

Cost implications of sustainable building construction essay



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North Devon District Council said that the local planning policy has to go through a rigorous development process and is assessed by an inspector before formal adoption. A policy that demands very high standards will usually receive objections from the local construction sector and is likely to be rejected by an inspector on the grounds of viability. They say the National Planning Policy Framework does not support LA's setting targets significantly above Building Regulations (CSH3) and therefore the viability argument will always prevail, unless the Authority is able to make an area by area justification for the higher standard. Hull City Council argued that although the NPPF is generally supportive of measures to mitigate climate change, it requires that the impact of all policies be assessed for their cumulative impact to viability. In Hull, their Core Strategy included ambitious policies requiring CSH, BREEAM and 10% renewables, as well as Affordable Housing, Open Space, Building for Life, Lifetime Homes and CIL. However, the inspector at Hull has asked for a viability study to be produced. Hull has lower levels of viability in comparison with other parts of the country. The study showed that large parts of the city were not able to achieve the proposed standards therefore they had to prioritise their standards and took the decision to limit the CSH to Level 3. The 10% renewables and BREEAM were reduced from 'requirements' to 'encouragement'. This was a reluctant decision by Members as they had requested higher sustainability standards, but had no choice if they were going to get the Plan approved by the Inspector. Hull argued the issue of viability is the greatest hurdle for most local authorities. The NPPF has placed a much stronger emphasis on viability and in particular, viability in terms of plan making. The NPPF calls for a balance between sustainable development which benefits the local

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community and realistic returns for land owners and developers, so that development is commercially viable. The problem for Hull and many other LA's is the low market value of housing compared to build costs. Even building to basic building regulations, some parts of the country have marginal levels of viability than for example, Inner London. Additional requirements, such as CFSH, erode the viability margin and prevent the opportunity for development, unless it is public funded or becomes more affordable.

3. 2 Cost Implications of Sustainable Building

As viability is such as issue with building to sustainable standards in different parts of the county, it is important to look at the cost implications. There have been a number of case studies carried out over the last few years to assess the financial impact of building or refurbishing a sustainable home. It is important to assess these studies during the research as the financial implications of building sustainably can heavily influence whether home owners or developers use sustainable building methods. With only 21% of local councils formally adopting BREEAM or CSH in private developments, there is more emphasis on home owners or developers to decide whether or not to design and build their home against green credentials.

New Build – The Code

A report was carried out in 2007 by Element Energy and Davis Langdon into the cost of building a variety of new homes assessed against the Code for Sustainable Homes. The Code measures the sustainability of homes against the nine design categories and provides a rating on a six star system. The report ' Cost of Building to the Code for Sustainable Homes' (Communities <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>)

and Local Government, 2007) wanted to identify: The solutions that home builders typically adopt to achieve credits under the various Code issues and the costs associated with each issue Understand the approaches typically taken by home builders to achieve each Code level and how these approaches are influenced by the characteristics of a development Understand the additional costs that home builders have typically incurred in achieving each Code Level, how these costs vary between types of dwelling and depending on the nature of the development Identify how Code costs have changed since introduction of the standard and provide insights into how they might change in the future The research carried out in August 2010 consulted a number of house builders combined with an analytical cost modelling exercise. The twelve house builders were a mix of private and social housing developers and the companies were a variety of sizes and locations. The developers were interviewed to gather their experience of building to the Code for Sustainable Homes. The Code cost estimates were assessed on four standard dwelling types: Two-bed flat Two-bed terraced house Three-bed semi-detached Four-bed detached house These basic dwelling types were combined to create five representative development scenarios, differing by number of dwellings, density, dwelling mix and green or brownfield. All Code costs presented in the report were extra-over costs relative to a baseline of Part L: 2006. A summary of the findings showing the variation in Code extra-over costs between the development scenarios are presented below. The extra-over cost of the Code is defined as the additional cost incurred in achieving a Code level, over the cost of constructing a dwelling to the minimum regulatory standard. As parts of the Code are adopted by the Regulations, <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>

the extra-over cost of achieving a particular Code level drops (and the cost of building the baseline dwelling increases by an equivalent amount). It is clear that as there is a significant increase in cost when building to Codes 5 – 6 standards. Currently Code Level 6 homes (Zero Carbon homes) are not common and house builders are mainly focusing on building to the Code where it is a mandatory requirement (social housing), a requirement for planning or requested by the client. Therefore, currently Code Level 3 Homes are most common and are only a slight improvement over current building regulations. House builders still have much to learn in order to build to Code Level 6 and a significant increase in costs could have a serious impact on whether developers and home owners aspire to achieve this level of sustainability, given the choice.

Refurbishments – EcoHomes

There have been very few case studies produced researching the financial implications of refurbishing dwellings using sustainable assessment methods. However, another case study was carried out by Davis Langdon looking at the cost implications of refurbishing properties between December 2007 and February 2008. Davis Langdon was commissioned by the Scottish Government to undertake a research project to establish the likely cost implications of achieving sustainable refurbishment on an existing dwelling. Baseline dwellings used as the basis for this project were carried out against very typical Scottish social housing schemes and were compared against the EcoHomes assessment standards of Good, Very Good and Excellent. The dwelling types assessed against EcoHomes credentials included: One and two bedroom bungalows Two and three bedroom houses One, two and three

bedroom flats

The following approaches were adopted during the research in order to work out the capital costs associated with achieving the different standards: For each dwelling type, a series of upgrades is proposed under the various EcoHomes credit headings. The capital and lifecycle cost of each proposed upgrade is calculated for each dwelling type. Because different credits have different weightings, the true cost of the upgrade is the weighted cost, whereby the upgrade cost is divided by the total weight factor. Potential upgrades are then ranked from cheapest to most expensive according to their 'cost per weighted credit'. The cumulative EcoHomes score for the ranked upgrades is calculated and the total costs for each threshold EcoHomes score (Good, Very Good and Excellent) are then identified. This process is applied for identifying the capital cost of the various ratings. In addition, the costs of achieving an EcoHomes Excellent score with a 30% mandatory energy reduction were identified. A summary of the capital costs associated with achieving the different EcoHomes ratings are shown in the table below, along with the percentage increases over the baseline capital costs. The results show quite a wide range between the various EcoHomes ratings. This variation may be due to the type of property assessed and its current state before assessment. The results show the scoring methodology certainly favours dwellings in urban locations over those in rural locations. The capital cost of achieving the various EcoHomes ratings, like the CSH, increases exponentially the higher the standard. These differences become significant when a standard of Very Good is achieved in a rural area and the cost considerably increases when the EcoHomes rating is upgraded to Excellent in both rural and urban areas. A standard of Very Good is usually

set by a local authority with the result that refurbishment cost differentials may vary anywhere between 0.3% - 2.4%.

3.3 Incentives

In order to encourage sustainable building practices, the Government has introduced various incentive schemes to help promote and alleviate the industry and homeowners from the financial burden of creating sustainable homes. Given that sustainable assessment methods such as BREEAM and CSH are non-mandatory and less than a quarter of local authorities have formally adopted them, it is important to encourage home owners and developers in other ways. Below are some of the incentives that the Government have made available.

3.3.1 Enhanced Capital Allowance

Enhanced Capital Allowances helps businesses by improving cash flow through accelerated tax relief. The scheme encourages businesses to invest in energy-saving technology which is specified on the Energy Technology List and managed by the Carbon Trust on behalf of Government. The Enhanced Capital Allowance scheme provides businesses with 100% first year tax relief on their qualifying capital expenditure. The Carbon Trust has assessed over 42,000 products and the Energy Technology List specifies the energy-saving technologies that are included in the scheme. The scheme will allow a business to write off the cost of the energy saving technology against the company's taxable profits in the year of purchase. This approach is highly beneficial for cash flow and gives developers an incentive to invest in energy-saving technology which is normally more expensive than less efficient alternatives.

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3. 3. 2 Reduced VAT on Energy Saving Materials

The Government have reduced the VAT rate to 5% on purchase of certain energy saving materials and equipment that can be installed in your house. The scheme also allows the building contractor to charge lower rates on both the installation work as well as the supply of materials and equipment itself. If the materials and equipment are installed into a new house at the time of construction, then VAT is not attracted at all.

3. 3. 3 The Feed-In Tariff

In 2007 David Cameron pledged his support for the Feed-In Tariffs (also known as FITs) which are the electricity portion of what some people call Clean Energy Cashback, a scheme that reimburses people for creating their own "green electricity". The second part of the scheme is the Renewable Heat Incentive, a similar measure for heat. The tariffs have been introduced by the Government to help increase the level of renewable energy in the UK towards our legally binding target of 15% of total energy from renewables by 2020 (up from under 2% in 2009). The Tariffs give three financial benefits: A payment for all the electricity you produce, even if you use it yourself Additional bonus payments for electricity you export into the grid A reduction on your standard electricity bill, from using energy you produce yourself However, on the 31 October 2011, the Government slashed FITs by 50%. As a result, this action has threatened over 4, 000 businesses and 25, 000 solar jobs in the UK and has caused a huge dent in the market, knocking confidence out of the industry and homeowners which does little to incentivise the industry to use sustainable technology.

3.3.4 The Green Deal

The Green Deal was launched by the Department for Energy and Climate Change on 1 October 2012 to help people make energy-saving improvements to their homes. The idea behind the deal is that there are no upfront costs for the energy saving measures by permitting loans to cover the work. The energy savings would need to be larger than the loan repayments in order for the Green Deal loan to be made worthwhile. The loan is subsequently repaid through customer's energy bills. The deal works by a Green Deal Advisor performing an inspection on a property and reporting on what energy improvement measures could be made to your home. The funding for these measures is issued by a Green Deal Provider and a Green Deal Installer will then install the agreed measures. These debts are subsequently passed onto the occupier when they pay their energy bill. It is hoped that the Green Deal will 'lead to the renovation of the UK's housing stock with an estimated 14 million homes seeing energy efficiency improvements ranging from double glazing, cavity wall and loft insulation through to gas and oil boilers, and renewable technologies such as solar PV, solar thermal and heat pumps'. However, some critics say there are fears that the Green Deal could increase fuel poverty as there are concerns over the viability of the loans and whether the cost of repayments would outweigh the savings on the bill. It was reported in the Telegraph newspaper by Kara Gammel (22 January 2013) that 'the take up has been slow, to say the least. The DECC has admitted that only two households have registered for the scheme'. James Murray from Business Green, part of the Guardian Environmental Network (13 February 2013) said that almost two thirds of people remain unaware of the initiative after a YouGov pole. In addition, <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>

almost two-thirds of people are unaware of the financing scheme. Just over half of those who had heard of it thought it would make a 'small difference' in helping people improve their home's energy efficiency and only 8 % felt it would make a 'big difference'.

3. 4 Current Performance and Existing Data

To get an idea on how many properties in the UK are adopting sustainable building practises and assessing their homes against green credentials, existing data has been assessed in order to analyse the current performance of new builds and refurbishments in the private sector.

3. 4. 1 New Builds

To analyse the current performance of sustainable building in new built properties, this dissertation looks at the data available on The Code for Sustainable Homes. The report analyses the Code for Sustainable Homes and Energy Performance of buildings by referring to the Cumulative and Quarterly Data for the past 2 years on the Government website. Appendix A shows the breakdown of the number of Code certificates issued by the private sector for each month in 2010/11 for both design and post construction certificates. These statistics have been broken down between Codes 1 - 6. For analytical purposes, two graphs have been produced showing the results. The graphs indicate that a majority of the homes assessed fall within Code Level 3 which is the minimum standard required for the Code for Sustainable Homes and which is a little over what is required under Building Regulations. There has been a significant increase in the amount of design and post construction certificates over a 2 year period which demonstrates a significant improvement. However the amount of post <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>

construction certificates issued is extremely small in comparison with the design certificates issued. It must be noted that it can take, on average, 18 months to two years to design and build a Code home. As a result, homes built to the Code standard will not achieve a post construction certificate until completion. The results show that the amount of design stage certificates for Code Level 3 in 2012 (7895) is a similar number to the post construction certificates achieved for Code Level 3 in 2012 (7105). In addition, 9,654 design certificates issued in 2010, resulted in 8,261 post construction certificates achieved in 2012. This would indicate that if a Code for Sustainable Homes took around 12 – 18 months to build the figures are not as poor as first imagined. It is conceivable that the remainder of homes did not achieve a post construction certificate and developers may have obtained design stage certificates for planning purposes, without seeing the scheme through to completion in order to cut costs. Generally, the figures indicate that the uptake of the Code is improving despite the majority of houses only being built to Code Level 3, achieving a slight improvement over Building Regulations. There are very few houses achieving a Code Level 5 & 6 standard.

3.4.2 Refurbishments

There is currently no data on the current performance of refurbished properties under the EcoHomes 2006 scheme, such as the Code for Sustainable Homes. However, a consultant for BREEAM confirmed that only just over 500 refurbishments have been registered with EcoHomes since 2006. This figure is, on average, under a hundred refurbishments per year. Consequently, available evidence indicates that very few homes are being

assessed under the EcoHomes scheme and the overall performance is poor. It is a long way off the targeted 12, 500 homes that required refurbishing, as stated in the introduction. BREEAM have said that they intend to assess the performance of refurbished properties under the new Domestic Refurbishment Scheme more closely.

3. 5 Appraisal of the Existing Data

This chapter has demonstrated that very few local authorities have formally adopted the Code for Sustainable Homes or Ecohomes within their planning policies. Only 21 % of local authorities have formally adopted sustainable building methods and 52% have not yet produced a Local Plan stating how they are intending to address climate change. Many local authorities argue that parts of the country have marginal levels of viability whilst developing and refurbishing properties, so additional requirements such as CFSH, erode viability margins and prevent the opportunity for development, so policies consequently reflect this. Davis Langdon's research projects demonstrated that building or refurbishing a property to sustainable requirements comes at a price, especially when building to the higher environmental standards. This finding reinforces the LA's argument that the additional capital costs incurred by sustainable building assessment methods are making it unviable in many parts of the country where property values are low. In order to relieve the industry and homeowners of these extra costs, financial incentives and various schemes have been produced by the Government. However, most of these proposals are not capturing the imagination of the industry and are failing to make sustainability a cost effective and viable option for homeowners and developers. The Government is equally failing to

make the industry sufficiently aware of these incentives and has undermined the confidence of the construction sector by back tracking on their policies. In an economy that is still very much in recession and with the construction industry trying to get back on its feet, the Government are not making it achievable to meet environmental objectives, which ultimately affects local authority planning policies due to the viability argument. Contractors, developers and homeowners are currently building to increasingly tight margins in order to make developments and refurbishment projects financially viable. For many, the Environment, Ecohomes and Code for Sustainable Homes are not a project priority and with the additional capital costs, lack of incentive, legislation and information available, the industry has an uphill struggle in order to achieve these environmental standards.

Chapter 4 – Research and Design Methodology

4. 1 Introduction

This chapter will describe in more detail the rationale for the methods of research described in the Outline Methodology and why the means adopted to conduct interviews and questionnaire research in consultation with the particular sample groups were selected.

4. 2 Research Aim

One of the main aims of this research paper was to explore whether or not the Government's environmental policies and incentives are effective in encouraging sustainability in the construction industry. The literature review provides an overview and critical analysis of the current legislation and the performance of sustainable building in private property developments and

refurbishments. It is clear that the government are trying to encourage local authorities, developers and homeowners to adopt non-mandatory sustainable building practises through local planning conditions and financial incentives. However, the results indicate that very few local authorities are implementing environmental policies and developers and homeowners are not adopting them, probably due to a lack of incentive and/or because of the additional capital costs incurred. Through a mixture of qualitative and quantitative research methodologies, the research went on to analyse the attitudes and opinions of individuals that have assessed, managed, designed and built homes against green credentials such as Ecohomes and the Code for Sustainable Homes. This research will help to further assess what the Government and local authorities should do to ensure the private housing sector achieves the projected sustainability targets in small domestic developments and refurbishment projects.

4. 3 Rationale for Research Methods

The research methods used in this dissertation had to be appropriate to the objectives of the study. It was decided to carry out a combination of Qualitative and Quantitative research methodologies which helped provide different perspectives on this research topic. The research involved a first phase of qualitative data collection. The advantage of qualitative research is that it allows the researcher to achieve a better understanding of the underlying reasons and motivations behind the answer to the questions. It also provides insights into the setting of a problem, generating ideas and hypotheses for later quantitative research. It can allow the researcher to uncover prevalent trends in thoughts and opinions. Qualitative research is by

definition exploratory, and it is used when we don't know what to expect, to define the problem or develop an approach to the problem. It's also used to go deeper into issues of interest and explore nuances related to the problem at hand. Common data collection methods used in qualitative research are focus groups, triads, dyads, in-depth interviews, uninterrupted observation, bulletin boards, and ethnographic participation/observation. The Qualitative research is followed by a second phase of Quantitative data collection and analysis. Carrying out Quantitative research by sending questionnaires can quantify data and generate results from a much larger sample of the population of interest. Measurement of the incidence of various views and opinions in a chosen sample would take a lot longer through individual interviews. Quantitative research is generally used to explore further findings after Qualitative research has been conducted. Quantitative research is conclusive in its purpose as it tries to quantify the problem and understand how prevalent it is by looking for projectable results to a larger population. Here we collect data through surveys (online, phone, paper), audits, points of purchase (purchase transactions), and click-streams.(Michaela Mora. Surveygizmo, Quantitative Vs. Qualitative Research - When to Use Which?)The diagram below shows the framework used in this research. Utilizing both the strengths of both Qualitative and Quantitative approaches, the mixed method approach helped to explore this subject where a single method would be inadequate. The aim is that their combined use provides an expanded understanding of the research questions (Brannen, 1995).

4. 4 Rationale for Research Interviews and Methodology

Data for research studies is often gathered by using questionnaires. However, the data can be enhanced by interviewing a sample of the respondents, prior to sending a questionnaire. Potential problems and difficulties arise at an early stage and are addressed before the questionnaires are issued. Conducting interviews also ensures more detailed explanations are given to an answer which is less achievable with questionnaires. Interviews for the initial research for this study were chosen because they are a useful technique for collecting information and opinions about a subject (Naoum, 2007). Based on the information gathered in the literature review, a small number of in-depth, semi- structured interviews were carried out in person. A semi-structured interview offers flexibility, allowing detailed explanations to be given and new questions to be asked as a result of what the interviewee said. A framework of questions was produced in advance in order to explore the specific topics relevant to the research. A number of sample groups were chosen to ensure a broad overview of individual experiences. The questions were designed to engage the interviewee on the subjects of sustainable legislation, incentives for sustainable building, the costs associated with building a sustainable development and their general attitude towards sustainable building. By researching multiple and diverse perspectives a more comprehensive evaluation for this study is possible (Coolican, 2004).

4. 5 Sample Groups

To get a broad overview of sustainable developments in the private sector a number of interviews were carried out from each of the following

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professional backgrounds: Construction / Project

ManagersArchitectsEnvironmental ConsultantsDevelopers / Homeowners

(Clients)Each of the interviewees was known to the author through

professional relations or contacts. The interviewees were from a range of

backgrounds with different experiences to obtain a range of views on

sustainability across the industry. The reasons for the selected groups were

as follows: Construction / Project Managers are responsible throughout a

sustainable building development from demolition, construction, operation,

maintenance, and renovation. Construction Managers work closely with

Architects, Environmental Consultants, and the Client at all stages of the

project to ensure the property is built to specification and complies with

green credentials. These professionals are familiar with development costs

and can determine what impact sustainable building methods have on

Client's budgets and their individual attitudes towards sustainability. They

also have a thorough understanding of the assessment methods used in

particular developments. Architects are usually involved from the outset and

frequently deal with the issues that are faced by embracing environmental

sustainability and the economic impact it has on developments. Their

designs are often restricted by policies that encourage particular types of

development in different areas. They may also be party to the Client's

attitudes towards sustainable building from both financial and ethical

perspectives and the impact this has on decisions that are made. They have

an important role in ensuring that the end product not only reflects the

Client's needs, but also meets the criteria set by the local authorities and

sustainable building assessment methods. Environmental Consultants are

hired by clients and design teams to help ensure projects are designed and

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built to meet environmental regulations. They have a sound understanding of sustainable building methods and help provide advice to clients and design teams in order to protect them from possible fines, legal action or misguided transactions. They are also employed to assess development proposals against its green credentials and its overall performance. Environmental Consultants have primary insight into the success of sustainable building and the legislation that is in place to enforce it. Developers and Clients play a key role in sustainable building. It is their aspirations and vision that help drive and deliver a project. The design brief provided by developers determines how the project is going to be delivered and to what extent it is built to green credentials. It is their attitudes and opinions that will influence how successful the Government is at encouraging sustainable building and what improvements could be made for the future.

4. 5 Data Analysis

How the interviewer documents the contents of the interaction with the respondent is important. The interviews were carried out in person in quiet rooms and the entire interview was tape recorded. The interview was then transcribed into text word for word leaving out any information that was deemed irrelevant. Copies of these interviews can be found in the appendix for further reference. The transcribed text then became the data to be analysed. After all the interviews were carried out the various answers and opinions were compared and summarised in order to draw conclusions. This enabled the design of the research questionnaire to take place.

4. 6 Rationale for Questionnaires

Questionnaires comprise of a written set of questions that are personally completed by the respondents. The questionnaire is a cost-effective research tool for use in data collection. It serves four basic purposes: To collect the appropriate data Make data comparable and amenable to analysis Minimize bias in formulating and asking question Make questions engaging and varied. The advantage of the questionnaire was: Respondents have time to think about the answers to the questions in the questionnaire They are extremely easy to administer and later analyse A researcher can send questionnaires to a large number of respondents distributed over a large geographical area The completion rate seems higher than for straightforward mail surveys when a researcher either delivers the questionnaire, picks it up or both (Babbie 1998) However there are some limitations for using questionnaires which was the advantage for carrying out both Qualitative and Quantitative research. Questionnaires sent by post or online frequently produce a lower response rate than those administered face to face. Questionnaires do not tend to reveal the underlying reasons for responses, for example why a person gave a particular response. In addition, the information that is provided can often be of limited value, unless enough of the questionnaires have been completed. In order to get a higher response rate from the target sample groups, e-mailed questionnaires were used to ensure a quick response and to allow sufficient time for analysis. Questionnaires in electronic format offer a much greater chance of a response than by post because of the ease and speed of completing the questionnaire.

4. 7 Questionnaire Design

The literature survey and interviews together guided the design of the questions that were included in the structured questionnaire. The questionnaire was designed to assess the attitudes of project/construction managers, developers, builders and architects towards sustainable building and analyse its current performance. The aim was to further establish what the Government and local authorities should do to ensure the private housing sector achieves the projected sustainability targets in small domestic developments and refurbishment projects.

4. 7. 1 Formulating Questions

In order to construct a good questionnaire and receive good reliable data for analysis, it is important that the research objectives are translated into specific questions. Whilst formulating questions Naoum (2007) suggested the following is considered: Which objective is the question related to? Is the question relevant to the aim? Is it relevant to the hypothesis? Can the answer be obtained elsewhere? When considering the questions there were two types of questions in survey research to consider, namely open-ended (unstructured) questions and closed-ended (structured) questions (Babbie, 1998). In open-ended questions, the respondent is asked to provide their answer to the question similar to the research interviews. In the closed-ended questions, the respondent is asked to select and answer from a list of answers provided by the researcher. Closed-ended questions often require a short response in the form of a Yes or No, Important or Not Important, etc. Closed-ended questions are easy to ask and quick to answer, they require no writing by either respondents or interviewer and their analysis is straight

forward (Nachmias and Nachmias, 1996). At the end of each research interview, the interviewees were asked what type of questions they were most likely to answer in an e-mailed questionnaire. A large majority of respondents preferred close-ended because they were a lot quicker and easier to process. As a result, closed-ended questions were used in this questionnaire. It was deemed appropriate to use close ended questions so that the data gathered could be later 'quantified' to better establish trends of opinion (Coolican, 1994).

4. 7. 2 Question Format

There are several formats in which closed-ended questions can be asked such as: Checklist, Grid, Rating scale, Likert Scale, Numerical Rating Scale, Ranking, Semantic Differential Scales. The questions in this research consisted of a variety of Checklist and Likert Scale formats.

Checklist

This type of question is essentially a list of items that the respondents have to mark or tick. It is a straight forward means of collecting information and the data can be analysed easily. The checklist questions are specially designed for a group of respondents who have accurate information and can answer the questions with a high degree of certainty (Naoum, 2007).

Checklist usually consist of Yes / No answers or choosing from a range of options

Likert Scale

This method measures the attitudes of the respondents. The individual is asked not only to indicate agreement or disagreement, but also to signify

how strongly he or she agrees or disagrees with a number of statements relevant to the attitudes being measured. This is normally done on a 5 point scale, though it is possible to use a 7-point scale. (Business Psychology and Organisational Behaviour, Eugene McKenna, Pg 271). The questions were rated using a five point Likert scale as shown below: 5 = strongly agree, 4 = agree, 3 = neither agree nor disagree, 2 = disagree, and 1 = disagree strongly.

4. 7. 3 Question Choice

The choice of words and phrases used in each question is critical in expressing the meaning and intent of the question to the respondent and ensuring that all respondents interpret the question the same way. Even small wording differences can substantially affect the answers people provide. The next stage was to start formulating the questions. During the research interviews, participants were also asked how many questions they would be prepared to answer. Most respondents said that the response rate would be higher if no more than 20 questions were asked. Whilst formulating the questions Naoum (2007) suggested paying particular attention to the following: Your questions/questionnaire should be short but comprehensive
Avoid leading questions
Avoid double questions
Avoid presuming questions
Avoid hypothetical questions
Must not be ambiguous
Before formulating the questions the proposal and dissertation aim was revisited. Thirty 'first thought' questions were produced based from the information and data collated in the literature review and research interviews. The questions were then cross referenced against the research goals. A number of sections were introduced and the first thought questions

were split accordingly into the relevant sections. The questions were subsequently refined and the less relevant questions were removed in order to reduce the total number of questions to 20.

4. 7. 4 Pilot Study

Pilot experiments are frequently carried out before large-scale quantitative research, in an attempt to avoid time and money being wasted on an inadequately designed project. Bell (1996, p. 84) described it as ‘ getting all the bugs out of the instrument so that subjects in your main study will experience no difficulties in completing it and so that you can carry out preliminary analysis to see whether the wording and format of questions will present any difficulties when the main data was analysed.’A pilot study is usually carried out on members of the relevant population, but not on those who will form part of the final sample. This is because it may influence the later behaviour of research subjects if they have already been involved in the research. To test the questionnaire 5 construction professionals known to the author were asked to complete the questionnaire. The following questions were asked as suggested by Bell (1996). How long did it take to complete? Were the instructions clear? Were any of the questions unclear? If so, which one and why? Did you object to answering any questions? Has any major topics been omitted? Was the layout of the questionnaire clear? Any comments? The respondent’s comments were noted and any useful feedback was fed back into the final questionnaire.

4. 7. 5 Cover Letter

The cover letter is an important part of the survey. The cover letter can affect whether or not the respondent completes the questionnaire. It <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>

provides an opportunity to persuade the respondent to complete the survey and should explain the purpose for the questionnaire. Nachmias and Nachmias (1996) wrote: A cover letter must succeed in overcoming and resistance or prejudice the respondent may have against the survey. It should (1) identify the sponsoring organization or the persons conducting the study, (2) explain the purpose of the study, (3) tell why it is important that the respondent answers the questionnaire, and (4) assure the respondent that the information will be held in strict confidence. A copy of the cover letter can be found in the appendix.

4. 7. 5 Sampling

The participants from the various sample groups were chosen using a systematic random sampling technique. De Vos (1998) defines sampling as a small portion of the total set of objects, events or persons which together comprise the subject of a study. A total of 200 contact details from Developers, Architects, Contractors, Construction and Project Managers were randomly obtained from the various registered professional bodies including, The Chartered Institute of Building (CIOB), The Federation of Master Builders and The Royal Institute of British Architects. Contacts from each professional sector were obtained from all over England.

4. 8 Data Analysis

Data from the questionnaires was quantitatively analysed by means of tables, percentages and explanation. The aim of analysing the data in tables and percentages is to provide a condensed picture of the data collected and to give adequate coverage in words. The tables will allow readers to see the evidence collected by the researcher. According to Neuman (1994), data <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>

analysis is a search for patterns in data. Once these patterns are found, they must be interpreted by means of tables and percentages and analysis.

Chapter 5 – Interviewee Response & Analysis

5. 1 Introduction

Prior to starting the interviews, the interviewees were advised as to the aim and objectives of the dissertation and why they had been asked to participate. It was explained that all responses would remain anonymous so they were free to voice their true feelings and experiences. The following topics were explored: Role in the Construction Industry Current Environmental Legislation Main Attraction for Adopting a Sustainable Building Practise Cost Implications of Sustainable Building Non – Mandatory Environmental Legislation Future Legislation

5. 1. 1 Role in the Construction Industry

Question: What is your role within the construction industry?

To get a broad overview of sustainable developments in the private sector, 11 interviews were carried out across the four professional backgrounds. The interviewees were from a broad range of backgrounds to give a good overview of sustainable developments and refurbishments. The interviewees were as follows: Architect 1 – Architect specialising in high end residential refurbishments in London. Architect 2 – Designer and Architect specialising in high end residential refurbishments and some new build projects in London and the South East. Architect 3 – Architect designing buildings across several sectors, including Nursery buildings, Private Residential Projects, Community

buildings and Apartments of all different sizes. Project Manager 1 - Project Manager for a high end residential building firm in London specialising in major refurbishments and subterranean developments. Project Manager 2 - Project Manager for a high end residential building firm in London specialising in major refurbishments and subterranean developments. Project Manager 3 - Director of a Project Management consultancy, specialising in sustainable residential and mixed use developments in both the private and public sectors. Environmental Consultant 1 - Environmental Consultant offering a range of Code and BREEAM services, specialising in housing developments and mainly refurbishments. Environmental Consultant 2 - Environmental Consultant providing services for clients in the development, construction and asset management sectors, as well as to contractors, housing providers, Government, local authorities and NGO's in the UK. Environmental Consultant 3 - Environmental Consultant offering a range of Code and BREEAM services, specialising in housing developments and mainly new builds. Developer / Client 1 - Property developer in London creating contemporary, modern, luxury residential homes and properties. Developer / Client 2 - Homeowner and private client having major refurbishment and subterranean development experience in London.

5. 1. 2 Current Environmental Legislation

Question: Is there any environmental legalisation (e. g. Part L and/or local authority planning conditions) that you have had to comply with?

This question was asked in order to establish what experience the interviewees had with the various environmental legislations. 50% of the

interviewees had been involved in new build projects which were required to comply with The Code for Sustainable Homes. The other 50% had worked on major refurbishments including subterranean developments that had to comply with Ecohomes. In some cases the interviewees had experience in both fields. The development costs of the projects the interviewees work on range from refurbishments with construction values beginning at around £70, 000 up to major mixed use housing developments valued at approximately £300 million. The Architects and Environmental Consultants were generally more aware of the range of environmental legislation such as Part L, Part G, Part E and Part F. Generally the Developers/Clients and Project Managers were less aware apart from Project Manager 3 that specialises in sustainable residential and mixed use developments in both the private and public sectors.

Question: Whilst developing domestic building projects in England, have you/or your clients generally find it difficult to satisfy the environmental legislation (e. g. Part L and/or local authority planning conditions).

This question was asked in order to establish whether the interviewees found it difficult to satisfy the various environmental legislations and if so, to establish for what reasons? Generally the interviewees that had worked on refurbishments and Ecohomes projects found it harder to satisfy the environmental legislation. Architect 2 had worked on around 10-15 Ecohomes projects, none of which have yet achieved a post construction certificate. Many of the interviewees say this is due to a lack of available information, education and awareness of sustainability. Project Manager 1 said " the hardest part I found was being able to fully understand the <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>

reasoning behind the Ecohomes requirements and then relaying this back to the client. There should be more information available to inform the end user". There also seems to be reluctance on the part of the end user and frustration about the whole process because they find the schemes are subject to 'over kill' and are generally too expensive. Project Manager 1 also claims there are not enough checking procedures in place to make sure the projects have complied with their planning conditions. There was a lot of criticism of the Ecohomes requirements. Developer 1 said "I think the target is good, but I think the methodology needs some work and it's way too much. My project has a big purse, but I can imagine that someone who is developing a small house and doesn't have much capital, then this whole process would be a non-starter. Some areas seem difficult and some areas are pretty ridiculous, for example the bike store". The projects that have to comply with the Code seemed to be more successful, largely due to better awareness and experience in general with running sustainable projects. Environmental Consultant 3 said that "most clients will get an Architect to project manage it or a separate Project Manager, but generally they know a fair bit about the Code for Sustainable Homes so usually there is not a huge amount of difficulty complying with it". Architect 3 doesn't find it hard to comply with the Code because the clients take their advice and unless it is horrendously expensive they generally have no problems. Having worked on a large number of sustainable projects, he is clearly more effective at steering and leading a sustainable project to help it comply. However he did say he "can't think of many private residential clients that have taken up the sustainable agenda with any interest at all". Project Manager 3 said that across the public sector they have little trouble at all with complying with the

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Code and achieving the minimum standards. He said his builders are "operating in an environment that the Code applies every single time. It doesn't require the inclusion of features or construction techniques that are particularly unusual or costly; it is very main stream". This demonstrates that as people become more and more used to carrying out environmental standards then it does become easier. There is a large gap between sustainable developments in the private and public sector. General Summary:

The Code

The Code

Ecohomes

Ecohomes

YES

No

YES

No

136125%75%85. 72%14. 28%

Question: How effective is mandatory environmental legislation / planning conditions in sustainable building?

This question was asked in order to establish whether environmental legislation is successful in making individuals comply with sustainable building requirements? The Developers/Clients generally found that mandatory planning conditions are effective because without them they wouldn't have adopted Ecohomes or the Code. However, they are generally <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>

unsure about the consequences of not complying and achieving a Post Construction certificate. Project Manager 1 said " if the client simply wishes or cannot afford the required sustainable measures there is no legislation to stop them from building what they want". However, Architect 1 and 2 both thought that not complying with Ecohomes could lead to major problems when selling a domestic property. The Project Managers all agreed that legislation is effective, Project Manager 3 quoting " had it not been mandatory it simply wouldn't have happened. I think mandatory legislation is essential and I don't think it is about consumer choice". Environmental Consultant 1 said " It's quite clear that if developers were left to their own devices and were allowed to self-certify everything, they wouldn't do a good job and they would do the least possible". The general consensus with Ecohomes and to a certain extent, the Code is that the local authorities are not following up and ensuring refurbishments and developments have complied with the planning requirements. Architect 3 said sustainability " is looked at a greater extent when you make the application and I hope it is not merely a box ticking exercise. Where it should have bite is with Building Control that should be taking it up and assessing it, but they don't. There is a separation between the two and Building Control would be better at policing authority I'm sure. Planners simply don't come back!" This is evident with Architect 2 that has not yet achieved a Post Construction Certificate across 10-15 Ecohomes projects and no-one has picked it up. Environmental Consultant 1 felt there is not enough legislation, " there aren't enough council's asking for high enough standards and then when standards are asked for they are not checked on at Post Completion stage". Project Manager 3 made an interesting point that " by making it mandatory in a <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>

sector like this (public) it has allowed supply chain companies to develop kit that is smaller, cheaper, easier to install and more sophisticated and had all the bugs ironed out of it. The cost of the equipment is coming down, the cost of maintenance is coming down, the industrial design is now improving, so there is now a market so the supply chain can now invest in producing better and better kit and try and win share of the market". The cost of sustainable building is clearly a problem and by making it mandatory, the supply chain becomes more innovative which helps drive down costs. General Summary:

The Code

The Code

Ecohomes

Ecohomes

Generally Effective

Generally Ineffective

Generally Effective

Generally Ineffective

1

3

6

1

75%

25%

85. 72%

14. 28%

Question: Did your last / a majority of projects achieve a design and post construction certificate?

This question was asked in order to establish how successful Ecohomes and the Code for Sustainable Homes are in private residential developments?

There seems to be a big difference between the successes of Ecohomes and the Code. Most of the people associated with new build projects and the Code have achieved a Design and Post Construction Certificate when

required. Architect 3 said " we make sure they do and it's not a hard thing to do". Environmental Consultant 3 said " people have to meet the Code level or they get into trouble with the local authority because they can't sell their home without a certificate". A majority of the interviewees involved in Ecohomes projects have struggled to achieve a Post Construction Certificate. Architect 3 has carried out 10 - 15 Ecohomes projects across London and not yet achieved a Post Construction Certificate to date and Architect 1 has only achieved a 50% success rate. More worryingly, Environmental Consultant 1 said " possibly less than 20% have got to Post Construction Stage. Of the ones we have stopped working on, the developer or resident has finished and nobody has asked them for a Post Construction Certificate so the contractor hasn't sent us any information and the council haven't followed up and asked for them for information. This is very common". Because sustainability is mandatory in the public sector, Project Manager 3 said " we are dealing with consultants and contractors where this is a matter of course, its complete bread and butter. They know how to do it, their site teams know how to do it, their site managers know what to look for, their buying departments know what to look out for. It's part and parcel". This demonstrates that by making it mandatory it eventually becomes the norm and is integrated into normal building practise. Environmental Consultant 2 said that because they are an assessor company they do achieve Post Construction certificates in all of their developments, but it is painful. He argued that " BRE really don't understand commercial pressures, they don't understand how the real world works. They have a monopoly position and exploit it. They have made the Code and Ecohomes into a dog's dinner, it really is stupid". He does however argue " there is a place for a sustainability

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assessment tool, but it needs to work in a way that the industry works which tries to establish learning". This again demonstrates that the current sustainability tools are not flexible enough leading to frustration amongst the people that adopt it. General summary:

The Code

The Code

Ecohomes

Ecohomes

YES

No

YES

No

4007100%0%0%100%

Question: What would happen if a post construction certificate wasn't achieved?

This question was asked in order to establish what pressures are on the various selection groups in order to comply with environmental legislation and what would happen if they didn't? Again there is a divide between Ecohomes and The Code. Environmental Consultant 3 stated that from his understanding " a penalty is paid to the local authority for not meeting the requirements". Architect 3 stated that " with Ecohomes assessment you can't normally inhibit the building, but by that period the planners have lost contact with the project, lost interest or don't have the resources so probably (do) nothing". Likewise, Environmental Consultant 1 said " in his experience <https://assignbuster.com/cost-implications-of-sustainable-building-construction-essay/>

absolutely nothing. There will be some cases, but it's very rare and specifically refurbishments, the local authority will not allow you to occupy until you have handed in a certificate. I know at least one borough that requires this. But when it comes down to timing and the owners have already moved in and there are no calls, no letters and nothing happens, you realise that it was an empty threat and they weren't enforcing". Most interviewees that have worked on Ecohomes projects think that it may only become an issue when the property is sold.

Question: Are you / your clients generally deterred by Ecohomes or the Code for Sustainable Homes?

This question was asked in order to establish the reasons why homeowners and developers may be deterred by Ecohomes and the Code? The Architects and Project Managers generally found their clients were deterred by Ecohomes. Project Managers 1 & 2 said their clients were put off by the additional capital costs in consultancy fees and upgrades required to their properties. Project Manager 1 also said that there is a lack of incentive to build green and a lack of awareness as to why it is important. Architect 1 argued that " the schemes are not flexible enough and ask for some silly requirements". Environmental Consultant 3 found that " most homebuyers don't understand it, but developers see it as a worthwhile thing now". Architect 3 said " not really with new build projects because it is not as hard to achieve, but with refurbishments then certainly". General Summary:

The Code

The Code

Ecohomes

Ecohomes

YES

No

YES

No

0

2

6

1

0%

100%

85. 72%

14. 28%

5. 1. 3 Main Attraction for Adopting a Sustainable Building Practise

Question: What is the main attraction for adopting a sustainable building practise?

The main attractions for adopting a sustainable building practise among a majority of the interviewees were the improvements in the efficiency and quality of the buildings. Project Manager 1 said more sustainable buildings

would " save the occupants money through savings in the life cycle costs and overall create healthier homes which contribute to the environment". Project Manager 3 said that in his 20 years of project managing, " the qualities of the homes that people get are immensely better. They are no bigger, but their sound performance is massively better. If you live in a block of flats you can actually get to sleep better and have a fighting chance of having affordable warmth". Architect 1 argued " with energy costs rising, upgrading areas of your home to save money could become very popular". She did make an interesting point that the " people that need to save money the most don't have the capital to spend on the upgrades". Other attractions suggested were Eco-bling, Feel Good Factor, Research and for large developers it helps to improve public image.

Question: Do you find sustainable building practises have a limitation on the design and finish of a project?

This question was asked to establish whether there were requirements that restrict the design and finish of a property which put people off. There was a mixed response to this question. Two of the three Environmental Consultants thought that it did limit the design and finish of a project. Environmental Consultant 2 said " the problem with BRE is they don't understand the real world isn't perfect" and " there are massive limitations" because not all properties are the same and the schemes don't allow for this. For example a property built by the Code as described by Environmental Consultant 3 is restricted to certain requirements such as Lifetime Homes that requires a building to cater for all disabilities. Project Manger 3 said that in new build developments the standards aren't particularly challenging and that it is very

easy to achieve because " the industry provides the technical support so that it is mainstream and house builders can get the kit off the shelf and not had to adopt specialist solutions of purchased highly expensive kit". The Project Managers working on major refurbishments found it hard to convince clients to meet requirements such as by installing sanitary ware with restricted flow rates. However, Environmental Consultant 1 said that once you explain to the homeowners that restricting flow rates was good for the environment they generally " come round to a more suitable way of thinking". Architect 1 argued that as the industry get used to applying these standards that it will soon become easier and cheaper to integrate into the design and execution of the project (much like it is in the public sector). This is also backed up by Architect 2 who said " it's a pain at the moment but it won't be eventually".

General summary:

The Code

The Code

Ecohomes

Ecohomes

YES

No

YES

No

2

2

4

3

50%

50%

57. 14%

42. 86%

5. 1. 4 Cost Implications of Sustainable Building

Question: Did you/your clients find it more expensive to build sustainably?

This question was asked to establish if people generally find it more expensive to build sustainably, as researched by Davis Langdon. All but one interviewee found building to either Ecohomes or the Code increased the upfront capital costs. This was mainly due to the appointment of a number of

environmental consultants including Environmental Assessors, Acoustic companies, Ecologists and the Contractor's management costs. There are also the additional costs to upgrade areas of the property and install renewable technology to ensure the development or refurbishments meet the required standards. Architect 3 argued that quality control and design engineering could achieve a higher environmental performance of a building without spending money you would have spent either way. Architect 1 argued " the more we do it the easier and cheaper it will get. It will become easier to integrate it into the design". Environmental Consultant 2 argued that, " if you take into account its lifecycle costs including demolition and reconstruction" then it probably wouldn't cost more. The problem is that many developers and homeowners don't consider the whole lifecycle of a property. He argued under a different question, that a developer " has no interest in the longevity or the durability of the end product". Once developers have got their money, they tend to run and move on to the next project. General summary:

The Code

The Code

Ecohomes

Ecohomes

YES

No

YES

No

3

1

7

0

75%

25%

100%

0%

Question: What financial incentives are you aware of to encourage sustainability and do these outweigh any additional costs?

Generally the interviewees had very little knowledge of the financial incentives available. Architects 1 and 3 were aware of the potential savings in life cycle costs from renewable technology. Architect 1 said that the problem with renewable technology is it takes a considerable amount of time

to get a return. She argued that not many people remain in their properties long enough to reap the benefits and developers don't make any money in re-sale value from installing it. Architect 3 was aware of the Feed-In Tariff and argued that if there was more information available from the central Government on the various schemes or renewable technologies available, then Architects could implement this into their designs and encourage their clients to use them. Project Managers 2 & 3 were also aware of the Feed-In Tariff and Green Deal, but said no one had adopted the schemes.

Environmental Consultant 2 said " there are very few financial incentives. Customers can't see any value in it. There are things like the Green Deal, Green Tariff, but they are really only small beer." Environmental Consultant 1 argued that " if there were more financial incentives more people would do it. There aren't enough of them and actually don't think you have to give money away to get results. In my personal opinion all insulation of whatever type should be free". General summary:

The Code

The Code

Ecohomes

Ecohomes

YES

No

YES

No

0

4

0

7

0%

100%

0%

100%

5. 1. 5 Non –Mandatory Sustainable Building Methods

Question: Where Ecohomes or the Code for Sustainable Homes is non-mandatory, do you/your clients adopt the schemes voluntarily?

As Ecohomes and the Code are non-mandatory, this question wanted to establish whether without legislation and local planning conditions are homeowners and developers likely to adopt the schemes voluntarily? The

Architects find that more clients are becoming aware of sustainability and integrating it into their homes. However, they aren't adopting Ecohomes and the Code voluntarily mainly due to the additional costs. Environmental Consultant 3 said " from my own experience you only get a small amount of clients that want to adopt it because of lower heating bills or they are environmentally friendly". Environmental Consultant 1 said that where sustainable building practises are non-mandatory they are " almost completely ineffective". Developer 1 had only been incentivised to use renewable technology in her developments. The Project Manager 1 felt that non-mandatory sustainable building practises are ineffective, but could be encouraged by making people aware of the benefits especially as fuel prices are rising. General summary:

The Code

The Code

Ecohomes

Ecohomes

YES

No

YES

No

0

4

0

76

20%

100%

0%

100%

Question: If given the choice would you / a majority of your clients build sustainably?

The environmental consultants are generally finding that clients wouldn't build sustainably out of choice because it is not their main priority and as Environmental Consultant 1 argued, clients and developers are driven by money and don't really respond without a financial incentive. However, Environmental Consultant 2 felt that people are coming round to the idea,

but there is not enough flexibility in the schemes. He argued " we have to recognise that no place is the same, no plot is the same and no site is the same and what is important in one part of the world might be less important in another. We have to recognise that and all these systems need to do that and I don't think they do at the moment, sufficiently at least. There needs to be compromise and there is no hard answer. For example you may be able to achieve considerable carbon emission reductions, but you can't achieve something else such as transport, but on balance that may be the better answer. It doesn't seem to recognise that, a compromise that you may need to take". Developer 1 said she would do under half of what was required by Ecohomes if given the choice and Developer 3 wouldn't do any of it apart from upgrades to loft insulation and a better boiler. Architect 3 said that clients generally " do it because they are made too. The only time they do it more is with developers that are doing larger residential schemes and they certainly don't want to do it because they are spending their profit". This was also argued by Architect 1 who said clients aren't adopting it voluntarily because they are working to tight budgets. General summary:

The Code

The Code

Ecohomes

Ecohomes

YES

No

YES

No

1

3

1

6

25%

75%

85. 72%

14. 28%

5. 1. 6 Future Legislation

Question: What would be the best way to improve sustainable building in England?

All three Environmental Consultants thought that more mandatory environmental legislation would improve sustainability and force developers and homeowners to adopt environmental building methods, but there needed to be a better assessment process in place to ensure the standards

are met. More financial incentives are also important in encouraging homeowners and developers to adopt sustainable building practises and technologies to make sustainable building more affordable and viable. Project Manager 3 made an important point and argued that the Government needs to stop changing their minds over a number of government initiatives such as the Green Deal and Feed-in Tariff because it was damaging its reputation and believability in the sector. This is evident in the literature review where it was reported that only five homes had signed up to the Green Deal and a number of companies have gone into liquidation because the Government has back tracked on the Feed-In Tariff. Without clear, reliable financial incentives, sustainability will continue to be an expensive exercise and in a majority of the country remain an unviable option. If sustainability became cost neutral, then there will be no excuse not to implement it into local planning policies. All three Architects and Project Managers 1 & 2 argued that there should be more information available on the benefits of sustainable building and the various incentives and building methods available. If homeowners and developers were more aware of the benefits, then they may be more likely to want to adopt sustainable building practises. Developer 1 felt the assessment methods need to be more flexible and could be achieved with fewer consultants on board. General summary:

Schemes More Flexible

Cheaper to Comply

Financial Incentives

More Onerous Legislation

More Information Available

Integrated into Building Control / Better Checking

1

3

6

5

6

4

Question: Do you think more onerous legislation or local authority planning conditions would have a positive or negative impact on the building industry?

Environmental Consultant 2 didn't believe the industry could be trusted to build sustainably on its own. " Builders by and large aren't really doing a great deal. They need structure, legislation and incentives to make them move". Environmental Consultant 1 thought that if you get " the clients on board with a bit of stick and carrot, it will end up having a positive effect. We would be up-skilling the construction industry; we would be introducing the sort of energy measures that have been present in Europe for many years". But Environmental Consultant 3 thought that finance is holding back the country. He suggested the Government should give people the option of

spreading the cost over a number of years. Project Manager 3 thought there should be a " more level playing field between the private and public sector so they have to build to the same standard would be greeted by most house builders as a negative, but I think it would be a positive thing by making things more mainstream and just the norm". He also suggested the Government should progressively increase the standards and should consult the industry'. Architects 1 & 2 argued similar points stating " the more people that get used to it and incorporate it will have a positive effect on the building industry" and " it will be positive eventually. It will be a pain to start with, but in a few years everyone will do it".

Question: Do you think more onerous legislation is the best way to achieve improvements in sustainable building?

Most interviewees thought that more onerous legislation is needed to improve sustainable building, but it also needs to be backed up with " more grants, incentives and better education" as argued by Project Manager 1. Project Manager 3 said he thought " there should be support for and an initiative from Government to raise the level of awareness as to why this is important". He went on to argue that " it should just become the norm. It should be one of the topics of discussion out there; why are we doing this as a society, why is this important and it should be everything from the technology down to house wife balancing the money that she has to keep her family warm to pensioners staying warm". He suggested that " legislation on its own is no way near as effective as a commitment to a much broader dialogue, but it does have to be supported by legislation". Project Manager 2 argued that unless it is made cheaper, implementing more

legislation could make it too expensive for many to do. Environmental Consultant 1 thought that if the techniques and technology that are used become cheaper, than the end user would be able to deal with it, understand it and then pay for it.

Question: Should environmental standards be part of building regulations?

Building control is principally a service to ensure health and safety standards apply to building work, energy saving provisions is attained and premises are fully acceptable for use. There have been a lot of discussions in recent years as to whether more environmental standards should be integrated into it.

The general consensus amongst the interviewees asked thought that sustainability should be more closely aligned with building control.

Environmental Consultant 3 argued that it absolutely should be. " We do have Part L. I think it is essential the building industry is required to build to a minimum standard like building regulation which is mandatory".

Environmental Consultant 1 also agreed, but felt it may be too much work for building control, but they should have specialists that work alongside building control officers. He also thought it would help " sharpen up the project team's attitude towards design". Project Manager 1 said from his experience " currently people are getting away with very little because no-one is checking that the planning conditions have been met". General summary:

The Code

The Code

Ecohomes

Ecohomes

YES

No

YES

No

3

0

6

0

100%

0%

100%

0%