SUSTAINABLE ENERGY AUTHORITY OF IRELAND

INSIGHTS PAPER

Survey of consumer behaviour in the commercial sector in the Republic of Ireland

November 2015

This report is the second in a new series of *Insights Papers* under development by the SEAI Energy Modelling Group (EMG).

Established in 2009, SEAI's Energy Modelling Group provides high-quality analysis and policy advice on a range of energy/climate issues at national and European level. It operates within SEAI's Low Carbon Technologies Development division in association with SEAI's Energy Policy Statistical Support Unit (EPSSU).

Insights Papers will be published as they are developed, to provide new information and insights to the policy and modelling community. Feedback and reaction to this and subsequent papers are welcome. Please email your thoughts to emg@seai.ie

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This report was commissioned by SEAI as part of a larger project investigating opportunities for energy efficiency across all energy-using sectors of the Irish economy. The final output is published as *'Unlocking the Energy Efficiency Opportunity',* SEAI (2015).

The work was undertaken by Element Energy Limited and The Research Perspective for SEAI.

elementenergy

The Research Perspective

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1 Background

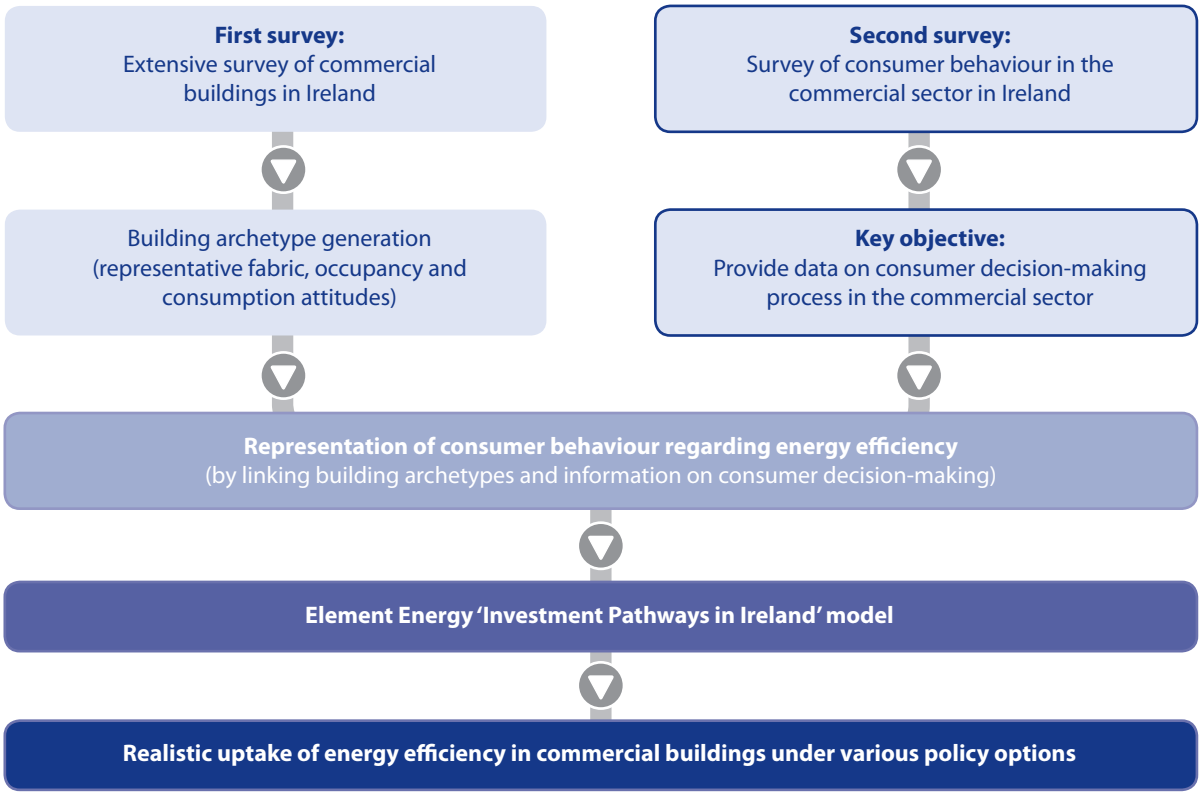
SEAI has commissioned a detailed analysis of the potential for energy efficiency improvements economy-wide to 2020. This work will form a key evidence base to inform Ireland's national strategy to meet its ongoing obligations with respect to the EU (Re-cast) Energy Performance in Buildings Directive (2010) and Energy Efficiency Directive (2012), including its headline target of achieving an economy-wide reduction in primary energy consumption of 20% by 2020. A key objective of this work is to develop an estimate of the potential energy savings in the commercial buildings stock to 2020, incorporating not only technical and economic aspects, but also the behaviour and decision-making process of consumers in the commercial buildings sector.

Prior to undertaking this work, the available data concerning commercial buildings in Ireland was inadequate for this purpose, in terms of profiling (i) the building activity category, physical characteristics, fabric condition and energy-consuming equipment across the stock, and (ii) the behaviour and decision-making process of commercial buildings consumers. The same data gaps exist to a similar degree in other EU member states. To fill these data gaps, two surveys were deployed.

The first survey collected data on building activity category, physical characteristics, fabric condition and energy-consuming equipment, and is described in detail in an earlier report.[1] Data from that survey established the technical and economic potential for energy efficiency in the commercial buildings sector to 2020.

This report focuses on the second survey by Element Energy in collaboration with The Research Perspective, which collected data regarding the behaviour and decision-making process of consumers in the commercial buildings sector. The data from this survey builds on the earlier work to estimate the actual uptake of energy efficiency under various policy scenarios. Subsequent reports will detail the full modelling results.

Figure 1: Objectives of the survey



1 *Extensive survey of the commercial buildings stock in the Republic of Ireland,* Element Energy and The Research Perspective for SEAI, 2014.

2 Approach to the development of the sample

The commercial buildings sector in Ireland is highly diverse, with companies of different sizes undertaking a wide range of activities. In order to ensure a tractable modelling process, and so that the resulting modelling outputs can be interpreted in a way that is useful for policy formulation, the diverse commercial buildings stock needs to be represented by a more limited set of building activity types. In the earlier survey[1] of building activity categories and physical building characteristics, a set of such representative building activity types was developed: Office, Retail, Hotel, Restaurant/public house, and Warehouse. The occurrence of these activity types across the commercial stock was determined by mapping the building activity types to a set of 'sectors' defined by NACE codes, [2] whose occurrence across the stock was determined using the GeoBusiness dataset. The NACE sectors and corresponding NACE codes are given in Table 1.

In the survey described here, data on consumer behaviour and decision-making was collected from 750 businesses across the same building activity types defined in the earlier survey. As shown in Table 1, a stratified random sample was developed, defining a sampling quota for each NACE sector. In order to ensure a sufficiently robust representation in the data of each building activity type, sampling quotas set at NACE sector level are not strictly proportionate to their occurrence across the stock. A number of business types were excluded from the survey, including sole traders and companies who operate their business from residential premises, a shared office or mobile premises.

Table 1: Number of interviews and NACE codes by sector

Sectors	NACE codes included	Number of interviews
Retail	4510–4799; 9602	200
Hotel	5510–5520; 5590	100
Restaurant/public house	5610–5630	125
Office	5810–7120; 7310–8299	150
Construction	4100–4399	100
Transportation/storage	4900–5320	75
Total		**750**

It was anticipated that consumer behaviour and decision-making may be strongly dependent on company size. Since over 90% of the companies in the above sectors have less than 10 employees, a random sample of companies was likely to select only a small number of large companies. An additional quota, based on company size, was therefore applied across the sample. A quota of 200 was set for companies with 10–49 employees and of 50 for companies with more than 50 employees, to ensure that sufficient data would be captured to understand the impact of company size on decision-making. [3]

2 The NACE code is a pan-European classification system which groups organisations according to their business activities.

3 All results shown in the main section of this report are based on the weighted data; that is, they reflect the actual distribution of company size across the commercial buildings stock. Results shown in the Appendix (Section 6), however, show the raw data from the sample response achieved.

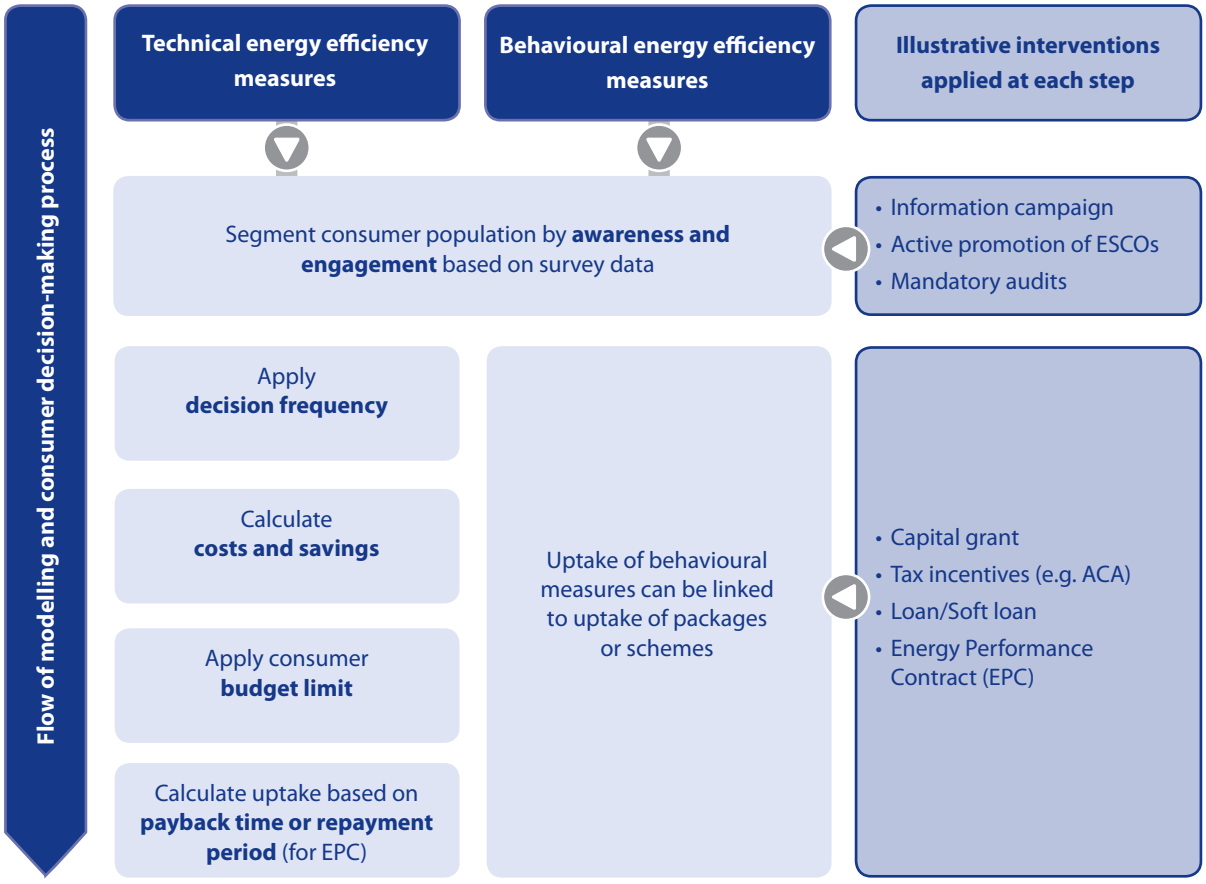
3 Survey design

Previous studies on energy efficiency in the commercial sector in Ireland have developed estimates of the cost-effective savings potential in this area, but have not considered the impact of other aspects of decision-making, such as awareness/engagement of different consumer segments, decision-making frequency and payback requirements i.e. the financial savings anticipated in return for the amounts invested in energy efficiency measures.

This work incorporates each of these aspects of decision-making to develop estimates for the actual uptake of energy efficiency measures under a variety of policy scenarios.

Prior to designing the survey, a conceptual framework for decision-making regarding energy efficiency in the commercial sector was constructed. This framework is explained below in the case of 'technical' and 'behavioural' energy efficiency measures. The survey was then designed to collect the data on each of these aspects of decision-making.

Figure 2: Consumer decision-making process in the commercial building sector



3.1 Technical energy efficiency measures

Technical energy efficiency measures are those that involve the purchase and installation of some form of energy efficiency technology. In commercial buildings, they could include installing insulation measures for cavity walls, solid walls and roofs, installing double and triple glazing, upgrading to more efficient heating and cooling systems including efficient boilers, heat pumps and air-conditioning units, adding or upgrading heating controls, and installing energy efficient lighting, lighting controls and energy efficient appliances.

The conceptual framework for decision-making related to technical energy efficiency measures includes the following elements:

Awareness and engagement

The first aspect of the decision-making process considers whether consumers make decisions related to energy efficiency at all, or whether they are instead entirely unaware or disengaged. To assess the awareness and engagement of commercial buildings consumers regarding technical measures, the survey examined whether respondents had investigated ways to reduce energy use through installing technologies such as insulation and double glazing, and whether they had already implemented such measures. In the relevant cases, respondents were also asked why they had not investigated such measures, or why they had investigated but not implemented them.

Decision-making frequency

An important limit to the rate at which energy efficiency measures can be taken up is the frequency with which consumers make purchasing decisions about their building fabric or equipment. This is known as the 'decision frequency'. In some cases, such as for heating, cooling or lighting systems, this is related to the lifetime of the equipment. In other cases, such as for insulation measures, this reflects the frequency with which consumers undertake building retrofit, or maintenance with a comparable level of disruption and/or cost. Less disruptive and lower cost measures, such as roof insulation, are likely to have a different applicable decision frequency compared to more disruptive and higher cost measures such as internal solid wall insulation.

Prior to the survey, the technical energy efficiency measures being modelled were categorised into packages labelled Shallow, Medium and Deep, according to the associated level of disruption and cost (see Section 6.1). A list of building retrofit and maintenance events were then drawn up, from 'maintenance/repairs on the building fabric' through 'lighting system re-fit/upgrade' to 'major external renovation work', and these were matched to our packages according to the same metrics. Through the survey, the fraction of respondents in whose buildings those events had occurred within various time periods (the last year, the last 2 years, and so on) were measured. In this way, the research could help determine an appropriate decision frequency for each technical measure and for each building type.

Cost and savings

Having fulfilled the first two aspects of decision-making above, the consumer is at the point of making a decision regarding a technical energy efficiency measure. As explained below, consumer budget limits, payback requirements and alternative ways of implementing the measure, in particular through an Energy Performance Contract (EPC), are considered here. Clearly, this requires that the costs and benefits of each measure be quantified. The data derived from earlier work on potential technical and economic energy savings was used here to quantify the costs and benefits involved in implementing energy efficiency measures.

Budget limit

Consumers' budget limit for energy efficiency measures, or the absence of such a limit, was assessed through the survey. By comparing this data with the cost of each measure, the research was able to determine the fraction of consumers who would not be able to fund each measure without financial assistance.

Payback requirement

Consumer decision-making in the commercial sector can be represented through 'willingness to pay' (WTP) curves, expressed in terms of the fraction of decision-makers willing to purchase a technology for a given simple payback period.[4] Information gathered in the survey was used to construct a WTP curve for the commercial buildings sector by asking questions regarding the organisations' simple payback time requirements for energy efficiency investments.

Attitudes to interventions: Energy Performance Contract[5]

A growing number of energy efficiency retrofits in the commercial sector are implemented as a result of Energy Performance Contracts (EPCs) between commercial building owners/managers and energy service companies (ESCOs). In simple terms, an EPC involves an ESCO performing an energy audit for the building and, if it finds sufficient potential for energy savings, supplying a loan for the capital cost for the improvement work. The loan is repaid with interest through the savings achieved on the company's energy bill, with the ESCO taking some or all of the savings for the 'repayment period'. In a 'guaranteed' EPC scheme, the loan is only repaid if the expected savings are achieved. In a 'non-guaranteed' scheme, the loan must be repaid even in the event that the expected savings are not achieved, but a lower rate of interest is paid to the ESCO to reflect the greater risk borne by the building occupier.

An EPC is therefore a way of enabling consumers to take up a measure even if the capital cost exceeds their budget limit. Given that the risk associated with the installation is taken, to a greater or lesser degree depending upon the precise form of the EPC, by the ESCO, it could be expected that consumers in the commercial sector would accept a longer EPC repayment period than they would accept as a simple payback time for their own investment.

The attitude and behaviour of commercial consumers towards EPC contracts was studied in the survey. After providing a description of two specific EPCs, respondents were asked whether they would consider such a scheme and, if so, what length of repayment period they would consider. Combined with data on the typical rate of return required by ESCOs, their response allowed us to estimate the fraction of consumers willing to take up each measure using an EPC.

4 Simple payback time is defined as (Capital cost) / (Annual savings – Operating cost).

5 The survey also explored respondents' attitudes to different forms of capital support, including tax rebate and cash-back before/after completion of the work.

3.2 Behavioural energy efficiency measures

Behavioural energy efficiency measures are those that involve some form of behavioural change in order to use less energy. They do not generally require the purchase of new equipment. In commercial buildings, they could include turning off lights outside working hours, reducing the target room temperature, enabling standby features on IT equipment and reducing hot water use.

Our conceptual framework for decision-making related to behavioural energy efficiency measures includes the following elements:

Awareness and engagement

This aspect is treated in a similar way to technical energy efficiency measures. Corresponding questions were asked, determining whether respondents had investigated ways to reduce energy use through behaviour change, whether they had already implemented such measures and, where applicable, the reasons why they had not.

Uptake of behavioural measures

Since the uptake of behavioural measures tends to be limited by a lack of awareness and/or the inconvenience involved, rather than by the cost of the measure (which is typically zero), the remaining elements of the decision-making process are different from those for technical measures. Evidence collected for the Department of Energy and Climate Change (DECC, UK)[6] shows that training provided at the same time as the adoption of new technology can act as a stimulus for implementing behavioural measures. The approach taken in the modelling work was therefore to link the uptake of behavioural measures with the uptake of significant retrofit events using an EPC scheme, the assumption being that these are opportunities for energy consuming processes to be reviewed and for staff to be trained in energy efficient behaviour.

6 *What works in changing energy-using behaviours in the home? A Rapid Evidence Assessment* RAND Europe for DECC, 2012

3.3 Summary of data gathered in the survey

A summary of the data collected through the survey is shown in Table 2. A number of 'Profile' variables were collected, so that decision-making characteristics could be compared across a range of commercial buildings consumer groups. As a result, characteristics across different building activity types, company sizes, occupier types (owner-occupier/decision-maker; tenant/decision-maker; tenant/non-decision-maker) and heating fuel types can be compared also.

The telephone interviews (750) were conducted in March 2014 over a period of two weeks. During that fieldwork period, there were no external events (such as news items or initiatives related to energy in the commercial sector) that may have impacted the survey response profile.

Table 2: Summary of data gathered in survey

Category	Data gathered in survey
Profile	Building activity type Number of employees Building size (floor area) Primary heating fuel Owner-occupier/Tenant Responsibility for large energy efficiency related purchases
Awareness and engagement	Whether organisation has investigated ways to reduce energy use through building fabric and/or behaviour change Reasons why organisation has not investigated, or Reasons why organisation has investigated but has not taken action
Decision-making frequency	Occurrence of a variety of retrofit and maintenance events such as lighting system re-fit/upgrade, re-wiring a room or space, major renovation work, etc.
Budget limit	Maximum amount organisations could consider spending on energy efficiency measures
Payback requirements	Simple payback requirement for energy efficiency investment
Attitudes to interventions	Whether organisation would consider EPCs Repayment period requirements for guaranteed and non-guaranteed EPC Attitudes to different cash support types (e.g. tax rebate, cash-back before/after work)

4 Key findings

This section presents a selection of the key results from the survey, which have been weighted to reflect the actual distribution of buildings across the commercial stock, and the insights they provide. Additional results from the survey, **not** weighted to reflect the actual distribution across the stock, can be found in Section 6.2.

Through the responses to the questions concerning awareness and engagement, four distinct consumer segments are constructed:

A. Consumers who do not think they need to reduce energy use as **energy is not a top priority**

B. Consumers who think they have **already put in place all possible measures**

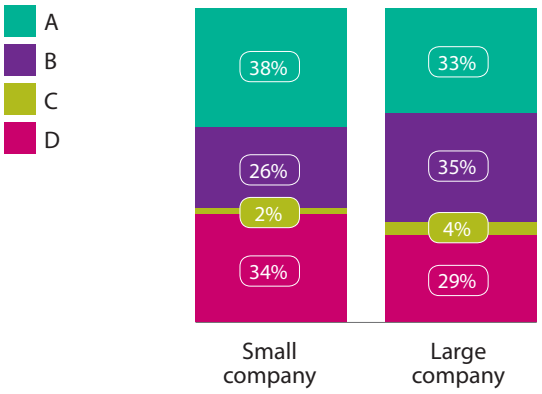
C. Consumers who think they can reduce energy use but they **need more information**

D. Consumers who **consider energy efficiency options.**

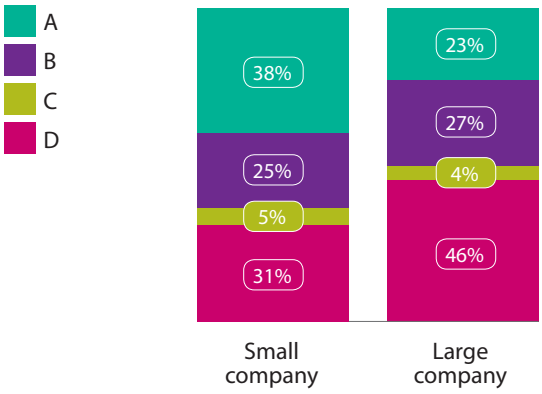
This treatment was performed separately for technical and for behavioural measures. The breakdown of commercial buildings consumers across the four segments is shown in Figure 3, by company size (for both technical and behavioural measures) and by building activity type (for technical measures only).

Figure 3: Key survey results for consumer awareness and engagement

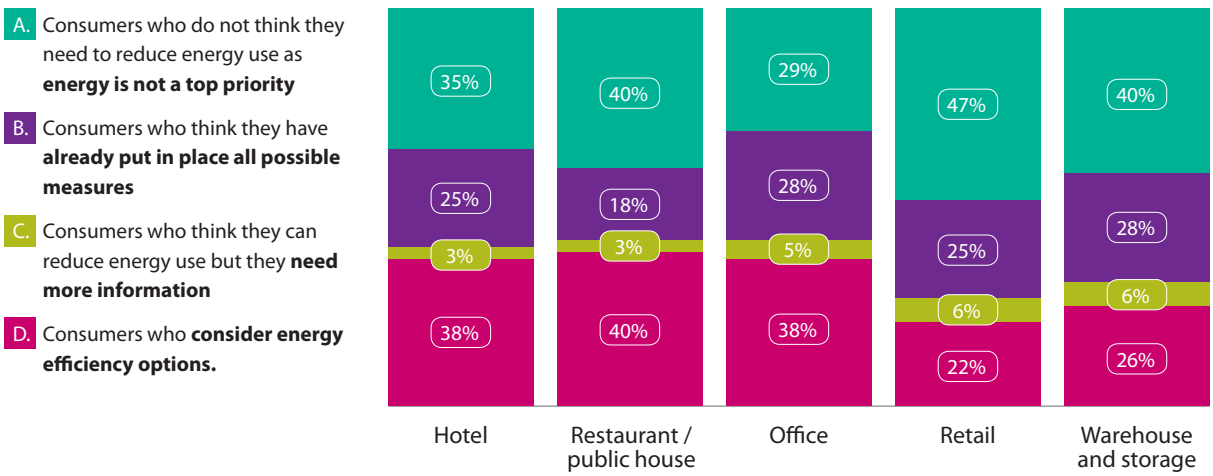
Improving building fabric (fraction of total)



Behavioural measures (fraction of total)



Improving building fabric – sector-level results (fraction of total)



For technical measures, it can be seen that only around one third of small companies (34%) and just over one quarter of large companies (28%) are in the fourth segment of consumers who actively consider energy efficiency options. More than one third of small companies (38%), and approximately one third of large companies (33%), fall into the first segment of consumers, who do not think they need to reduce their energy use. To engage this group in energy efficiency is likely to require regulation. A further quarter of small companies (26%) and a further third of large companies (35%) fall into the segment of consumers who think that they have already implemented all possible measures, even though very few buildings offer no further savings potential. Only 2% of small companies, and 4% of large companies, think that they need more information in order to reduce their energy use. This suggests that untargeted information campaigns are unlikely to have a large impact on the uptake of energy efficiency measures. A more targeted approach will be required to capture the disengaged consumers in the other segments.

Awareness and engagement for behavioural measures follows a similar pattern, though with some notable differences. For small companies, the breakdown by consumer segment is similar to that for the technical measures. For large companies, however, the fraction of consumers stating that they consider behavioural measures for energy efficiency (46%) is significantly higher than the fraction considering technical measures (28%). Correspondingly, a lower fraction of consumers fall into the first two segments in relation to behavioural measures.

The breakdown of consumers across the segments of awareness and engagement is quite strongly dependent on the building activity type. In particular, the fraction of consumers who state that saving energy through technical measures is not a top priority is significantly larger for the Retail activity type (47%). That fraction is lowest for the Office activity type (29%), with Hotel (35%), Restaurant/public house (40%) and Warehouse and storage (40%) in between. For the Retail activity type, less than a quarter (22%) of consumers state that they actively consider technical energy efficiency measures, compared with between 38% and 40% of consumers in the Hotel, Restaurant/public house and Office activity types.

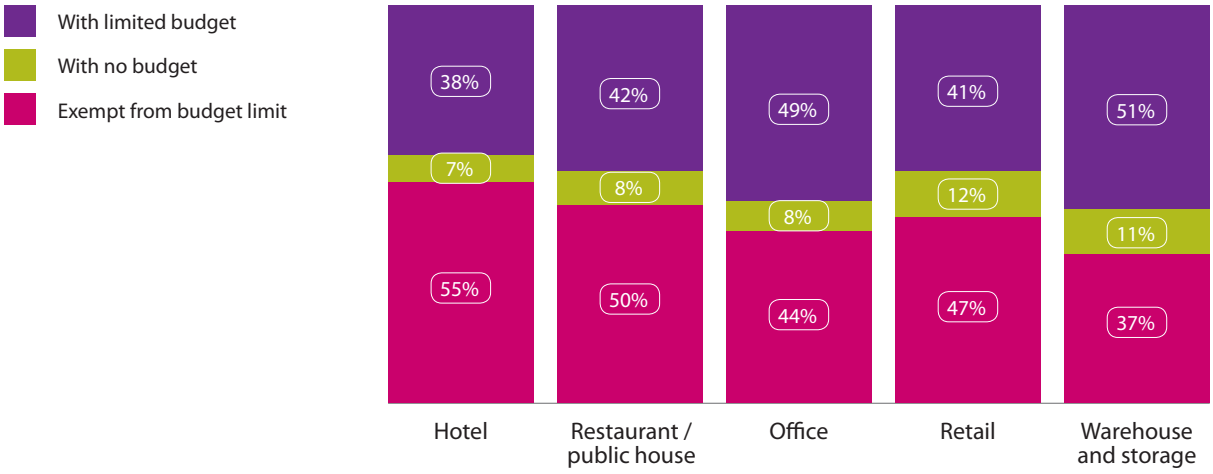
Figure 4: Key survey results for decision-making frequency

Figure 4 shows the decision frequencies derived for Shallow, Medium and Deep packages, by company size and building activity type. (For a description of which measures are included in the packages, refer to Section 6.1.) It can be seen that the decision frequency for the Shallow package ranges between 3 and 8 years, for the Medium package between 4 and 10 years, and for the Deep package between 6 and 13 years. This implies that only a little over half of all commercial buildings are likely to make a decision regarding a Deep building retrofit between now and 2020.

The retrofit decision frequency depends strongly on building activity type, with decisions being made most frequently in the Hotel activity type for both small and large companies. Decisions are made least frequently in the Warehouse/storage activity type, followed closely by the Retail and Office activity types. Large companies in the Hotel and Warehouse/ storage activity types tend to make decisions more frequently than their small company counterparts. There is little correlation between decision frequency and company size for the other activity types.

Figure 5: Key survey results for budget limit

Companies 'exempt from budget limit', 'with limited budget' and 'with no budget' (fraction of total)



Average capital budget limit (€ thousand)

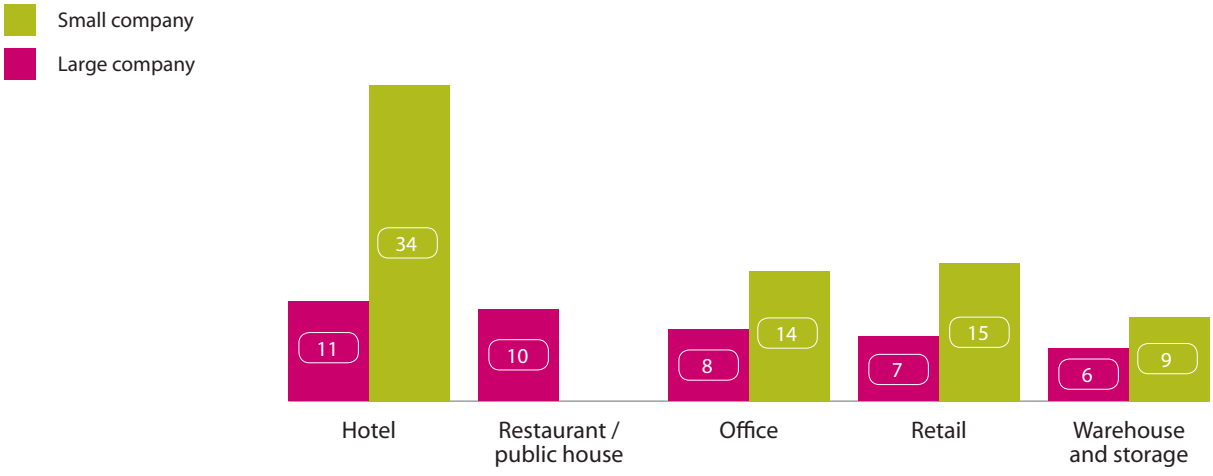
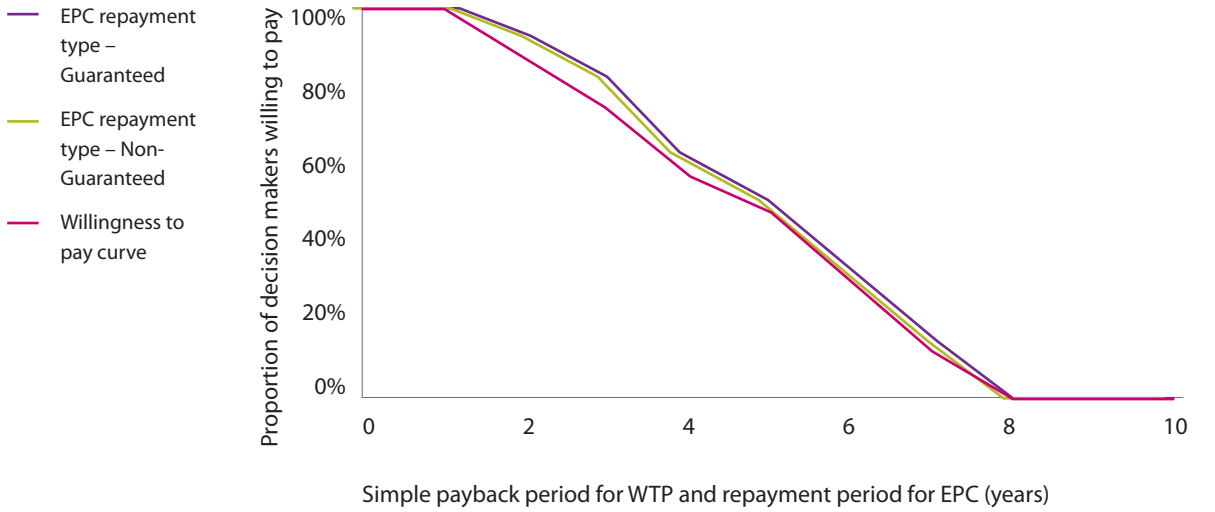


Figure 5 displays budget limit characteristics for energy efficiency reported by the companies surveyed. Considering the characteristics by building activity type, it can be seen that between 7% and 12% of companies have no budget for energy efficiency. Between 37% and 55% report having no fixed budget for energy efficiency. The Hotel activity type reports the largest fraction with no fixed budget for energy efficiency (55%), with the Warehouse/storage activity type reporting the smallest fraction (37%). Among the respondents who reported having a finite budget limit, the mean budget limit quoted ranged between €6,000 and €11,000 for small companies and between €9,000 and €34,000 for large companies. The Hotel activity type reported the largest budget, and the Warehouse/storage activity type the smallest.

Figure 6: Key survey results for payback requirements and attitudes towards EPCs

Consumer requirements for simple payback and EPC repayment period



Number of organisations stating they would not avail of an ESCO scheme (fraction of total)

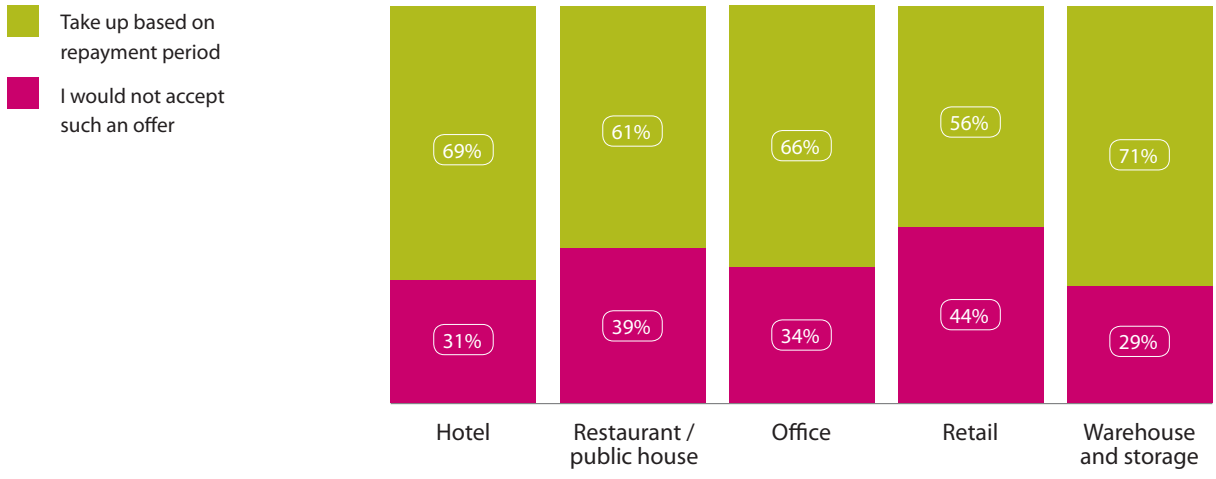


Figure 6 shows our derivation of the simple payback time requirement for energy efficiency measures based on the survey responses.[7] It can be seen that the fraction of consumers willing to pay for a measure decreases fairly uniformly from 100% for a simple payback time of 1 year to 0% for a simple payback time greater than 8 years. Figure 6 also shows the requirements regarding repayment period for energy efficiency measures implemented via 'guaranteed' and 'non-guaranteed' EPC schemes, as described in the previous section. The similarity between the requirements for simple payback and EPC repayment period is striking. This suggests that, despite the transfer of some or all of the project risk to the ESCO, consumers are not willing to accept a longer repayment period when implementing a measure through an EPC contract than when implementing it themselves. Given that the EPC repayment period will be longer than the simple payback time (since the ESCO will need to make a profit), this suggests that EPCs may not be particularly successful in addressing the barrier relating to stringent payback requirements in the commercial sector. Furthermore, as also shown in Figure 6, a significant fraction of consumers (from 29% in the Warehouse/storage activity type to 44% in the Retail activity type) stated that they would not avail of an EPC contract for any repayment period.

However, it is notable that EPCs are likely to boost the uptake of energy efficiency measures in other ways. First, an EPC removes the budget limit constraint applying to approximately half of all companies. Second, it is expected that the activities of ESCOs will result in increased awareness among building managers and company executives regarding the large economic benefit to implementing energy efficiency measures. This may be an important mechanism for engaging the segment of consumers who think that they have already implemented all the measures possible, as well as those who state that they need more information. Given that the first segment accounts for up to a third of all consumers, as shown in Figure 3, this 'active promotion' element could potentially have a large effect on the uptake of energy efficiency measures.

7 To derive the curves shown, a small number of outliers have been removed.

5 Conclusion

This survey of consumer behaviour and decision-making related to energy efficiency in the commercial buildings sector in Ireland provides a wealth of new information for policy-makers. The survey was designed to deliver a quantitative dataset which could be combined with earlier work on the technical and economic potential for energy efficiency savings in the sector so as to develop a realistic estimate of the savings to 2020 under a variety of policy scenarios. The outcome of this study will form a key evidence base to inform Ireland's national energy efficiency strategy, including its headline target of achieving an economy-wide reduction in primary energy consumption of 20% by 2020.

The survey has revealed a number of key insights which explain the relatively slow uptake of energy efficiency measures in commercial buildings to date, and which could inform the design of more effective policy:

Awareness and engagement in energy efficiency in the commercial sector are currently low

- Strikingly, the survey found that approximately two thirds of commercial consumers do not currently consider energy efficiency measures, both in terms of technical measures, such as fabric insulation and more efficient heating systems, and behavioural measures, such as reducing the internal temperature or turning off unnecessary lights. The majority of these consumers state either that they do not consider energy use a top priority, or that they have already implemented all possible measures.
- In contrast, only around 3% of commercial consumers state that the reason they have not investigated energy efficiency is because they need more information. This suggests that untargeted information campaigns are unlikely to have a large impact on the uptake of energy efficiency measures. A more targeted approach will be required to capture disengaged consumers.
- Small companies are significantly less likely to have implemented energy efficiency measures than large companies. Around 45% of small companies surveyed stated that they have not investigated ways to save energy through improving the building fabric, compared with 36% of large companies. This suggests that there is considerable existing potential for energy efficiency in SMEs. Since only large organisations will be covered by the forthcoming regulation for mandatory energy audits, additional interventions to engage SMEs will be required.
- Of the various building activity types surveyed, Retail and Warehouse/storage activity types show the lowest levels of engagement, with only 22% and 26% respectively currently considering energy efficiency options.

Decision frequency for building retrofit limits the savings achievable by 2020

- The uptake of many energy efficiency measures will be limited by the decision-making frequency for building retrofit. This research indicates that Deep retrofit measures which involve high levels of disruption and/or cost, such as solid wall insulation and new glazing, are likely to be considered less than once every 10 years in the majority of commercial buildings. That means that only a little over half of all commercial buildings are likely to make a decision regarding a Deep building retrofit between now and 2020.
- All levels of retrofit tend to be more frequent in Hotels than in other building types, and least frequent in Warehouse/storage buildings.

Many organisations are currently sceptical about contracting ESCOs to implement energy efficiency, but ESCOs could significantly raise awareness and engagement

- Over one third of organisations surveyed stated that they would not currently use the services of an ESCO to implement energy efficiency measures through some form of EPC.
- Furthermore, the repayment requirements derived from the survey for 'guaranteed' and 'non-guaranteed' ESCO schemes are very similar to the simple payback requirements for companies' own investments. This suggests that, despite the transfer of some or all of the project risk to the ESCO, consumers are not willing to accept significantly longer contracts with ESCOs than they would accept for their own investments. Given that the EPC repayment period will be longer than the simple payback time (since the ESCO will need to make a profit), this suggests that EPCs may not be particularly successful in addressing the barrier relating to stringent payback requirements in the commercial sector.
- However, EPCs are likely to boost the uptake of energy efficiency in other ways. An EPC removes the budget limit constraint which applies to approximately half of all companies. Furthermore, ESCOs could play a key role in raising awareness and engagement in energy efficiency among building managers and company executives by making these stakeholders aware of the large economic benefit in implementing energy efficiency measures.

Note on forthcoming publication

The survey results described in this report have been combined with earlier work examining the technical and economic potential for energy efficiency savings in the Irish commercial sector to develop a realistic estimate of the savings potential to 2020 under various policy scenarios. Alongside this, corresponding estimates of the potential energy savings across a range of other sectors, including residential and public buildings, public utilities, industry and transport have been developed. Details of this work, and the implications for Ireland's national energy efficiency strategy, are presented in *'Unlocking the Energy Efficiency Opportunity',* SEAI (2015). Available at www.seai.ie.

6 Appendix

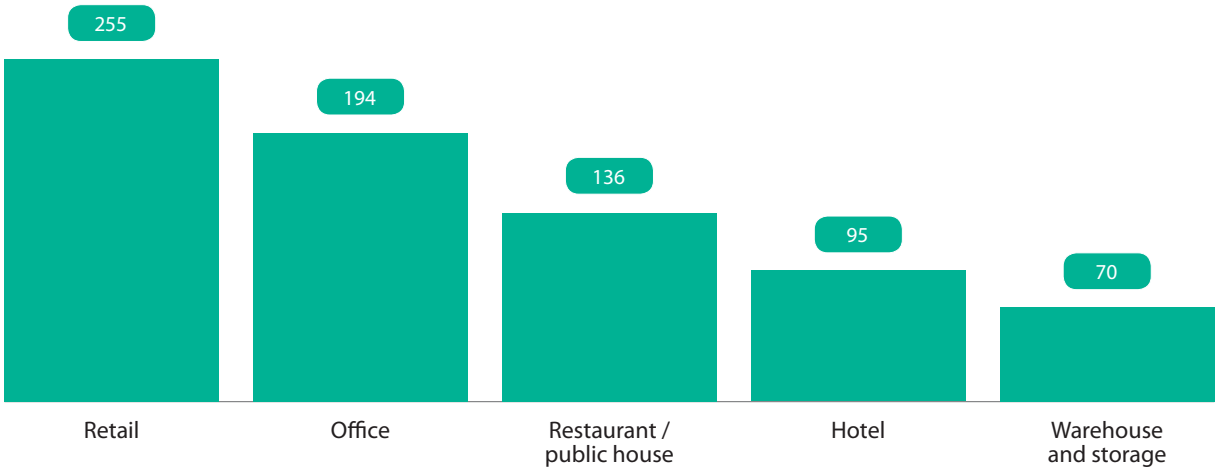
6.1 Energy efficiency measures included in packages

Table A1: Energy efficiency packages

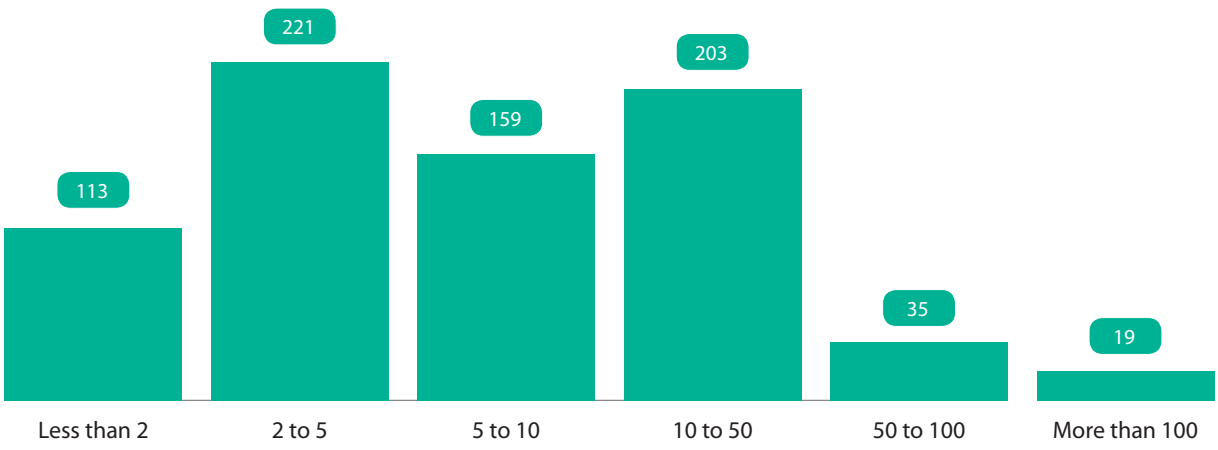
Package	Measures included
Shallow	Cavity wall insulation; draught proofing; energy efficient lighting; heating controls
Medium	All measures included in Shallow package; roof insulation; energy efficient appliances (office equipment); energy efficient appliances (refrigeration); more efficient boiler replacement
Deep	All measures included in Medium package; external wall insulation; double glazing; heat pump; lighting controls

6.2 Further results from the survey

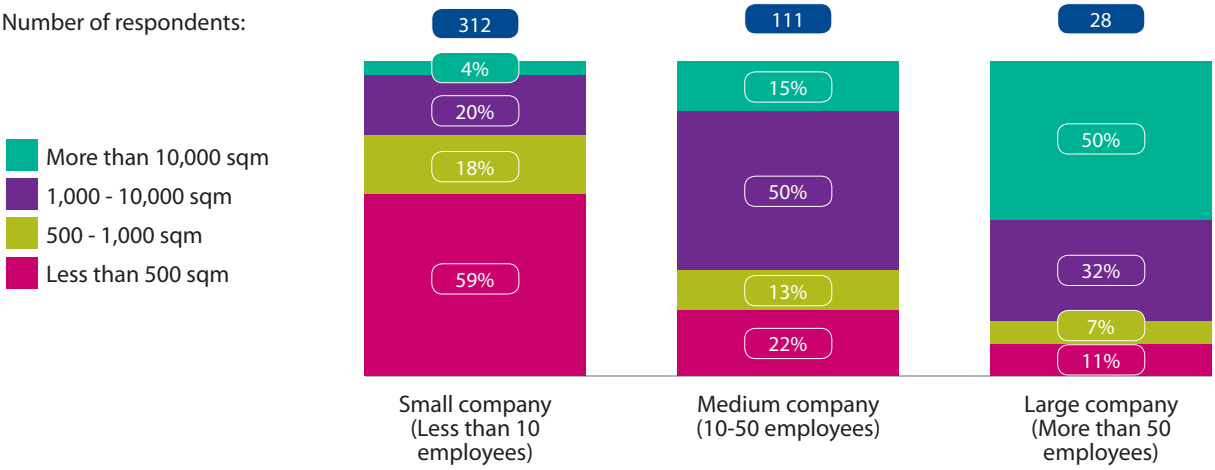
Q1. Number of organisations by building activity type



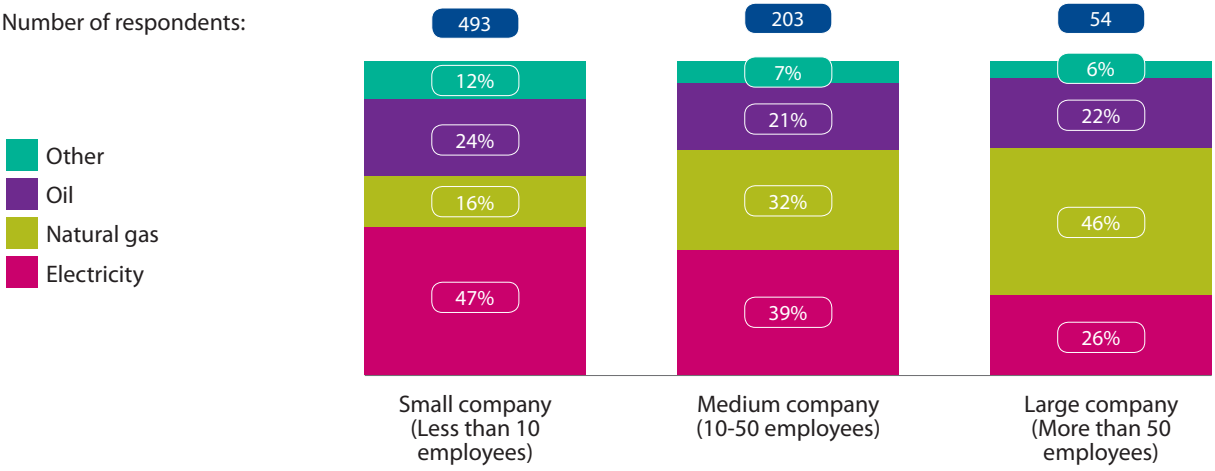
Q2. Number of organisations by number of employees in the occupied building



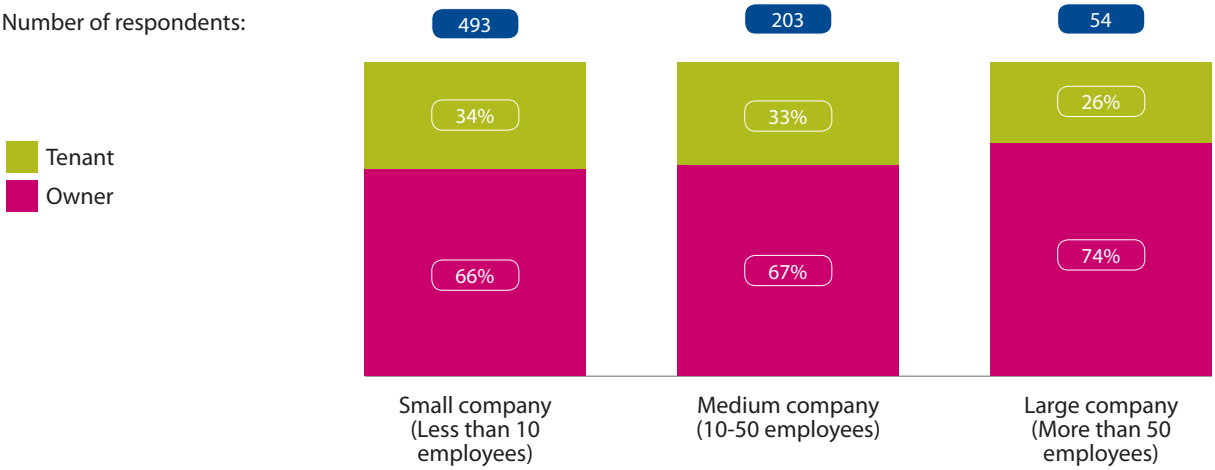
Q3. Number of organisations by floor area of the occupied building and company size



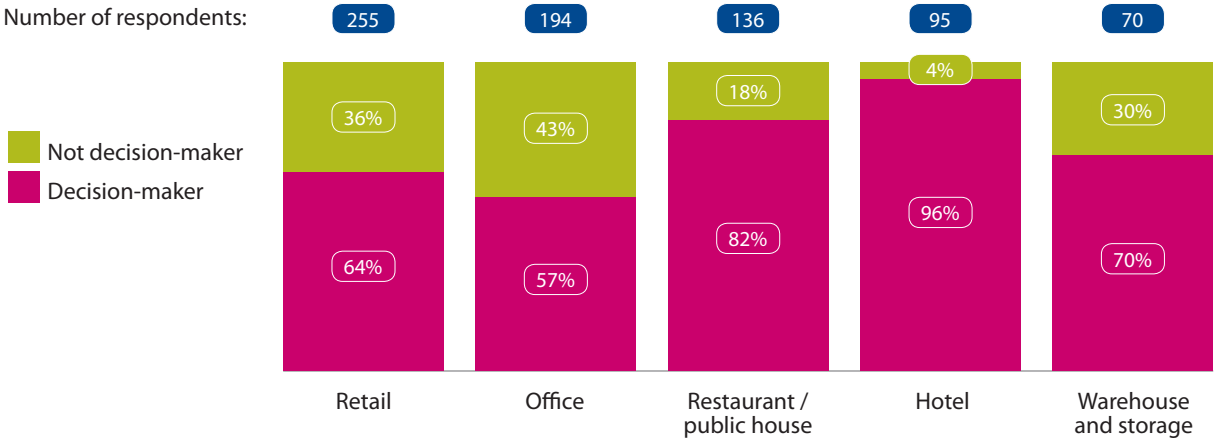
Q4. Number of organisations by main heating fuel and company size



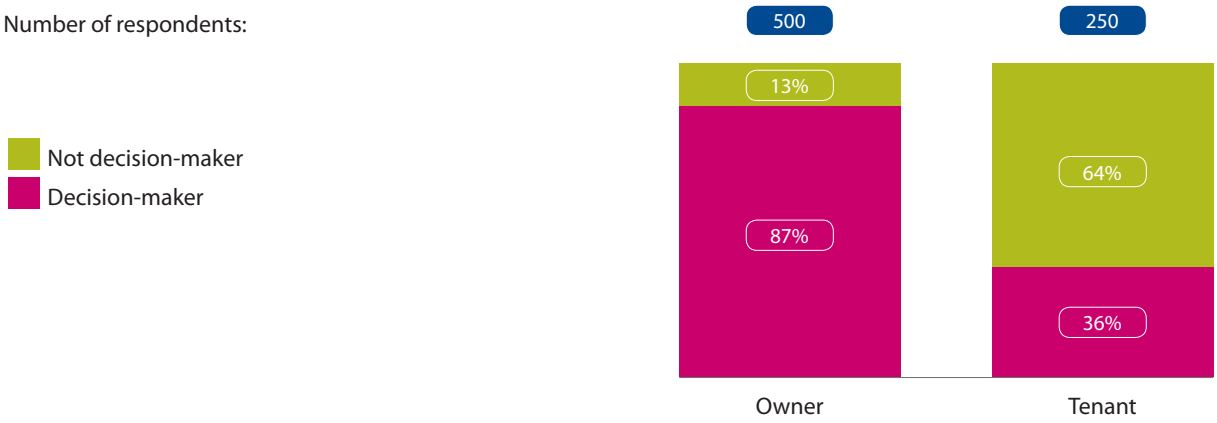
Q5. Number of organisations by tenancy and company size



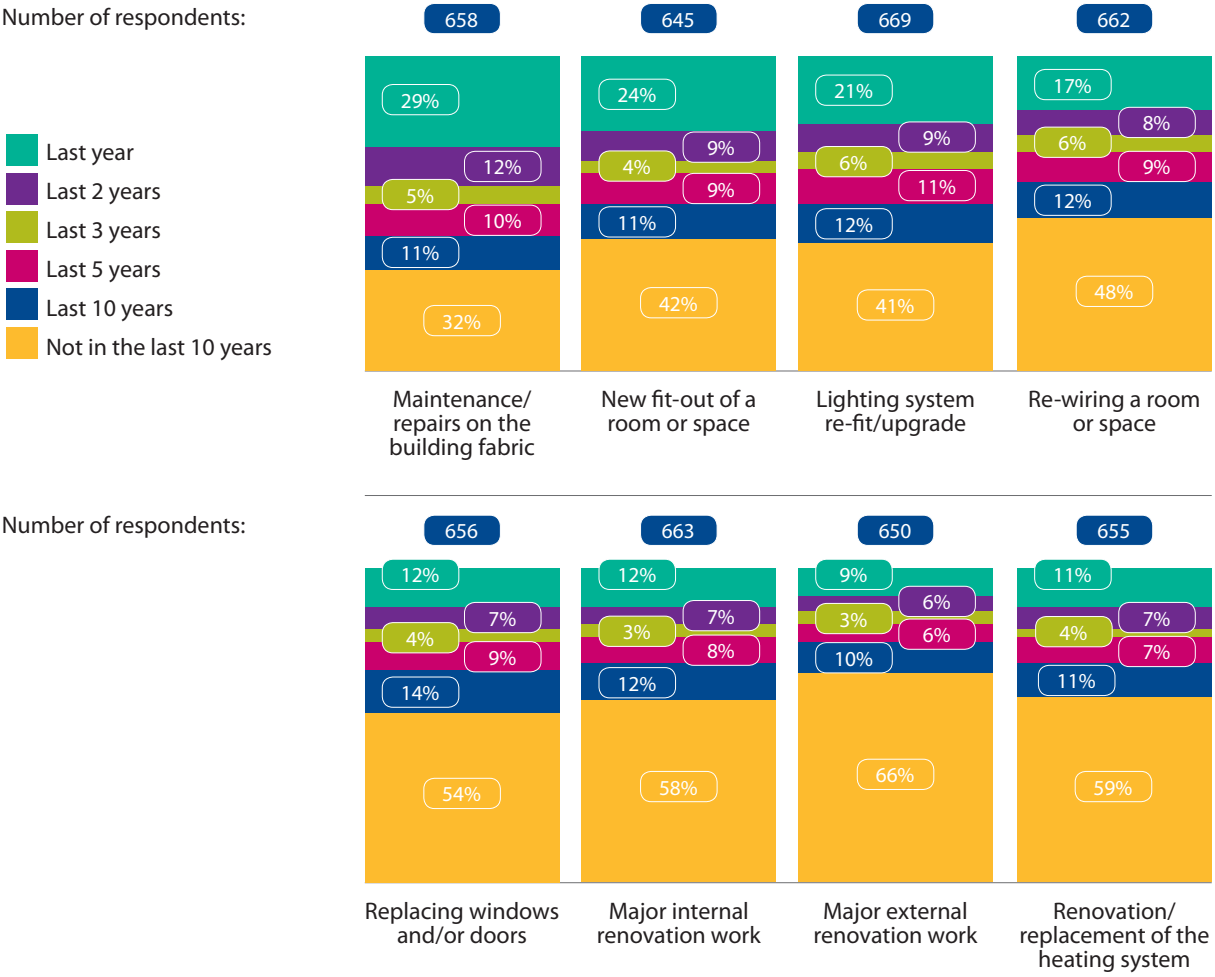
Q6. Number of organisations by decision-making responsibility and building activity type



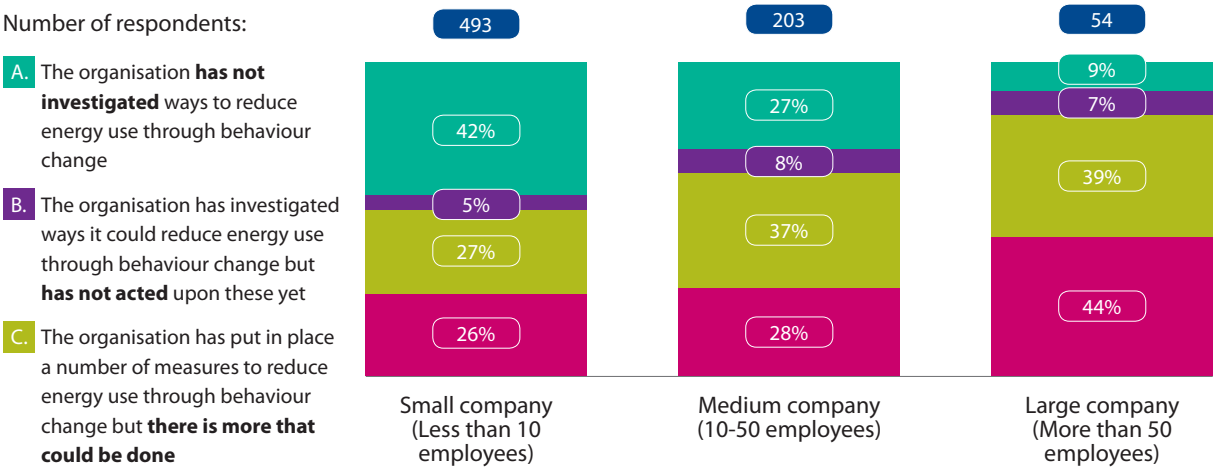
Q5 and Q6. Number of organisations by tenancy and decision-making responsibility



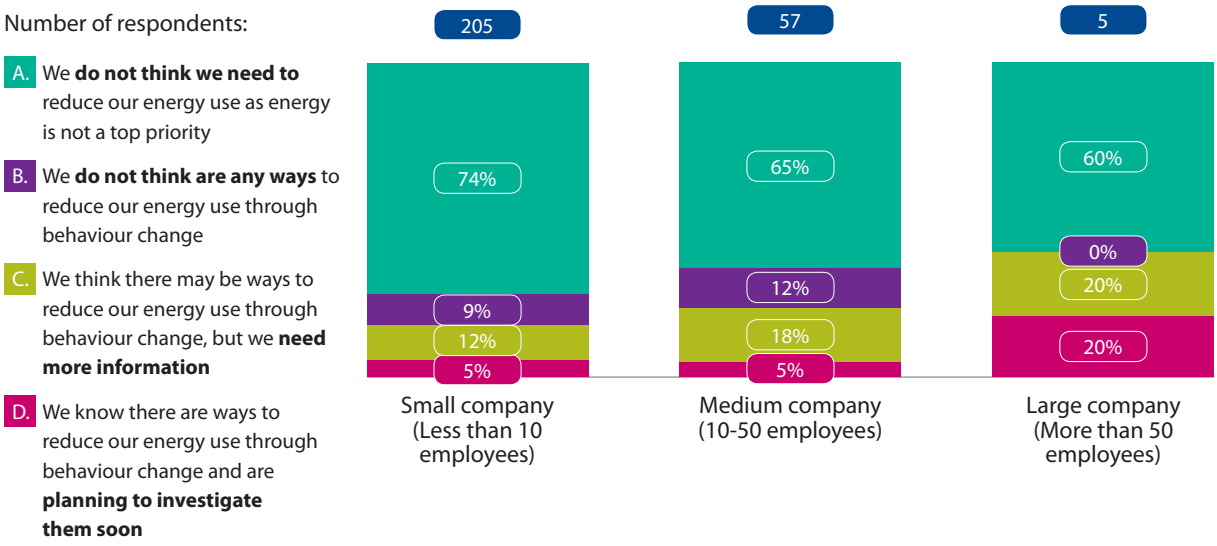
Q7. Number of organisations having undertaken various fabric upgrade-related actions



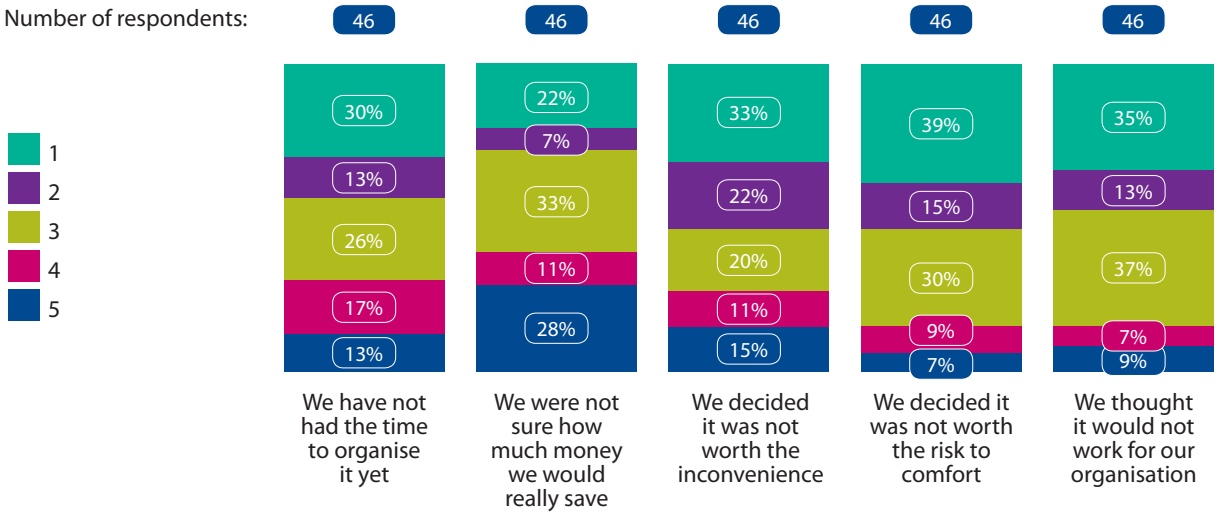
Q8. Number of organisations having investigated behaviour change



Q9. Number of organisations by reason for not having investigated behaviour change



Q10. Relevance of factors in not having implemented behaviour change



Q10: How relevant are the following factors in describing why your organisation has not taken action to reduce energy use through behaviour change? (1=Not at all relevant, 5=Very relevant)

Q11. Number of organisations having investigated fabric improvement

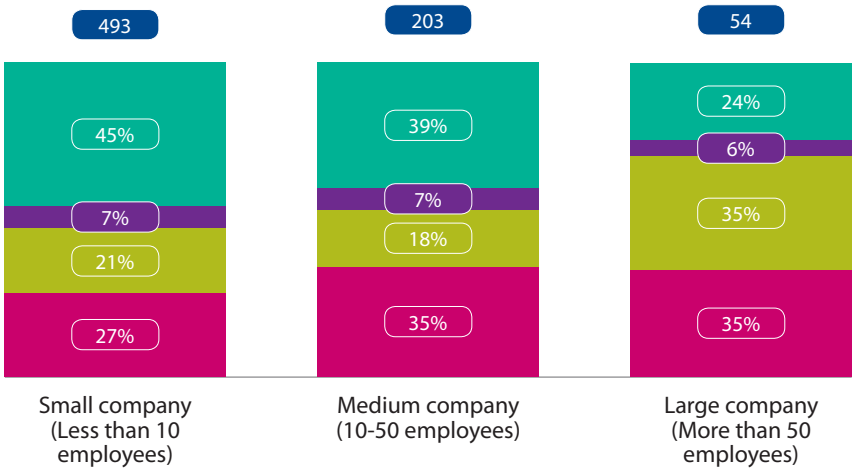
Number of respondents:

A. The organisation **has not investigated** ways to reduce energy use through improving the building fabric

B. The organisation has investigated the ways it could reduce energy use through improving the building fabric but **has not acted** upon these yet

C. The organisation has put in place a number of measures to reduce energy use through improving the building fabric but **there is more that could be done**

D. The organisation **has already put in place all the possible measures** to reduce energy use through improving the building fabric



Q12. Number of organisations by reason for not having investigated fabric improvement

Number of respondents:

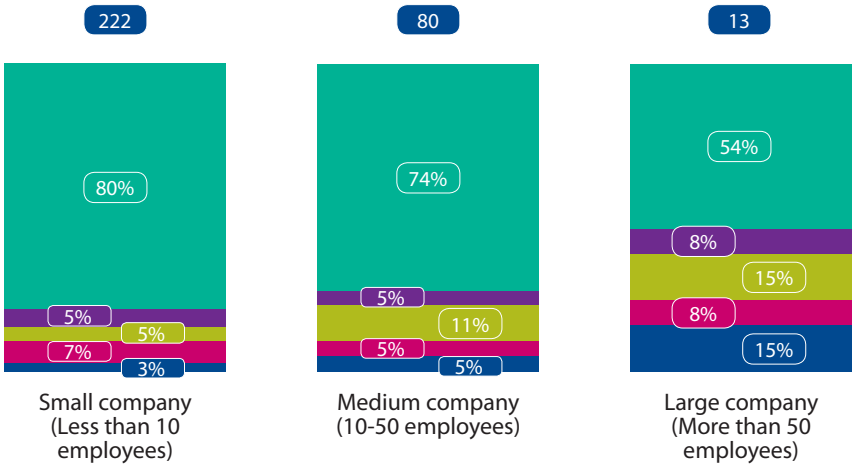
A. We **do not think we need to** reduce our energy use as energy is not a top priority

B. We **do not think there are any ways** to reduce our energy use through improving the building fabric

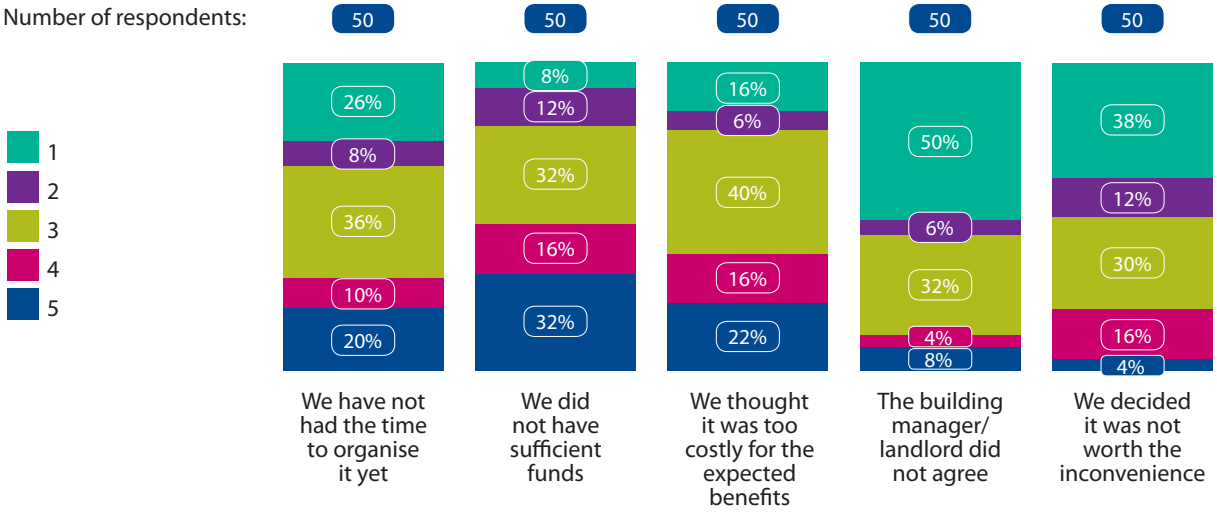
C. We think there may be ways to reduce our energy use through improving the building fabric, but we **need more information**

D. We think there may be ways to reduce our energy use through improving the building fabric, but fabric improvements are **not our responsibility**

E. We know there are ways to reduce our energy use through improving the building fabric and **are planning to investigate them soon**

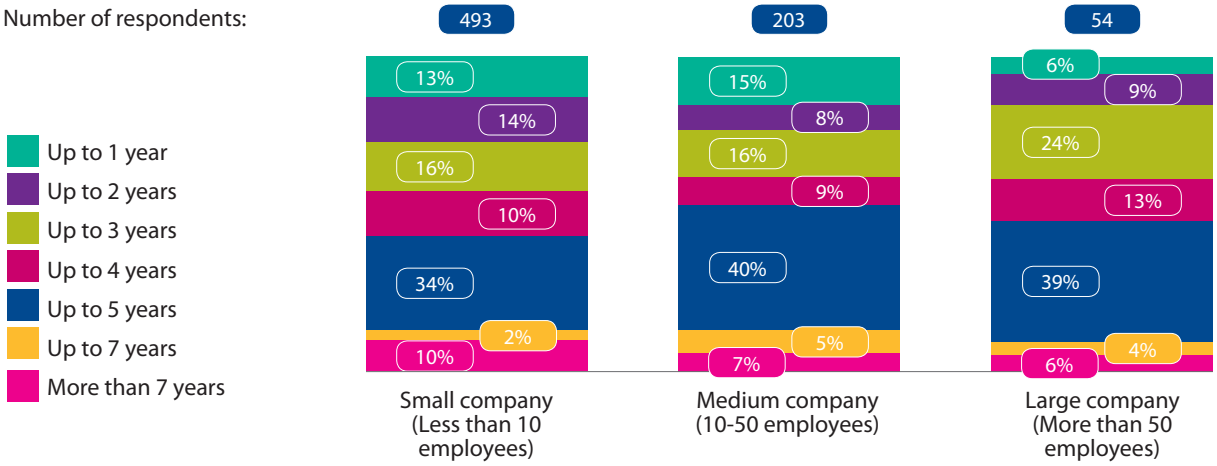


Q13. Relevance of factors in not having implemented fabric improvement



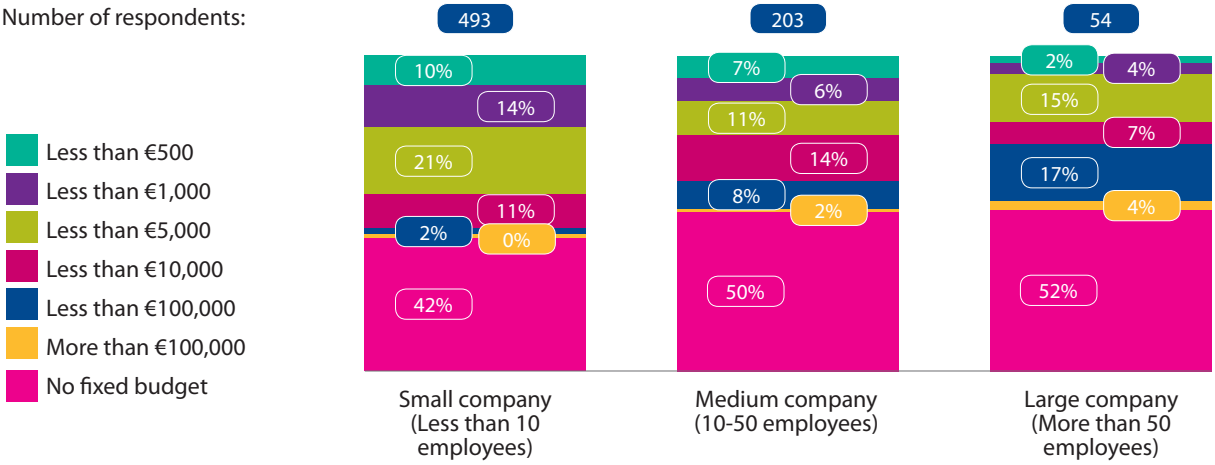
Q13: How relevant are the following factors in describing why your organisation has not taken action to reduce energy use through fabric improvement? (1=Not at all relevant, 5=Very relevant)

Q14. Number of organisations by simple payback time requirement



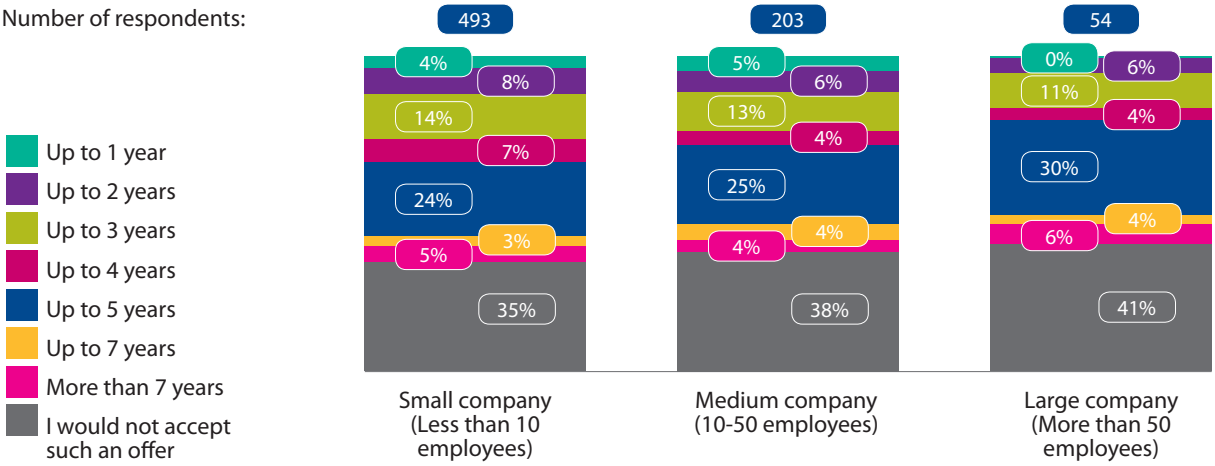
Q14: If your organisation was deciding whether or not to invent in an energy efficiency measure which involved an upfront capital cost, but saved you money each year after the investment, how many years would you be willing to wait until the savings paid back the initial cost? Assume a simple payback with no interest.

Q15. Number of organisations by budget constraint



Q15: If your organisation wanted to invest in an energy efficiency measure which met the payback period requirements you mentioned you mentioned, what is the maximum amount you could conceive spending on the measure?

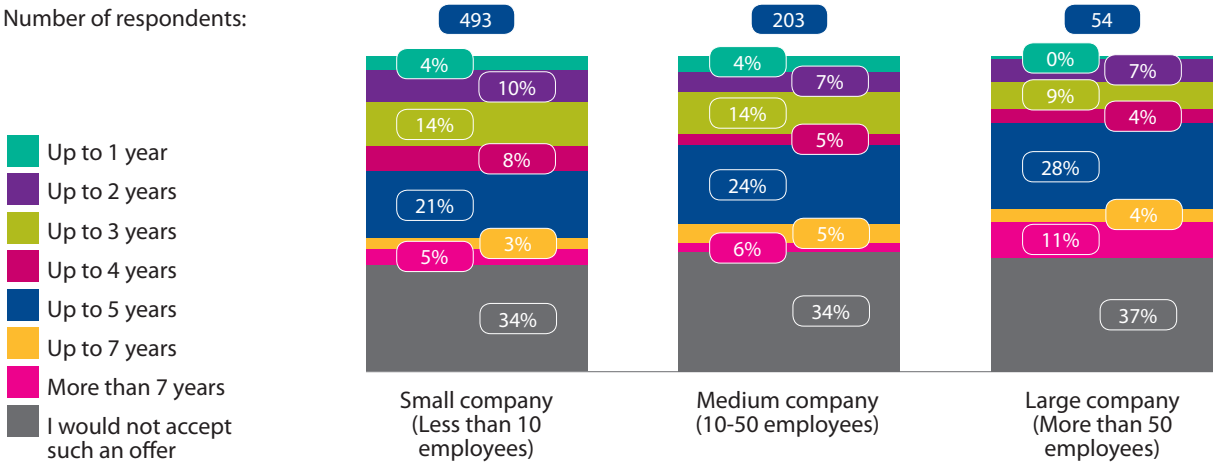
Q16. Number of organisations by repayment time requirement for ESCO contract option 1



Q16: An energy service company performs an energy audit for your organisation. If the company finds potential for energy savings, it provides the capital cost for the improvement. There are two options for repaying the loan.

Option 1: You repay the loan with interest over a fixed repayment period. The scheme is designed so that your annual savings should be larger than the annual loan repayment, but if the expected savings are not achieved, the loan should still be repaid.
For such a scheme, what is the maximum repayment period you would accept, or would you not accept it for any repayment period?

Q17. Number of organisations by repayment time requirement for ESCO contract option 2

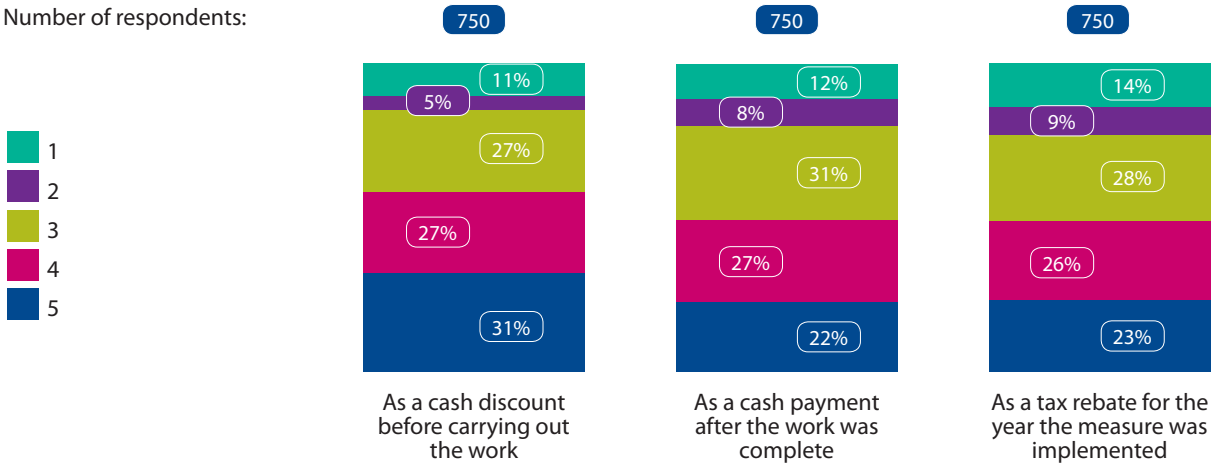


Q17: An energy service company performs an energy audit for your organisation. If the company finds potential for energy savings, it provides the capital cost for the improvement. There are two options for repaying the loan.

Option 1: You repay the loan with interest over a fixed repayment period. This time, the annual savings to you are 'guaranteed' by the energy service company, but as a result, these annual savings would be somewhat lower than before.

For such a scheme, what is the maximum repayment period you would accept, or would you not accept it for any repayment period?

Q18. Number of organisations by likelihood of availing of cash support of various types



Q18: In a different scheme, you are eligible for a cash support from a government-backed scheme. Once the support has been taken into account, the measure meets your payback time requirement.

Assuming the support is worth the same amount of money in each case, how likely would you be to implement the measure if the support was provided in the following ways? (1=Not at all relevant, 5=Very relevant)

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