challenge reported by public and private sector organisations.

**Lack of funding / finance** was an issue for all organisations, however, in the public sector, 70% of public sector participants cited finance as a significant barrier compared with 37% of the private sector participants. In addition, 16% of public sector participants noted that they did not have the personnel resource available. Information declarers showed a similar, but less pronounced, difference in that 58% of the public sector cited finance as a barrier and 50% of the private sector did so.

**Uncertainty around long term benefits**, constraints imposed by premises and cost constraints were cited by both participants and information declarers in both sectors to a similar degree.

However, more organisations from the private sector felt there were **no barriers** to energy efficiency compared with fewer from the public sector.

## 4.3 Objective C: assess whether the CRC has delivered abatement in a cost effective manner

This objective is addressed in the synthesis report, using quantitative survey data on the take-up of different energy efficiency measures in combination with data from other sources.

## 4.4 Objective D: has the CRC been administered effectively?

There were mixed messages about the effectiveness of CRC delivery and administration.

Just under half of CRC participants thought that the scheme was delivered efficiently and consistently. More than 60% of participants found reporting of energy use data for the CRC straightforward, and just under two-thirds of CRC participants found the process of reporting on the CRC straightforward and finding buying and surrendering allowances clear.

However, 60% of energy managers across both public and private sectors disagreed that the CRC requirements were easy to understand. This may relate more to the design of the scheme than to the effectiveness of administration.

# Annexes

## Annex 1: Summary of actions taken, planned and considered by organisations interviewed in the quantitative survey

		Taken action	Action planned but not yet implemented	Action considered but rejected	Not considered	Not relevant to my organisation	Don't know	Overall
<b>Set up targets to reduce energy use</b>	CRC Participant and Private Sector	78%	11%	2%	7%	1%	1%	100%
	Information Declarer and Private Sector	61%	14%	2%	18%	3%	1%	100%
	CRC Participant and Public Sector	85%	7%	1%	5%	2%	0%	100%
	Information Declarer and Public Sector	83%	5%	1%	10%			100%
	Organisations which have exemptions	80%	3%	1%	14%	2%		100%
	Overall	75%	10%	2%	11%	2%	1%	100%
<b>Improving monitoring</b>	CRC Participant and Private Sector	88%	7%	1%	2%	0%	1%	100%
	Information Declarer and Private Sector	79%	7%	2%	8%	2%	1%	100%
	CRC Participant and Public Sector	92%	3%	2%	1%	2%		100%
	Information Declarer and Public Sector	93%	4%	1%	2%			100%
	Organisations which have exemptions	79%	9%	5%	7%			100%
	Overall	85%	7%	2%	5%	1%	0%	100%
<b>Installed Automatic Meter Reading Systems</b>	CRC Participant and Private Sector	83%	8%	2%	6%	1%	0%	100%
	Information Declarer and Private Sector	67%	8%	4%	17%	2%	2%	100%
	CRC Participant and Public Sector	90%	4%	2%	2%	1%		100%

	Information Declarer and Public Sector	79%	10%	4%	8%			100%
	Organisations which have exemptions	68%	13%	5%	12%	1%	1%	100%
	Overall	77%	8%	3%	10%	1%	1%	100%
<b>Installed energy reporting systems and software</b>	CRC Participant and Private Sector	63%	15%	4%	16%	2%	0%	100%
	Information Declarer and Private Sector	43%	9%	9%	34%	3%	2%	100%
	CRC Participant and Public Sector	67%	12%	6%	14%	1%		100%
	Information Declarer and Public Sector	53%	13%	15%	18%		1%	100%
	Organisations which have exemptions	52%	16%	7%	23%	2%		100%
	Overall	55%	13%	7%	22%	2%	1%	100%
<b>Set up dedicated cross organisation working group on energy efficiency</b>	CRC Participant and Private Sector	57%	11%	4%	26%	2%	1%	100%
	Information Declarer and Private Sector	36%	12%	1%	46%	4%	0%	100%
	CRC Participant and Public Sector	59%	14%	10%	14%	3%		100%
	Information Declarer and Public Sector	58%	4%	11%	26%	1%		100%
	Organisations which have exemptions	53%	16%	3%	27%		1%	100%
	Overall	51%	12%	4%	30%	2%	1%	100%
<b>Employed dedicated staff (e.g. energy managers)</b>	CRC Participant and Private Sector	49%	4%	5%	40%	1%	1%	100%
	Information Declarer and Private Sector	26%	2%	4%	63%	5%	0%	100%
	CRC Participant and Public Sector	70%	2%	3%	24%	1%		100%
	Information Declarer and Public Sector	51%	2%	13%	33%	1%		100%
	Organisations which have exemptions	35%	3%	5%	52%	3%	2%	100%
	Overall	43%	3%	5%	46%	2%	1%	100%
<b>Brought in external expertise to assess energy efficiency (energy audit)</b>	CRC Participant and Private Sector	81%	5%	4%	7%	1%	1%	100%
	Information Declarer and Private Sector	76%	7%	2%	12%	1%	2%	100%
	CRC Participant and Public Sector	81%	4%	3%	10%	1%		100%
	Information Declarer and Public Sector	85%	4%	2%	7%	2%		100%
	Organisations which have exemptions	78%	6%	1%	14%	1%		100%
	Overall	79%	6%	3%	10%	1%	1%	100%
<b>Trained/educated staff on energy efficient behaviour</b>	CRC Participant and Private Sector	84%	7%	1%	6%	0%	1%	100%
	Information Declarer and Private Sector	72%	8%	1%	18%	1%		100%
	CRC Participant and Public Sector	80%	11%	2%	7%			100%
	Information Declarer and Public Sector	82%	10%	2%	5%			100%
	Organisations which have exemptions	78%	10%	1%	10%	1%		100%

## Annexes

	Overall	79%	9%	1%	10%	1%	0%	100%
Applied for/achieved a certified energy efficiency or energy reduction standard	CRC Participant and Private Sector	35%	18%	12%	31%	2%	3%	100%
	Information Declarer and Private Sector	15%	14%	7%	57%	3%	5%	100%
	CRC Participant and Public Sector	37%	9%	24%	25%	1%	3%	100%
	Information Declarer and Public Sector	20%	17%	13%	43%	2%	5%	100%
	Organisations which have exemptions	19%	18%	13%	46%		3%	100%
	Overall	26%	15%	13%	40%	2%	4%	100%
Invested in improved energy efficient technologies (e.g. efficient lighting, IT, chillers, HVAC)	CRC Participant and Private Sector	93%	3%	1%	2%	0%	0%	100%
	Information Declarer and Private Sector	89%	3%	0%	7%	0%	0%	100%
	CRC Participant and Public Sector	97%	2%		0%	1%		100%
	Information Declarer and Public Sector	98%		1%	1%			100%
	Organisations which have exemptions	91%	5%		3%		1%	100%
	Overall	93%	3%	0%	3%	0%	0%	100%

## Annex 2: Final telephone survey script for quantitative research – energy managers

### INTRODUCTION

#### GATEKEEPER [IF NOT DIRECT DIAL]

Good morning/afternoon. My name is X and I am calling from a company called Databuild on behalf of the Department of Energy and Climate Change (DECC). I would like to speak to:

- Use named contact first – their replacement if the person has left
- If not: ask to speak to the person responsible for energy management (who may or may not have energy as a primary responsibility (e.g. it may be handled by Finance)). NB we may be referred to an external party where energy management or aspects thereof are outsourced. Where the organisation indicates this is the most appropriate person to speak to for the 'energy manager' interview, it is OK to proceed on this basis.

#### TARGET RESPONDENT

Good morning/afternoon. My name is X and I am calling from a company called Databuild on behalf of the Department of Energy and Climate Change (DECC). We are currently carrying out some work for DECC, speaking to medium and large-scale organisations across the UK about how they manage their energy use. We're particularly interested to discuss steps taken or considered in recent years to improve your energy efficiency and the factors influencing your decision making.

The results will be used by DECC to inform decisions regarding future energy efficiency policy, so this is an opportunity for your organisation to feed into DECC's decision making.

If required to convince the respondent to participate:

- It's important that as many organisations as possible agree to participate to ensure that DECC's decisions are based on sound evidence.
- A summary of the results by sector will be shared with those who are willing to participate.

Is now a convenient time? The conversation will take around 20 minutes.

Possible outcomes:

- Yes
  - Continue with interview
  - No – researcher to make an appointment for a convenient time
- I'm not the best person to speak to – who would be a good person to talk to? (Take details of name and number and telephone alternative contact)
- Unwilling to participate – why?

Individual responses If required:

- will be treated in confidence; only anonymised information will be shared with DECC, unless otherwise agreed with you. The full data will be accessed by Databuild and CAG Consultants (the team responsible for undertaking this work on DECC's behalf)
- Your details were provided to us by:
  - If you are speaking to the named contact: the Environment Agency
  - If you are speaking to a person nominated by the named contact: <name of person who referred you to this individual>

**ALL RESPONDENTS**

Can I just check; do you have the remit to put forward recommendations on energy efficiency within the organisation?

- Yes
- No – try to identify who does this and follow up with that person instead. Terminate interview

Profile information to be recorded from database for all records:

- Electricity consumption in 2008<sup>24</sup>
- Activity sector (SIC)
- CRC participant number (CRC registrants)
- Regulator
- Exemptions from CRC allowances – CCA
- Exemptions from CRC allowances – EU ETS
- For participants: whether they qualified for phase 1, phase 2 or both

**Note to researcher:**

Capture name of respondent if different to that listed in the database or indicate you have spoken to the named contact if that is the case.

All responses will be treated in confidence and will only be used for research purposes by the team undertaking this evaluation on behalf of DECC. Responses will be shared with DECC in an anonymised form only, unless otherwise agreed by you. Calls may be monitored for training purposes.

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<sup>24</sup> Based on analysis of half hourly meter data supplied by DECC and the Environment Agency.

## **SECTION A: PROFILE**

I'd like to start by finding out a bit more about your organisation and your role.

Researcher to record if obvious; clarify if necessary

Are you:

- An employee of the organisation
- An external party nominated to respond on behalf of the organisation

### **ALL**

1. What is your job title? [capture verbatim] Code to distinguish between:

- Director, i.e. member of the board of directors
- Other employee of the organisation

### **EMPLOYEE OF THE ORGANISATION**

Having established in the introduction that energy is part of their remit:

2. Is energy your sole responsibility or one of a number of responsibilities? (Capture verbatim and categorise)

- Energy is sole responsibility
- Energy is one of a number of responsibilities
  - Part of an Environment/Sustainability role
  - Part of a role with wider responsibilities (e.g. general manager / director)

3. When did you take responsibility for (or start advising the organisation on) energy-related matters? (Capture year and categorise)

- Took responsibility before 2007
- Took responsibility between 2007 and 2010
- Took responsibility since 2010

### **EXTERNAL PARTY**

4. What is your relationship with <the organisation>?

5. When did you start advising the organisation on energy-related matters? (Capture details and categorise)

- Started before 2007
- Started between 2007 and 2010
- Started since 2010

**ALL**

6. Does <organisation name> conduct carbon management or reporting activities?

- Carbon management
  - Reporting
  - Both
  - Neither

If conducting carbon management or reporting activities:

What is your role in this? (capture verbatim)

7. So I can get more understanding of energy use within your organisation

a) Did the **amount of energy** used by your organisation between 2007 and 2010 increase, decrease or stay about the same? [Allow option for don't know]

[IF INCREASED OR DECREASED] What are the main factors that led to this increase/decrease? (Capture verbatim and code, multiple response)

- Acquisitions/disposals of businesses, sites or buildings
- Changes in business activity level – i.e. growth or decline in activity
- Shift in balance of different business activities
- Changes in equipment used
- Changes in or refurbishment of buildings
- Changes in working practices
- Change in management priorities
- Other – what?

b) Has the **amount of energy** used by your organisation increased, decreased or stayed about the same since 2010? [Allow option for don't know]

[IF INCREASED OR DECREASED] What are the main factors that led to this increase/decrease? (Capture verbatim and code)

- Acquisitions/disposals of businesses, sites or buildings
- Changes in business activity level
- Shift in balance of different business activities
- Changes in equipment used
- Changes in or refurbishment of buildings
- Changes in working practices
- Change in management priorities



**NB for questionnaire reviewers:**

If external parties are interviewed, wording will need to be altered e.g. 'your organisation' and 'you' will often need to be substituted for the organisation name. This is not indicated in the questionnaire to allow for ease of review.

**SECTION B: GENERAL ATTITUDES AND BEHAVIOUR**

**ALL**

To start with, I'd like to get a general idea of where energy management fits in your organisation and how you manage your energy.

8. What level of priority would you say **energy efficiency** takes in your organisation as a whole, currently? Please use a scale of 1 to 10 where 1 means a very low level and 10 means a very high level.

**Researcher to capture verbatim comments made by respondent regarding the confidence in their rating / any caveats raised**

1 – Very low priority 2 3 4 5 6 7 8 9 10 – Very high priority  
Don't know

9. Is the same level of priority given to **energy efficiency** at board level?

- Yes
- No – what priority is given to **energy efficiency** at board level? Please use a scale of 1 to 10 where 1 means a very low level and 10 means a very high level.

**Researcher to capture verbatim comments made by respondent regarding the confidence in their rating / any caveats raised**

1 – Very low priority 2 3 4 5 6 7 8 9 10 – Very high priority  
Don't know

Why do you say that?

10. Does energy efficiency take more or less priority in your organisation as a whole now than it did four years ago (i.e. in 2010)?

- More
- Less
- About the same
- Don't know

**IF HAD RESPONSIBILITY FOR ENERGY IN THE ORGANISATION BEFORE 2007**

11. And thinking back a little further now, does energy efficiency take more or less priority in your organisation now than it did seven years ago (i.e. in 2007)?

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- More
- Less
- About the same
- Don't know

### **ALL RESPONDENTS ABLE TO ANSWER QUESTIONS 10 OR 11**

12. Why has the level of priority changed/not changed for your organisation?

[record verbatim and code, but do not prompt]

- Mentioned CRC
- Did not mention CRC

### **ALL**

13. In your opinion, has the organisation's awareness of **energy efficiency** increased, decreased or stayed the same...

[For those able to comment] since 2007?

[For everyone else] since 2010?

- Increased
- Decreased
- Stayed the same

### **If increased or decreased**

14. What are the main factors that led to these changes? (Capture verbatim and code, but do not prompt)

- Mentioned CRC
- Did not mention CRC

### **ALL**

15. Does your organisation forecast its future **energy usage** routinely (i.e. at regular intervals)? [unprompted]

- Yes
- No – does your organisation monitor its energy use?
  - Yes
  - No
- Don't know
- Unwilling to say – why?

16. **If organisation forecasts its future energy use:** When did your organisation start routinely forecasting its future **energy use**? (capture year and categorise)

- 0-6 months
- More than six months to one year
- More than one year to three years
- More than three years to five years
- More than five years to ten years
- More than ten years
- [DO NOT READ OUT – FOR USE BY RESEARCHER IF REQUIRED] Don't know – check if they can tell you “at least X years”
- [DO NOT READ OUT – FOR USE BY RESEARCHER IF REQUIRED] Unwilling to say – why?

#### **ALL WHO ROUTINELY FORECAST THEIR ENERGY USE**

17. Why did your organisation decide to forecast its [future] **energy use**?

**Note to researcher:** Capture verbatim and code; probe for details if required to clarify categorisation:

- In response to rising costs of energy / to save on energy costs
- To inform budgeting and financial planning/management
- For tenant billing purposes (landlords)
- We've been using too much energy/wanted to cut down/be more efficient
- To monitor building/see how efficient it was/measure energy consumption
- Environmental/sustainability concerns/want to reduce carbon footprint/be green (no policy/regulations mentioned)
- Improve our reputation/ethical reasons/CSR
- As part of the CRC Energy Efficiency scheme
- In response to EU Emissions Trading Scheme requirements
- To secure relief from the Climate Change Levy under climate change agreements
- Energy Savings Opportunities Scheme (ESOS) requirements (e.g. to implement an energy audit)
- Recommendations from Energy Performance Certificates (EPCs)
- To monitor the effectiveness of investment in energy efficiency (e.g. under Enhanced Capital Allowances)
- Other government policy/targets/regulations – what?

- Other agreements/accreditations – what?

18. [if they do not forecast energy use, but do monitor energy use] When did your organisation start routinely monitoring its energy use? (capture year and categorise)

- 0-6 months
- More than six months to one year
- More than one year to three years
- More than three years to five years
- More than five years to ten years
- More than ten years
- [DO NOT READ OUT – FOR USE BY RESEARCHER IF REQUIRED] Don't know – check if they can tell you “at least X years”
- [DO NOT READ OUT – FOR USE BY RESEARCHER IF REQUIRED] Unwilling to say – why?

#### **ALL WHO MONITOR ENERGY USE BUT DO NOT FORECAST ENERGY USE**

19. Why did your organisation decide to monitor its **energy use**?

**Note to researcher:** Capture verbatim and code all that apply; probe for details if required to clarify categorisation but do not prompt for CRC at this stage.

- In response to rising costs of energy / to save on energy costs
- To inform budgeting and financial planning/management
- For tenant billing purposes (landlords)
- We've been using too much energy/wanted to cut down/be more efficient
- To monitor building/see how efficient it was/measure energy consumption
- Environmental/sustainability concerns/want to reduce carbon footprint/be green (no policy/regulations mentioned)
- Improve our reputation/ethical reasons/CSR
- As part of the CRC scheme
- In response to EU Emissions Trading Scheme requirements
- To secure relief from the Climate Change Levy under climate change agreements
- Energy Savings Opportunities Scheme (ESOS) requirements (e.g. to implement an energy audit)
- Recommendations from Energy Performance Certificates (EPCs)
- To monitor the effectiveness of investment in energy efficiency (e.g. under Enhanced Capital Allowances)
- Other government policy/targets/regulations – what?

- Other agreements/accreditations – what?

20. Thinking about the number of people in your organisation who have responsibility for **energy management or carbon reporting**:

a) How many full time equivalent staff have responsibility for energy management or carbon reporting in your organisation?

- None
- 1-2
- 3-5
- 6-10
- 10+
- Don't know

b) Is this more, less or about the same compared to four years ago (i.e. 2010)?

- More
- Less
- About the same
- Don't know

21. Do any members of staff have performance metrics or objectives based on meeting **energy efficiency targets**? Capture details verbatim

- Yes
- No
- Don't know

22. How often does your board/senior management consider **energy efficiency matters**?

- At least once a month
- About once a quarter
- About once every six months
- About once a year
- Less often than once a year
- Never
- Don't know

23. And is this more or less often than the board/senior management considered **energy efficiency** four years ago (i.e. in 2010)?

- More
- Less
- About the same

**IF RESPONDENT DOES NOT HOLD BOARD-LEVEL ROLE**

24. How often does your board/senior management discuss **energy efficiency matters** *with you*?

- At least once a month
- About once a quarter
- About once every six months
- About once a year
- Less often than once a year
- Never
- Don't know

25. And is this more or less often than the board/senior management discussed **energy efficiency matters** *with you* four years ago (i.e. in 2010)?

- More
- Less
- About the same

**ALL**

26. How easy or difficult is it to secure approval from the board/senior management for investment in Energy Efficient technologies?

- Very easy
- Easy
- Neither easy nor difficult
- Difficult
- Very Difficult
- Don't know
- [SPONTANEOUS] Board hasn't considered any bids for investment

27. Is it any easier or more difficult to secure approval now compared to four years ago?

- Easier now – why?
- More difficult now – why?
- About the same – why?
- Don't know

## ALL

28. Moving on, compared to four years ago (i.e. 2010) would you say that the **amount of action your organisation takes on energy efficiency** has increased, decreased or stayed the same

- Increased – why? Capture main reasons verbatim and code using frame for increased action below. Do not prompt
- Decreased – why? Capture main reasons verbatim and code using frame for decreased action below
- Stayed the same – why? Capture main reasons verbatim
- Don't know

## CODE FRAME FOR INCREASED ACTION; DO NOT PROMPT

- To reduce energy expenditure
- Increasing energy prices
- Carbon footprint /sustainability/climate change/environmental concerns/reduce carbon emissions
- Response to Climate Change Levy
- Response to climate change agreements (CCAs)
- Response to EU ETS
- Improve Energy Performance Certificate (EPC) rating
- Improve Display Energy Certificates (DEC) rating
- ESOS requirements (e.g. to implement an energy audit)
- Reduce costs for tenants (landlords)
- Other environmental/energy efficiency agreements – what?
- To improve / protect reputation
- To show leadership on energy efficiency
- To assist in meeting internal targets
- Reduce cost/make savings
- CRC requirements – phase 1 registration (applicable to both information declarers and participants)
- CRC requirements – to reduce costs of CRC allowances
- CRC requirements – to report to CRC
- CRC requirements – to avoid CRC penalties
- CRC requirements – to perform better in CRC league table before it was abolished
- Other CRC – probe for details

- Legislation/regulation/government targets

**CODE FRAME FOR DECREASED ACTION; DO NOT PROMPT**

- Lack of finance;
- Lack of staff time;
- Have done all the obvious things;
- Lack of information on other options;
- Other business priorities;
- Energy has become a smaller proportion of our costs;
- Have dropped out of CRC
- Other – what?

29. Has your organisation ever undertaken an energy audit? That is an assessment by an energy expert of the amount of energy your organisation uses, and ways in which you can reduce your energy consumption to reduce your costs?

- Yes; can you remember when this last took place)
  - Last 12 months
  - Last 2 years
  - Longer ago
- No
- Don't know

30. I'm going to read out a list of factors that may have affected **the amount your organisation invests in Energy Efficiency**. For each factor, I'd like you to tell me if it has or hasn't influenced the amount invested in **Energy Efficiency**.

In your opinion, have any of the following affected the **amount your organisation invests in Energy Efficiency**? [For each where they say it's had an impact] Please could you briefly describe how this has affected the amount invested in Energy Efficiency.

Factor	No influence	Influenced; code direction:		Don't know	Capture details verbatim...
		Less investment	More investment		
The recession					
Cost of energy / energy prices					
Customer demand					
Improving or protecting your reputation					
The level of priority given to energy					



efficiency by your board					
The Climate Change Levy (CCL)					
The CRC Energy Efficiency scheme					
IF THEY FORECAST THEIR ENERGY USE ALSO COVER:					
Your energy use forecasts					
ALL WHERE RELEVANT AS DETERMINED BY INFORMATION FROM THE DATABASE					
EU Emissions Trading Scheme (ETS)					
Climate Change Agreements					

31. Is there anything else that has affected the amount your organisation invests in energy efficiency? What else? Again – capture details for each – how has this affected the amount invested in Energy Efficiency? DO NOT PROMPT

- Display Energy Certificates
- Energy Performance Certificates
- The Carbon Trust Standard for Carbon
- The Carbon Disclosure Project
- Energy Savings Opportunities Scheme (ESOS) requirements (e.g. to implement an energy audit)
- Other – what?

32. And, what has been the most important factor influencing the amount your organisation has invested? – capture details.

**SECTION C: ACTIONS TAKEN/CONSIDERED IN THE LAST FOUR YEARS (i.e. since 2010)**

I'd now like to ask a few questions about specific actions your organisation has taken or considered.

**ALL**

33. I'm going to read out a list and I'd like you to tell me if your organisation has done this in the last four years (i.e. since 2010), and if not, if it's something your organisation has considered. (researcher to clarify for actions considered but not yet taken whether action is planned or has been considered and rejected)

	Taken action	Considered action, but not taken		Not considered	N/A
		Action planned but not yet implemented	Action considered but rejected		
Set targets to reduce energy use					
Improved monitoring					
Installed Automatic Meter Reading Systems					
Installed energy reporting systems and software					
Set up dedicated cross organisation working group on energy efficiency					
Employed dedicated staff (e.g. energy managers)					
Brought in external expertise to assess energy efficiency (energy audit)					
Trained/educated staff on energy efficient behaviour					
Applied for/achieved a certified energy efficiency or emissions reduction standard					
Invested in improved energy efficient technologies (e.g. efficient lighting, IT, chillers, HVAC)					

For actions considered but rejected: On what grounds was <X> rejected?

DO NOT PROMPT

- Cost outlay considered too high at this time
- Payback period too long
- Other options were more cost effective
- Not considered to offer significant opportunity for improvement
- Lack of information – We don't know what's possible
- Lack of trusted information – We are aware of options, but advice isn't sufficiently tailored or we get conflicting advice
- Too much uncertainty about long term benefits and costs
- Reluctance to take action in market that isn't well established – don't want to take action yet in case new and better (cheaper or more effective) options will be available in future
- We don't stand to benefit from taking action (e.g. landlord taking action that benefits tenants more than them)
- Lack of funding/finance

- Personnel resources not available to take forward
- Lack of support from the workforce
- Energy efficiency not an organisational priority
- Limitations of the premises
- Lack of support from board/senior management
- Other – what?

34. Thinking about the actions you have taken <researcher to remind respondent of areas where they said they took action>, what prompted those actions? Researcher to capture verbatim and code using code frame below next question

35. Thinking now about the actions you are planning to take <researcher to remind respondent of areas where they say they are planning to take action>, why are you planning to take these actions. Researcher to capture verbatim and code using code frame below:

**For both taken and planned actions researcher capture response verbatim and categorise [multiple response]. Do not prompt:**

- To reduce energy expenditure
- Increasing energy prices
- Carbon footprint /sustainability/climate change/environmental concerns/reduce carbon emissions
- Response to Climate Change Levy
- Response to climate change agreements (CCAs)
- Response to EU ETS
- Improve Energy Performance Certificate (EPC) rating
- Improve Display Energy Certificates (DEC) rating
- ESOS requirements (e.g. to implement an energy audit)
- Reduce costs for tenants (landlords)
- Other environmental/energy efficiency agreements – what?
- To improve / protect reputation
- To show leadership on energy efficiency
- To assist in meeting internal targets
- Reduce cost/make savings
- CRC requirements – phase 1 registration (applicable to both information declarers and participants)
- CRC requirements – to reduce costs of CRC allowances
- CRC requirements – to report to CRC

- CRC requirements – to avoid CRC penalties
- CRC requirements – to perform better in CRC league table before it was abolished
- Other CRC – probe for details
- Legislation/regulation/government targets
- Other – what?

**If taken or planned action and not mentioned CRC as an influence – prompt**

36. Did the CRC energy efficiency scheme have any influence on your decision to take action or the nature or extent of actions you took?

- CRC influenced the decision to take action – how?
- CRC influenced the nature/extent of action – how?
- CRC influenced both – how?
- CRC did not influence either – Why?

**If CRC influence the nature or extent of action or both**

37. How important was the CRC, relative to other factors [that influenced your decision to take action or the nature/extent of actions you took]? (Capture verbatim comments and code)

- Not at all important
- Somewhat important
- Important
- Very important
- Don't know

**ALL**

**WHERE INVESTED IN ENERGY EFFICIENT TECHNOLOGIES**

38. You mentioned earlier that your organisation had **invested in energy efficiency technologies**; could you give me a brief overview of what technologies have been invested in, and the scale of action taken? Researcher to capture verbatim and code all that apply. Don't prompt list, but ask for clarification if required to categorise:

- Catering – Fridge and Freezers
- Compressed Air
- Heating – Condensing Boiler
- Heating – Radical Boiler Redesign
- Heating – More efficient air conditioning
- Heating – Optimising Start Times

- Heating – Programmable Thermostats
- Heating – Reducing Room Temperature
- Heating – TRVs Fully Installed
- Innovative Glazing
- Insulation – Roof
- Insulation – Wall
- Windows – Double Glazing
- Innovative Glazing
- Office Lighting
- Motor – Variable Speed Drives
- Office Equipment Computer
- Office Equipment Vending machines
- Presence Detector
- Timers
- Building Management Systems
- Energy Management
- Switching off Equipment
- Other – what?

#### **WHERE INVESTED IN ENERGY EFFICIENT TECHNOLOGIES**

39. Approximately how much has your organisation invested in Energy Efficient technologies in the last four years? Use ranges if unable to estimate

40. Was this amount invested mainly in one year or at different times across the last four years?

- Mainly in one year – why?
- At different times across the last four years
- Don't know

#### **IF AT DIFFERENT TIMES ACROSS THE LAST FOUR YEARS**

41. Has the amount you've invested in Energy Efficient technologies over the last four years increased, decreased or stayed about the same? Why?

- Increased
- Decreased
- Stayed about the same

- Don't know

**For all CRC participants taking at least one corporate level action in the table above i.e. not just investment in energy efficiency technologies**

42. Would your organisation have taken the actions we have been discussing in the absence of the CRC? Capture verbatim comments

- Yes, we would have taken all of these actions in the absence of CRC
- We would have taken some, but not all actions in the absence of CRC – which actions are you unlikely to have taken in the absence of CRC?
- No, it is unlikely that we would have taken any of these actions in the absence of CRC
- Don't know

**For all CRC participants taking at least one action**

**If would have taken at least some action anyway**

43. Is the scale of action your organisation took (for example, the amount of time and money invested, and kWh savings) any greater or less than it would have been in the absence of CRC?

- Scale of action is greater– why?
- Scale of action is less – why?
- Scale of action was about the same as would have been the case in the absence of CRC i.e. we've taken similar actions to those we would have taken anyway, at a similar scale, with similar results in terms of kWh savings etc – capture comments made by the respondent

**For all CRC participants taking at least one action**

44. Did your organisation take these actions any sooner or later as a result of CRC?

- Sooner – why?
- Later – why?
- Some actions were sooner and others are later – capture details what AND why?
- CRC has not led to us taking action any sooner or later

**SECTION D: WIDER BENEFITS AND BARRIERS TO FURTHER ACTION**

**ALL**

45. Are there any benefits to your organisation of **taking action to improve your energy efficiency**, other than a reduction in your energy costs?

- Yes – what are the benefits?

- No

46. Are there any **barriers** to your organisation taking further action to improve your **energy efficiency**?

- Yes – capture verbatim and categorise (multiple response):
  - Lack of information – We don't know what's possible
  - Lack of trusted information – We are aware of options, but advice isn't sufficiently tailored or we get conflicting advice
  - Too much uncertainty about long term benefits and costs
  - Reluctance to take action in market that isn't well established – don't want to take action yet in case new and better (cheaper or more effective) options will be available in future
  - We don't stand to benefit from taking action (e.g. landlord taking action that benefits tenants more than them)
  - Lack of funding/finance
  - Personnel resources not available to take forward
  - Lack of support from the workforce
  - Energy efficiency not an organisational priority
  - Limitations of the premises
  - There are no further cost effective technologies available to us at the moment
  - Lack of support from board/senior management
- No

## **SECTION E: IMPACT OF CRC ON PARTICIPANT INVESTMENT IN ENERGY EFFICIENCY [PARTICIPANTS ONLY]**

### **ALL CRC PARTICIPANTS**

47. Excluding the administrative costs of complying with the CRC, would you say **the amount of money your organisation has invested in the energy efficiency measures we've just been discussing**, is higher, lower or about the same as it would have been in the absence of CRC:

- We've invested more in energy efficiency as a result of CRC
- We've invested less in energy efficiency as a result of CRC
- CRC has had no or minimal impact on the amount we have spent on energy efficiency
- Don't know

Why do you say that?

48. Do you include the cost of the CRC within the business case for Energy Efficiency investments?

## Annexes

- Yes – in all cases
- Yes – in some, but not all cases – capture details – why in some, but not others?
- No – why not?
- Don't know

49. Do CRC costs have a significant or insignificant impact on your profitability? Why do you say that?

- Not at all significant
- Fairly insignificant
- Neither significant nor insignificant
- Significant
- Very significant
- Don't know

## **SECTION F: EXPERIENCE OF PARTICIPATION [PARTICIPANTS ONLY]**

Finally I'd just like to ask you a few questions about your experience of participating in the CRC:

50. What is your position in your organisation in relation to the CRC?

- Senior Officer
- Primary Contact
- Secondary Contact
- Consultant
- Other - what?

51. What level of importance does your organisation attach to the publicly available reports from the CRC e.g. annual report publication? Why do you say that?

- High importance
- Some importance
- Neutral
- Minimal importance
- No importance at all
- Don't know

52. Overall, would you agree or disagree with the following statements? Why do you say that:



- The requirements of the CRC are easy to understand
- Reporting energy use data for the CRC is straightforward
- The process of reporting on the CRC is straightforward
- The process of buying and surrendering allowances is clear
- The scheme is delivered efficiently and consistently

## **SECTION G: CLOSE OF INTERVIEW [ALL]**

53. Thank you very much for your time that's all the questions I have. Is it ok to come back to you if I need to clarify anything about the conversation with you?

- Yes
- No

54. As part of our quality procedures a research manager may be in contact with you to verify some of your responses, is this ok?

- Yes
- No

### **If selected to invite for qualitative interview in line with agreed criteria**

55. Our partners CAG Consultants will be contacting a number of interviewees by phone over the next few weeks to explore your views in more depth. Would you be happy to be contacted for this?

- Yes
- No

### **If not a senior manager/board member and selected to invite for senior manager qualitative interview in line with agreed criteria**

56. The work we are doing is part of a broader programme of research that will be used to inform future energy efficiency policy]. In addition to the survey you have completed today, CAG are currently in the process of speaking to a number of senior managers and directors about whether and how energy, carbon risk, and energy efficiency is discussed at board level. Could you introduce us to the relevant person within the organisation so we can give them opportunity to participate?

- Yes – capture details and agree how they would like to progress this
- No – why not? Capture details

57. It is sometimes possible to link the responses we have collected with other government data for statistical analysis and policy formulation. Would you be happy for your linked responses

to be passed to DECC in this format? IF NECESSARY: Your confidentiality will be maintained, and linked data will only be used for statistical purposes by researchers authorised by DECC.

- Yes
- No

58. Are you willing for us to share your contact details with DECC and any research contractors appointed by DECC for research into energy efficiency in the future? These contact details will not be linked to your responses to this survey.

- Yes
- No

59. Everyone participating in this survey will be eligible to receive a summary of the results by sector. Would you like to receive a copy of the results summary?

**IF REQUIRED – EXPLAIN THAT THIS WILL GO THROUGH RESPONSES TO THE KEY QUESTIONS IN TURN, WHEREAS THE PUBLISHED REPORT MAY NOT INCLUDE THIS LEVEL OF DETAIL**

- Yes – capture email address
- No

60. Finally, would you like to take Databuild's number or the Market Research Society Free phone number to confirm this is a genuine market research study?

- Databuild – 0121 687 1144
- MRS number – 0500 396 999
- No
- Both

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