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MARKET TRANSFORMATION HOUSING INDUSTRY SURVEY

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Creating homes and neighbourhoods
that work well into the future
and don't cost the Earth

HOUSING INDUSTRY SURVEY: TOWARDS SUSTAINABLE PRODUCTS AND SERVICES

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ABSTRACT

A survey designed to assess the level of knowledge and uptake of sustainable business practices by businesses in the housing industry sector was carried out in June 2006. Adoption of environmental practices of New Zealand companies is lower than survey results from European and Australian companies. Over one third of companies offered services to improve insulation or increase thermal mass in houses. By contrast, the greatest need for information was identified as water-related issues closely followed by energy efficiency. The greatest consumer demands experienced by the companies, in order of importance, were for energy efficiency, insulation, noise reduction and solar hot water. The main obstacles to the adoption of more sustainable practices, in order of importance, were lack of customer demand, cost of sustainable materials, lack of reliable information, and lack of knowledge and skills. The Building Code was singled out as an obstacle to change, innovation and best practice. Customer demand was identified as the key factor that would stimulate companies to adopt more sustainable practices

REFERENCE

2007, Housing Industry Survey: towards sustainable products and services

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EXECUTIVE SUMMARY

A survey designed to assess the level of knowledge and uptake of sustainable business practices by businesses in the housing industry sector was carried out in June 2006. The survey explored the motivation, barriers and drivers that influence the uptake of sustainable practices. It also compiled examples of sustainability best practice by respondents and identified companies willing to participate in developing best practice case studies.

400 businesses from 10 different groups across the housing sector were contacted by telephone and invited to participate in the survey. 86 companies (22%) responded, with more than half coming from the Auckland region (see Annex 1 for a list of respondents). The size of the companies varied from those with an annual turnover of $80,000 to over $1.6 billion, and with fulltime employees ranging from 1 to 15,000.

A series of questions about environmental practices and initiatives was used to establish an environmental profile of the respondent companies. The adoption of environmental practices such as an environmental policy, formal environmental management systems and environmental reporting was higher than found in other surveys of New Zealand businesses but considerably lower than reported in surveys of European and Australian companies. Although the sample of companies appeared to have a prior interest in sustainability issues, some 34% of the companies surveyed had not adopted any of these environmental practices. Energy efficiency and waste reduction measures had been implemented by over 60% of companies and water conservation measures by over 40%. Participation in sustainable business schemes was generally low and only eight companies had participated in international sustainability reporting initiatives. Customers and clients provided the main motivation for improving environmental performance. However, owners and senior managers were the main drivers for gaining certified environmental credentials. Only 6% of the companies surveyed indicated that they did not expect to be required to implement sustainability practices in the future.

Another series of questions explored the knowledge, use and provision of tools, products and services specific to the housing industry. Up to 29% of respondents had knowledge of or had used a wide variety of tools that rated the environmental performance of houses. Over one third of companies offered services to improve insulation or increase thermal mass in houses. By contrast, the greatest need for information was identified as water-related issues closely followed by energy efficiency. The greatest consumer demands experienced by the companies, in order of importance, were for energy efficiency, insulation, noise reduction and solar hot water.

The final series of questions explored sustainability needs of companies. The main obstacles to the adoption of more sustainable practices, in order of importance, were lack of customer demand, cost of sustainable materials, lack of reliable information, and lack of knowledge and skills. The Building Code was singled out as an obstacle to change, innovation and best practice. Customer demand was identified as the key factor that would stimulate companies to adopt more sustainable practices followed by financial incentives, regulation and environmental performance standards for houses. To stimulate customer demand, the most important interventions were public information about the environmental benefits of sustainable housing, financial incentives and regulation (for example, requiring the provision of house performance information at the point of sale).

1. INTRODUCTION

1.1 General introduction

The role that businesses and industry can play in helping to deliver the objectives of sustainable development is increasingly recognised internationally. At the 1992 Earth Summit in Rio de Janeiro, Agenda 21 identified business and industry as the cause of much of the world's pollution as well has having the potential to provide solutions to reverse environmental degradation. Chapter 30 of Agenda 21 calls for increased environmental awareness and action by business sectors especially through the *'implementation of codes of conduct promoting better environmental practice'.*

Regulatory requirements, potential impacts on reputation and competition are influencing many major companies to adopt more sustainable practices. In turn, large companies are focussing on the impacts of the small- and medium-sized enterprises (SMEs) that make up their supply chains. More than 95% of New Zealand's companies are SMEs i.e. employing less than 20 employees (MED 2005). SMEs play a very important role in the social and economic development of the country, representing a large part of the economy. On an individual basis, these companies may have a negligible effect on the environment, but collectively their cumulative environmental impacts are large.

Agenda 21 acknowledged that responsible private enterprises can contribute to improved efficiency of resource use, reducing risks and hazards, minimising wastes and safeguarding environmental quality (UN DESA 1992). This was reinforced at the World Summit in Johannesburg in 2002 where industry was challenged to change from unsustainable patterns of production and consumption towards more responsible practices (UN DESA 2002, Chapter 3).

Internationally, and in New Zealand, businesses are responding by improving environmental and social performance, producing sustainability reports and promoting ethical investment decisions through their business practices. Programmes such as Responsible Care® for the chemical industry was instrumental in improving the health, safety and environmental performance of that sector. Organisations such as the Coalition of Environmentally Responsible Economies (CERES), a network of investment funds and environmental organisations, promote stakeholder engagement, disclosure through environmental reporting and corporate governance. The Carbon Disclosure Project (CDP) represents 225 international institutional investors and seeks disclosure from the world's largest publicly listed companies of investment-relevant information concerning their greenhouse gas emissions and climate change stance. In 2006 the CDP requested information from all New Zealand companies listed on the NZ50 (New Zealand Stock Exchange). The information request covered some companies related to the New Zealand housing industry sector, but very few in this sector responded to the CDP survey.

Environmental management system standards such as the ISO 14000 series certify businesses that are managing their impacts on the environment. Improved economic performance often follows from improved environmental and social performance.

Internationally, more than 110,000 companies are currently certified under the ISO 14000 series, with the bulk of these companies located in Europe. In New Zealand about 180 companies are certified to ISO 14001 (ACNielsen 2005). Other environmental management schemes operating in New Zealand include The Natural Step (TNS) and Enviro-Mark®NZ, in addition to sector specific schemes. The building sector does not have its own sector-specific environmental management system.

The World Business Council for Sustainable Development (WBCSD) provides international business leadership acting as a catalyst for change towards more sustainable development through economic growth, ecological balance and social progress. Recently, the WBCSD has launched a project to promote zero net energy consumption for buildings (WBCSD 2006), a three year study with the aim of identifying how to remove barriers, transform attitudes and change the business climate.

In addition to the slow uptake of environmental management systems in New Zealand, surveys of corporate environmental reporting have concluded that few companies report on their performance and they produce less comprehensive reports than their overseas counterparts (Guthrie and Grace 2002, Milne *et al* 2001). However, there are a number of New Zealand organisations that produce leading reports and three are listed in the top 30 worldwide (Landcare Research, The Body Shop Australia/New Zealand, Watercare Services) (SustainAbility & UNEP 2000, 2002, SustainAbility, UNEP & Standards & Poor's 2004, 2006).

Despite the overall low level of environmental and sustainability reporting, a recent survey by Lawrence and Collins (2004) from the University of Waikato, indicates that New Zealand businesses are becoming more actively engaged in both environmental and social practices. Even though New Zealand businesses experienced low external pressure to adopt more responsible practices, 53% of the firms surveyed expected environmental management to have greater importance within the next 5 years, indicating a shift in corporate behaviour (Lawrence and Collins 2004).

New Zealand businesses are also ranked annually by a Massey University survey regarding their environmental and social responsiveness (Centre for Business and Sustainable Development 2005). This is based on the UK *Index of Corporate Environmental Engagement* that annually surveys the FTSE 350 and companies in the Dow Jones Sustainability Index Group. The UK index is highly regarded by analysts, as well as businesses, for its integrity and usefulness. The New Zealand index provides companies with a means of measuring and benchmarking their progress. Senior managers taking part in the survey, comment on the educational role the survey has played in defining the route a company may take towards strategic environmental management (Centre for Business and Sustainable Development 2005). Another survey concluded that such voluntary programmes "*offer promise for New Zealand businesses*" but need to be taken seriously by the businesses adopting them (Collins *et al* 2004).

1.2 Beacon Pathway and the role of businesses and industry

Beacon Pathway Ltd is a research consortium promoting affordable and attractive ways to make New Zealand homes more sustainable. Its two main goals aim to help bring the vast majority of New Zealand homes to a high standard of sustainability by 2012 and to ensure that every new or redeveloped subdivision or neighbourhood, from 2008 onwards, is created with reference to a nationally recognised sustainability framework.

In a production and consumption context, this implies that businesses in the housing industry will supply more sustainably produced goods and services and that consumers will demand higher standards of environmental and social performance for all the goods and services that go into design, construction and retrofitting homes.

1.3 The housing sector

The housing sector can be divided into a number of groups, covering different business sectors involved in the planning, construction and operation of homes. For the purposes of this report, these groups are:

- Finance and sales
- Development and construction
- Building and trades
- Fixtures and fittings manufacturing
- Education and training
- Planning and design
- Utilities and waste
- Building materials manufacturing
- Marketing and retail
- Advice and advocacy
- Others (local government, crown entities and community groups)

The planning and design sectors generally cause little damage to the environment in their own right, but they can influence downstream impacts quite dramatically. This is especially true for passive heating design, defining the need for insulation, lighting and energy consumption. Therefore this sector can contribute significant benefits for sustainable development through education and implementation of sustainable building concepts for construction.

Marketing and retail as well as the finance and sales sectors also have relatively low direct environmental impacts, but can influence the uptake and demand for sustainable building practices, by promoting and providing incentives for more sustainable homes. This is especially true for the finance and insurance sectors, as they can have a direct impact on both consumers and developers.

The environmental impact of the building and construction sectors is not only affected by the building practices employed, but also has an influence on the materials used for construction. These can have quite significant environmental impacts during and after construction is complete. Also the quality of workmanship can have significant effects, for example with insulation, as even small gaps or wrong material choices can affect the effectiveness of insulation envelope. Minimising environmental impacts and using environmentally responsible products can also reduce hazardous impacts on the construction site.

1.4 International experience

Internationally there are several examples of interventions that aim to engage the various business sectors within housing in more sustainable practices. Listed below are a few of the international interventions to promote sustainable development in the construction and housing sectors. Other initiatives include investment and finance, as well as insurance and other service providers. For a full overview of international initiatives, see the IND1 report to Beacon Pathway (Landcare Research, 2004).

- In the UK, the housing market will be required to provide energy performance certificates when selling homes from July 2007 onwards.
- The Australian Centre for Design[1] promotes environmental sustainability through research, consulting, professional development and knowledge sharing, including projects such as EcoHome (life cycle assessment in the building and construction sector), Aurora material guidelines (discussing energy efficiency of building materials and their embodied energy), as well as a savewater™ initiative. The EcoReDesign

[1] http://www.cfd.rmit.edu.au/

programme is aimed to assist small- and medium-sized companies to reduce the environmental impacts of their products. Other initiatives include environmental ratings for furnishings, the sustainable packaging alliance and many more.

- Brisbane City Council (BCC) incorporated energy efficiency into their city plan in 2000, including hot water systems at a later stage. BCC then pledged the South East Queensland Regional Organisation of Councils (SEQROC) to promote energy efficiency within the region, resulting in the adoption of a regional-wide Sustainable Housing Code. This now applies to all new homes within the region (ICLEI 2006).
- The Green Building Council in Australia offers a environmental rating tool "Green Star" which aims to support the housing industry in its transition towards sustainable development. The tool is predominantly used for rating commercial office buildings, but recent upgrades have extended the use of the Green Star to shopping centres, health care and education facilities (Green Building Council of Australia 2006).

1.5 New Zealand experience

To date there have been a limited number of interventions in New Zealand to influence the housing industry to adopt more sustainable practices. These include:

- The Building Act was amended in 2004 to promote more sustainable buildings as well as to address energy efficiency and health issues. This has encouraged industry organisations to examine their position with respect to sustainable development and a number of them have begun to develop sustainability strategies to either promote sustainable development to their members, or to respond to demands for a greater focus on sustainable development from their members.

- The Green Building Council (NZGBC)[2] was recently established in New Zealand and is committed to developing market based solutions to deliver efficient, healthier and more innovative buildings. The NZGBC is also lobbying for changes to the New Zealand Building Code, especially with respect to insulation and energy efficiency.

- The Energy Efficiency and Conservation Authority (EECA) is currently developing a home energy rating scheme to raise awareness of property owners, prospective buyers and tenants[3]. EECA plans to introduce this scheme as a voluntary rating scheme from December 2007 onwards, with the intention to change it to a mandatory rating scheme once initial problems have been resolved.

- Other NZ based initiatives, such as the Sustainable Business Network (SBN) and the New Zealand Business Council for Sustainable Development (NZBCSD) promote, amongst other things, sustainable reporting and business practices.

In the past few years, a number of New Zealand companies have positioned themselves as providers of more sustainable products and services. Notable among these are Resene Paints, Contact Energy, Meridian Energy, Winstone Wallboards, Pink Batts and Interface Carpets.

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[2] http://www.nzgbc.org.nz/

[3] http://www.eeca.govt.nz/residential/home-energy-rating-scheme/indexnew.html

2. OBJECTIVES

The objective of the research reported here was to assess the level of knowledge and uptake of sustainability practices within the housing industry, by identifying the motivation, levers and barriers that influence the uptake of sustainable practices. This also includes the identification of examples of sustainability best practice and best practice case studies.

The survey is part of a broad research programme to examine how to drive demand for greater uptake of sustainability features in both new and existing homes. The survey was designed specifically to identify:

- the level of knowledge and practice of industry in adopting sustainable practices
- the motivation, benefits, levers and barriers associated with putting this into practice
- examples of best practice and suitable case studies about companies from across a range of housing sectors
- industry perception of the barriers to consumer demand to be and what sort of tools or initiatives could be developed to drive consumer demand
- the nature of any support that industry associations could provide that would assist companies to adopt more sustainable practices e.g. what sort information gaps are there – where they go for information and at what level.

3. METHODS

3.1 Research survey

The research was based on a survey sent to some 400 companies in the housing sector. The survey was initially made available via the Beacon Pathway website but there was a very low return rate despite promotion by several organisations. Lists of companies were compiled by accessing a wide range of publicly available information from industry associations related to some aspect of housing. These companies were contacted directly by telephone and email. Follow-up phone calls were made to remind businesses to return the survey and to offer assistance in completing questionnaire.

The survey was carried out between mid-May to mid-June 2006. A total of 86 responses were received from around 400 surveys distributed (a rate of return of 22%).

The survey sample is not considered to represent overall engagement with sustainability issues in the housing sector. It is difficult to attract businesses that have not considered sustainability issues to reply to such surveys, and it is assumed that respondents generally had some prior interest in this area. The survey results are therefore likely to provide a more positive reflection of responses to sustainability issues in the sector. However, the results provide an insight into current practices and barriers to sustainability.

The survey was divided in 4 sections:

1. Company profile - to learn about the organisation
2. Environmental profile - to learn how the organisation/company is managed (i.e. environmental management practices and credentials)

3. Housing profile - to learn about the organisation's/company's role in the house value chain and what products and services it offers

4. Sustainability needs profile - to obtain information about what support could help build capacity for sustainable development for the organisation/company and/or the sector, and gather ideas on how consumer demand for sustainable housing can be stimulated).

The survey questions were developed by Landcare Research, which sought comment from Beacon Pathway, URS New Zealand, Ministry for the Environment and BRANZ.

3.2 Pilot test

The survey was piloted with a house building company, a manufacturer of building materials and a firm of architects. As result, the survey was modified to more clearly explain how confidential information would be managed and what would happen to the data collected.

There are several limitations to this study. Firstly, the survey is a self assessment, limiting the accuracy of the answers provided as these are based on the perception of the businesses about their own practices and have not been tested by a third party or outside source. Also, as the questions had been written in an simple and easily understandable way, this potentially left some room for different interpretations. For example, the question about the adoption of sustainability practices, which included the option "our company is an industry or sectoral leader in sustainability practices" could have been answered in a very optimistic way or based on sound comparisons. Also, different sectors have different levels of sustainable practices, which do not necessarily represent the true level of sustainability for that company within the housing industry or overall. Additionally, the accuracy of the answers depended on the knowledge of the person answering the questions.

4. RESULTS

4.1 Overview

The survey focused on organisations in 10 different groups involved in the housing value chain, irrespective of their knowledge and application of sustainable practices (Figure 1). The majority of the organisations that completed the survey were from the Auckland region, with the rest scattered throughout New Zealand (Figure 2). Organisations ranged from 1 to 15,000 full-time employees and a turnover between $80,000 to over $1.6 billion per annum. However, over a quarter of respondents did not disclose their annual turnover (Figure 3).

Figure 1 Number of respondents by business sector

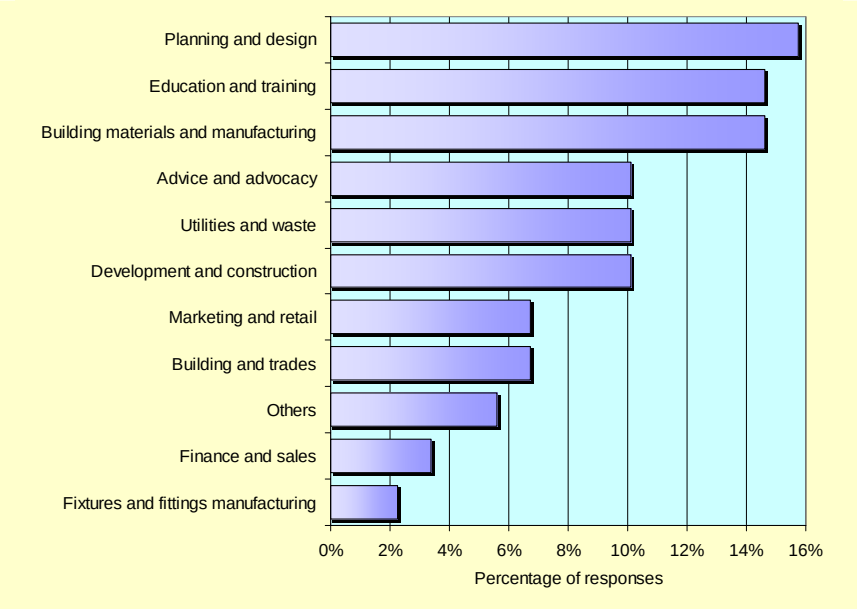

Planning and design
Education and training
Building materials and manufacturing
Advice and advocacy
Utilities and waste
Development and construction
Marketing and retail
Building and trades
Others
Finance and sales
Fixtures and fittings manufacturing
0%
2%
4%
6%
8%
10%
12%
14%
16%
Percentage of responses

Figure 2 Respondents by region

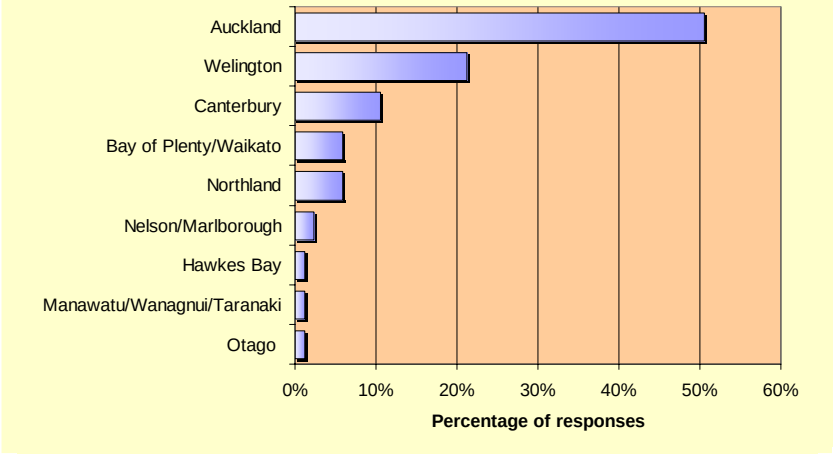
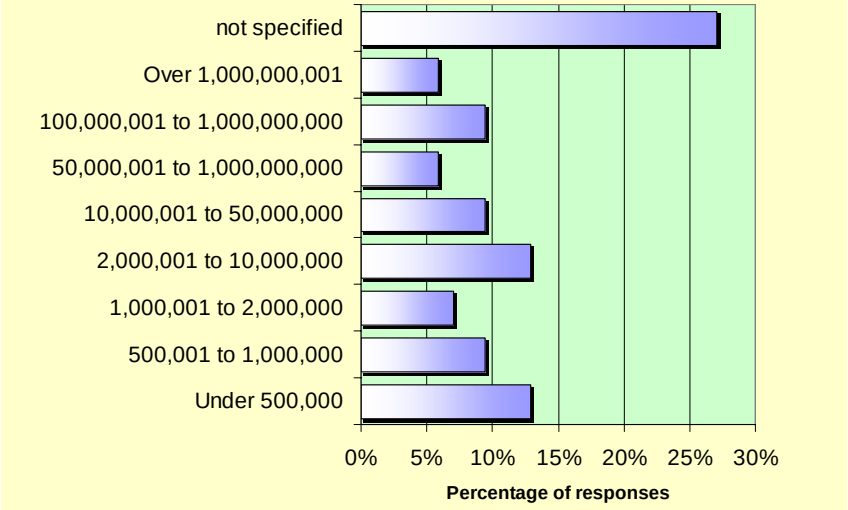


Figure 3 Respondents by annual turnover



4.2 Results – section by section

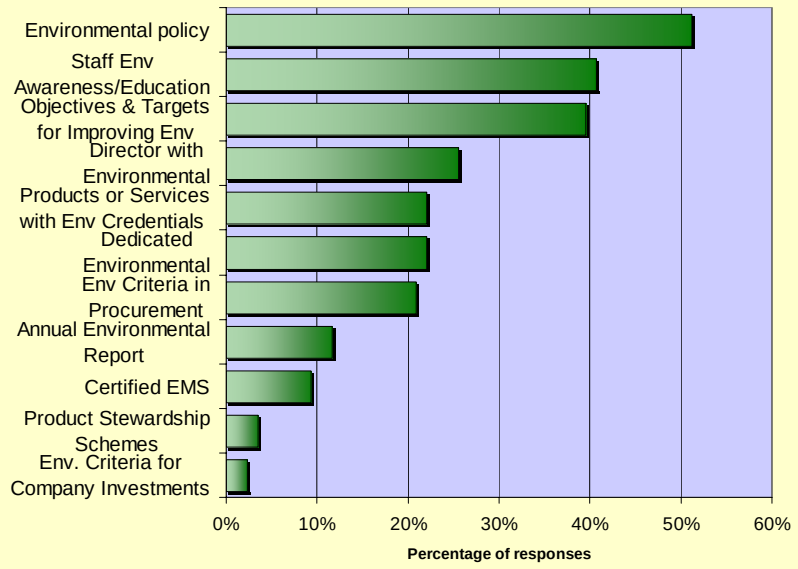
4.2.1 Environmental Profile

The environmental profile questions were designed to learn about the company's environmental management practices and credentials .

Respondents were asked to select from a list of environmental practices those practised by their company (Figure 4). The most popular environmental practice reported was having developed an environmental policy, with more than half of the respondents having one in place. 10% of the respondents indicating that they had implemented an environmental management system (ISO 14,001 or Enviro-Mark®NZ). 12% produce annual environmental reports. This is higher than found in an Auckland University study where only 5% of the top 100 New Zealand companies produced some form of an environmental report. Internationally

reporting is much higher, with 30% of top 100 companies in many European countries producing stand alone environmental reports. In Australia the number of companies reporting has increased from 5% five years ago to 15% in 2001.

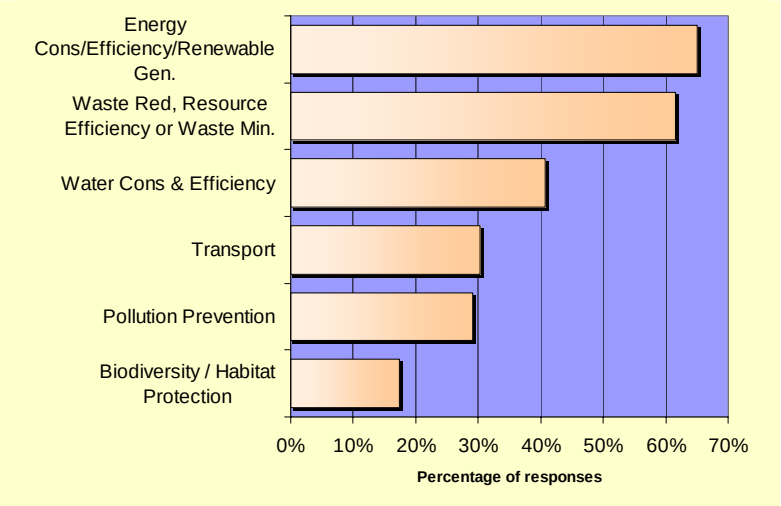
Figure 4 Responses by environmental practices



A relatively large number of companies (over 35%) were found to have programmes for increasing environmental awareness of staff and have also set objectives and targets to improve environmental performance. 18 companies (22%) have some environmental guidance or apply some environmental criteria in their procurement policies/procedures. However, 34% of the respondents did not have any environmental considerations in their profile at all.

When asked about environmental initiatives, covering the organisations' in-house practices as well as products/services offered, energy conservation/efficiency (65%) and waste reduction and resource efficiency (62%) were top of the list (Figure 5). Next on the list were water conservation and efficiency initiatives at 41%, although this contrasts with information provided later in the survey, where respondents specified a small number of water-related products and services that they offered.

Figure 5 Environmental Initiatives



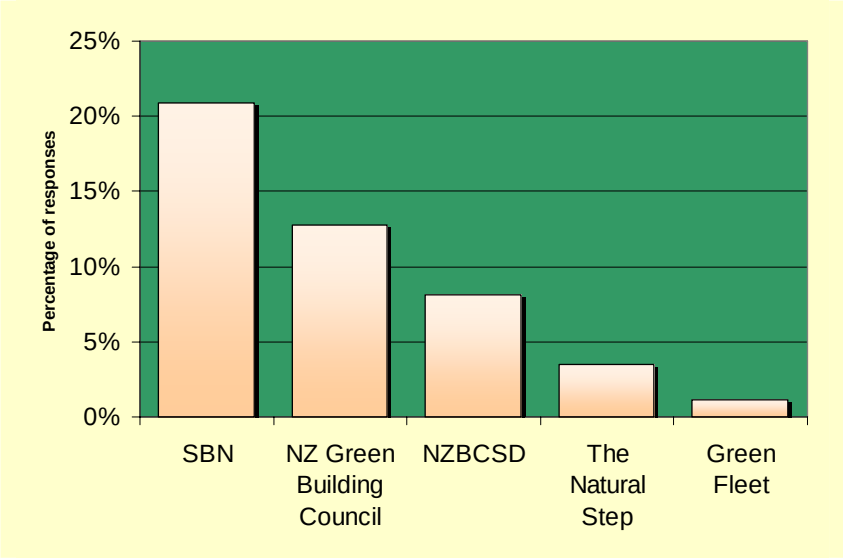
Only eight of the companies surveyed (9%) had participated in international sustainability reporting schemes. This is in line with New Zealand involvement overall, which is quite small (Table 1), even though many of the organisations listed in these schemes are part of the housing sector value chain.

Table 1 International sustainability schemes

International schemes	Overall NZ listed companies	Surveyed companies
Down Jones Sustainability Index	1	1 – IAG New Zealand
FTSE4Good	6	0
Global Compact	1	0
Global Reporting Initiative	10	3 - Waste Management, IAG New Zealand, Meridian Energy
Reputex	45	1 - IAG New Zealand

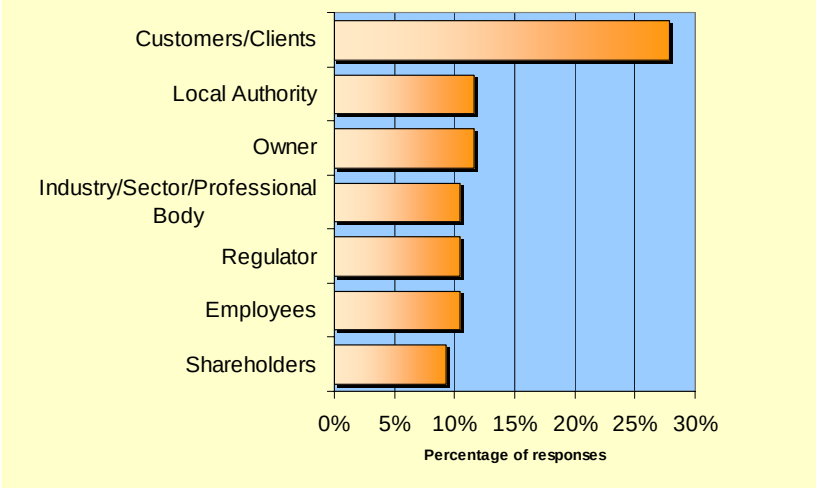
When asked about their involvement in New Zealand-wide sustainability schemes, 21% of the companies reported to be associated with the Sustainable Business Network (SBN). 13% had joined the NZ Green Building Council, which is remarkable since this programme had only been operating in New Zealand for a few months at the time of the survey. Another 12% of the businesses had joined Green Fleet, the New Zealand Business Council for Sustainable Development (NZBCSD) or The Natural Step (Figure 6). However, overall, 62% of the businesses surveyed were not part of any sustainability initiative.

Figure 6 New Zealand business initiatives



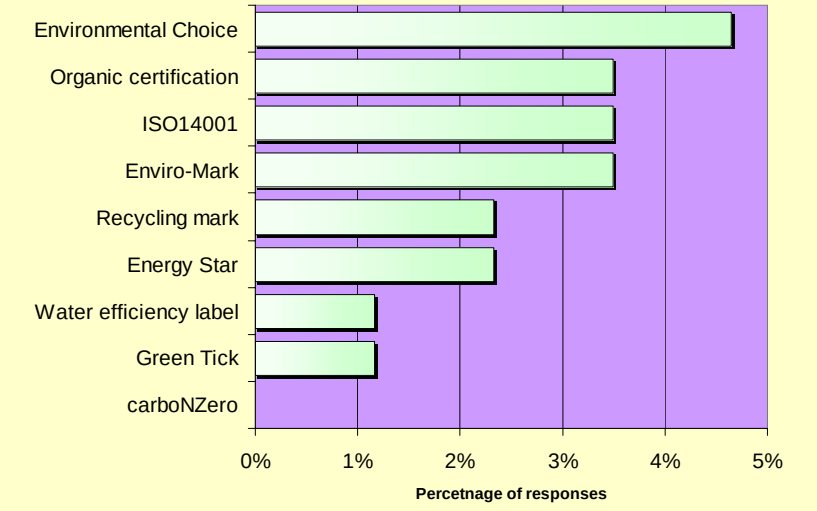
The low participation in sustainability schemes may also be a result of the low external pressure on the businesses, with 28% of the businesses listing Customers/Clients' requirements as by far the most important reason why companies improve their environmental credentials (Figure 7). Owner, local authority and industry bodies were less important, confirming consumer demand as the main driver. Local Authorities (perhaps because of their permitting function under the Resource Management Act) had the same influence and exert same pressure that an owner would have on the company.

Figure 7 Stakeholder groups requiring environmental credentials



The overall uptake of certification schemes amongst the surveyed companies was very low. Only 15% of the respondents were certified to carry an environmental label on their products, materials or services (Figure 8). Of these, four organisations were certified to carry two labels and one organisation was certified to carry three. The uptake was low considering that the assumption that respondents to the survey were generally more concerned about sustainability practices than the majority of businesses in the sector.

Figure 8 Certification levels within the surveyed companies



When asked what had influenced them in taking up a certification scheme, 24% indicated that the NZ owner or a board/senior management staff member was the driver for implementation. An additional 16% of the companies claimed that employees were responsible for the initiative and 15% said it was due to customer pressure. Only 2% said that regulation had influenced them in their decision to join a certification scheme. The survey results show that investors, banks and insurers do not yet play a role in the adoption of standards and labels. This is quite different from international experience where these groups play a much more important role in requesting some form of environmental commitment to invest in or insure businesses. Only 34% of the respondents had heard of, or

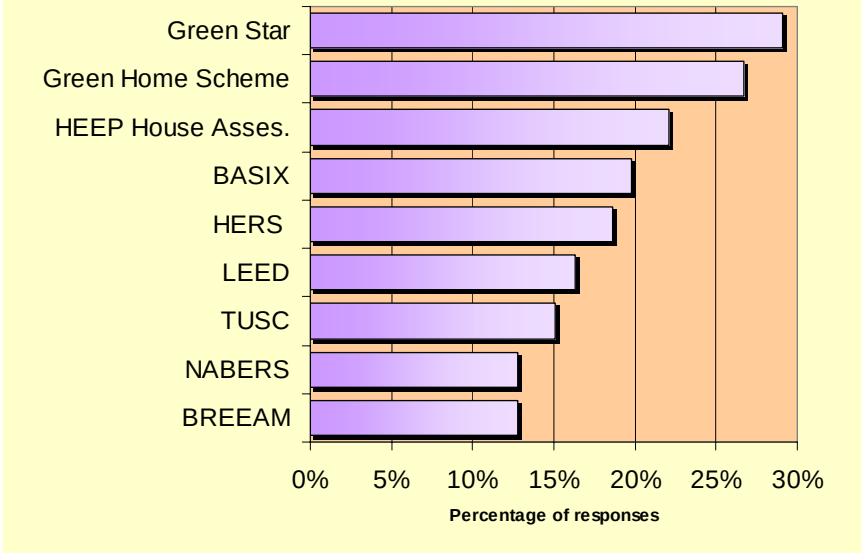
were using, environmental or sustainable codes of practice or guidelines available from their industry associations. No standards were available for about 18% of the businesses and 43% did not answer the question.

4.2.2 Housing Profile

The housing profile questions were designed to learn about the company's products and services specifically related to the housing industry.

Respondents were asked to indicate from a list of rating tools for housing from around the world, which tools they were familiar with or had used (Figure 9) (See Annex 2 for full name and country of origin of tools listed in Figure 9). There was general familiarity with rating tools across the entire spectrum. 29% of respondents had heard about or were already using Green Star, followed by Green Home Scheme at 27%.

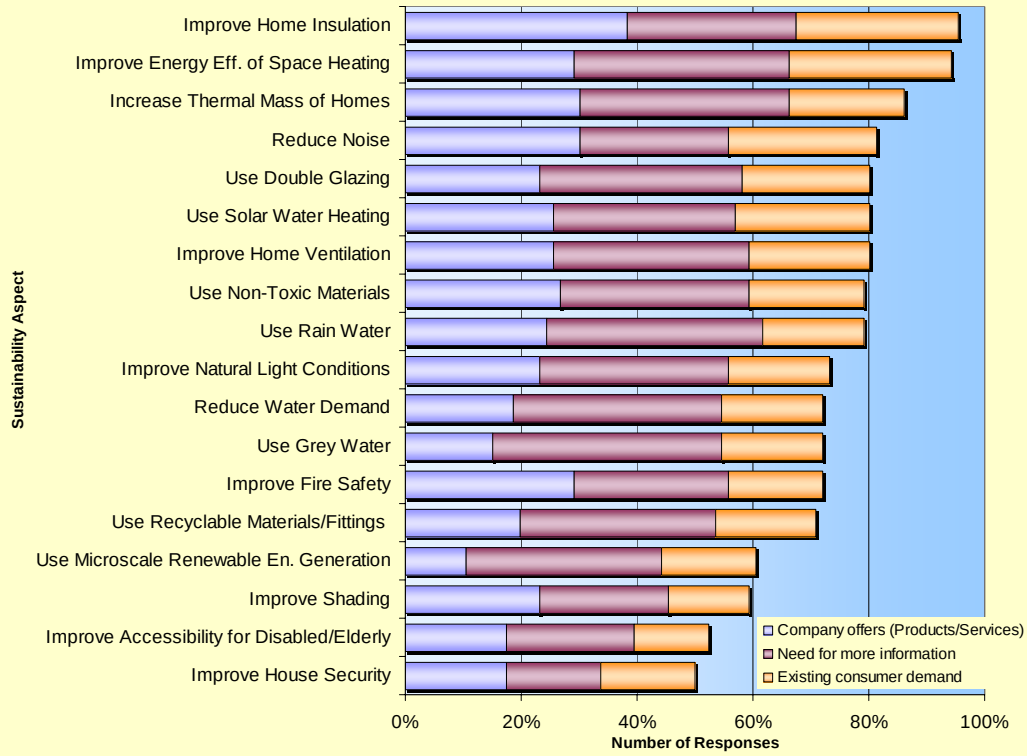
Figure 9 Rating tools known and applied by businesses



Respondents were asked separately if they were involved in any sector specific initiatives. Beacon Pathway was identified most (19%), followed by REBRI (Resource Efficiency in the Building and Related Industries) (10%) and the Healthy Homes Programme (9%).

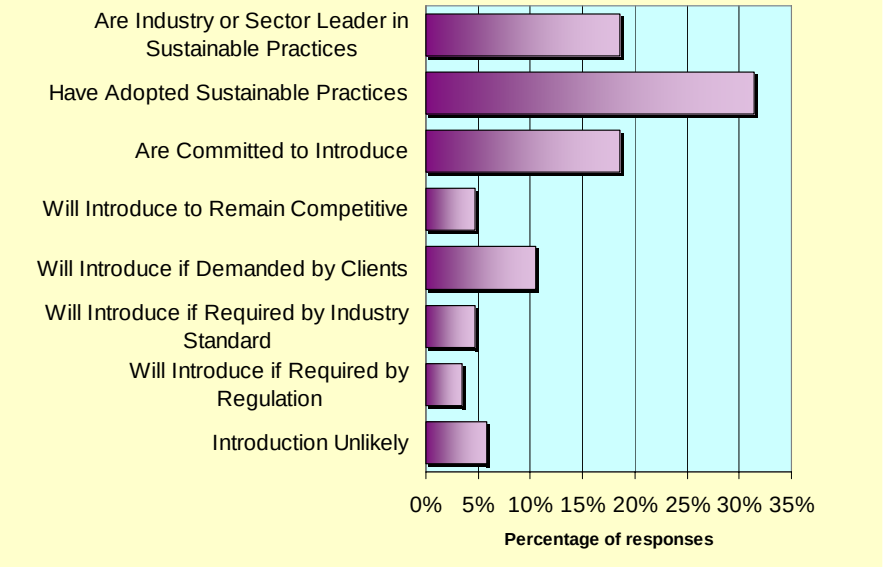
When asked about sustainability aspects of homes (Figure 10), home insulation and energy efficiency of space heating were the top features that organisations in the housing value chain were concerned about. Over one third of companies already offered services in the area of home insulation, with another 30% focusing on increasing thermal mass. Noise reduction was also mentioned by 30% of the companies. In terms of information needs, water-related issues were top of the list (i.e. grey-water and rain-water use, reduction of water demand-fittings/appliances), followed by energy efficiency (space heating, home insulation, double glazing). Consumer demand, in addition to confirming the interest in energy efficiency and home insulation, highlighted two new areas of interest: noise reduction and solar water heating. Fire safety, accessibility and house security ranked low in terms of perceived consumer demand, as is the case with rainwater and grey water use, and water demand reduction.

Figure 10 Sustainability Aspect: Uptake, Information Need and Consumer Demand



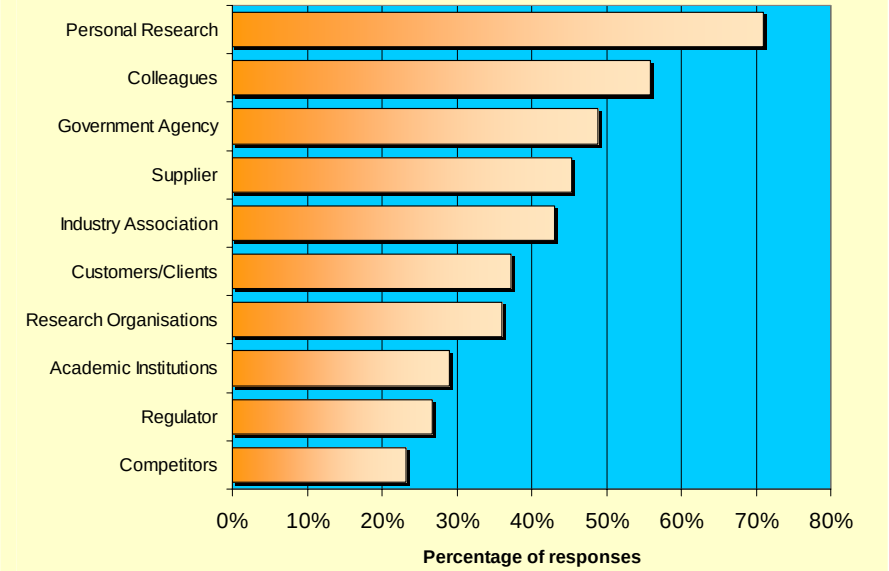
When asked about their current level of sustainable practices (Figure 11), about one third of the respondents reported that they had already adopted some sustainability practices, while 19% claimed to be industry- or sector-wide leaders. A further 19% had already made commitments to introduce sustainability practices. The remaining companies indicated that they would introduce sustainable practices if required by customers, regulation or industry standards. Only 6% of the businesses interviewed expected that they would not move to introduce sustainability practices at all.

Figure 11 Adoption levels of sustainability practices



When asked where they obtained information about sustainability practices (Figure 12), companies mainly relied on personal research as the source of information (71%), closely followed by information provided by colleagues (56%) and government agencies (49%). Suppliers, industry associations and clients were also consulted by more than a third of the businesses surveyed. Even though competitors ranked lowest, some 23% of the businesses used their competitors as sources of sustainability information.

Figure 12 Information sources



Other research however indicates that one of the biggest barriers for companies to implement sustainability measures, for example energy efficiency measures, is the lack of time and knowledge to identify suitable options (Becken *et al* in press; Sorrel *et a*l 2000). This may indicate why the overall level of implementation of sustainable measures has been quite low within the surveyed businesses.

4.2.3 Sustainability Needs Profile

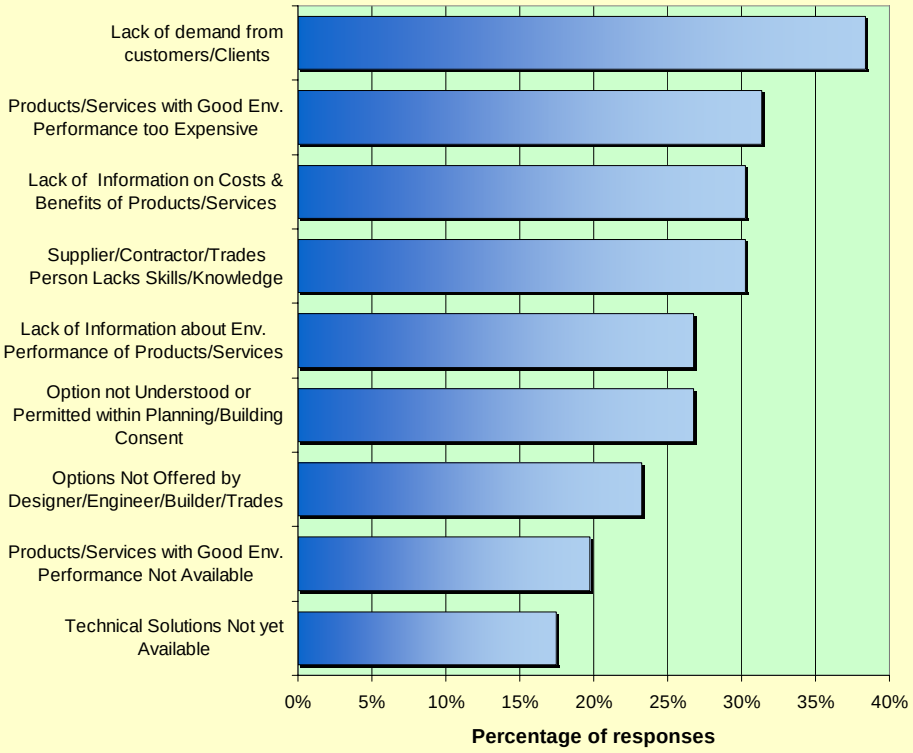
The sustainability needs questions were designed to obtain respondents' views about what support could help build capacity for sustainable development for the company and/or business sector, and their ideas on how consumer demand for sustainable housing could be stimulated.

Over one third of respondents considered lack of demand from customers was the main obstacle to the uptake of sustainable housing, although it should be noted that all other listed obstacles were closely ranked by respondents at between 17 to 30% (Figure 14). While the highest ranked obstacle was demand-side, the next highest three obstacles were all supply-side. Higher costs for more sustainable products and lack of reliable information (both 30%) were closely linked due to their economic/financial dimension. Lack of knowledge and skills (30%), relates to education. Additional comments made by respondents largely focused on the building industry, its slowness in responding to change, lack of adequate trade skills as well as knowledge about pay-back times and life-cycle costing.

The Building Code was also singled out as an obstacle to change, being outdated and putting companies on a "race to the bottom" (with minimum standards perceived as having become common practice). The difficulty in promoting alternative solutions as 'acceptable

solutions' had stopped the industry from innovating, with best practices such as storm water management and grey water use remaining uncommon.

Figure 13 Barriers to implement sustainable practices



Energy conservation and efficiency is undoubtedly the key area for the NZ housing sector to focus on, with over 32% of the respondents considering it of utmost importance (Figure 14). Health and well-being came second in overall importance, confirming the mainstream theory that successful market transformation programmes are based around wider benefits than energy efficiency or cost-savings. It was somewhat surprising that waste generated during house occupancy was the lowest ranked, given that many respondents come from outside the construction industry and had an interest in house performance during its use (i.e. utilities, local authorities).

Figure 14 Issues of Interest/Concern in order of importance

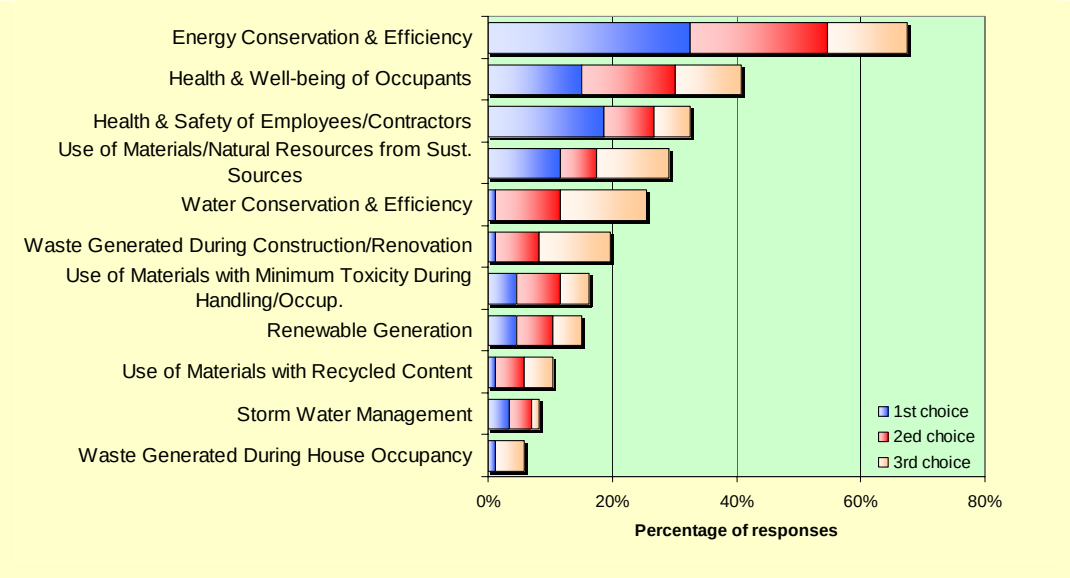
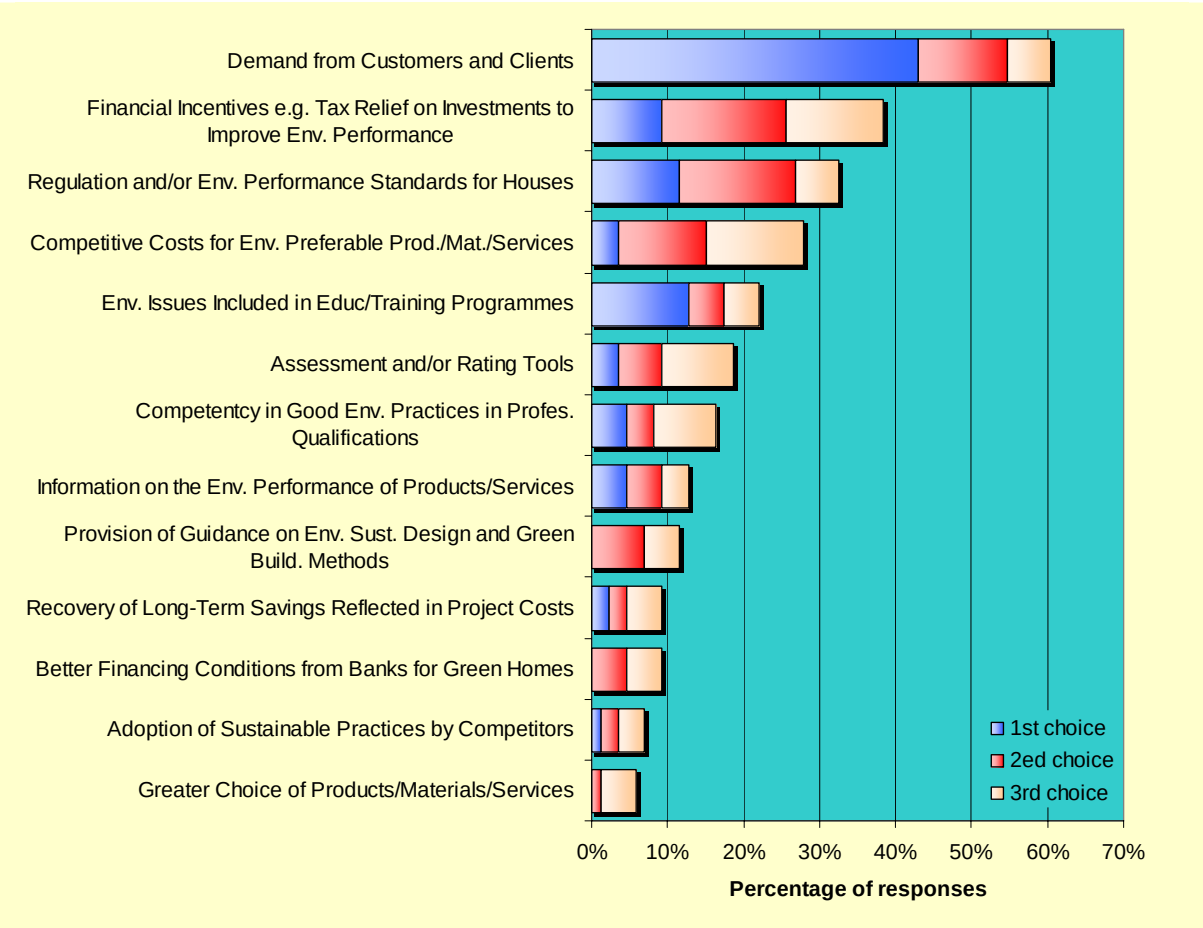


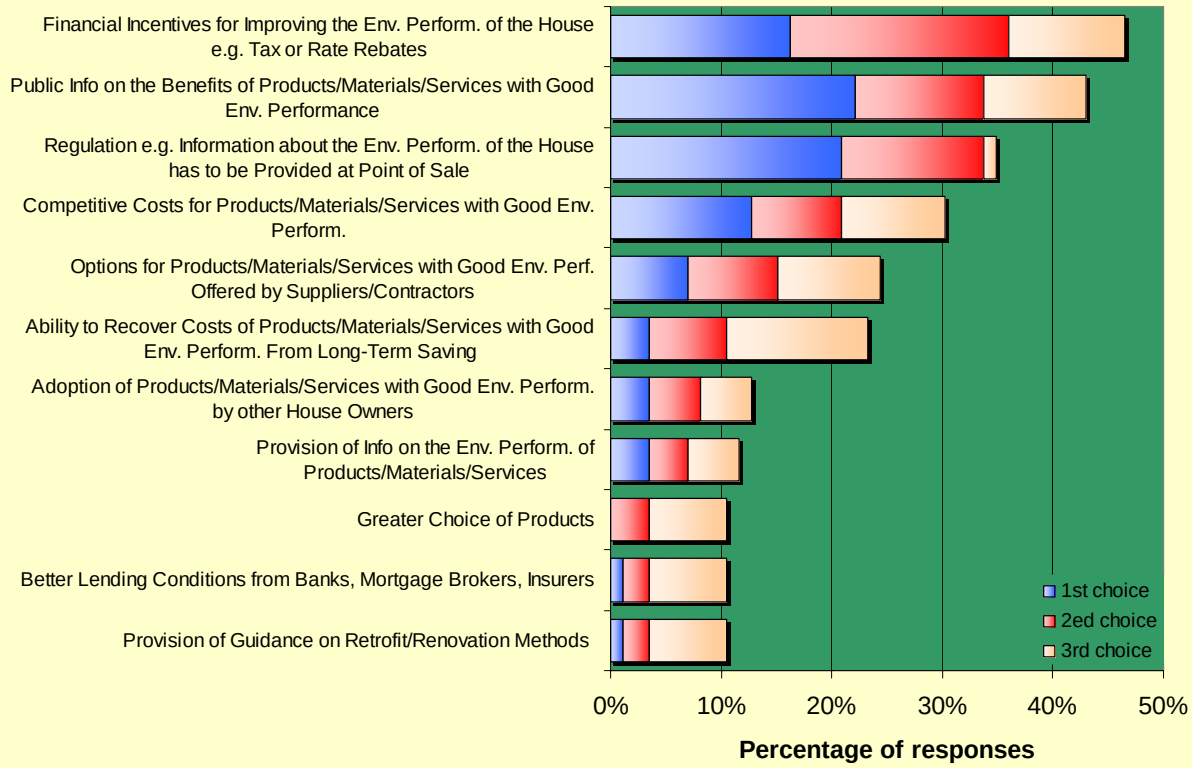
Figure 15 and Figure 16 indicate the responses for factors that stimulate adoption of sustainable practices and those that stimulate customer demand. 43% considered demand from customers and clients as the key factor that would make the industry adopt more sustainable practices (Figure 15). Although not many respondents considered financial incentives (tax relief on investments to improve environmental performance) as a first factor to stimulate adoption of sustainable practices, this was second highest in overall ranking with 33 responses (38%). Regulation and environmental performance standards for houses was third highest.

Figure 15 Factors stimulating the adoption of sustainable practices



In terms of factors that would stimulate market demand (Figure 16), provision of public information about environmental benefits and financial incentives (tax and rate rebates) were the preferred choices.

Figure 16 Factors that would stimulate higher demand from customers



Regulation (providing information about environmental performance at point of sale) was third most important. Competitive costs for environmentally preferable products and services was the fourth most important factor for both sustainable practice uptake as well as customer demand. This emphases the need to improve the knowledge of the sector about life-cycle costing and full-cost accounting so that they can demonstrate to clients that higher up-front costs are often offset by operational costs and long term savings.

5. FINDINGS AND DISCUSSION

5.1 General conclusions

The survey results show that the level of engagement in sustainability practices in the housing industry is relatively low. While other international studies show that businesses generally show an increasing engagement in sustainability issues, there has been no research with a specific focus on the housing industry sector. Therefore, it is unknown whether a similar increase is also seen in this sector.

We assume that those businesses that responded to the survey (22% of the 400 companies contacted) had a particular interest in sustainability issues. Of the respondents, a limited number reported adopting environmental practices at the management level (for example, environmental reporting or formal environmental management systems), although more than half had adopted an environmental policy. A higher proportion had made practical steps towards improving their environmental performance, having adopted in-house environmental initiatives (for example, energy conservation measures). Very few survey respondents participated in environmental business schemes or supplied products or services with

environmental credentials. For most, customers and clients provided the main motivation for improving environmental performance, while owners and senior managers were the main drivers for gaining certified environmental credentials.

Of interest is the housing sector's perception of itself, with 19% of the respondents claiming to be industry or sector wide leaders. This is a very positive perception given that few businesses have implemented sustainable business practices, have certification or feature an environmental management system. This highlights the fact that there is either a very low level of sustainable practice within the sector in general, or that there is a lack of awareness of alternative options to pursue a more sustainable approach to business and supply more sustainable products and services. Either way, this finding reinforces the need to provide information and to further raise awareness within the sector.

5.2 Key barriers to sustainability in the housing industry

Lack of consumer demand was singled out at the major barrier to more sustainable practices being adopted in the housing sector. Other key barriers identified were:

- the higher cost of products/services with good environmental performance in relation to standard products
- insufficient knowledge about available products and services, their costs and benefits.

Respondents' comments highlighted the slowness of the building industry in responding to change, and the lack of adequate trade skills and knowledge about pay-back times and life-cycle costing. The Building Code was singled out as one of the main obstacles to change. It was thought to be outdated and served to put companies on a "race to the bottom" (with minimum standards perceived as having become common practice).

In addition, there was perceived to be a lack of external pressure, resulting in a low uptake of sustainable practices. This was thought to be due to lack of regulatory guidelines and outdated Building Code requirements (for example, insulation, ventilation and heating requirements). This, in turn, was thought to stem from low levels of industry and, in particular, consumer awareness. International evidence points to a need for regulation to drive sustainability responses. Therefore in New Zealand low regulatory pressure to provide more sustainable services may be a factor which reduces the motivation for businesses to justify investment in environmental credentials and certification.

Lack of financial incentives are a further barrier to the uptake of more efficient measures and practices. For example, the fact that large areas of New Zealand are not required to pay for their water consumption and the low cost of electricity, act as disincentives for business to invest in more efficient technology or to change consumer behaviour.

5.3 Key drivers for market transformation

The survey results show that increasing awareness within the industry sector and among consumers would be likely to drive demand for products and services with sustainability credentials. Additionally, many respondents would be prepared to implement more sustainable practices, if demanded by regulation or industry associations. This highlights the need for more incentives for businesses to adapt and the need for more external pressure, for example through higher national standards or increased consumer awareness through media campaigns.

Increasing awareness of both the industry and consumers is also required to facilitate understanding of the benefits of using more sustainable products. Initially, these products can have higher costs, which may discourage their uptake. Additionally, building design and

business practices often limit the uptake of more sustainable measures. However, these products and practices can have benefits which outweigh the costs and generate savings many times higher than the initial cost difference over the products' lifetime. It is therefore important to provide builders, trades persons as well as consumers with the necessary information to understand the potential benefits of implementing more efficient measures, and their expected pay-back periods. It is very important to refer to health and other benefits, as these also influence decision making.

Other drivers can be internal to a business, or a response to potential external forces. Companies often anticipate potential problems when adopting sustainability practices. Uptake of such practices is often limited by time and resource constraints. For example, the costs associated with joining a sustainable business scheme or implementing changes to the business operations and capital costs for implementing these measures can create an initial barrier to investigate the potential benefits further. However, the survey results show that the implementation of sustainable practices is often initiated by management or employees promoting higher standards, rather than through external pressure. This aligns with recent literature about New Zealand business practices, where 53% of participants implemented sustainable practices because they thought that these would become more important in the future. Respondents considered competition and especially overseas markets (such as Europe, which requires higher levels of certification), as drivers for improving sustainable practices.

Financial incentives (for example, tax and rates rebates) were considered the main factor to stimulate higher demand from consumers for improved environmental performance of houses. Internationally, banks and insurance companies were important drivers of sustainable business practices and environmental decision-making. For example in the US and UK, there are special home loans available where environmental friendly and energy efficiency measures are included in home developments. A number of countries also provide information on national or regional service providers, to enable consumers to make their choices based on the environmental performance of the service provider.

5.4 Alignment with Beacon research pathways

The following section considers the survey's findings in terms of the Beacon research pathways. As a general comment, the Building Code is seen as a major obstacle to innovation. Given the wide reach of the Code, this finding applies to some degree to all areas of Beacon's research interest.

5.4.1 Energy

The market for energy efficiency products and services appears to be the most well developed of all the products and services asked about in the survey. Energy related products and services made up five of the top nine areas of operation reported by respondents. Additionally, energy efficiency and conservation was the key issue seen as important to the respondents. Respondents reported information needs around energy efficiency (in particular, space heating, thermal mass of homes and double glazing). Microscale energy generation did not show high levels of demand or supply, however information needs in this area were particularly high.

The high level of market development supports Beacon's approach of focusing on other, less well developed aspects of the energy area, such as reducing demand for reticulated energy and increasing use of local renewables. However, information and other work relating to reducing energy needs in new and renovated homes will be of value, given apparent information gaps in these areas.

5.4.2 Water

The market for water-related sustainability products and services does not appear well developed, with little supply or demand compared to the energy area. Information needs, particularly around use of grey and rain water, were high. This finding supports the Beacon water research priorities. Further research into issues relating to consumer demand for products and services enabling the use of grey and rain water, as well as water demand reduction, are likely to be of interest.

5.4.3 Indoor environmental quality

The key markets in this area relate to reduced noise, improved ventilation and the use of non-toxic materials. These areas relate to health and well-being, indicating consumer willingness to purchase products and services which improve their lifestyle, without necessarily having financial rewards. Information needs are fairly high across all aspects of indoor environmental quality, other than noise reduction (including use of recyclable materials/fittings, improved natural light and shading). Further research and work by Beacon may stimulate market uptake of a wider range of products and services to improve indoor environmental quality and health and well-being of occupants, while also improving the environmental performance of houses (with flow-on cost savings).

5.4.4 Materials

The market for non-toxic materials appears to be fairly well developed, with the market for recyclable materials and fittings less so. In both cases an information need was identified. More than half the respondents stated that they had a focus on waste reduction in their operations, however it is unknown whether that commitment extended to reducing waste associated with their products and services through their full life cycle. Further work may need to be conducted in this area to determine the priority areas for Beacon's attention.

6. FUTURE STRATEGIES

This study highlights a range of areas where Beacon could usefully provide further research, information and influence to help support and develop the market for sustainable products and services in the housing sector. Future strategies for further consideration are listed below in terms of the key sectors being targeted.

6.1 Local government

- Relationship building and seeking opportunities to influence local government implementation of the Building Code in its current form (for example, exploring the potential to partner with sympathetic councils to see how the Building Code can be used to encourage greater innovation in the use of sustainable products and services).
- Seek opportunities to influence local government to consider implementing financial incentives for houses built or renovated with sustainability in mind (e.g. rates relief, design guidelines, district plan rules).

6.2 Central government

- Further work on the impact of the Building Code on developing the market for sustainable products and services (i.e. to what extent does the Building Code stifle innovation?, what are the relative impacts across Beacon research targets?).

- Beacon to participate in further consultation and Select Committee process relating to the 2007 review of the Building Code (giving consideration to market transformation aspects of submissions on the review).
- Identification of priority future changes to the Building Code which would most contribute to achieving Beacon's targets from a market transformation perspective (i.e. strategic future changes we consider need to be made post the 2007 review).
- Relationship building with key central government agencies responsible for administration of the Building Code (in particular the Department of Building and Housing), to seek opportunities for influencing the future direction of the Code.
- Seek opportunities to influence central government (in particular Department of Building and Housing, Ministry for the Environment, Ministry of Economic Development) to consider implementing financial incentives for houses built or renovated with sustainability in mind (e.g. tax relief, regulation).

6.3 Housing industry

This sector includes all aspects of the housing industry from builders and product manufacturers and suppliers to design professionals and the housing industry supply chain.

- More specific work with housing industry participants on aspects of the Building Code which deter innovation in the implementation of more sustainable housing solutions.
- Explore opportunities to partner with housing industry participants (e.g. developers, architects, building companies) to influence upcoming projects to incorporate sustainability aspects into their planning.
- Further work to determine the type of information that would be helpful to housing industry participants (e.g. life cycle costing information/training, information on costs and benefits and payback periods for specific products, general or specific information on the benefits of sustainable products and services, "green" product specifications and other details).
- Provide information resources, in a manner most useful to the housing industry, on sustainable products and services in areas identified in this report. Key areas where information requirements were identified were: water-related issues (i.e. reducing water demand, use of grey and rain water) and energy efficiency (i.e. space heating, thermal mass of homes, double glazing, insulation).
- Explore opportunities to partner with a representative range of housing industry participants (for example, developers, architects, building companies) that have not yet taken up sustainable practices in the management of their businesses, and assist them to work on these issues.
- Further work to understand the level of commitment within the industry to waste reduction (both in operations and through the life cycle of products/services which they provide) to determine how Beacon can best target this issue.

6.4 Consumers

- Further work on the type of information that would be helpful to consumers in planning building and/or renovation projects (e.g. cost and benefit and payback period information for specific products; comparative data for specific products, general information on the benefits of using sustainable products and services, assurance of product and service providers).
- Provide information resources, in a manner most useful to consumers, on sustainable products and services in areas identified in this report. The aim is to promote demand for

more sustainable products and services. Key areas where information requirements were identified were: water-related issues (i.e. reducing water demand, use of grey and rain water), energy efficiency (i.e. space heating, thermal mass of homes, double glazing, insulation).

6.5 Infrastructure

This sector includes utilities, banks and insurance companies etc.

- Further work on the key opportunities in this sector, who are the interested players and opportunities for developing partnerships.

6.6 Beacon shareholders

- Feedback on changes to uptake of sustainable practices, products and services by the building industry, through a repeat of this survey every two years (monitoring change).
- Consider how to determine whether changes in survey indicators can be linked to Beacon's work (evaluation of effectiveness of Beacon's work programme).

References

Acnielsen 2005. *The ISO Survey – 2005*. Geneva: International Organization for Standardization (ISO).

Background Note 2004. *Electricity generation : New Zealand and selected OECD countries*. Wellington: Parliamentary Library. 2004/08. Dec 2004.

Becken, S, Marquardt, M & Mckenzie, S forthcoming. Energy Use and Greenhouse Gas Emissions of Small to Medium-sized Tourism Businesses: a Case-Study Approach. Lincoln: Landcare Research.

Centre for Business and Sustainable Development 2005. *Corporate environmental and social responsiveness in New Zealand: Survey of Corporate Environmental and Social Responsiveness 2005 Report*. Palmerston North, NZ: Massey University. ISBN No. 0-473-06563-6

Collins, E, Corner, P, Kearins, K & Lawrence, S. 2004 Getting serious about voluntary environmental programmes. *University of Auckland Business Review* 6 (2), 57-65.

Green Building Council of Australia 2006. Green Star: an Environmental Rating System for Buildings Sydney: Green Building Council of Australia.

Guthrie, T & Grace, M. 2002 Going, going, green. *Unlimited - Business Magazine NZ*.

ICLEI 2006. Sustainable Housing Code: ICLEI.

Landcare Research 2004. *IND1: Industry Research Impacts and Alternatives.* Lincoln: Landcare Research

Lawrence, S & Collins, E 2004. *Sustainability practices in New Zealand*. Hamilton, NZ: University of Waikato in partnership with the Sustainable Business Network.

MED 2005. *SMEs in New Zealand: Structure and Dynamics - 2005* Wellington: Ministry of Economic Development.

Milne, M, Owen, D & Tilt, C. 2001 Corporate environmental reporting: Are New Zealand companies being laft behind? *University of Auckland Business Review* 3 (2), 24-26.

Sorrel, S, Schleich, J, Scott, S, O'malley, E, Trace, F, Boede, U, Ostertag, K & Radgen, P 2000. *Reducing Barriers to Energy Efficiency in Public and Private Organisations*. Brigton, UK: Science and Technology Policy Research - University of Sussex. JOS3CT970022

SustainAbility & UNEP 2000. *The global reporters*. London: SustainAbility Ltd.

SustainAbility & UNEP 2002. *Trust Us - The Global Reporters 2002 Survey of Corporate Sustainability Reporting*. London: SustainAbility Ltd.

SustainAbility, UNEP & Standards & Poor's 2004. *Risk & Opportunity: Best Practice in Non-Financial Reporting.* London: SustainAbility Ltd.

SustainAbility, UNEP & Standards & Poor's 2006. *Tomorrow's Value: The Global Reporters 2006 Survey of Corporate Sustainability Reporting.* London: SustainAbility Ltd.

UN DESA 1992. Agenda 21 (ed. Division for Sustainable Development), pp. Chapter 30: United Nations.

UN DESA 2002. *Johannesburg Plan of Implementation*. New York: United Nations.

WBCSD 2006. Our vision: A world where buildings consume zero net energy: World Business Council for Sustainable Development.

Annex 1: Survey Respondents

ADC Architects
Adobe South
Ann Galloway Architect Ltd

Architects h+k
Architectural Ecology Ltd
Arhaus Group Ltd
Azzuro Solar NZ Limited
Bay Builders 2003 Ltd
Bernhardt Architecture Ltd

BRANZ Ltd
Building Biology & Ecology Institute (BBE)
Building Construction ITO

Building Research

Campbell & Shadbolt Architects Ltd

Chow Hill Architects
Christchurch City Council
Christchurch Polytechnic Institute of Technology
Community Energy Action
Consumers Institute
CPIT
CSP Galvanising
Darrell Trigg Builder Ltd
Dickson Lonergan Ltd
Dulux NZ
Ecomatters Environment Trust
Employers & Manufacturers Assn (Northern) Inc
Energy Efficiency & Conservation Authority
Energy Options Limited
Envirowaste Services Limited
Fletcher Reinforcing
Fire Protection Association Inc
Firth Industries
Fletcher Building Limited

Fletcher Residential Limited
Fyfe Homes

Genesis Energy
Golden Bay Cement
Heavy Engineering Research Assn (HERA)
Historic Places Trust
Hostess Joinery Ltd
IAG New Zealand Limited
Jet Express Mortgage Finance
Kresta Blinds
Master Plumbers & Gasfitters & Drainlayers NZ Inc
Matisse International
Meridian Energy
Metrowaste
Metrowater
Mike Pero Mortgages
Moss Brothers Residential Wellington-Wairarapa Ltd
Murray Borland Architecture Ltd
Neil Properties Ltd
New Zealand Contractors Federation Inc
New Zealand Forest Research Limited (trading as SCION)
NZ Council for Sustainable Development
NZ Institute of Surveyors
NZ Pine Manufacturers Association
Oak Green Ltd

Orion New Zealand Limited
Pacific Coilcoaters
Placemakers
Property Council of New Zealand
Pryda New Zealand
Registered Master Builders Federation
Ron Graham Architect
Ross Roofing Ltd
School of Forestry, University of Canterbury
Solar Peak Limited
Stephenson & Turner NZ
Styrobeck Plastics
T Drupsteen Consulting Engineer
Tasman Insulation NZ Ltd
University of Auckland
University of Auckland, Faculty of Engineering
Vector
Victoria University of Wellington School of Architecture
Waitakere City Council
Waste Management NZ Ltd
Wattyl New Zealand Limited
Wellington City Council
Westpac
Winstone Wallboards Ltd

Insulation Council of New Zealand WQI Limited

Annex 2: Rating tools for housing

- TUSC – Tools for Urban Sustainability: Code of Practice (NZ)
- NABERS – National Australian Built Environmental Rating System (Australia)
- LEED – Leadership in Energy and Environmental Design: Building Rating System (US)
- HERS – Home Energy Rating System (US)
- HEEP – Household Energy End-Use Project (NZ)
- Green Star (Australia)
- Green Home Scheme (NZ)
- BREEAM – Building Research Establishment Environmental Assessment Method (UK)
- BASIX – Building Sustainability Index (Australia)