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THE ROLE OF CONSUMERS AND CORPORATIONS IN TACKLING CLIMATE CHANGE

Ethical Investment Research Services (EIRIS).

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EXECUTIVE SUMMARY

Climate change has been widely recognised as one of the most significant challenges facing the global economy. Eurostat, the Statistical Office of the European Communities, based in Luxembourg, indicates that in 2007, the households sector was responsible for 24.6 % of the final energy consumption in the 27 countries of the European Union. It appears that there is potential for improving consumer involvement in tackling climate change through lifestyle change and purchasing preferences.

However, the Intergovernmental Panel on Climate Change's (IPCC) 2007 report states that while consumers can play a critical role, voluntary consumer-facing initiatives by corporations, local and regional authorities, and civil society organisations have had limited impact to date on the national or regional emissions level.

According to a study of 1,000 people each from the UK, US and China, by an independent non-profit organisation (NPO) headquartered in the UK, the Climate Group, 66% of people in the UK and 65% in the US could not name a single brand that is taking the lead in tackling climate change, although the data shows that consumer commitment is rising significantly. This could indicate that companies have not provided consumers with sufficient information regarding the climate change impacts associated with their products.

Against this background, this paper presents the main findings of EIRIS research on how companies and consumers interact on the issue of climate change and in particular how companies in consumer-facing sectors such as supermarkets, automobiles[1], residential buildings and electricity interface with consumers to tackle the issue of climate change.

Section I presents an overview of the key drivers in consumer involvement in tackling climate change as well as company responses in the above mentioned four sectors selected for review in the present study. Using the same analytical framework, Sections II to V analyse the performance of each of these sectors.

EIRIS' main findings on consumer trends are as follows:

- Only a minority of consumers are prepared to pay a premium for products with lower carbon emission impact.

- Financial incentives including reduced tax, discounted insurance and cost saving devices seem to be the strongest drivers of consumer involvement in the fight against global warming and climate change.

- Governmental regulations also seem to play a significant role in the purchase of climate-friendly products.

[1] Automobile sector does not include manufacturers of parts

- A wide range of information tools is available for consumers to compare products and to help them make more environmentally-friendly purchasing decisions. However assurance or verification systems of their reliability are not yet sufficiently developed.

- Independent sources of information are regarded by consumers as more credible than companies' claims.

EIRIS' main findings regarding corporate performance are as follows:

- Companies in the electricity sector are the leaders across the four sectors reviewed in the fight against climate change. The sector particularly shows the strongest performance on disclosing climate change impact whereas a large proportion of supermarkets and residential builders have not yet started to engage in public reporting.

- The automobile sector has also become more committed to energy saving cars.

- The residential building sector lags behind significantly with many companies without a basic commitment to address climate change risks.

Sectoral findings:

Supermarkets

- While a wide range of carbon labelling schemes for product lifecycle has been developed, there is a clear need for a more internationally consistent system to increase the comparability of products sold and the transparency of schemes.

- Consumer groups are becoming more active on climate change. This has yet to be translated into consumer purchasing decisions. More proactive consumer involvement in influencing companies is required.

Automobile

- There is a limited level of consumer groups' involvement on climate change in this sector. Stakeholder engagement is a key area for improvement.

- Governments and corporate incentives continue to be a key driver in promoting climate-friendly cars.

Residential buildings

- The complexity of efficiency rating systems seems to be a source of confusion to consumers. The priority should be given to the simplification of these systems and providing the right incentives.

- There is ample room for companies to improve overall commitment and disclosure levels.

Electricity

- This sector shows a high level of commitment by governments, companies and consumer groups.

- However, there is an urgent need to establish a clearer definition of 'green electricity' which should be internationally consistent and comparable.

This paper recommends areas for further development:

Governments

- The provision of a clear framework to support consumer action on climate change by establishing targets, incentives and transparent regulations and standards.

- Internationally consistent and comparable rating/labelling standards should be considered.

Companies

- Direct engagement with consumers (and other external stakeholders) should be improved in order to achieve greater credibility.

- Public reporting on climate change related information including product emissions data needs to be strengthened.

Consumer groups and other third party organisations

- Providing unbiased information for consumer decision-making and influencing companies by campaigning and engaging with them are essential.

- Providing independent research, review and verification would add credibility to consumer information.

I. CONSUMERS AND CLIMATE CHANGE

Main drivers in consumer-facing sectors

The role of consumer involvement in tackling climate change can vary significantly from voluntary offsets to proactive engagement with companies. According to the report 'Consumers, brands and climate change 2008 & 2007' published by the Climate Group, a survey conducted by the Group places private individuals second behind nongovernmental organisations (NGOs) as the major player in helping to reduce climate change impacts, followed by governments and business.[2] This survey also reveals that consumers' own involvement tends to be limited to obvious and easy commitments without additional cost, for example through actions such as turning lights off and washing clothes at lower temperatures. Cost-saving seems in fact to be the main incentive for consumers to buy climate-friendly products such as electricity from renewable sources, hybrid cars or energy efficient homes.

Based on available studies, EIRIS has identified the following five drivers in consumer-facing sectors that could improve the interface between companies and consumers: (1) regulation and standards; (2) communication and engagement; (3) labelling schemes; (4) independent assurance and verification and (5) product innovation and marketing strategies. Detailed information specifically for each of the four sectors will be examined in the following sections.

1) Regulation and standards

In order to encourage companies' commitments to provide consumers with climate-friendly products or services, government-led public policy, regulation, frameworks, support (such as subsidies) and government accreditation programmes under international, national and regional climate change targets are necessary.

Government subsidies such as tax reductions and products including discounted insurance can create and/or increase financial incentives for consumers to choose climate-friendly products where such incentives may not exist or existing incentives are insufficient for consumers.

Additionally, voluntary or mandatory reporting requirements, standards and frameworks can promote companies' public disclosure on climate change related information including both product level and operational level.

2) Communication and engagement

The provision of appropriate and comparable information to consumers is important to promote transparency and choice. In addition, engagement activities with external stakeholders, including consumers and third party organisations, are essential for companies to gauge the external expectations in society. There are broadly two types of initiatives: company-led and consumer-led initiatives. Tables 1 and 2 below provide some illustrative examples.

[2] All the sources are included in 'References' at the back of this paper.

Table 1. Company initiatives[3]

Commitments	Examples
Consumer education and awareness raising	• Carbon calculators on websites • Providing tips for saving energy through product use
Transparency in public reporting	• Reporting on websites or CSR/environmental reports • Ensuring that consumers have been fully informed of the climate change impacts associated with companies' products and services
Direct engagement and interaction with consumers	• Conducting regular surveys • Directly providing information on climate change impact • Interactive communications • Providing bespoke advice
Voluntary offsetting	• Products with offsetting e.g. an airline's offsetting scheme donating passengers' money to a project which has positive impacts on the environment, or a bank's climate care scheme inviting individuals to personally offset the carbon emissions of a journey or energy use

Table 2: Consumer-led initiatives

Initiatives	Details	Examples[4]
Empowering consumers	• Conducting surveys and research • Policy recommendations • Consumer protection • Campaigns	• Consumer International (UK) • The Ethical Consumer Research Association Ltd (UK) • Which? (UK) • Consumer Focus (UK) • VZBV (Germany), the federation of German consumer organisations • Consumer Watchdog (US) • Consumer Federation of America • CompenCO2 (Belgium)
Consumer education	• Through magazines and websites to provide information on ethical shopping	• New Consumer (UK)
Provision of comparison tools	• Ratings • Calculations	• Which? (UK) • Green Consumer Guide (UK) • Climate Counts (US)
Increasing competitiveness in markets	• Awarding a prize for best practice products and services	• Which? (UK)
Innovation	• Feasibility experiments	• BBC2 Ethical Man (UK)

[3] Tables presented in this study were compiled by EIRIS based on publicly available information. Further references are included at the back of this paper.

[4] The lists of examples are not exhaustive, but representative.

In addition, there are government-led initiatives which include labelling schemes, certification (including assurance) and providing support and frameworks in order to promote consumer involvement to tackle climate change issues.

3) Labelling schemes

In order for consumers to make purchasing decisions, comparable information with third party approval or certification gives a clearer indication to consumers.

Current labelling schemes with regard to climate change impacts include labels which indicate the actual amount of GHG (greenhouse gas) emissions by the use of products and life cycle emissions of products, or shows that a product meets climate-friendly criteria. In addition, a variety of energy efficiency ratings have been commonly seen for white goods, buildings and cars.

In Europe, GreenLabelsPurchase is a pilot initiative which aims at increasing greener procurement through the promotion of energy efficient products and awareness-raising. The initiative is supported by the European Commission with 12 institutions[5] in nine European countries. The institutions have established different labelling systems. Through this initiative, these institutions work together to ensure future development to promote consistency and transparency in labels.

Table 3 provides examples of energy efficiency labels for general consumer goods and services. Sector-specific labels are explained in the relevant sector section.

Table 3: Examples of energy efficiency labels

Label	Country	Application	Description
Swan label	Norway, Sweden, Finland, Iceland, Denmark	Over 50 different products (including cars, toiletries, home appliances)	Introduced by the Nordic Council of Ministers in 1989.
GEEA label	Denmark, the Netherlands, Sweden, Switzerland	Energy efficient appliances (home electronics and office equipment)	GEEA (The Group for Energy Efficient Appliances) label indicates energy consumption level, in association with the European Energy Network (EnR).
The Blue Angel (Der Blaue Engel)	Germany	Environmentally friendly consumer goods and services	Administered by the Federal Environmental Agency

4) Independent assurance and verification

In order to increase the transparency and the credibility of information provided by companies, independent verification by credible third party organisations is important for consumers to be confident in their purchasing decisions. A UK consumer organisation, Ethical Consumer, indicates that an accreditation scheme would guarantee that consumers get what they expect. It seems that certification for renewable energy and approval of energy efficiency could give consumers objective ways of measuring their

[5] Berliner Energieagentur GmbH (Germany), B.&S.U. Beratungs- und Service-Gesellschaft Umwelt mbH (Germany), O.O.Energiesparverband (Austria), Motiva Oy (Finland), Ente per le Nuove Tecnologie, l'Energia e l'Ambiente (Italy), Building and Civil Engineering Institute ZRMK (Slovenia), Efeko Ltd (Finland), Centre for Energy Efficiency (Bulgaria), Ekodoma (Latvia), Budapest University of Technology and Economics (Hungary), Krajowa Agencja Poszanowania Energii (Poland) and Centre for Environmental Studies Foundation (Hungary)

contribution to preventing climate change through their purchasing decisions. Similarly, Consumer International, the global federation of consumer groups, states that consumers want more independent assurance of product information.

Furthermore, a report published in April 2009 ('What assures consumers in an economic downturn?') by AccountAbility, an international institution for sustainability reporting, suggests that there seems to be a significant decrease in consumers' trust in corporate businesses in the current financial climate. Therefore, consumers tend to trust independent methods of assurance more than companies' own promotional claims.

5) Product innovation and marketing strategies

There is growing evidence that consumers take into account the climate change impacts caused by the products they purchase. However, businesses are expected to continue to develop innovative climate-friendly products with the additional features of cost-saving or efficiency to attract consumers who may not be sold on product climate friendliness alone.

Marketing strategy can play a significant role, for instance, by selecting a limited range of products which are 'approved' by a company to be energy efficient.

Company response

The following four sectors have been selected for this study: supermarkets, automobile, residential buildings and electricity. These four sectors are considered as having direct contact with, and access to consumers in the household environment.

Within these four sectors, there is a great degree of diversity in product types, the availability of energy-efficient technology, types of consumer interactions, regulatory drivers, the nature and frequency of interaction with consumers, the cost of products, and governments' intervention. Additionally, significant differences can be seen across different regions. However, this paper focuses on an overview of diverse company-consumer interactions.

This paper analyses those companies listed in the FTSE All World Developed Index[6]. This results in a sample of 27 supermarket companies, 31 automobile manufacturers, 24 residential building and 68 electricity companies. This paper uses EIRIS climate change sector classifications[7] which capture the business activity of each company[8].

EIRIS climate change research assesses companies' responses to the challenge of climate change by employing 24 assessment indicators under four different sections namely: policy & governance (e.g. corporate-wide climate change policy, or is board remuneration linked to climate change performance); management & strategy (e.g. long or short-term targets); disclosure (e.g. the quality of carbon data, or quantified disclosure risks or opportunities) and performance & innovation (e.g. year-on-year reduction in

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6 The FTSE All-World Index Series is the Large/Mid Cap aggregate covering 2,700 stocks from the FTSE Global Equity Index Series. This is divided into Developed and Emerging segments, covering 90-95% of the investable market capitalisation. Developed Index covers companies in Europe, North America, Asia and Pacific. http://www.ftse.com/Indices/FTSE_All_World_Index_Series/index.jsp

7 EIRIS has classified companies into over 50 climate change sectors and sub-sectors based on their business activities. Each sector is defined as very high, high, medium or low climate change impact based on the direct, indirect and/or product emissions.

8 The numbers of companies in each sector vary as the analysis in this paper is based on companies listed in the FTSE All World Developed Index.

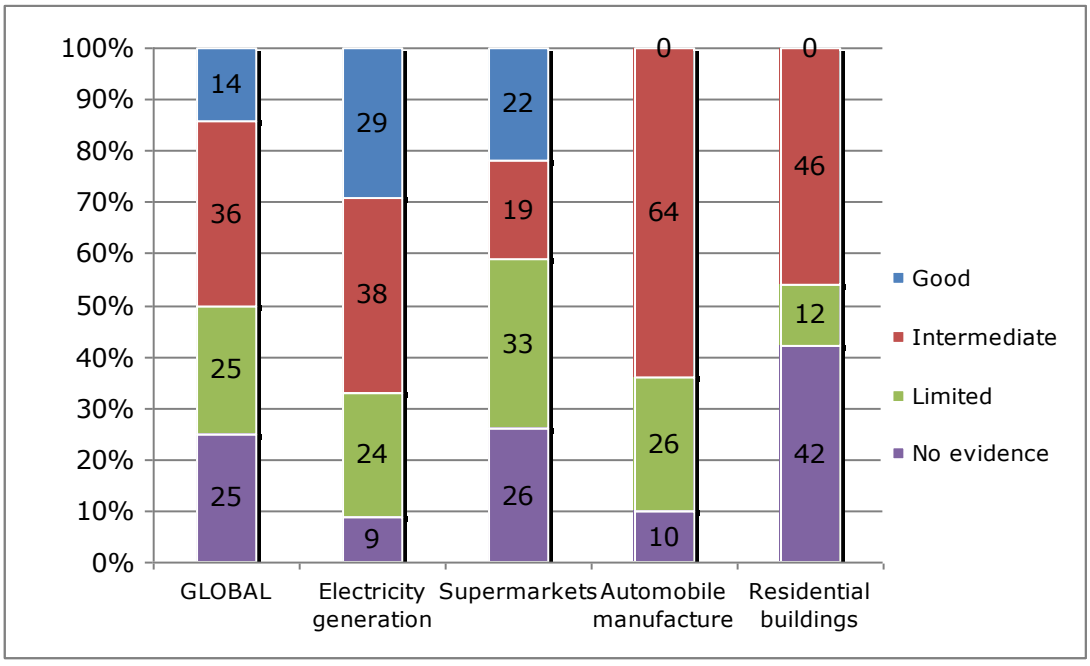
GHG emissions, or transformational initiatives such as large scale investment in carbon capture and storage).[9] The grades range from no evidence to limited, intermediate, good and advanced. The good assessment represents companies adequately addressing their climate change impacts. Electricity companies have been classified as having a very high climate change impact while the three others have been identified as high impact sectors. In addition, business sectors such as automobile manufacturers and residential buildings have been identified as having additional impacts associated with their products; therefore, they are expected to meet additional criteria.

Overall response to climate change challenge

Figure 1 below indicates the overall response to climate change challenges by companies in all four sectors and the global average[10].

The global benchmark is shown in the column on the left, indicating that three-quarters of companies have demonstrated some commitments to tackling climate change. The largest proportion of companies are assessed as intermediate (36%) followed by limited (25%) and no evidence (25%) and good (14%)[11].

Figure 1: Overall grade for consumer-facing sectors and the global benchmark



Source: EIRIS

9 Detailed methodology is explained in Appendix 1.

10 Of those listed in the FTSE All World Developed Index, 827 companies have been identified as having very high, high and medium climate change impacts. The global average includes all the sectors including these four consumer-facing sectors.

11 EIRIS has identified both operational and product climate change impact. The overall research primarily considers operational impacts with additional indicators on products specifically for several sectors including automobile manufacture and residential buildings.

Key findings - sector

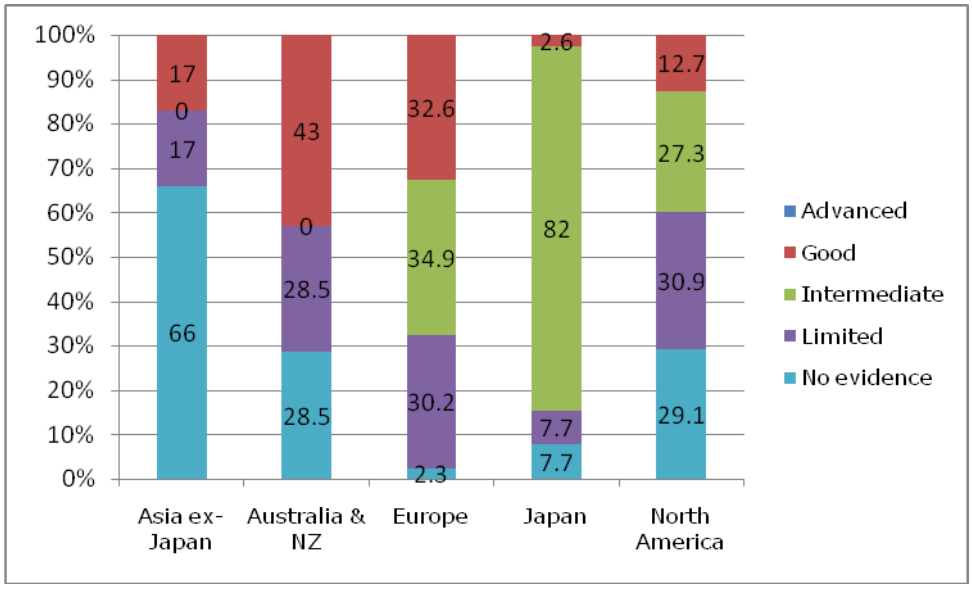
- Overall, companies in the electricity sector are the leaders among the four sectors.
- Over two-thirds (67%) of the electricity sector is assessed as intermediate or good; for supermarkets 41% achieve intermediate or good and for automobiles and residential buildings there are no companies assessed as good but 64% and 46% assessed as intermediate respectively.
- 26% of supermarkets and 42% of residential buildings companies have not demonstrated any commitment to tackling climate change. This proportion is significantly less for electricity generation and automobile manufacture (9% and 10% respectively).
- No automobile and residential buildings companies scored *good* due to the lack of disclosure on product/service related emissions; these two sectors have been identified as having additional impacts associated with their products. In order for companies in these product related sectors to meet the indicator, estimated amount of GHG/CO2 emissions by the use of products needs to be disclosed publicly.

Figure 2 below illustrates the regional comparison of the overall commitments by companies in all four sectors.

Key findings - regional

- European companies have shown approximately equal distribution between good, intermediate and limited grades, and 97.7% of them have committed to reducing their climate change impact.
- The majority of Asia ex-Japan companies (66%) and almost one-third of both Australia and New Zealand companies (28.5%) and North American companies (29.1%) have, however, no commitment.

Figure 2: Regional comparison (Overall grade)



Source: EIRIS

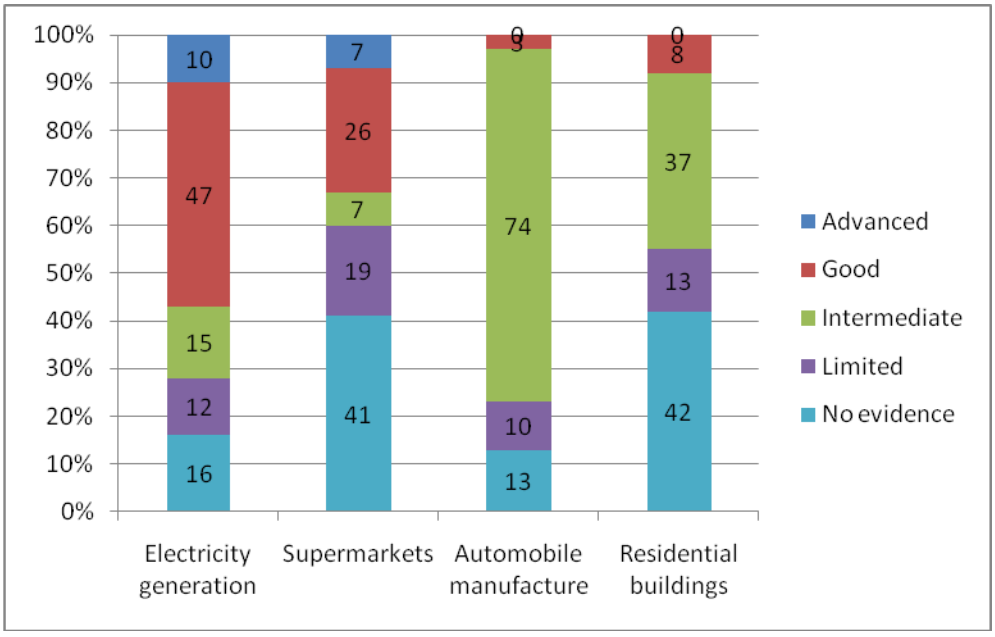
Disclosure levels

Figure 3 below illustrates how companies publicly disclose quantitative data regarding climate change. EIRIS climate change research focuses on eight indicators including actual emissions, trend data, scope of data, verification and quantification of risks.

Key findings - disclosure

- EIRIS research reveals that the electricity sector is also a leader among these four sectors.
- In the supermarket sector, a large proportion of companies (41%) have not publicly disclosed quantitative information on climate change risks including emissions data.
- Similarly, 42% of companies in the residential building sector have not started public disclosure.
- In contract, 87% of automobile companies have committed to public disclosure of quantitative climate risks.

Figure 3: Disclosure grade for consumer-facing sectors



Source: EIRIS

The disclosure section of EIRIS climate change research has an element of independent verification which assesses whether or not the data disclosed by companies is independently verified by external organisations. All of the four sectors show a similar trend for independent verification of data with approximately one-third of all companies independently verifying their data by an external organisation (25.8% of automobile, 38.2% of electricity, 33.3% of residential building and 33.3% of supermarket companies).

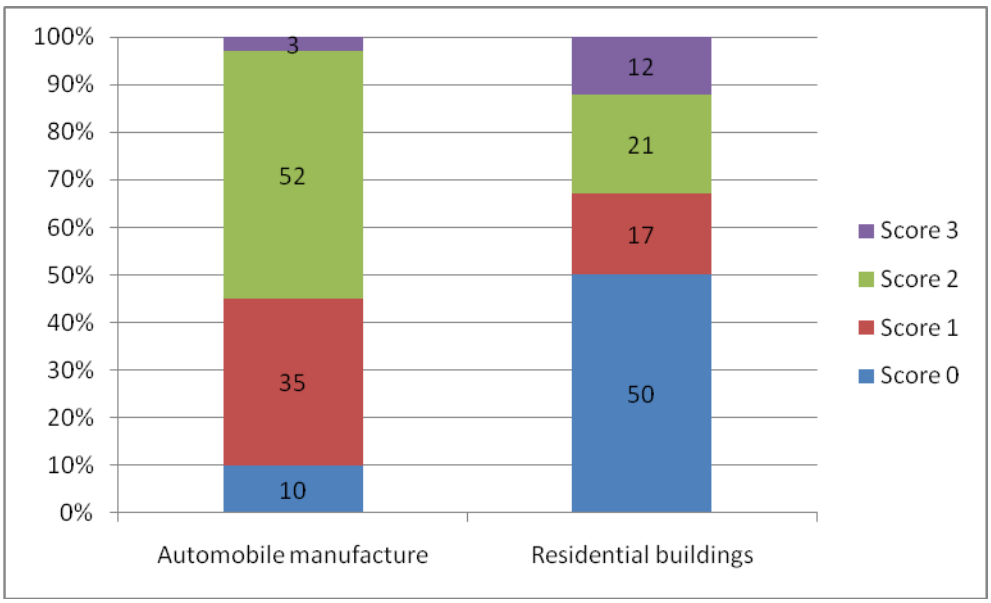
Product-related climate change risks

Among the four consumer-facing sectors, automobile manufacturers and residential building companies have been identified by EIRIS as having additional impacts associated with their own products i.e. cars and houses. EIRIS climate change research includes six additional product-related indicators specifically for these sectors. These include public policy on product-related commitment, targets and public disclosure of total climate change impacts through the use of their products. Figure 4 below indicates the levels of commitment to addressing product-related climate change risks by the automobile and residential buildings sectors. The highest score (3) means that a company meets the indicator of public policy on product impact, targets and public disclosure of emissions by all products sold worldwide. Score 2 indicates that a company meets two indicators out of three.

Key findings - product

- The majority of automobile companies (90%) have shown evidence of a commitment to addressing product-related risks.
- Half of the companies in the residential building sector have not demonstrated any commitment to product-related climate change risks.
- This indicator was designed to provide external stakeholders with information on the total impact caused by the use of companies' products, however, it seems challenging for companies to grasp the total GHG/CO2 emissions caused by the use of their own products at this stage.

Figure 4: Product-related commitment (Automobile and Residential buildings)



Source: EIRIS

II. SUPERMARKETS

Background

The supermarket sector can be described as one of the most consumer-facing sectors as the business activities are inseparable from consumers' everyday lives. Supermarkets sell a wide range of products from food to other commodities with a variety of choices in terms of price range and product quality. The main climate change impact associated with products in this sector is through supply chains (agriculture and food production) and distribution methods.

The strongest drivers in consumer involvement in this sector are considered to be awareness raising and labelling systems. Currently, the main communication channel between companies and consumers in this sector appears to be information provided on product packages, including labelling schemes and 'approval' by a third party organisation. Consumers' perception of brands' reputations and habitual trends also contributes to their purchasing decisions.

It appears that current consumer involvements in this sector are mainly seen in their purchase behaviours (e.g. boycotting or selecting certain products) rather than proactive initiatives to influence companies. Additionally, NGO claims and media reports could influence their purchasing decisions.

Drivers

1) Regulation and standards

One of the recent examples of standards in this sector is PAS (Publicly Available Specification) 2050. PAS 2050 is a newly introduced standard developed by the Carbon Trust, a UK government-funded independent company, Defra (Department for Environment, Food and Rural Affairs) and BSI British Standard to provide a consistent way of counting the greenhouse gas emissions embedded in goods and services throughout their entire lifecycle, from sourcing raw materials, through to manufacture, distribution, use and disposal. Since 2006, the Carbon Trust has worked with 75 product ranges across a wide range of companies including Pepsico, Boots, Innocent, Tesco, Cadbury, Coca Cola, Kimberly Clark, The Co-operative Group and Sainsbury's.

2) Communication and engagement

One of the most significant communication vehicles within this sector seems to be provided mainly by independent consumer groups. This includes research, campaigns, policy recommendations, consumer education and comparison websites. For instance, Which?, a UK based independent consumer group, tests products, provides reviews, publishes unbiased information and campaigns to get a fairer deal for consumers.

Australia's largest consumer group, CHOICE, provides tips to avoid companies' 'greenwash' as the reliability of terms such as 'sustainable', 'natural' and 'environmentally friendly' is unclear, based on the investigations they conduct. The Group indicates that there are many green claims that are not supported by evidence. It is also campaigning to ensure that green labels are reliable and transparent.

3) Labelling schemes

The most conventional label seen in supermarkets is the country of origin label which shows the country in which a product is manufactured or produced. There are no internationally consistent rules; therefore, the definition of production stage on labels differs significantly depending on the type of products and national laws. The labels are often presented with vague expressions such as 'Made in EU/EC/Asia' without specifying a particular country. Furthermore, these labels are not designed to give a clear indication of the climate change impacts associated with products. Where these do exist there remains the challenge of a lack of internationally consistent rules in labelling whole product ranges. Recent labelling schemes are more specific to climate change impact through products' lifecycle. Table 4 summarises examples of labelling schemes for products in supermarkets.

Table 4. Examples of labelling schemes for products in supermarkets

Label	Organisation	Life-cycle Analysis	Quantification	Other description
Carbon Reduction Label	Carbon Trust (UK)	Yes	Yes	Since 2006, it provides labels on 75 different products.
Certified Carbon Free label	CarbonFund.org (US NPO)	Yes	Yes and No	Regular monitoring conducted by the organisation.
CarbonCounted label	CarbonCounted (Canadian NPO)	No	Yes	The web-based tool was designed to track, quantify and manage carbon content throughout the supply chain.

There has been a negative labelling such as 'air-freighted' label. Although this does not provide the actual amount of GHG emissions through products' lifecycle, this attempts to enable consumers to choose products with lower climate change impact. According to the Soil Association, the UK's major certification organisation for organic food, although less than 1% of imported food is air freighted, it contributes to 11% of the carbon emissions from UK food distribution. However, it should be noted that although air-freighted products are more carbon intensive than locally sourced products, farmers and producers in developing countries greatly rely on the income from the exports. It could be said that these labels provide consumers with options for purchasing decisions based on their own priorities.

4) Independent assurance and verification

The three labels mentioned above specify the need of independent verification to achieve the licence and the label. However, only the UK label developed by the Carbon Trust has a specified standard to comply with. Although there is no international standard established, the US and UK labels share some degree of consistency as both provide companies with options to use one of PAS2050 standard, ISO14000 or Greenhouse Gas protocol for life-cycle analysis.

5) Product innovation and marketing strategy

Despite the lack of internationally established ways of labelling climate change impacts on products in supermarkets, it appears that these labels have increasingly become an indicator for consumers to make a purchase decision. In addition to carbon labels, a 'choice restriction' strategy seems to be an increasingly popular marketing strategy. For example, the Co-operative Group replaced conventional light bulbs with

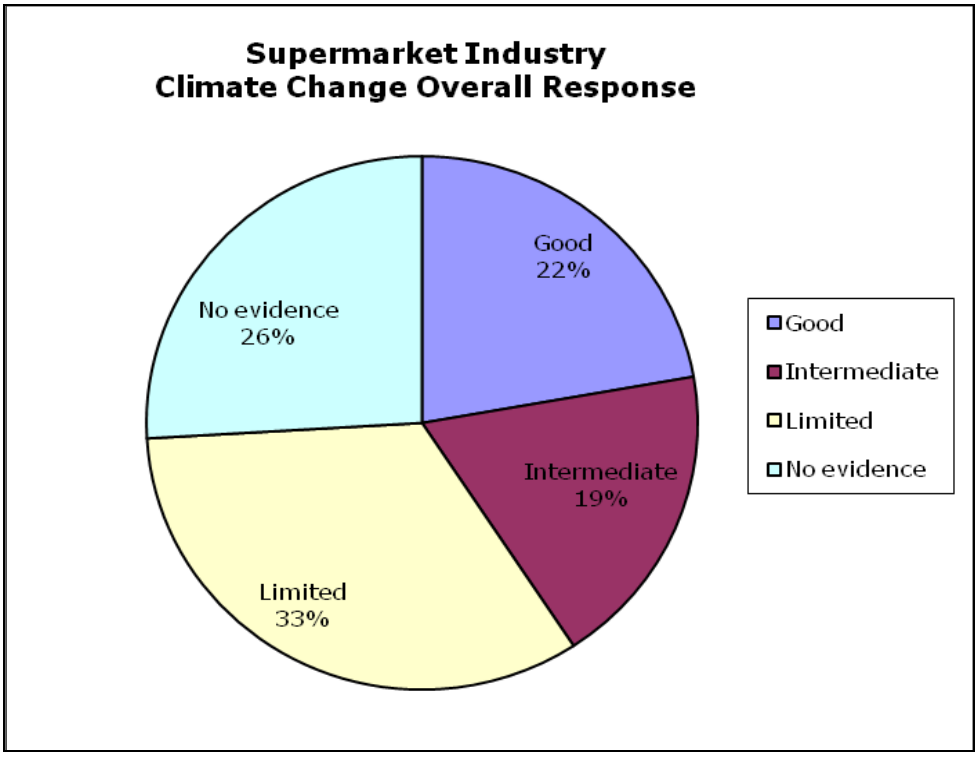
energy-efficient ones at 50 pilot stores in autumn 2007. Furthermore, the Group will offer only white goods with the highest energy-efficiency ratings.[12]

EIRIS research

Compared with other sectors, consumers have frequent contact with the supermarket industry. Consumers' pressure through consumer groups and increasing the competitiveness of differentiating products by employing labelling schemes are likely to improve the interface between companies and consumers.

Figure 5 below shows EIRIS research on the 27 companies in the supermarket industry listed in the FTSE All World Developed. This shows how companies are responding to the current expectations of external stakeholders. Almost a quarter of companies (22%) have been assessed as demonstrating a 'good' commitment, 19%; intermediate, 33%; limited and 26% of them have not shown any commitment to the climate change challenge. Based on EIRIS research, it can be said that there seem to be gaps between leaders and laggards in this sector. In other words, some companies have been proactively involved in initiatives to promote transparency concerning the climate change impacts of their products, however, a substantial number of companies have not yet initiated climate change commitments.

Figure 5: Overall grade (Supermarkets)



Source: EIRIS

[12] AccountAbility & Consumers International, 'What Assures Consumers on Climate Change', June 2007.

Challenges and potential future development

One of the key drivers in the supermarket sector to improve the interface between consumers and companies could be labelling systems.

It appears that the carbon label has been increasingly regarded as one of the indicators consumers rely on in their purchasing decisions. Along with other labels available in supermarkets such as organic and fair-trade, carbon labels enable consumers to have a greater number of options when making purchasing decisions. This is also helpful for raising consumer awareness of the climate change impacts of the products they purchase.

Although different carbon labels share a certain degree of consistency, there remains a need for an internationally consistent labelling system in order to increase comparability across all products.

There still seems to be scope for consumers to be involved in proactive initiatives for influencing companies.

From companies' perspective, stakeholder engagements including regular surveys and collaborative projects with NGOs could highlight external expectations in society.

III. AUTOMOBILE MANUFACTURERS

Background

According to the European Commission, carbon emissions from passenger cars account for approximately 12% of the European Union's total emissions. The factors involved in the decision-making process of consumer purchasing include financial capacity, design, practical function and fuel efficiency.

In addition to serving a practical function, cars are also considered as often costly status symbols for many people and for those on lower incomes a significant they take up a considerable proportion of their income. Fuel efficiency is not only a factor for climate change impact, but also a significant element for longer-term financial impact for individuals.

The most significant climate change impact in this sector is the high level of carbon emissions caused by the use of cars. Currently, consumers significantly rely on information on fuel efficiency provided by companies and industrial associations.

The frequent use of technical terminology employed in different types of efficiency labels and the lack of internationally consistent and comparable labelling schemes seems to result in the low level of consumer involvement in this sector. There is not much evidence of consumers conveying messages to car manufacturers or pressurising them. However, automobile companies, industrial associations and consumer groups provide a substantial number of comparison websites of fuel efficiency.

Drivers

1) Regulation and standards

Across the different regions, various ways of presenting fuel efficiency have been employed. These are translatable units, however they could cause consumer confusion.

In 1998, European car manufacturers agreed to a voluntary commitment with the European Commission to improve fuel efficiency by reducing average fleet CO2 emissions to 140 g/km by 2008. They had achieved 163 g/km in 2007. In 2007, the Commission proposed the improvement of efficiency to 130 g/km, plus 10g/km from biofuels by 2012. In April 2009, the European Parliament and of the Council published Regulation (EC) No 443/2009 which specified a long-term target to achieve 95g/km for the year 2020.

In the US, the new political regime led by Barack Obama has set Corporate Average Fuel Economy (CAFE) rules for the 2011 passenger car standard at 30.2 miles per gallon and the light truck standard at 24.1 mpg. This is the first increase in fuel efficiency requirements for passenger cars in the US since 1985.

Similarly in Japan, the Ministry of Economy, Trade and Industry in partnership with the Ministry of Transport introduced the latest fuel efficiency regulation which requires automakers to improve fuel efficiency by an average of 23.5% by fiscal 2015.

In addition to these targets, governments have been attempting to encourage consumers to buy efficient cars by providing financial incentives such as reduced tax, discounted insurance and subsidies, due to the fact that energy efficient cars require advanced technology which potentially imposes financial burdens on consumers. The following table illustrates examples of governments providing financial incentives to consumers.

Table 5: Examples of governmental incentives for consumers in the automobile sector

Type	Country	Year	Description
Tax exemption	Germany	January 2009	Tax exemption for the first 120 g CO2/km from 2010 onward, which is set to be lowered to 110 grams from 2013.
Subsidy	France	December 2008	Offering motorists who scrap vehicles that are more than 10 years old EUR 1,000 toward the cost of new cars that are fuel efficient and low polluting.
Subsidy	UK	April 2009	An initiative to help consumers and businesses make the transition to low carbon by providing help worth GBP 2,000 – 5,000 towards buying the first electric and plug-in hybrid cars, expected to be from 2011 onwards.

2) Communication and engagement

Consumer organisations including the Energy Saving Trust, a UK-based non-profit organisation, provide free impartial advice on saving money and fighting climate change to consumers, businesses and the community. This includes information on a new or used car's fuel efficiency as well as providing information on how to be an environmentally friendly driver. Likewise, comprehensive lists of cars' fuel efficiencies and annual fuel costs have been disclosed on the ACT ON CO2 website which is a UK cross-governmental initiative, currently involving the Department of Energy and Climate Change, the Department for Transport and the Department for Communities and Local Government. It aims to help people save money, energy and reduce their carbon dioxide emissions. Similarly, the Vehicle Certification Agency, a UK executive agency of the Department for Transport, discloses an extensive list of car fuel efficiency on its website.

In the US, the Department of Energy, Energy Efficiency and Renewable Energy and the Environmental Protection Agency provide consumers with information on tax exemption, financial incentives and fuel efficiency.

In terms of initiatives led by companies, the most common tool provided by companies is the comparison of fuel efficiency. Additionally, manufacturers including Toyota Motor, Mazda Motor, Volkswagen and Volvo provides consumers with tips for fuel consumption saving. Ford Motor's website provides similar tips as well as offset programmes which invest in emissions reduction projects such as the construction of a wind farm in India. General Motors' website also offers a fuel economy calculator.

However, there is not much evidence of companies proactively leading interactive initiatives with consumers. It can be said that the automobile sector is significantly driven by regulations and targets established at national or international levels.

3) Labelling schemes

Providing consumers with information on fuel efficiency and CO2 emissions on labels is one of the three pillars of the strategy the European Union adopted in 1995 to reduce CO2 emissions. This was aimed at helping consumers choose vehicles with low fuel consumption. The EU requires dealers of new

passenger cars to provide potential buyers with useful information that must be displayed on the car's label, on posters and on other promotional material.

However, a UK based climate change campaigning organisation, We Are Futureproof, has indicated that only three in 10 people understand vital information about fuel efficiency and associated emissions currently shown on car adverts. According to the study, the public prefers a colour-coded scale, which is commonly used for energy efficiency labels on white goods, to understand and compare the fuel efficiency and car emissions.

In March 2009, 50by50, a global fuel economy initiative (GFEI) was launched by the United Nations Environment Programme (UNEP), International Energy Agency (IEA), International Transport Forum (ITF) and FIA Foundation. The initiative aims to reduce fuel consumption per kilometre by 50% by 2050 with intermediate goals in 2020 and 2030. One of the aims is to support awareness initiatives to provide consumers and decision makers with information on options. The GFEI report points out that today's labelling schemes differ significantly across all countries. It recommends that harmonisation of labelling systems is necessary in order to provide consistent signals to consumers.

4) Independent assurance and verification

There are a substantial number of websites which provide comparisons of fuel efficiencies of passengers' cars. Additionally, many companies covered in this study have a list of recent models' fuel efficiencies available on their websites.

Additionally, in many countries including Australia, European Union, Japan, New Zealand and the US, all new cars need to be sold with a label which indicates fuel efficiency and associated emissions. Each governmental agency has established an assessment procedure to oversee the credibility of efficiency figures.

There is not much evidence of the efficiency figures being internationally consistent and comparable as it seems that each country employees own testing criteria for city and highway driving.

5) Product innovation and marketing strategies

In addition to the recent technology developments in 'climate-friendly' or lower emission cars including hybrids and electrics, the above mentioned financial incentives set by governments seem to play significant roles in attracting consumers. Moreover, there are discount services/products associated with the purchase of environmentally friendly cars. For example, the Climate Group's 'Together' initiative aims to provide both ideas for behavioural changes and practical solutions for consumers to help them reduce their household emissions by one tonne over three years. As part of a commitment to Together initiatives, MORE TH>N, a UK insurance company, has launched Green Wheels which allows consumers to review and monitor reports on their driving style and compare it with other drivers. The Company also offers a 15% discount on car insurance if consumers drive an environmentally friendly car.[13]

In May 2008, General Motors announced that it had been promoting its trucks more than it should have and was shifting its marketing towards fuel economy and hybrid models. Similarly, the Toyota Prius attracted consumers not only because of its fuel efficiency but also its status as an environmentally friendly vehicle popularised by many celebrities. However, a recent study conducted by AccountAbility suggests

[13] In Summer 2009, EIRIS will be launching a website, YourEthicalMoney.org, which includes consumer guide on financial products.

that low consumer confidence in business has led to a reduced consumer tolerance for corporate reporting, overstated claims, celebrity endorsements and 'greenwash'.

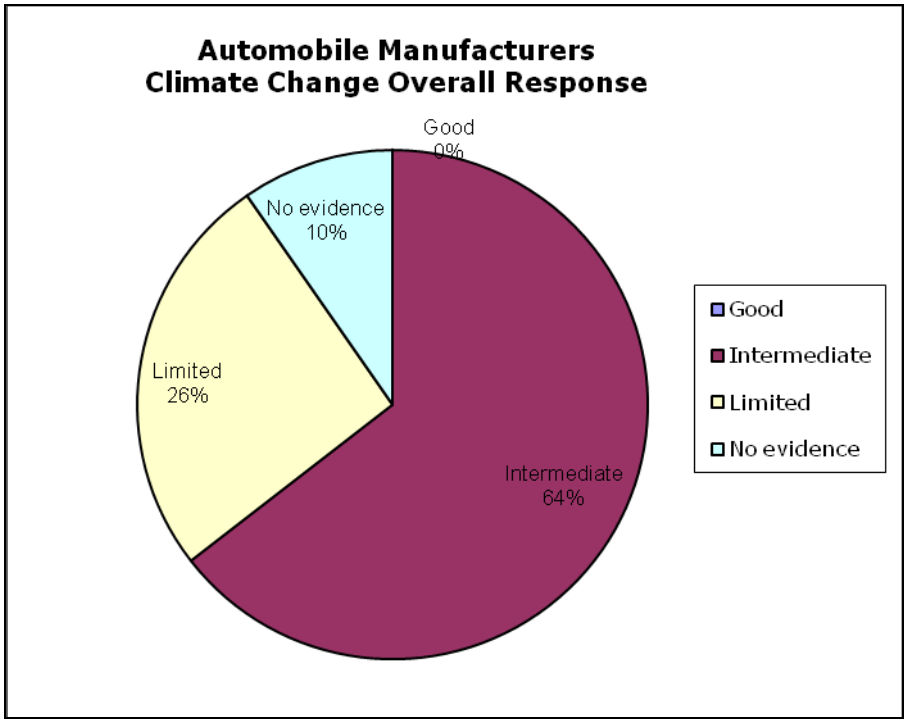
EIRIS research

A low level of interaction between companies and consumers has been found in this sector. Figure 6 below shows how automobile companies are committed to reducing climate change risks.

- 90% of automobile companies have demonstrated some degree of commitment to global climate change.

- The highest proportion of companies are assessed as intermediate (64%) and no company has been graded as demonstrating a good commitment.

Figure 6: Overall grade (Automobile)



Source: EIRIS

Challenges and potential future development

Key findings in this sector include:

- This sector seems to be significantly driven by governmental regulations and specific product targets.

- Governmental interventions, including subsidies, reduced tax and discounted insurance play significant roles in attracting consumers. Furthermore, infrastructural development will be expected to support further development of environmentally-friendly cars including for cars running on electricity or bio-fuels.

- There is not much evidence of companies proactively interacting with consumers apart from the provision of efficiency comparison websites and tips for ‘eco driving’.

- However, EIRIS research shows that 90% of companies have committed to tackling climate change.

Incentivising consumers by both governments and companies will continue to be key driver in promoting climate-friendly cars. In addition to fuel efficiency, there are other decision-making factors for consumers, therefore stakeholder engagement between car makers and consumers will play an important role.

IV. RESIDENTIAL BUILDINGS

Background

According to the IEA report, 'Worldwide Trends in Energy Use and Efficiency' published in 2008, household sector is responsible for 21% of global carbon dioxide emissions[14].

Buying a house is a major purchase which involves long-term a long-term financial commitment for individuals. Factors such as location, size and price are the most significant drivers in the purchasing of residential homes. As advanced technology and equipment for energy efficient homes can result in high costs, incentivising consumers by providing subsidies and different price ranges is essential. In addition, the energy efficiency of a house potentially contributes to longer term cost saving. It should be noted that a number of energy saving measures can be retro-fitted to existing buildings and are not only restricted to new build.

According to the World Business Council for Sustainable Development (WBCSD), the sector needs to strengthen building codes and energy labelling to increase transparency for sustainable housing.

Although many countries have their own government accreditation programmes, evidence of proactive engagement between companies and consumers has not been seen. It seems that the lack of comparable and consistent rating standards results in consumers' confusion and losing credibility of efficiency.

Drivers

1) Regulation and standards

In February 2008, the UK government confirmed that a mandatory rating against the Code for Sustainable Homes would be implemented for new homes from May 2008. The code sets minimum standards for energy and water use at each level between 1 and 6. The UK government has set a target of making all new homes zero carbon by 2016.

The European Union's Energy Performance of Buildings Directive was adopted in 2002, and includes minimum requirements for the energy performance of new and large existing buildings, regular inspection of boilers and air conditioning systems and energy performance certification for buildings.

The following table summarises examples of governmental initiatives which could potentially attract consumers to adopt climate-friendly housing.

[14] The figure disclosed in 2008 report is from 2005, covering activities related to private dwellings. This includes energy-using activities such as space and water heating, cooling, lighting and the use of appliances. This does not include personal transport. http://www.iea.org/Textbase/Papers/2008/indicators_2008.pdf

Table 6: Examples of governmental initiatives in the residential building sector

Type	Country	Description
Subsidy and tax incentive	Japan	The Government offers subsidies for the installation of photovoltaic systems for residential buildings. It also offers subsidies for residential fuel cell cogeneration systems and tax incentives.
Eco Loan	France	The Government announced that it would launch in April 2009 an interest-free eco loan of up to EUR 30,000 to increase the use of thermal renewable energy sources and of energy conservation. This only applies to sustainable housing renovations.
Investment in sustainable housing	US	The Government has announced that it will invest about USD 8 bn in energy efficiency efforts as part of the President's American Recovery and Reinvestment Act. The Department of Energy indicates that the fund will support adding more insulation, sealing leaks and modernising heating and air conditioning equipment, which are expected to lead to energy and cost savings.

2) Communication and engagement

In this sector, there are a great number of initiatives led by governmental agencies and industrial associations which aim to increase the energy efficiency of homes. However, there is not much evidence of companies taking a lead, although some companies' websites including Asahi Kasei, Daiwa House Industry, PanaHome, Sekisui Chemical, Sekisui House and others provide information on the installation of insulation systems and energy efficient homes.[15]

The Association for Environmentally Conscious Building (AECB), which is a UK organisation aimed at facilitating environmentally responsible practice within buildings, established an initiative, the CarbonLite Programme. This provides tools and knowledge to create low-energy buildings in line with existing and expected future legislation covering both domestic and non-domestic buildings. The Programme provides a practical step-by-step guide aimed at all those practitioners involved in the design, construction and use of low-energy, low-CO2 emissions buildings.

However, a recent survey of home buyers by Sponge, a UK-based independent network of built environment professionals that campaigns for greater environmental sustainability, found that while the public is willing to adopt a sustainable lifestyle, there is a worrying lack of knowledge about what that means in terms of housing. However, 92% of respondents said they would like to see sustainability features as options on new homes and a further 62% stated that these features should be compulsory. However, approximately 70% of the respondents said they know 'little or nothing' about what sustainability meant in this context. It also reveals that while half of the respondents were prepared to pay a small premium for sustainable housing, nine out of ten thought the Government should provide more incentives.

As the survey results suggest, it seems that there are not sufficient communication channels available to give consumers detailed product information on housing, and the incentives to take energy efficiency into account are currently considered weak by consumers.

[15] Of those which received 'intermediate' grades under EIRIS climate change research.

3) Labelling schemes

In England and Wales, the SAP (Standard Assessment Procedure) is now mandatory for all new homes. The energy rating indicates a building's energy efficiency on a scale of 1 to 100 where 1 is the worst and 100 is a zero energy usage. The rating is based on the energy costs associated with space heating, water heating, ventilation and lighting, less cost savings from energy generation technologies. Other leading green building rating systems include the UK's mandatory Building Research Establishment's Environmental Assessment Method (BREEAM), Leadership in Energy and Environmental Design (LEED) and Green Star in the US and Australia. According to ClimateChangeCorp, an independent news website, the LEED rating is the most widely available in the US, China, India and parts of the Middle East. BREEAM is being applied in Europe and the Middle East. Green Star is common in South Africa, Australia and New Zealand.

Similarly, in the US, the Energy Star programme started in 1992 as a US government programme and subsequently became an international energy-saving programme in Australia, Canada, Japan, New Zealand and the EU. This was initially started as a labelling scheme for home appliances such as computers and white goods, however, the energy efficiency of residential buildings has been also included in this programme. The Energy Star logo is provided if a product meets stringent efficiency criteria set by the US Environmental Protection Agency and the Department of Energy.

In Australia, there is a similar national rating programme, NatHERS, Nationwide House Energy Rating Scheme. NatHERS is an initiative of the Ministerial Council on Energy and is administered by the Energy Efficiency Working Group and managed by the Department of the Environment, Water, Heritage and the Arts.

In France, the Association HQE (High Environmental Quality) has established building certifications since 2005 which include a certification for houses. Energy efficiency is one of the criteria for the certification which ensures the promotion of environmentally friendly houses. The association also provides practical steps for builders in order to achieve sustainable housing.

4) Independent assurance and verification

As mentioned above, there is currently no internationally applicable metric to rate the efficiency of residential buildings. ClimateChangeCorp also points out that there is no consistent rating system available at the moment, although BREEAM, LEED and Green Star have agreed to develop common metrics for measuring CO2 emissions from buildings which clearly makes it easier to monitor energy performance.

5) Product innovation and marketing strategies

In October 2008, Sumitomo Trust & Banking and Sekisui House released a joint announcement that the Bank was launching a mortgage policy with a lower interest rate that only applies to those who purchase Sekisui's houses which generate less CO2 emissions by installing photovoltaic power systems, highly efficient water heaters and heat insulation.

One of the examples of sustainable housing can be seen at Beddington Zero Energy Development (BedZED) which is an environmentally friendly housing development in London, in association with BioRegional, a UK-based independent environmental organisation, London's housing association Peabody Trust and Arup, a global consulting firm. BedZED started in 2001 and currently comprises 100 homes, community facilities and workspace for 100 people. The features include the use of energy only from renewable sources including 777 square meters of solar panels; south-facing buildings to take advantage of solar gain with triple glazed and thermal insulation; and increased water efficiency by using recycled water from rain and eco-friendly transport. The project website indicates that space-heating requirements were

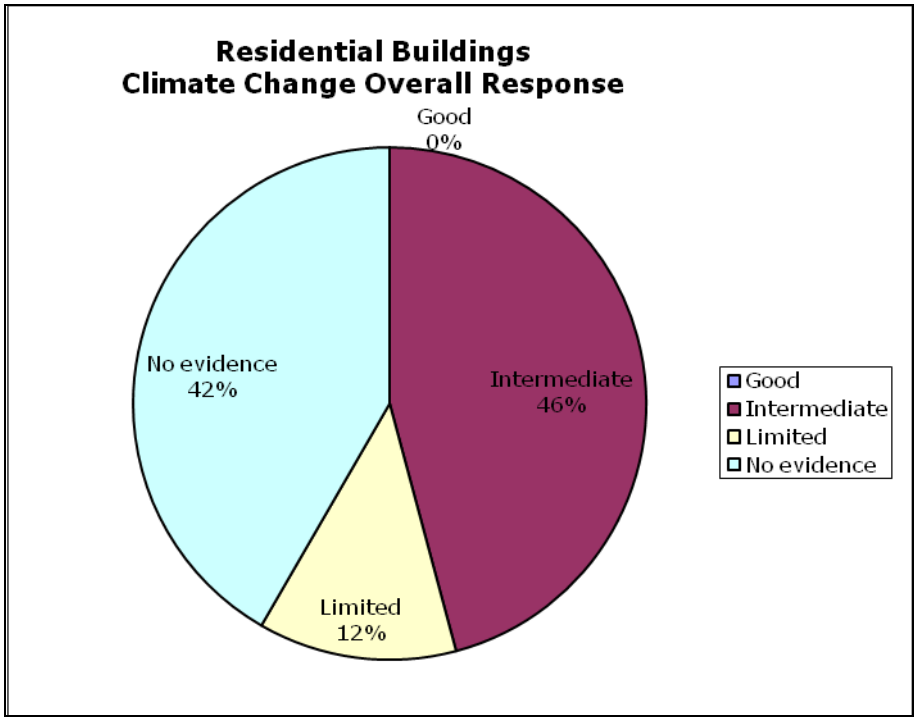
88% less than the national average; hot water consumption has been reduced by 57%; electricity use has been reduced by 25%; mains water consumption has been reduced by 50% and residents' car mileage is 65% less than the national average.

EIRIS research

Figure 7 below illustrates the level of commitments by the 24 companies in the residential building sector listed in the FTSE All World Developed Index.

- A large proportion of companies (42%) have not shown any evidence of commitment, whereas the largest proportion of companies is assessed as intermediate (46%).
- No company has achieved a good grade, which requires companies to publicly disclose estimated total amount of emissions generated through their products' lifecycle.
- Based on EIRIS research, it can be said that this sector still has room to improve commitments to climate change risks both through their operational and product impacts.

Figure 7: Overall grade (Residential Buildings)



Source: EIRIS

Challenges and potential future development

Key findings in this sector include:

- Similar to the automobile sector, governmental intervention including subsidies seems to play an important role.
- Despite consumer interest, the complexity of terms and efficiency rating systems confuses consumers.
- Different types of accreditation schemes have agreed that they aim to develop a consistent system.
- There is not much evidence of companies proactively engaging with consumers although some companies provide information on the installation of insulation systems and energy efficiency of homes.
- The home insurance and mortgage sector also offers discount services for efficient homes.

Simplifying and harmonising efficiency rating systems and the provision of continuous incentives to consumers would provide consumers with clearer paths to sustainable housing.

As EIRIS research indicates, there is room for companies to improve overall commitment and disclosure levels toward minimising climate change impacts through their products.

V. ELECTRICITY SECTOR

Background

According to the IEA, electricity production is estimated to contribute almost a quarter of global GHG emissions. In today's society, electricity is considered an indispensable commodity in the household environment. The significance of the electricity sector's climate change impact shows that consumers' purchasing decisions can potentially contribute towards the move to a low carbon society. In doing so, consumer involvement in reducing GHG emissions appears to be a key area for both expanding the use of renewable energy and reducing energy use. This section provides in-depth analysis on the electricity sector.

According to Greenpeace, electricity consumption in households differs significantly throughout the world. An average household in the US consumes more than twice as much as an EU household and a Japanese one. It also indicates that a US household uses three times more electricity for lighting and twice as much for refrigerators than in the EU.

In Europe, consumers have a choice of electricity suppliers following the liberalisation of the electricity market, which has enabled consumers to have greater choice in selecting suppliers. It has also resulted in an increase in competitiveness in the market in terms of different types of tariffs, product and service quality. On the other hand, the electricity market is still significantly controlled by certain suppliers in some countries such as Japan.[16]

Factors that form part of consumer decision-making for electricity suppliers are price range, service and delivery quality and contributions to mitigating climate change impacts, as the quality of electricity does not vary.

Third party organisations including consumer groups and NGOs have comparison websites for price ranges and tariffs. Additionally, company communication and marketing through TV adverts, leaflets and websites also provide information.

Compared to the other three sectors, the electricity sector demonstrates the highest level of proactive commitment by both companies and other stakeholders. Companies provide consumers with a wide range of interactive tools which include energy audits and providing bespoke energy saving tips. However, it should be noted that in a number of companies this is mandated by the government as part of national strategies to reduce GHG emissions.

Drivers

1) Regulation and standards

In order to tackle climate change challenges and to secure the future energy supply, governments are attempting to increase the proportion of energy from renewable sources such as wind, solar, biomass,

[16] Japanese electricity market was deregulated in 1995, however, it is still controlled by regional suppliers.

hydro and geothermal power. Table 7 highlights examples of governments' targets in promoting the use of renewable energy.

Table 7: Examples of governments' targets

Region	Target	Description
EU	20% of electricity from renewables by 2020	EU Renewables Directive requires member states of the EU to adopt national targets based on the target
UK	10% of electricity from renewables by 2010	The EU Directive also requires the member states to guarantee the source of renewable energy by issuing Renewable Electricity Guarantee of Origin (REGOs) certificates.
US	Varies state by state	Renewable Portfolio Standards (RPS) require electric utilities to increase the proportion of renewable energy used to produce electricity. For example, in California the law is 20% renewable by 2010, whereas New York has a 24% requirement by 2013.
Japan	Over 60% of domestic electricity from renewables by 2050	The Year 2050 Renewable Energy Vision aims at generating over 60% of electricity from renewables by 2050.

As an example, the Renewables Obligation (RO) was introduced in 2002 in the UK, requiring licensed electricity suppliers to source a specific percentage of the electricity they supply from renewable sources. Suppliers receive RO certificates which can be traded between suppliers to fill the gap between the required percentage of renewable energy and actual performance. For those which do not meet the requirement, they pay into a 'buyout' fund administrated by the Office of Gas and Electricity Markets (Ofgem), the gas and electricity regulator.

In addition to the national target, Japan's Top Runner Program law aims to promote energy efficiency in designated products which are used in large quantities and consume a significant amount of energy, such as appliances and heaters. The law requires manufacturers to meet energy consumption efficiency targets which are based on the value of the most energy-efficient products in the same market. This potentially enables consumers to reduce the use of electricity.

2) Communication and engagement

In general, there seems to be two ways to reduce climate change impacts through the use of electricity: the reduction of energy use and the use of renewable energy. The former requires changes in consumer behaviour such as using efficient light bulbs, reducing 'standby' losses, upgrading energy-efficient appliances and installing heat insulation. The latter entails either generating electricity at home through solar panels or small scale hydro-power or choosing an electricity supplier which produces energy from renewable sources.

In terms of changing consumers' behaviour, NGOs and consumer organisations including Greenpeace and the Green Consumer Guide, run by a UK-based independent media company Greenmedia Publishing Ltd, provide consumers with information on how to save energy in the domestic environment. Additionally, these organisations provide comparison websites which clarify the definition of green tariffs and compare tariffs offered by different suppliers.

Electricite de France (EDF) has started several trials on a Smart Meter which records the energy usage of home appliances and lighting and sends that information to customers on their computer, mobile phone or TV. This is aimed at both providing accurate bills for customers and making customers more aware of the energy and cost savings they could make. The Company has set a target of providing all customers with

Smart Meters by 2020. Other companies including American Electric Power (AEP), Fortum, Energias de Portugal (EDP) and Contact Energy have started similar services.

3) Labelling schemes

Table 8 summarises examples of labelling schemes and certification systems for electricity produced by renewable sources.

Table 8: Examples of labelling/certification systems for renewable electricity

Country	Label/Certificate	Description
Europe	Eugene[17] (the Eugene Green Energy Standard)	This is a European standard to which green electricity labelling schemes can be accredited to confirm that green electricity is generated from sustainable renewable sources. It is managed by the Eugene Network, an international NPO. Independent third party verification is required. Currently, accredited national energy labels include German OK Power, Finnish Norppa and others.
Germany	OK-Power	Established by the Oko-Institut, World Wild Fund for Nature (WWF) Germany and the Consumer Agency NRW. The label is controlled by independent accredited laboratories every year to maintain the high credibility of the label.
	Gruner Strom Label (Green Electricity Label)	It provides a gold or silver label based on its criteria. Annual control by an independent institution guarantees the compliance with the criteria and increases the credibility of the label.
	TUV mark	It is provided by TUV Management Services GmbH which guarantees that electricity is generated from renewable energy sources.
Finland	Norppa	The label is granted by the Finnish Association for Nature Conservation for energy produced from renewable sources, or energy services supporting energy efficiency.
Sweden	Three different labels available	The three types are: electricity labelled by the Good Environmental Choice Programmes of the Swedish Association for Nature Conservation, the Certified Environmental Product Declaration developed by the Swedish environmental management council and Product Specified Electricity.
US	Green-e	An independent certification and verification programme for renewable energy and greenhouse gas emission reduction. Established by a non-profit Centre for Resources (CRS), aiming at protecting consumers for the voluntary renewable energy market. The verification process audit requires providers of retail Green-e certified renewable energy products to complete an annual third-party verification audit of their renewable energy purchases and sales.

4) Independent assurance and verification

There is a wide range of green tariffs offered by electricity suppliers which will be explained in the next section.

[17] It announced that Eugene would cease to exist in its current form although the members and board would continue to work together to promote green energy in Europe. http://www.eugenestandard.org/newsletter/36.htm

Despite the recent increase in consumer willingness to reduce electricity use to tackle climate change and/or reduce costs, it seems that the transparency and reliability of these tariffs and certification schemes have not been sufficiently addressed. Consumer Focus, a UK-based consumer organisation, indicates that there are no independent accreditation or audit schemes for green energy tariffs to ensure the 'greenness' of products and to give consumer confidence.

Although there are many comparison websites which specialise in green electricity, the lack of transparency and assurance could potentially lead to a decrease of consumer confidence in renewable energy.

5) Product innovation and marketing strategies

Consumer Focus points out that the definition of 'green electricity' varies significantly from simply supplying renewable electricity to building wind turbines or investing in projects to offset household carbon emissions. The organisation alleges that the 'green tariffs' offered by electricity suppliers may actually come from non-renewable sources and therefore consumers must be wary of what companies mean by the term 'green.'

According to Consumer Focus and Ethical Consumer, the current green tariffs offered by British electricity suppliers have three different types of 'green electricity' as indicated in Table 9.

Table 9: Definitions of 'green electricity' in the UK

Tariff Type	Actual source of electricity	Details
Green source tariff	A percentage of electricity comes from renewable sources	A supplier guarantees to buy a percentage of electricity (from 10 to 100%) from a renewable generator which uses wind, hydro, biomass, tidal and wave power, geothermal and/or solar. Under the EU Renewable Directive, these tariffs need to be certified by Renewable Electricity Guarantee of Origin (REGOs). Consumers may pay more for this than for a standard tariff.
Fund based tariff	In some cases, energy provided to consumers may be from non-renewable sources.	This is designed to encourage consumers to support the construction of new facilities for renewable generation by deducting contributions from a customer's bill. As well as providing capital to build the renewable supply capacity of the future, fund based tariffs also provide grants for community or other renewable projects such as energy efficiency and awareness raising.
Carbon offset tariff	In some cases, energy provided to consumers may be from non-renewable sources.	This intends to help consumers reduce or offset climate change impacts in the household environment. In general, suppliers make a donation to a carbon reduction project through the collection deducted from a customer's bill.

EIRIS research

Investors are playing an increasingly important role in driving forward corporate responses to climate change. Investors representing over USD 15 trillion assets have signed the United Nations Principles for Responsible Investment (PRI) which promotes the increased disclosure and incorporation of ESG (environmental, social and governance) factors into investment decisions and ownership practices. Investors may engage collectively, for example, the Institutional Investor Group on Climate Change (IIGCC), a European forum for collaboration between pension funds and other institutional investors on

climate change related issues, has established a disclosure framework for the electricity sector. Investors may also engage with individual companies to improve corporate performance on climate change.

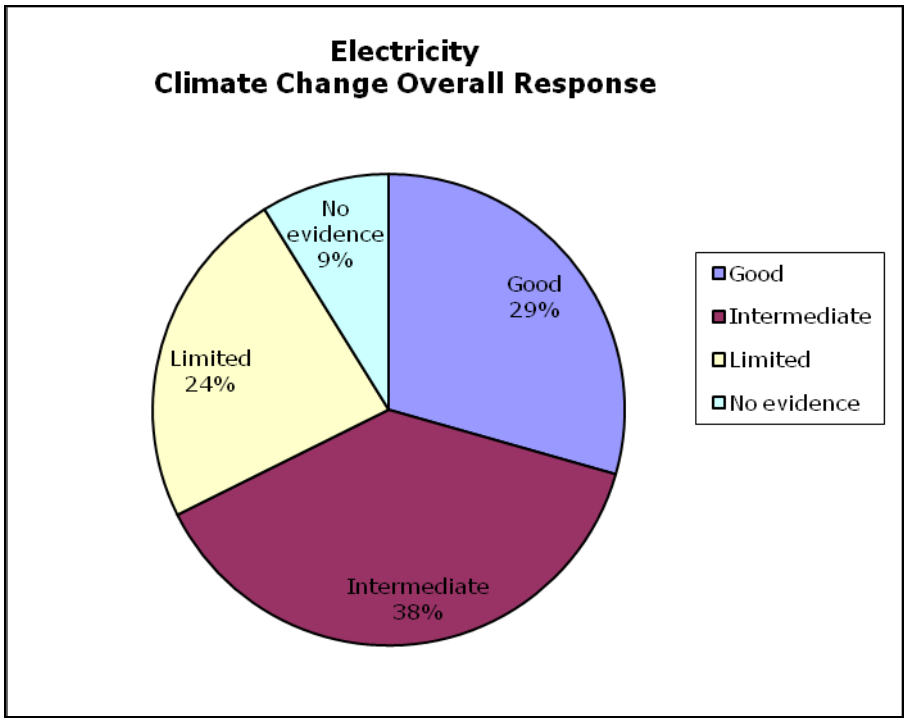
Figure 8 below shows EIRIS research on overall response to climate change in this sector, in response to major drivers such as governmental targets, regulations and investors' pressures.

- Although the largest proportion of the companies has been assessed as demonstrating intermediate commitment, almost one-third of companies have achieved a good assessment.

- In addition, only 9% have yet to make initial climate change commitments. This may be attributed to high climate change risks associated with the sector's operations which significantly rely on fossil fuels.

- However, it can be said that the sector still has not demonstrated sufficient performance in the reduction of actual operational emissions.

Figure 8: Overall response (Electricity)



Source: EIRIS

Challenges and potential future development

Key findings in this sector include:

- Many companies and consumer organisations provide a substantial amount of climate change related information including tips for reducing energy use at home, efficiency comparisons and green products.

- However, the definitions of 'green' products possibly confuse consumers due to the lack of transparency of information provided and the lack of internationally consistent accreditation schemes across the sector.

Increasing transparency in information provided by companies, government initiatives and consumer pressure to lower the price of renewable energy are amongst the key factors for promoting the use of renewable energy. As the definitions of 'green' electricity vary, there is a need to establish an internationally applicable definition of 'green electricity' alongside accompanying monitoring systems undertaken by an accredited independent organisation.

Commitment by electricity companies

This section analyses how companies that scored the highest assessment for their overall response to climate change are interfacing with consumers on the issue. The nine elements used to assess the companies aim to determine if and how companies are influencing consumer actions to reduce climate change impacts. The elements do not cover all possible initiatives electricity companies can or are undertaking to engage consumers on the issue of climate change but are representative of the broader categories of education, resources and incentives.

The assessments were based on publicly available information on the company websites applicable to residential consumers. Of the electricity companies under evaluation in this paper, 20 scored a grading of 'good' for their overall response to climate change and 19 were assessed (as one did not supply electricity to residential customers).

Table 10 illustrates that providing energy saving tips to consumers is the most common tool companies offer, followed by emissions/efficiency calculators and smart meters.

The first three elements – energy saving tips, emissions/efficiency calculators and interactive energy efficiency tools gauge the level of general information companies are making available to consumers on actions they can take to reduce their climate change impact. The presence of home energy audits, eco-certified electricity and smart meters determine whether or not the companies are providing specific information to help consumers make climate friendly decisions. Demand side incentives, renewable energy incentives and carbon offset programs identify the companies that are providing consumers with reasons to choose climate friendly options.

Table 10: Consumer interfacing element

Consumer Interfacing Element	% of companies
Energy saving tips	100%
Emissions/Efficiency calculator	63%
Interactive energy efficiency tools	53%
Home energy audits	32%
Eco certified electricity	42%
Smart meters	63%
Demand side incentives	32%
Renewable energy incentives	42%
Carbon offset programmes	21%

Table 11: Commitments by electricity companies

Company	Energy saving tips	Emissions/efficiency calculator	Interactive energy efficiency tools	Home energy audits	Eco certified electricity	Smart meters	Demand side incentives	Renewable energy incentives	Carbon offset programs	
AGL Energy (Australia)	X	X			X					
American Electric Power (US)	X	X				X				
CLP Holdings (Hong Kong)	X	X	X		X			X		
Consolidated Edison Holding (US)	X				X		X			
Contact Energy (New Zealand)	X	X	X			X		X	X	
Duke Energy (US)	X	X		X		X	X		X	
Electricite de France (France)	X	X	X	X		X	X		X	
Energias de Portugal (Portugal)	X	X	X			X				
Entergy (US)	X	X	X	X						
EVN (Austria)	X			X						
Fortum (Finland)	X				X	X		X		
FPL Group (US)	X	X	X			X	X	X		
Kansai Electric Power (Japan)	X	X			X					
Oesterreichische Elektrizitaetswirtschafts (Austria)	X									
Origin Energy (Australia)	X	X	X	X	X	X		X	X	
Pinnacle West Capital (US)	X		X		X	X		X		
RWE (Germany)	X					X		X		
Scottish and Southern Energy (UK)	X		X			X	X			
Xcel Energy (US)	X	X	X	X	X	X	X	X		
Total	**19**	**12**	**10**	**6**	**8**	**12**	**6**	**8**	**4**	

VI. OPPORTUNITIES FOR FURTHER DEVELOPMENT AND PROGRESS

Overall, there still seems to be room to improve the consumer-company interface. Each consumer-facing sector has a variety of market characteristics in terms of product range, the affordability of technology, extent of consumer contact, the availability of energy-efficient products and governmental targets and regulations which contribute to differing levels of engagement. Similarly, there are variations in climate change commitments across different countries and regions.

Raising consumer awareness remains a key challenge across all sectors focused on in this paper. Companies, governments, consumer groups, NGOs and consumers all have a role to play in this.

The following points identify potential areas of focus for each stakeholder group:

Government

- Establishing ambitious yet feasible targets and taking the lead in initiatives.
- Incentivising consumers by providing subsidies and tax reductions.
- Developing a simple and comparable rating standard for product efficiency with regular audits (with expert stakeholders).
- Establishing a consistent definition and standards for 'green products' with a set of criteria to comply with, in order to increase transparency (with expert stakeholders).

Companies

- Being aware of the decrease of consumer trust in business sectors in the current financial climate.
- Promoting interactive engagement with consumers.
- Interacting directly with consumers through regular surveys and collaborative projects with NGOs to increase credibility.
- Increasing the transparency and credibility of product emission data through independent verification or assurance.
- Improving public reporting through websites and reports.

Consumer groups and other third party organisations

- Proactively conveying consumers' message to the business sector and governments.
- Working on providing independent research, review, verification or assurance to recover consumer trust.
- Working to improve information for consumer decision-making and influencing companies by publishing unbiased information, campaigning and engaging in collaborative projects.

APPENDIXES

1. EIRIS CLIMATE CHANGE RESEARCH METHODOLOGY

With input from investor groups, NGOs and companies (including WWF, Climate Group, Carbon Trust and IIGCC), EIRIS has developed indicators to assess how companies should best address their climate change impacts and risks. EIRIS indicators cover aspects such as:

- *Governance* – e.g. does the company have a corporate-wide climate change policy, or is board remuneration linked to climate change performance.
- *Strategy* – e.g. has the company set targets.
- *Disclosure* – covering the quality of carbon data, or quantified disclosure risks or opportunities.
- *Performance* – e.g. year-on-year reduction in GHG emissions, or transformational initiatives such as large-scale investment in carbon capture and storage.

These indicators are aggregated into five assessment grades from *no evidence* to *advanced* where *good* is considered to be the level at which companies are adequately addressing the issue of climate change.

2. ELECTRICITY SECTOR INITIATIVES

Definitions:

(1) Energy saving tips

Companies received credit for this element if they dedicated a section of their website to providing tips on how consumers can make their home more energy-efficient and/or reduce carbon emissions in general. All companies evaluated met the element. For example, AGL energy and EDF have online tools for consumers to identify potential areas of energy/cost saving in the home.

(2) Emissions/efficiency calculators

Companies received credit for this element if they provided an online calculator for carbon emissions and/or energy efficiency related calculations. Kansai Electric Power, for instance, provides Eco eLife Check tool on its website that allows consumers to calculate their CO2 output, compare their results with the average and check their position in a national ranking.

(3) Interactive energy efficiency tools

Companies received credit for this element for a resource that provides feedback on improving home energy efficiency based on information provided by consumers. Most resources were web-based and required varying levels of consumer input ranging from electricity bill information to general questions about electricity consumption habits. EDP, CLP Holdings and EDF provide consumers with analysis of their energy consumption and tips for energy saving based on consumers' input/bills.

(4) Home energy audits

Companies offering in-home energy audits to consumers met this element. For example, Duke Energy offers eligible homeowners a Home Energy House Call, a free in-house energy analysis.

(5) Eco certified electricity

Companies met this element if they offered electricity from renewable sources that are certified by an independent third party system. Companies in this category supply electricity certified by industrial associations, NGOs, a national voluntary certification programme and a national environmental association.

(6) Smart Meters

Companies engaged in initiatives to test and/or implement smart meters or similar technology received credit for this element. Smart meters, considered the next generation of electricity and gas meters, provide consumers with real-time information about the energy they are using. The assertion is that smart meters will allow consumers to better manage their energy consumption and make more energy-efficient choices. For example the real-time information would allow consumers to decrease energy consumption in periods of higher rates.

(7) Demand side incentives

Companies providing consumers with incentives to reduce the use of electricity received credit for this element. Examples include Consolidated Edison Holding, which administers demand response programmes that involve the temporary reduction and /or shifting of electricity usage, especially during peak demand periods, and rewards participating consumers with financial incentives.

(8) Renewable energy incentives

Companies that provide incentives for consumers to sign for renewably sourced electricity received credit for this element. Xcel energy offers Solar Rewards programmes which allow consumers to receive cash back for installing a photovoltaic system at home. Similarly, Origin Energy offers solar heating for consumers' hot water and solar electricity systems with interest free pay by instalment plans. Norppa electricity sourced from renewable sources by Fortum is priced at the same cost as regular energy from non-renewable sources.

(9) Carbon offset programs

Companies offering direct or indirect means to help consumers offset carbon emissions received credit for this element. Two main features were identified in this category: (a) consumers pay extra money to offset their emissions by supporting programmes that reduce or prevent the release of CO2 emissions, or invest in the future construction of renewable energy related equipment/facilities; (b) a company estimates the emissions produced by consumers' consumption and offsets them through schemes that support a range of verified greenhouse gas offset programmes.

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