



Making business sense  
of climate change

# Brand value at risk from climate change



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**Appendices available separately from the Carbon Trust**

# Foreword

Set up in 2001, the Carbon Trust is an independent company, business led and funded by government, tasked with reducing greenhouse gas emissions in business and the public sector. We work directly with companies of all sizes to help reduce carbon emissions and develop new low carbon technologies. We also periodically undertake detailed research to improve understanding of climate change issues.

## Why did we undertake this study?

It is a misconception that only 'industrial' heavy users of energy are impacted by a carbon constrained world. When in 2003 the Carbon Trust threw down the gauntlet to large companies in the UK concerned about climate change and its impact on their businesses, inviting them to come and work jointly with the Carbon Trust on its new Carbon Management programme, a much broader range of companies responded. These included supermarkets, food manufacturers and several high street banks: many companies for whom climate change is not such an obvious issue. What most of them had in common was a strong dependence on their consumer perception or consumer facing 'brand'.

Other sources have regularly quoted 'reputational risk or brand risk' as a further element of value at risk from climate change measures, over and above exposure to energy and other greenhouse gas intensive operations. However, no numbers have been prepared in an attempt to quantify this. It is recognised as significant, but its scope unquantified.

Against this background, we commissioned Lippincott Mercer, a leading brand advisory firm, to undertake this study. This report reflects a summary of their work.

## Who should it be of interest to?

This study addresses a range of audiences, in both the corporate and investor communities. Brands traditionally fall under the remit of

marketing, but the *risk to a company's value from an issue such as climate change* is of much wider interest.

## How reliable are the results?

It is difficult to put hard values on intangible assets such as brands, although it is often necessary to do so, and methodologies do exist. We felt it important that we attempt to quantify their contribution to value with a *standardised approach*, in order to make sense of the resulting outputs. The methodology links back to tangible examples of the impact on premium pricing and market share that can be achieved by a strongly branded product over and above a weaker competitor. We have made our approach clear; if you disagree with a particular assumption it is possible to adjust the outputs accordingly.

## What does this mean for companies?

As this report illustrates, climate change is not *just* an issue for industrial companies or sectors, such as oil & gas, traditionally linked with the issue.

There are three ways in which climate change can impact companies: regulatory risk, physical risk and business risk. Companies subjected to emissions regulation and buildings compliance, for example, are exposed to *regulatory risk*. Certain sectors, particularly property and insurance are subject to the *physical risk* of the implications of climate change.

The brand value risk identified and explored in this report falls into the third category of climate change exposure, **business risk**. Other types of business risk include changing demand for a company's products, or a changing competitive landscape (higher energy intensive products becoming less competitive versus competing alternatives).

**Tom Delay**

*Chief Executive, the Carbon Trust*

The Carbon Trust, through its Carbon Management programme, helps companies understand the strategic impact of climate change on their businesses, and take action. For more details on this programme, and other Carbon Trust activity, please email [info@thecarbontrust.co.uk](mailto:info@thecarbontrust.co.uk) or visit [www.thecarbontrust.co.uk](http://www.thecarbontrust.co.uk).

# Executive Summary

Climate change is not yet a significant consumer issue. Two thirds of Britons say they know 'a great deal' or 'a fair amount' about the subject, but the link between their actions as individuals and climate change is not yet being widely made.

However, analysis of previous environmental, health or social concerns (from CFCs to organic food to sweatshop labour) indicates this can change quite rapidly. This report argues that climate change **will** become more visible as an issue over the next 5 years, from extreme weather events, to press coverage of the political debate over issues such as post-2012 international emissions regulation and the need or otherwise for nuclear power. This report argues that in this context, ***climate change could become a mainstream consumer issue by 2010.***

How much this matters to companies will depend upon their sector. This report analyses six sectors in detail:

- Airlines and Food & Beverages were found to have the highest intangible value at risk (50% and 10% of market value respectively) – interestingly more than Oil & Gas.

- Results for our other four sectors – Oil & Gas, Retail, Banking and Telecommunications – were much lower at less than 2-3% of market value; however even this small percentage can still equate to several billions of pounds in value in the UK market (FTSE All Share) alone.\*

The analysis has focused on consumer brand value. Other reputational elements at risk include a company's reputation amongst its business customers, staff, suppliers, shareholders and regulators.

The findings raise a series of challenging questions. If brand value is at risk from climate change, there is an opportunity for differentiation against competitors. Forward looking companies at least need to assess the risks and issues, to avoid falling behind in such a mainstream consumer issue. Companies also need to understand the response time. How long is the lead time for a supermarket to start offering a local alternative to long-haul fresh vegetables? How does this compare to the time it would take for an airline to replace an ageing fleet stock? In many cases, even though the consumer interest may be several years away, action is needed now.

To summarise,

- 1 Climate change could plausibly become a ***mainstream consumer issue*** in the next five years.
- 2 When this happens, there will be ***reputational implications*** for many sectors not seen to be addressing the issue appropriately.
- 3 In some sectors, the lead time for action could be several years, ***leaving unprepared companies at risk.***

\* The range of market value at risk for each of the six sectors analysed is up to c. £6bn

# 1. Introduction and Methodology

The objective of this work was to assess, approximately but in quantitative financial terms, the brand value at risk for companies in different sectors as a result of their response to climate change issues.

*Our focus was not on assessing the impact of climate change on brand value today, which is generally very small, but on projecting the likely development of this impact by 2010.* In order to understand how brand value is likely to become at risk from climate change between now and 2010 we need to understand a sector's exposure to climate change issues; the changes in company and consumer behaviour likely in response to climate change issues; and how these will impact brand value. This involves three lines of analysis:

- **How important is brand image to each sector?**  
Understanding brand dynamics in each sector today, determining what proportion of market value today can be attributed to brand image, and is therefore potentially at stake if climate change issues affect that image.
- **How have consumers responded in the past to similar issues?**  
Understanding precedents for how companies' responses to social issues have historically been perceived by consumers and have affected brand value.
- **How exposed is each sector to climate change issues?**  
Understanding the operational exposure to climate change for companies in each sector, and how this impact may develop over the next few years, potentially influencing brand dynamics as suggested by the precedents.

The extent to which brand value is likely to become at risk from climate change depends on a combination of the three.

Six sectors were selected for analysis, following initial screening. These were:

Selected sectors*	
'High carbon'	Airlines
	Oil & Gas
'Medium carbon'	Food & Beverage Production
	Food Retail
'Low carbon'	Telecommunications
	Banking

\* See Appendices for data behind 'high', 'medium' and 'low' carbon categorisation

We have tested the sector-by-sector conclusions, where possible, with a range of company contacts.

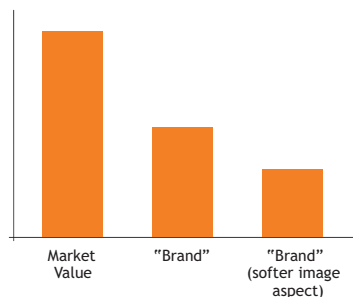
## 2. Valuing Intangibles

Our first line of analysis was to understand the importance of brand value to each of our six sectors.

There are many legitimate definitions of brand, and multiple approaches to brand valuation. In essence, most focus on how brands shift consumers' demand for competing companies' products and services. The financial value of a brand is derived from the price premium and/or market share advantage that a strongly branded product supports, versus a weaker branded, or unbranded rival.

Understanding brand dynamics for this analysis involved two steps for each sector:

- Valuing brand as a proportion of a company's market value; and
- Estimating the proportion of this brand value that is attributable to softer 'image' factors.



### 2.1 Valuing brand equity as a proportion of a company's market value

We have used two complementary approaches to valuing total brand equity.

The first is a 'top-down' approach based on the published valuations provided by Interbrand for a range of large companies, adjusted where necessary to fit the brand definition we are using above.

The second is a 'bottom-up' approach based on proprietary research and analyses conducted by Lippincott Mercer with individual companies in the sectors being studied. In some cases these are based on simulated consumer choices, using discrete choice modelling to quantify the impact of different attributes of an offer in driving consumer choice. In some cases they are based on in-market measurements of the relative share or premium competing brands achieve in like-for-like situations.

The analysis for each sector is discussed the Appendices, available separately from the Carbon Trust.

#### Interbrand published ('top down')

- Interbrand is one of the best known names in the brand valuation business, due in part to their published valuation each year of the top 100 brands worldwide.
- Comparison to total market value.
- We have used this publicly available information for the top down analysis work.
- Less applicable in some service sectors.

#### Lippincott Mercer ('bottom up')

- Bottom up modelling, using specific case studies.
- Based on impact on market share or price premium sustained by a stronger branded product versus a weaker or unbranded competitor.
- Resulting valuation depends on business mix, cost structure (fixed/variable) and other business dynamics.

## 2.2 Estimating the proportion of brand equity that is attributable to softer 'image' aspects

It is necessary to estimate the proportion of brand equity for each sector that is attributable to softer 'image' aspects of brand strength, as opposed to perceptions of a product or service experience.

***It is this 'image' aspect that is most vulnerable to consumers' perceptions of a company's response to an issue such as climate change.***

In some sectors, assessing the relative role of image vs. experience is a matter of common sense. In others it may be less obvious, but is revealed quantitatively in some of the Lippincott Mercer simulated-choice research conducted with individual companies.

For example, in Food Retail, most of the brand difference between two competitors can be explained by the difference in customers' perceptions of the experience of shopping at the two stores: perceptions of the range and price of the products, the availability of trolleys, the service at check-out and so on. Pure image factors – customers' perceptions of any two competing brands in terms of trust, affinity with themselves, innovation etc. – contribute only a tenth as much as experience to the overall brand impact. In Food Manufacturing, by contrast, these softer image factors contribute most of the

overall brand impact: the price and volume premium in branded products is much greater than can be explained by the actual product differences that consumers experience.

## 2.3 Results for our six sectors

Based on these analyses, we can quantify the total brand value and brand image value for each sector, expressed as a proportion of market value for typical large players within the sector (see table). Details of the calculations and sources for each sector are given in the Appendices, available separately from the Carbon Trust.

Airlines have the largest exposure to brand value, with over 100% of their market value linked to brand. This is in part linked to the low levels of profitability and valuations in the sector. If a strongly branded airline were to lose all the advantages associated with its brand, the loss of sales (together with airline's high fixed cost base) would cause a positive operating profit to switch to strongly negative. A smaller, yet still very significant, 50% of market value is attributable to brand image.

By contrast, brand value for the Oil and Gas sector is much lower (2-2.5%). Virtually all of this is image related, given the commodity status of petrol. Consumer brand is linked to downstream retail operations only, which are a small value component of a typical integrated oil and gas company.

Brand value as percentage of market value		
Sector	Brand (All)	Brand (Image only)
Airlines	>100%	50%
Oil & Gas	2-2.5%	2-2.5%
Food & Beverages Production	68%	55%
Food Retail	52%	5%
Telecommunications	17%	10%
Banking	17%	6%

Source: Lippincott Mercer analysis



Food & Beverages Production and Food Retail both have high brand values. However, as explained above, the dynamics for each are very different. In choices between branded food and beverage products, image factors account for around 80% of the total brand value. In choices between branded retailers however, other factors dominate. As a result, brand image is of high importance to branded Food & Beverage producers, but much less so for Retailers, such as supermarkets.

Brand value for Telecommunications and Banking is around 17%, dropping to 10% and 6% respectively when just brand image is considered.

## 2.4 Scope of analysis

Finally, the definition of brand value used here focuses on the direct impact of brand in shifting customer (generally consumer) demand. As discussed later, ***other aspects of brand*** – its direct influence on employees, investors, and popular and regulatory sentiment – will also be affected by climate change.

## 3. Carbon in the context of precedents

The second line of analysis is to understand precedents for how companies' responses to other social and environmental issues have been perceived by consumers and have affected brand value.

Our focus has been to learn from these case studies the dynamics of the 'tipping point' at which they moved from their niches to the mainstream market, and how they affected consumer behaviour and, where relevant, companies' brands. We then use this as a basis from which to predict how consumers' response to climate change might evolve between now and 2010.

For brand value to be at risk from climate change issues consumers need to

- **be concerned** about climate change;
- **make the link** between the environmental issue and their daily actions; and
- modify their **purchase behaviour** to reflect their concerns about how companies are addressing the issue.

### **Today this is not happening significantly.**

Although basic awareness of climate change as an environmental issue is high, people are not making the link between climate change and their daily actions. That the climate is changing is an increasingly accepted reality, but people are not yet making the link between energy usage and climate change (that CO<sub>2</sub> emissions are a major cause of climate change is also not widely understood). While what consumers 'do' may be soon linked to climate change (initial focus likely to be on electricity and gas usage), the impact of what they 'buy' requires much further personal understanding.

However, experience of other social and environmental issues suggests that this **situation can change quite rapidly**. In this chapter we

review the experience of these precedents, and compare it to ways in which consumers are likely to be increasingly exposed to climate change issues over the next few years, to argue why a 'tipping point' in consumer behaviour regarding climate change is a reasonable planning likelihood between now and 2010.

### 3.1 Carbon responsibility is not today a strong driver of brand image

The public today are quite aware of the prospect of climate change. Erratic weather and an increasing incidence of natural disasters have helped to raise popular awareness. 'Global warming' has become a household term. As illustrated below, only 1% of Britons claim never to have heard about global warming, and two-thirds (67%) say they know 'a great deal' or 'a fair amount' about it. In April 2004, Prime Minister Tony Blair warned that there is 'no bigger long-term question facing the global community' than the threat of climate change.

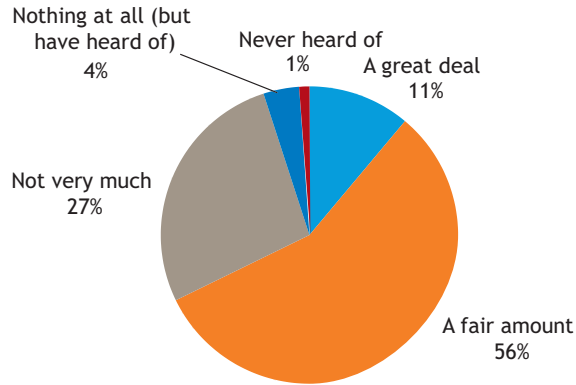
Understanding of the details behind climate change mitigation (for example knowledge of the Kyoto Protocol) is considerably lower. However, media coverage of the topic is steadily growing.

However, **awareness does not necessarily translate into immediate concern** or action.

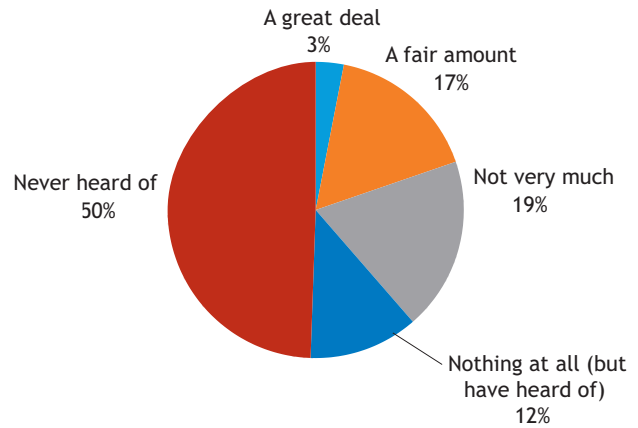
While awareness of global warming is high, other issues dominate peoples' concerns. Since a brief period of prominence in the late 1980s and early 1990s, the environment has become less important to people (see figure on page 10). Terrorism, crime, the National Health Service and education are all seen to have a more immediate, personal and local impact. Climate change may be 'the most important **environmental** issue'<sup>1</sup> facing the world today but it is still seen as less serious than other issues.

**Familiarity with global warming and the Kyoto Protocol <sup>i</sup>**  
 (How much, if anything, do you know about ...)

**Global Warming**



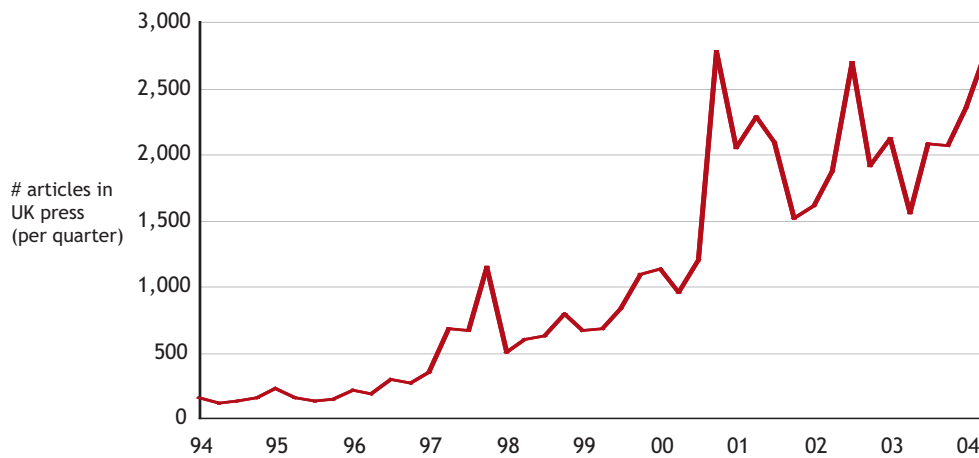
**The Kyoto Protocol**



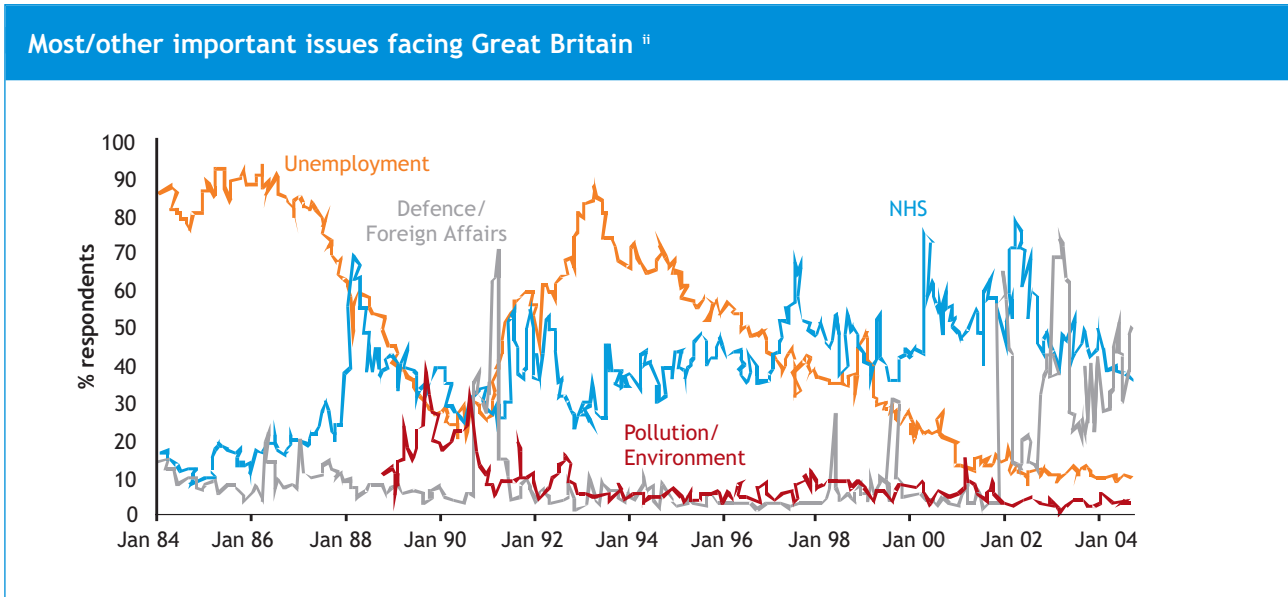
Source: MORI  
 Base: 1,004 British adults, May 2004

**Growth in UK press mentions of climate change**  
 (Proxy for awareness)

**Growth in UK press mentions of climate change**  
 (Proxy for awareness)



Source: Factiva, UK English language press mentions including global warming, climate change, greenhouse effect or greenhouse gas



Source: MORI  
Base: c. approx 2,000 British adults

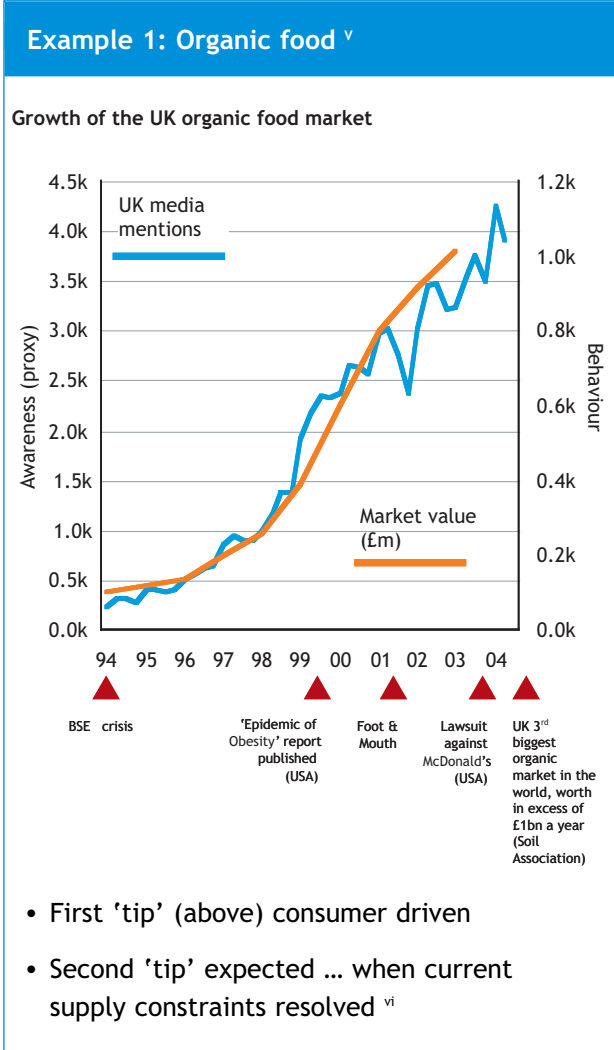
One indication of how far the public have to go in translating their awareness into action is that, according to research in 2002, 70% of Britons are unable to name the gas that most contributes to global warming.<sup>iii</sup>

With consumer appreciation of their personal contribution to the causes and impacts of emissions so low today, it is inevitable that mainstream consumer perceptions and behaviour are not affected by a company’s stance on climate change. **The question is how quickly this situation may change.**

### 3.2 Small changes can drive big behavioural impacts

Small changes can disrupt an apparently stable situation. Once that equilibrium is disturbed, surprisingly large changes can occur, surprisingly fast. This is the mechanism that may drive mainstream consumers to respond to climate change, quickly and on a large scale.

In his book “The Tipping Point”,<sup>iv</sup> Malcolm Gladwell adapts epidemiology concepts to explain how social phenomena can ‘tip’. **In recent years there have been some significant ‘tips’ where social and environmental concerns have resulted in dramatic changes in consumer behaviour.** Subject to favourable conditions, a number of issues have moved from their niches



- First ‘tip’ (above) consumer driven
- Second ‘tip’ expected ... when current supply constraints resolved<sup>vi</sup>

to the mainstream market. Leaded petrol is no longer widely available. All tuna sales are now dolphin-friendly. Consumers now expect supermarkets to sell organic food.

### Example 2: Unleaded petrol

- Public awareness (cumulative toxin, playgrounds)
- Technology available
- Petrol tax intervention (freeing up 2\* and 3\* pumps) required to drive main 'tip'
- 90% cut over 10 years

'Tips' in social and environmental issues happen when consumers are engaged in two senses: they both want to, and can, take action. Different factors drive these two different aspects of the transition. A review of past precedents suggests **five generalised factors that help to drive a tip**, from those most focused on helping consumers to want to act, to those most focused on helping consumers to be able to act:

- a **Spots of consumer interest.** Issues of immediate personal impact provoke the strongest reactions. Older first-time mothers' health concerns drove the original 'tip' in the growth of organic food. Parents concerned with the effects of kerbside lead levels on children in school playgrounds were early adopters of cars that ran on unleaded petrol. Cafédirect, the leading Fairtrade coffee brand gained a 10.5% share of the UK market through focusing its marketing on students.<sup>vii</sup>

### Example 3: CFCs (ozone layer)

- No feasible substitute when problem first identified
- Strong press coverage
- Some (limited) consumer move away from aerosol deodorants, etc.
- Switch 'tipped' when technology available and regulation in place

- b **Intensity of exposure.** As with all advertising, basic prompted awareness is insufficient. An intensity of general exposure helps consumers to internalise and relate to an issue, not just be aware of it. Highly publicised food safety

scares and fears over GM accelerated the growth of organic food. A video of dolphins being drowned in tuna nets, which was leaked to the US press, drove demand for dolphin-friendly tuna. A leaked audit associated Nike with sweatshops. Sales of organic food have grown in close alignment with the number of media mentions.

### Example 4: Sweatshops

- Pressure group driven
- Much greater awareness of third world
- Nike specifically targeted
- Nike sales suffered, but issue never taken to broader next level
- Limited alternatives for quality sports wear

- c **Pull from leading countries.** Another country leading in a particular social or environmental issue can accelerate consumers' response. First, it provides the information and example to encourage action, by showing what can be done. The Californian courts ruling on Nike's reliance on sweatshop labour provoked widespread acknowledgement and boycotting of the brand internationally. Secondly, it can drive companies to introduce practices that are then offered internationally. Developments (such as manufacturer take-back) in recycling in Germany, where 50% of household waste is recycled, are now driving an increase in levels in England, where only 14.5% is recycled.<sup>viii</sup>
- d **Enabling through regulation.** The extent of change is often amplified by regulation. From first lobbying to final introduction the regulatory process is slow, but by working in parallel with other parts of the transition its eventual appearance can be decisive in driving a tip. While other factors had already led to the development and increasing sales of cars that could run on unleaded petrol, in the UK it was a tax intervention that caused a tip in unleaded petrol sales. By increasing tax on two- and three-star leaded petrol, such that their price became the same as for four-star,

the Government effectively freed the tanks and pumps at filling stations that were needed to supply unleaded. Manipulating duty to position unleaded as an alternative cheaper fuel then further encouraged conversion.<sup>ix</sup>

- e **Realistic available choices.** Dramatic 'tips' in social and environmental issues can only occur when consumers have the opportunity to change their behaviour. Purchasers of refrigerators may have been concerned about CFC damage to the ozone layer, but until HCFC- and HFC-based products became available there was no practical alternative. Before the 1980s, consumers aware of the harmful affects of lead could do little to reduce their emissions. Insufficient organic

supply currently prevents consumers switching in areas other than fresh produce.

### 3.3 Carbon will 'tip' between now and 2010

While climate change issues do not currently affect mainstream consumer behaviour, there are many developments expected between now and 2010 that collectively match the characteristics described above, and are therefore likely to contribute to a 'tip' in consumer behaviour.

Although only five years away, the following speculative scenario for early 2010 is quite plausible:

#### Climate Change Snapshot, UK, 2010 – speculative scenario

One hundred thousand northern Europeans died in the heat wave of 2008. California has imposed permanent water rationing. Relief agencies warn that late rains again raise the spectre of widespread hunger in southern Africa. Bangladesh is inundated by catastrophic floods, though little media attention is paid to this now regular occurrence.

Cases of malaria have been reported among holidaymakers in Greece and Turkey. Crystal suspends 20 per cent of its ski holidays after a third season of poor snow.

Within the UK, bouts of erratic weather have become an annual event. Augusts are wet; gale-force winds common; heavy snowfalls are expected in February. The Thames Barrier is being urgently extended to protect Canary Wharf after floods caused £100 million of damage. One in ten Cornish homeowners are no longer able to get their homes insured.

Many countries now see new nuclear power as essential; the UK's White Paper on 'The Need for Nuclear', published in 2007, generated protest marches and extremely large media opposition. Plans for Heathrow Terminal 6 have been shelved, although aviation continues to grow. European Union aviation CO<sub>2</sub> emissions have been subject to 'cap and trade' regulation since 2008. CO<sub>2</sub> implications of flights are now voluntarily included on passenger e-tickets.

Energy labels are now in place in all supermarkets, banks and shopping centres. Energy certificates have been a mandatory part of house sales since mid-2006; some mortgage lenders are now proactively offering discounts to purchasers of AB rated homes.

Targets for greenhouse gas emissions from most developed-world countries (excluding the USA) are now legally binding for the period 2008-12 since Russia ratified the Kyoto treaty in 2005. Discussions on post 2012 emissions regulation continue to stall over developing country targets and the transport sector. International tension mounts as emissions in the US, China and India continue to increase.

Most of the volume car manufacturers now offer hybrid-fuel cars with high mpg and ultra-low emissions. Desirable, hybrid SUVs have been available from Lexus and others since 2005. Luxury with responsibility has become the motoring chic. GDP growth remains strong.

The scenario above is clearly speculative and only one of many possible outcomes. However, it illustrates a plausible scenario for the combined impact of four different ways in which issues of climate change will become more visible over the next half decade:

- a Severe weather.** Although the full effects of climate change will be felt only in the long-term, the first serious signs of change may be seen over the next five years. Even if underlying trends are less visible, incidences of unpredictable events such as droughts, hurricanes and flash floods are already becoming more frequent and severe.

Severe weather is already linked to climate change by the press; any increase in occurrence will likely reinforce the reality and permanency of change.

- b Regulatory impact.** A range of regulatory measures are already in place in the UK and elsewhere to encourage the development of a lower carbon economy. New measures are likely to continue to be introduced. These include 'cap and trade' schemes for carbon emissions (such as the European Emissions Trading Scheme, which started trading on 1st January 2005), and mechanisms to support greater deployment of renewable energy (such as the UK's Renewables Obligation requirement on electricity generators to source a growing percentage of their power from renewable sources).

The results of these measures will be fairly visible – ranging from potential increases in electricity pricing (linked to Emissions Trading carbon prices), to the likely government-led promotion of energy efficiency awareness (through Energy Labelling of products and buildings), to the visible continued deployment of renewable power generation (including on- and off-shore wind power, and solar power in sunnier climates).

- c Politics/current affairs.** Over the next five years political debate will frequently be drawn to climate change. The EU has ambitious targets to tackle emissions although

it is questionable whether even those for 2008-2012 will definitely be met across the whole region.

Even following ratification of the Kyoto Protocol by Russia, and the protocol's subsequent entry into force, emissions in the US, and developing world emissions (most notably China and India) will remain largely unregulated until 2013 at the earliest.

Political issues such as the international tensions over post-Kyoto (ie 2013 and beyond) emissions targets and the re-opening of the nuclear debate are likely to be the subject of much contention. This will not only increase the intensity of exposure of many people to climate change issues, but will drive strong consumer interest in some, turning passive awareness into more passionate engagement.

- d Commercial anticipation.** Many companies are already aware of the growing need to address climate change. Those anticipating forthcoming demand and legislation are taking a lead in the response to climate change. Innovative carbon-sensitive products are already in the pipeline.

Insurance companies and banks are already developing tools to predict the likely climate change impact on their assets. Toyota has licensed its innovative hybrid fuel technology to other car manufacturers, and will be launching a Lexus-branded hybrid SUV in 2005. Even in less carbon-intense sectors, forward-looking companies are already reviewing their operations and sourcing of materials to be able to communicate a carbon-responsible position, such as HSBC's announced plan to become 'carbon neutral'. These anticipatory moves will explicitly make the link to consumers' actions. They will bring consumers products developed for the most aware and concerned markets, and will offer consumers realistic choices without big compromises in lifestyle.

Across these four fronts, climate change issues exhibit all of the five different conditions that have driven other issues to a 'tipping point' of consumer engagement.

**Climate change also has two other characteristics** not shared with the precedents we have reviewed, that may further accelerate consumer engagement:

- The first is ***the breadth of ways in which it affects people***, and therefore the number of different triggers that people may respond to; many other issues have depended on particular triggers relevant to only particular groups of people, but here many people may climb on

board the same platform for very different reasons.

- The second is ***the breadth of product and service categories the issue affects***, encouraging cross-fertilization between categories – for example, initial exposure to the issues through low-emission hybrid cars may translate into emission awareness that consumers take to other categories of purchase.

For all these reasons, and despite the inevitable unknowns in any one of the predictions above, ***it is prudent to plan for a substantial change in consumer behaviour in this area.***



## 4. Understanding operational exposure to climate change

The third line of analysis was to understand, in general and for each sector, the operational exposure to climate change issues and how this exposure may develop over the next few years. This is used in our analysis in two ways:

- To understand the *issues specific to each sector* that may concern consumers sufficiently to influence their brand choices, and that may give the brands competing in each sector the opportunity for differentiation in their response.
- To develop a *quantitative scale of operational exposure to climate change*, so that each sector's operational exposure and intangible (brand) value at risk can be compared on a like-for-like basis.

### 4.1 Understanding the issues for each sector

The Carbon Trust has conducted and commissioned various studies on the tangible impacts of climate change and works directly in this area. In 2003-2004, the Carbon Trust successfully piloted the Carbon Management programme with 50 leading UK companies including sixteen of the FTSE100. The following sectors were represented: manufacturing, retail, finance, pharmaceuticals, utilities, education, transport, property and construction, and food and drink. Through this work, the Carbon Trust has first hand experience of the tangible implications of climate change on a range of businesses. Our analysis in this chapter and the appendices was based in part on these previous studies, supplemented with further desk research.

For high carbon sectors such as airlines and oil & gas, climate change is already a key strategic issue.

- **Aviation** is currently outside of the EU ETS and aviation fuel is untaxed. However regulation is

considered inevitable and individual airlines are actively involved in the debate over how greenhouse gas emissions from their sector should be regulated from 2008.

- As one of the main sources of fossil fuels, the **Oil and Gas** sector is exposed to long term business uncertainty, although nearer term, climate change concerns may actually increase demand for gas.<sup>x</sup> Today, the sector's main direct operational exposure to climate change is as an energy intensive manufacturing sector.

For both these sectors, energy efficiency would be a cost issue in its own right, even without the additional pressure of the need to reduce energy related emissions under climate change regulation.

For medium and low carbon sectors, the position varies:

- **Food and beverage** manufacturers while neither producing a directly carbon-related product nor overtly driven by energy, still have moderate carbon intensity through energy use in their manufacturing processes. There is also long term potential supply chain risk, due to weather disruptions potentially affecting its sourcing of key raw materials for certain products.
- Similarly, the **Food Retail** sector has moderate carbon intensity through its own energy use. Retailers are exposed to the rising costs of transportation, and heating, refrigerating and lighting their premises. Growth in demand for fresh and exotic produce all year round is being met by increasing refrigeration of the supply chain and a greater proportion of products being flown in from abroad.
- The **Banking** and **Telecoms** sectors have much lower carbon intensity in their own direct operations, as illustrated in the analysis below

and in the Appendices, available separately from the Carbon Trust. However in both sectors, there are material indirect linkages to higher carbon intensity.

For telecoms, this is the energy use associated with the use of their products by customers. This raises the softer issue of the level of responsibility of a single sector, but does not directly add to the telecom sector's exposure.

By comparison, banks are heavily indirectly exposed, through the potential financial impact of climate change on others that they may lend to or invest in: from homeowners with mortgages who now live on flood plains, to manufacturers exposed to emissions regulation, to renewable energy projects seeking finance. For the banking sector, there is a serious value risk if banks fail to accurately assess and manage their financial exposure to the risks of others.

These issues, together with the implications for brand valuation and competitiveness are described in detail for each sector in the Appendices, available separately from the Carbon Trust.

## 4.2 Basic CO<sub>2</sub> intensity of EBITDA

Companies in most sectors now provide information on their annual emissions of carbon dioxide and other greenhouse gases. To develop a quantitative scale of operational exposure to climate change for each sector, we analysed the mass of carbon dioxide emitted by representative firms in each sector, divided by that company's EBITDA.\* Details on the assumptions used are in the Appendices, available separately from the Carbon Trust.<sup>xi</sup>

These ratios, shown in the table below, reflect the carbon dioxide and other greenhouse gas emissions linked directly to each sector's operations.

Basic CO <sub>2</sub> intensity of EBITDA		
Category	Sector	Kg CO <sub>2</sub> eq/£ EBITDA
'High Carbon'	Airlines	14.5
	Oil & Gas	7.94
'Medium Carbon'	Food & Beverage Production	0.85
	Food Retail	0.70
'Low Carbon'	Telecommunications	0.26
	Banking	0.04

Source: Lippincott Mercer analysis

\* EBITDA is the abbreviation for Earnings before Interest, Tax, Depreciation and Amortisation - a commonly used measurement of profit.

### 4.3 Adjusted CO<sub>2</sub> intensity of EBITDA

Emission levels are a good starting proxy for operational exposure to climate change. However, there are other tangible impacts, for example from risks to global supply chains from severe weather in source countries. We have included these factors by upweighting the emissions figure in three specific sectors, as reflected by the green bars in the figure below and the accompanying comments:

- **Oil and Gas:** The EBITDA calculations capture the sectors exposure as an energy intensive manufacturing sector. However, they do not reflect the longer term industry uncertainty; for this we have assumed a 30% additional impact.
- **Food and Beverages:** The EBITDA calculations capture the sector's exposure through its energy costs. However, they do not reflect the potential supply chain risk due to the physical effects of climate change in the future. There are already reports of occasional supply chain disruption in some areas such as tea. This will clearly vary by company and product, but we have assumed a 15% additional risk impact. The impact may be greater longer term, but on a 5 year time horizon, this appears reasonable.
- **Banking:** The banking industry's direct CO<sub>2</sub> exposure is low and captured by the EBITDA calculations. However, the sector is heavily indirectly exposed through its broader lending and investment activities. We have assumed a further 10x exposure from such indirect operations.

The following graph summarises the operational exposure to climate change (or 'adjusted CO<sub>2</sub> intensity of EBITDA') for each of our six sectors:

Whilst not core to the analysis of brand value at risk, this figure provides a useful cross check and comparison. The numbers are used in a later scatter graph to show that it is not necessarily the

sectors with greatest operational exposure to climate change that face the largest brand risk on this issue.

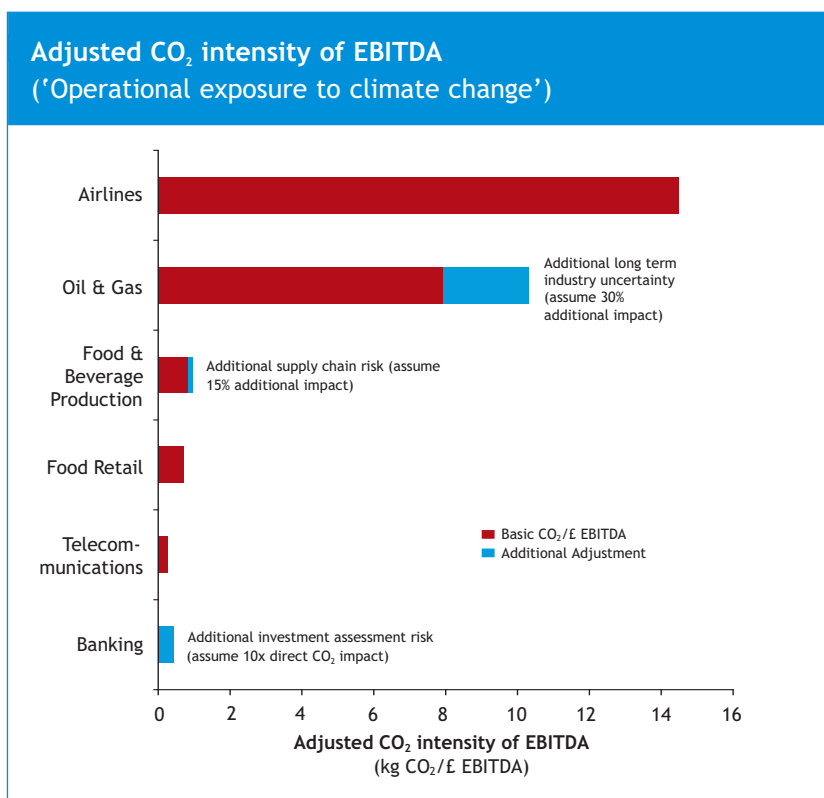
### 4.4 Considerations on CO<sub>2</sub> intensity calculations

It is important to note that this *operational exposure is not the same as tangible value at risk*.

Airlines, for example, while highly carbon-intensive, fall outside current emissions regulation. Despite their high exposure to climate change, their tangible value at risk depends on the format and timing of future regulation.

Other sectors face different costs per tonne of carbon dioxide and have differing abilities to pass through additional costs incurred to customers. Analysis published in 2004 by the Carbon Trust explored the issues of price pass-through and competitiveness implications of the forthcoming European Emissions Trading Scheme (EU ETS).<sup>xii</sup>

**Further quantitative analysis is expected later in 2005 on the broader tangible value implications of climate change.**



# 5. Results and Conclusions

Section 2 analysed the brand value at risk from image factors for each of the six sectors analysed in this report. Only some of this brand value, however, is at risk from issues related to climate change, depending upon the perceived relevance of carbon-related issues. This relevance varies by sector and depends on three things:

- The importance of carbon as a tangible issue;
- The visibility/directness of that sector's link with climate change; and

- The opportunities that exist for companies to differentiate based on their relative carbon-friendliness.

These issues are discussed for each of our six sectors in the Appendices (available separately from the Carbon Trust), and the results are summarised below.

## 5.1 Key Drivers

The drivers varied considerably by sector.

### High Carbon Sectors: Airlines and Oil & Gas

For sectors with high, evident carbon dioxide emissions, such as airlines and the oil and gas industry, customers may be most aware of climate change issues, but do not in general have easy substitutes. The choices that would seriously reduce emissions – for example, choosing not to fly as regularly – may become more prevalent under extreme pressure, but they involve major sacrifices (or additional costs) in some of the things that matter most strongly to people.

Given this lack of easy substitutes, consumers (as they start to consider climate change more) may focus on relative company performance. If you are still determined to fly, is there a more carbon responsible airline? If you don't want to cut back on driving, is there a more climate-responsible petrol company from which to buy petrol?

Within airlines, the question revolves around whether there would be significant differences in CO<sub>2</sub> performance between different airlines, if consumer interest in this grew. This is complex, depending upon age of fleet and type of airline. Fuel is a high cost for all airlines at around 15% of revenues, so airlines already have the incentive to optimise engine efficiency. However, maximising engine efficiency is not necessarily the same as minimising CO<sub>2</sub> emissions. No one airline has yet sought to take the position of 'leading' on carbon responsibility.

Oil and gas companies are already in the limelight on climate change. Brand image in this sector is driven largely by a perception of the company, rather than of the product. Shell and BP are well known for having embraced climate change as a CSR issue, with ExxonMobil further behind. However, little consumer interest has been given yet to the individual company's own emissions, although with all companies keen to minimise energy costs, there may be little real difference in performance (and it is difficult to compare the published figures on a like-for-like basis). As illustrated on page 20, consumer brand only affects a small part of the business.

In both these sectors, all of brand image (50% and 2-2.5% of market value respectively) is assumed to be at risk.

### Medium Carbon Sectors: Food & Beverage Production and Food Retail

For sectors such as food manufacturing and retailing, with significant (but more moderate) carbon dioxide emissions, customers may be slower to let climate change issues influence their brand choices. However, these sectors take so much of a household's spending that, even though emissions per unit of spend may be much lower than in the high carbon sectors above, the total level of emissions are high enough to warrant consumer's attention. Emissions from food manufacturing and retailing are typically around 0.2kg for each pound a consumer spends on the product – one tenth of the level for airlines. But the average UK household spends £49 per week on food and drink, and only £6 per week on air travel.<sup>xiii</sup> The result is that household food purchases account for up to 9kg of carbon dioxide equivalent per week, and air travel for 13kg.

The food-related emissions are indeed lower, but they are of a similar order. In addition, the opportunity to choose substantially lower-emission like-for-like alternatives is potentially much greater in food than in air travel, suggesting that food *may* be a good place for rational consumers to focus their carbon sensitivity.

However, it is uncertain whether consumers will really make this link, and let climate change influence their brand choices in these sectors. In choices between branded food and beverage products, it is likely that they will to a significant extent, with perhaps 10 per cent of market value at stake from the manufacturers. In choices between branded retailers, it is likely that other factors will dominate, with less than 1 per cent of market value at stake.

### Low Carbon Sectors: Telecommunications and Banking

For sectors with very low 'direct' carbon dioxide emissions, such as banking and telecommunications, the question is not just about whether customers will make the link to climate change issues, but whether it matters if they do. Even where there are big proportional differences in emissions, such as between fixed and mobile communications providers, the absolute levels are not sufficient to influence mainstream customer choice, even if awareness grows.

In both sectors, however, there are material 'indirect' effects that are within companies' control or areas of influence. These provide opportunities for leadership (and risks of being seen as a laggard), and that may influence consumer choice sufficiently to affect brand value.

In telecommunications, these derive from the much higher emission levels from the equipment consumers use in conjunction with the communication service – such as computers left permanently on standby to support 'always-on' broadband, or mobile phone chargers left plugged in when not in use. Whilst clearly not (just) the responsibility of the telecommunications sector, but a broader ICT issue, these are areas where telecommunications companies could, if it were considered strategic, choose to get more heavily involved. There remains very little risk (less than 1% of market value at stake), but a potentially valuable upside.

In banking, the most likely exposure is not from energy issues, but from bank's investment and lending exposure. Brand value may come under pressure if banks are seen to invest in projects that appear irresponsible in a climate of concern. In addition, a bank's position on decisions such as mortgage conditions on properties exposed to increasing flood risk may cause a negative response from consumers. These effects may amount to perhaps 1-2% of market value at stake.

## 5.2 Brand value at risk (% Market Value)

The table below outlines the three stages of the calculation of the brand value at risk from climate change. The overall brand value, brand image and brand image at risk from climate change are each expressed as a percentage of market value for a typical company in each of the sectors studied.

These numbers need some explanation:

For airlines and oil & gas, all of a company's brand image equity is assumed to be at risk if climate change is mishandled. This doesn't imply, for example, that an airline's brand image is all linked to climate change... far from it. A similar scare over safety (look for example at the general concerns over the safety of flying following September 11th) could have an even greater impact on brand value. However, when a major brand or company is subjected to several potential risks, often any one of these alone could result in a major hit to operations. If climate change becomes a major consumer issue, and one airline is significantly behind its peers on this issue, half of the company's value could be at stake.

As discussed above, the proportions of brand value at risk are lower for our other four sectors.

## 5.3 Brand value at risk vs. Operational Exposure

The graph on the following page analyses the intangible value at risk from consumer brand issues in relation to climate change, compared against each sector's 'adjusted CO<sub>2</sub> intensity' of profits.

Airlines, a sector with obvious operational exposure, has an additional substantial brand value at risk, with opportunities for companies to act now to take brand leadership on the climate change issue.

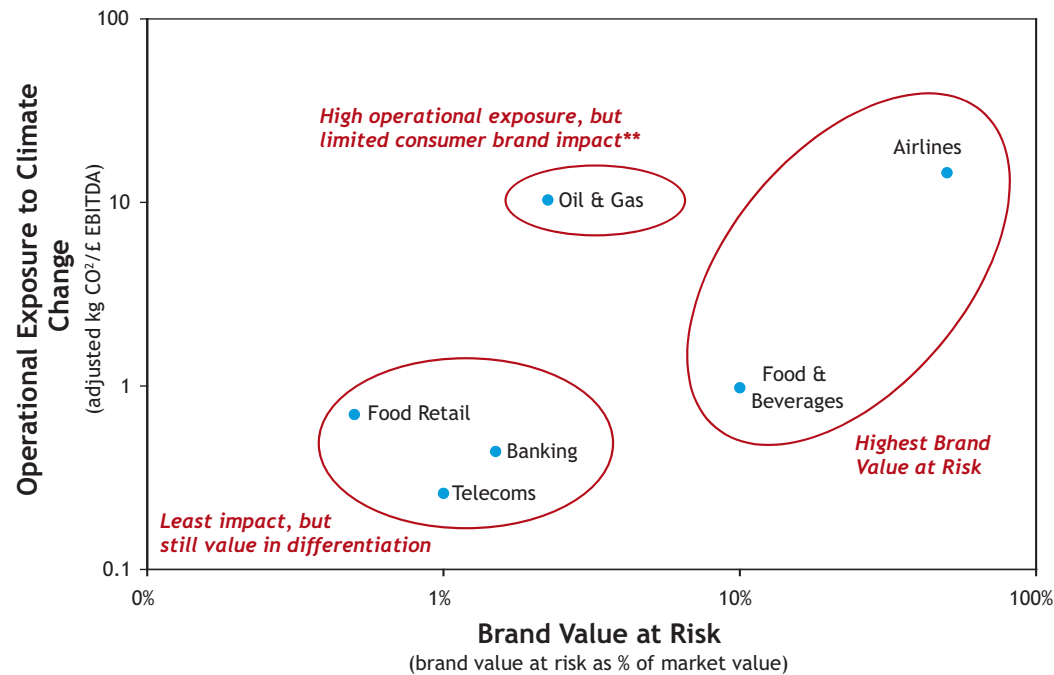
Food and beverage manufacturing, a sector with less obvious links to climate change, stands out as a sector in which the brand issues may have a disproportionate impact. This is driven by the central role played by brand image, the ease with which consumers can switch brands (and the precedents for them doing so), and the material contribution the sector makes to a consumer's overall emissions given the size of the spend in that sector. Again, there are opportunities for companies in that sector to act now to take brand leadership.

In other sectors the risks are less dramatic, but they still represent significant value at stake. Even in the 'low carbon' sectors of banking and telecommunications, where direct emissions from operations do not create brand risk, there are

Brand Value as Percentage of Market Value			
Category	Brand (Total)	Brand (Image)	Brand value at potential risk from climate change
Airlines	>100%	50%	50%
Oil & Gas	2-2.5%	2-2.5%	2-2.5%
Food & Beverages Production	68%	55%	10%
Food Retail	52%	5%	<1%
Telecommunications	17%	10%	1%
Banking	17%	6%	1-2%

Source: Lippincott Mercer analysis

## Results Summary (Logarithmic Scale)



\*\* Consumer brand only impacts the lower profitability retail operations which are typically a low margin, low value component of an oil and gas company. Other reputational aspects of branding are also significant to this sector but are excluded here.

opportunities for companies to create positive brand value if they position themselves appropriately on the climate change issues that affect their customers, rather than their own operations.\*

#### 5.4 Brand value at risk (£ bn)

Finally, the following table analyses how material these are in £bn terms. It takes the FTSE All Share capitalisation for each sector, as at end September 2004 and applies the above % to that value.

#### £ billion, based on FTSE All Share - Monthly Review September 2004

Sector	Total Market Value	% at risk	£ billion at risk
Airlines	3.1	50%	1.5
Oil & Gas	172.9	2-2.5%	3.9 (third)
Food & Beverages Production	66.5	10%	6.6 (highest)
Food Retail	31.7	<1%	<0.4
Telecommunications	116.0	1%	1.2
Banking	380.8	1-2%	5.7 (second)

\* One example might be BT's recent highly publicised move to source all of its electricity from renewable sources. Another example, as already mentioned, would be HSBC's recently announced plan to become carbon neutral.

Other reputational risks mentioned	
Airlines	<ul style="list-style-type: none"> <li>• Reputational value, especially regarding access to prime take-off and landing slots at key airports</li> </ul>
Oil & Gas	<ul style="list-style-type: none"> <li>• Reputational value, as it impacts access to new upstream E&amp;P (exploration &amp; production) access and hiring talent</li> </ul>
Food Retail	<ul style="list-style-type: none"> <li>• Reputation with local authorities regarding planning for opening new stores</li> </ul>
Banking	<ul style="list-style-type: none"> <li>• Reputation with corporate business customers</li> </ul>

Airlines and Food & Beverages are the highest in percentage terms. Food & Beverages is also the highest when ranked in terms of £bn of market value. However, Oil & Gas and Banking also now make it onto the list, at £3.9bn and £5.7bn of value each at stake respectively.

In essence, whilst just one or two percentage points sounds small, it can represent significant value in the larger FTSE sectors.

## 5.5 'Consumer' is not the only brand

This analysis has focused on consumer facing brand. There are many other aspects of brand or a company's reputation that can impact a company, including its reputation amongst its business customers, staff, suppliers, shareholders and regulators. One example is the Oil & Gas sector – just 2-2.5% value at risk from brand seems low, however the implications of a company's broader political reputation can be argued to be an order of magnitude higher in this sector.

Some specific additional stakeholder reputational risks mentioned by companies interviewed are listed above.

## 5.6 What does it mean?

Our analysis has focused on six sectors. Many other sectors are also heavily exposed to consumer brand perception, and have varying links to climate change issues. This report provides a framework for analysis that could easily be extrapolated to other sectors.

- 1 If it appears plausible, as argued in Section 3, that climate change *could* become a significant consumer issue within the next 5 years, companies need to start planning now. It is difficult to tell, but better to be prudent.
- 2 If climate change becomes a broader issue of awareness, it is not just industrial sectors (those regulated by the EU ETS and other greenhouse gas reduction mechanics) that will have value at risk.
- 3 What are the reputational implications of not addressing climate change at least as appropriately as competitors:
  - With customers, both consumer and corporate?
  - With NGOs?
  - With staff?



- With suppliers and/or financiers?
- With local, national and international public bodies, influencing anything from planning to access to natural resources?

Is there a competitive advantage in being ahead of competitors in this issue?

- 4 If climate change *does* become a consumer issue, what is the lead time in addressing appropriate action?

The last question is perhaps the most key.

If within the retail sector, 'food miles' tips as a consumer issue, the response time to source a greater proportion of fresh food from sources closer to home is probably less than a couple of years, provided the supply chain can cope with the volumes. The supermarket seen to be the 'first mover' would have a brand advantage, but competitors could potentially follow fairly quickly.

By comparison, if airline fleet energy efficiency were to become a visible consumer driver ('airline X emits xx kg CO<sub>2</sub> per passenger from London to Paris, airline Y emits yy kg CO<sub>2</sub> for the same route'), the lead time for adjustment may be rather slower. Aircraft are not replaced frequently. If climate change becomes an issue over and above traditional fuel efficiency/operating cost concerns, and differences between airlines exist, this is an issue with a much larger lead time. Given the complexities of these calculations and attributions, it is also in the companies' interests to act now to shape the debate, and ensure that consumers are making their comparisons on meaningful measures.

## 5.7 Further information

The Appendices to this report, containing the company specific information, are available separately from the Carbon Trust.

Further information on the brand valuation and consumer behaviour assumptions in this report and the appendices can be obtained from Lippincott Mercer.

Further information on climate change, its strategic implications on businesses, and the options companies have for addressing the issue can be obtained from the Carbon Trust.

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### The Carbon Trust

The Carbon Trust works with UK business and the public sector to cut carbon emissions and capture the potential of low carbon technologies. An independent company set up by Government to help the UK meet its climate change obligations, the Carbon Trust creates practical business-focused solutions to carbon emission reduction through energy efficiency, carbon management, and investment.

### Lippincott Mercer

Lippincott Mercer is a leading design and brand strategy consultancy. The firm was founded in 1943 as Lippincott & Margulies; it created the concept of corporate identity, and in the last decade has been a leader in the application of quantitative analysis to align brands and business strategy. Lippincott operates globally from its headquarters in New York City and London and other offices in the United States, Europe and Asia. For more information, email [simon.glynn@lm.mmc.com](mailto:simon.glynn@lm.mmc.com), call +44 (0)20 7915 9800, or visit [www.lippincottmercer.com](http://www.lippincottmercer.com)

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- v Lippincott Mercer analysis. Original sources: Organic Centre Wales; Factiva, UK English language mentions including organic\* and food\* or farm\* or crop\* or garden\* or soil\* or environment\* or range or agricultur\* or herb or green or vegetarian\* or produce. Note possible error rate of up to 10% due to the different contexts of the use of the word organic. Defra.
- vi Lippincott Mercer analysis and prediction.
- vii News & Analysis, March 2004. Cafédirect has a 10% share of the UK roast and ground coffee market. Douwe Egberts, the market leader, has 13%.
- viii DEFRA, 2004.
- ix DFT Focus on Roads. Unleaded petrol was ~1p per litre less than leaded between 1990 and 1997.
- x Not all global warming implications for the oil and gas sector are negative. Mechanics to limit CO<sub>2</sub> emissions will actually favour natural gas in the medium term (considerably less carbon intensive than coal). However, the longer term projections for the industry are uncertain.
- xi Appendix 4 calculates the carbon intensity of both revenue and EBITDA. The revenue calculation gives a good proxy for the carbon intensity of a company's products. The EBITDA calculation, gives a moderate proxy for the carbon intensity of a company's profits and hence valuation.
- xii 'Implications for Industrial Competitiveness – the EU ETS', published by the Carbon Trust, May 2004.
- xiii Office for National Statistics. *Family Spending: A report on the 2002-2003 Expenditure and Food Survey*.



An independent company set up by the Government to help the UK meet its climate change obligations through business-focused solutions to carbon emissions reduction, the Carbon Trust is grant funded by Defra, the Scottish Executive, the National Assembly for Wales and Invest Northern Ireland.

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