



Managing greenhouse gas emissions
across the value chain:

The new agenda

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About this document

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Any views expressed in this report and any errors or omissions are entirely the responsibility of the authors.

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Contents

Introduction	1
Managing value chain greenhouse gas emissions	2
Drivers for action	2
What are the management objectives?	2
Data quality: a lot of hot air?	4
Should companies report on their value chain greenhouse gas emissions?	5
Product labelling: use or ornament?	6
Conclusions	8
Endnotes	9

Introduction

Over the past few years, the management of greenhouse gas (GHG) emissions has become one of the core corporate responsibility issues. The focus of this activity has evolved from a concentration on direct and indirect (i.e. electricity) emissions, to one that considers wider emissions across the value chain. These include emissions from the transportation of purchased materials, finished goods and products, and waste; leased assets; franchises and outsourced activities; the use of products and services; and the disposal of products at the end of their life.¹

For some companies, emissions from across the value chain can be much larger than those associated with direct and indirect emissions. Apart from the environmental impacts of these emissions, they may also present risks (e.g. increased costs, regulatory exposures) and opportunities (e.g. improved brand and reputation) to the business. This has led many companies to invest time and resources in understanding these emissions, and taking action to minimise the downside risks and maximise the opportunities associated with them.

We strongly support the premise that companies should take action to reduce GHG emissions from their value chains, as we see that such action should enable more effective and targeted emission reduction efforts and the identification of a wider range of cost-saving opportunities. However, we are concerned that the progress to date in quantifying and, more importantly, minimising these emissions has been somewhat piecemeal and that many companies do not seem to fully recognise the risks and opportunities presented by proactive approaches to GHG emissions in their value chains.⁵ We also worry that current discussions around how companies manage their GHG emissions – in particular, the emphasis on reporting and product labelling – may push companies in directions that could run counter to their best interests and, perversely, have the effect of delaying action or of focusing management attention on the wrong areas. The aim of this paper is, therefore, to set out our views on current practice on GHG emissions in the value chain and to catalyse discussion on how corporate practice may evolve over the next two to three years.

Insight investment and climate change

Insight has a long-standing commitment to being a responsible investor.² The primary motivation for this commitment is to protect and enhance our clients' financial returns. We believe that we have a duty to our clients to assess the extent to which the companies in which we invest are exposed to environmental, social and governance (ESG) risks, to evaluate the quality of their management of those issues, and encourage the companies in which we are shareholders to manage their ESG risks effectively.

Climate change has been a central focus of our work for a number of years.³ Climate change is a major theme in our investment analysis, we engage with companies to encourage them to adopt effective climate change management strategies, to reduce their emissions and to publish robust data on their emissions and emissions-management programmes, and we actively support collaborative initiatives such as the Institutional Investors Group on Climate Change.

In March 2008, we published the results of a benchmark of 125 large European companies, evaluating how these companies are managing climate change related risks and opportunities.⁴ One of the central findings of this research was that while most companies now have a clear understanding of the risks and opportunities presented by their own GHG emissions, relatively few have as yet thought about the emissions from their value chains in a similarly structured manner.

This report presents our views, as a large institutional investor, on how we see the current debate around value chain-related GHG emissions and sets out our views on the actions that we expect companies to take on this issue.

Managing value chain greenhouse gas emissions

Drivers for action

There are three broad reasons for companies to focus on GHG emissions across the value chain. The first is that the value chain may actually be a more important source of emissions than the direct and indirect sources that have been the traditional focus of management attention. This opens up the possibility that companies may be able to achieve much greater emission reductions through actions involving their customers or suppliers than through their own activities and operations.⁶ The second is the increasingly compelling business case for action; the drivers include current and potential legislation (which may increase costs and so impact on profit margins), increasing consumer interest in environmentally-friendly products and stakeholder pressure for credible and transparent information on GHG emissions.

Examples of direct/indirect emissions compared to those from supply/value chains

- Marks & Spencer estimates that its operational (predominantly store and office energy use, refrigeration/air conditioning, transport and warehouse energy use) carbon dioxide equivalent (CO₂e) emissions in 2007-2008 were 469,000 tonnes while the approximate footprint of its food sales – which encompasses emissions arising from raw material production and manufacturing – was 3.3 million tonnes of CO₂e.⁷
- Wal-Mart estimates that supply chain emissions account for 92% of its environmental footprint.⁸
- Rio Tinto reported total GHG emissions of just over 28 million tonnes of CO₂e with a further 6.6 million tonnes attributable to the transportation of its products and raw materials; conversely, the combustion of the coal provided to its customers for electricity generation and steel production resulted in emissions of 344 million tonnes of CO₂e.⁹
- BP reported that its direct emissions were 69 million tonnes of CO₂e but emissions arising from its customers' use of its oil and gas products were 521 million tonnes.¹⁰

The third is that, by focusing on greenhouse gas emissions across the value chain, companies may reap a range of soft benefits such as greater employee engagement and the sharing of best practice across the company and its value chain.

However, the business significance of value chain GHG emissions is not simply defined by the total amount of emissions. In practice, business significance is defined by:

- The impact, if any, of GHG emissions on unit price and, ultimately on profit margin (including consideration of whether these costs will be absorbed by suppliers or can be passed through to customers).
- The relative significance of energy/GHG emission costs versus other costs (labour, other raw materials, etc).
- The extent to which the sourcing of raw materials or the distribution of products is, or may be, affected by the availability of fossil fuels and/or constraints on GHG emissions.
- The extent to which changes to legislation, national and international, impact on GHG emissions – and hence the costs – associated with the value chain.
- The level of consumer interest in a product's GHG emissions, and how this compares to consumer interest in other environmental and social issues as well as to wider issues such as product quality and cost.

What are the management objectives?

Our view is that companies should be clear about their overall objectives as a necessary prerequisite to specifying management action. Based on the financial risks/opportunities presented by climate change and the significance of the company's emissions (and the relative importance the company assigns to each), companies need to specify the objectives for their value chain emissions management activities and define criteria against which this performance can be assessed.

Companies may decide on a range of objectives that cover some or all of the following:

- Minimising energy consumption and resource utilisation.
- Minimising costs, whether on a relative (per unit) or absolute basis.

- Strengthening reputation.
- Reducing or eliminating GHG emissions.
- Identifying and taking advantage of opportunities, such as new revenue streams, new markets and new products.
- Engaging with and influencing the supply chain.
- Meeting reporting requirements, e.g. its own corporate social responsibility (CSR) and sustainability reporting, responding to client and customer demands for information.

To meet their objectives, companies may focus their efforts on reducing embedded emissions through, for example, changing materials specifications to give preference to lower GHG emitting options; giving preference to low-emissions suppliers; and reducing their food/product miles through optimising routes, localising sourcing and using more efficient distribution technologies. Alternatively, they may decide to design low-emissions products and services; deploy new products such as new technologies and new value propositions for existing technologies; or educate their customers (e.g. product labelling).¹¹ While the specific actions taken will be company-specific, we would expect that attention would be focused on the most significant sources of emissions, those activities that offer the greatest potential for reductions, and the areas where the company has the most influence.

There are four wider points that need to be made here. The first is that organisational buy-in is essential. While senior management and CSR department support is important, the successful implementation of a value chain focused greenhouse gas emission reduction programme requires buy-in across the organisation. Thus, the business or cost benefits of action must be readily apparent and priority given to those areas which impact directly on the financial bottom line. Furthermore, measures to reduce value chain greenhouse gas emissions should be seen as part of wider business process improvement efforts, not as a stand-alone activity. Most companies are already taking actions that contribute to reducing GHG emissions but these are often described in terms of reducing the consumption of energy, water or other raw materials or achieving cost-savings, rather than reducing emissions specifically.

British American Tobacco: working for positive social, environmental and economic impacts in its supply chain¹²

In 2008, BAT established a number of collaborations with its materials suppliers as part of its Life Cycle Analysis (LCA) work. This included carrying out sustainability studies with suppliers of product components such as tow, carbon (both of which are used in cigarette filters), and packaging and printing materials. The process of collating data, measuring impacts and gaining a more detailed understanding of each manufacturing process has enabled BAT to identify areas for improvement (e.g. in one case, it was able to eliminate a superfluous step in a manufacturing process), thereby providing both environmental and financial benefits.

There are two wider lessons to be drawn from BAT's work. The first is that it is critical that LCA and process studies focus on the areas that are of greatest importance for a given material or process; in some cases, the carbon footprint is the most important whereas in others the central environmental issue may be energy or water use. The second is that data acquisition and analysis are not trivial processes, and require significant time and effort to ensure that the data are accurate and fit for purpose. However, BAT's experience is that the process of gathering and verifying these data has been an essential element in developing capacity and knowledge within its suppliers, in helping to identify environmental improvements and in creating supplier buy-in to the implementation of these improvements.

In this context, it is important to recognise that the language of climate change or emissions reduction may not make sense to (or resonate with) local management; terms such as efficiency and cost may be much more effective at getting the message across and creating a shared vision for action.

Second, the priorities/objectives set by companies will define the type of information that is required. Companies need to specify how performance is to be measured, how often reports need to be prepared, what data are required, how data are to be generated (measured or estimated), acceptable levels of uncertainty, and how data should be checked and verified.

Third, it is important to recognise that reducing GHG emissions may not be the primary objective, and hence the decisions on what actions need to be taken may not necessarily lead to emissions reductions. For example, while a retail company may seek to reduce the food miles associated with its products by preferentially purchasing products closer to the point of sale, its need to minimise country-specific risks may result in certain products being sourced from abroad with a consequent increase in its GHG emissions. In fact, one of the perverse consequences of climate change could be that changing weather patterns make geographical diversification a desirable characteristic of supply chains. Another implication may be that the threat of regulation (or higher costs associated with GHG emissions) may force companies to find cheaper sources of raw materials, e.g. through sourcing from countries or regions where GHG emissions are not regulated or through forcing suppliers to absorb these extra costs.

Fourth, managing GHG emissions from value chains presents challenges that are quite different to the management of direct emissions: accessing data is more difficult; there are fundamental questions around the scope of responsibility and the limits to the influence that can be exerted; and efforts to reduce emissions may conflict with other supply chain management objectives. Companies have tended to concentrate their CSR initiatives on those areas where they can exert the greatest level of control/influence. If this approach was applied to GHG emissions, the likelihood is that value chain emissions would be relegated to a lowly position in any list of priorities. Our view is that companies need to take a much more holistic view of where their major impacts are and be mindful of the pace at which social and environmental issues, previously considered to be of secondary importance, can rise up the hierarchy. Lack of direct responsibility is unlikely to be accepted as an excuse for failing to address a risk (or opportunity), and companies may be confronted with the need to re-establish a greater level of control and influence to address those issues deemed to be important to their business and stakeholders. This may also prevent a company from falling into the trap of channelling most of its efforts into areas where it has most control, despite the environmental benefits of these actions being minimal.

Data quality: a lot of hot air?

A natural starting point for many organisations when confronted by a risk to their business is to try and calculate the scale of the problem – the assumption is “what gets measured gets managed.” There are various reasons for collecting data on GHG emissions, including locating major sources of these gases, tracking reductions (or increases) against established targets, and enabling the company to communicate internally and externally the importance that it attaches to GHG emissions.

However, though it is possible to calculate direct and indirect emissions for a company with a reasonable degree of accuracy, attempting to quantify total GHG emissions through the value chain is far more problematic. Putting aside questions of cost (both in time and money), there is a distinct possibility that this quest for perfect data becomes a Sisyphean task – one that is never capable of resolution – and can divert attention from effectively managing the risks associated with GHG emissions.

Over the last 5 years, whilst our understanding of direct and indirect emissions – where they are, how to measure them – has increased substantially, we are some way from reaching a similar level on value chain-related emissions. There are various reasons for this:

- Inconsistencies in the definition of the scope and boundaries.¹⁴ Despite emerging international standards not all organisations follow the same approach to calculating their GHG emissions, either in terms of calculation methodologies or in terms of aspects such as defining the scope (or boundaries) of reporting.
- Data are not readily available (e.g. not all buildings are metered and not all waste, travel or energy providers are able to provide accurate figures).¹⁵
- As one moves further down the supply chain, the difficulties and costs of gathering data tend to multiply.¹⁶ It would be easy to assume that acquiring data from the supply chain is just a matter of gathering information like any other certification or verification process. However, the process is nowhere near as clear cut. There are a number of dimensions – complexity, continually moving baselines, challenges of scope and data, lack of knowledge within the supply chain – and so there is an overwhelming need for the supply chain to develop its knowledge and expertise. In addition, suppliers may not be willing to share information, in particular where data are closely

linked to costs, although this willingness to share information is also a function of the type/duration of the relationship. Suppliers are more likely to be willing to share information where there is a longer-term relationship.

Supply Chain Labelling/Management Initiatives

- The Carbon Disclosure Project (CDP) Corporate Supply Chain Programme, initiated in 2007, utilises the annual CDP Information Request to request information on the emissions resulting from a company's supply chain and the risks and opportunities presented by climate change to the business. The Programme is designed to assist companies in their efforts to anticipate and manage new pressures from climate change which are not directly within their organisational control.¹⁹
- In 2008, the British Standards Institution (BSI) produced PAS 2050 – a specification for calculating product life cycle GHG emissions, co-sponsored by the Carbon Trust and the Department for Environment, Food and Rural Affairs (Defra). PAS 2050 is an independent standard, developed with input from international stakeholders and experts across academia, business, government and non-governmental organisations (NGOs).²⁰
- The Carbon Trust has published a series of reports and case studies to explain how organisations could cut emissions throughout their supply chain.²¹
- The World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI) are presently developing standards for product and supply chain GHG accounting and reporting.²²

Consequently, collecting data to establish a comprehensive GHG footprint¹⁷ can be time consuming and has cost implications. While we recognise that, in certain sectors, initiatives are already underway to count the carbon cost of transport, chilling and warehousing, these are still at an early stage of evolution. Some companies have suggested that 2-3 years is required for the information gathering and data assurance process to develop to an appropriate level of maturity.¹⁸

There are three points we would like to make here. The first is that it is the organisation's objectives that define the quality of the data gathered and how these data are to be used. In our view, the decision to take action on value chain-related emissions does not necessarily mean that the first step is to gather data on every aspect of the value chain (e.g. through conducting a detailed life-cycle assessment). For example, if companies are only interested in identifying priorities for action, a simplified data acquisition/analysis process that identifies hot-spots/areas for action may be sufficient.²³ The second is that we believe it is a fallacy that the data required for reporting are necessarily of higher quality than for emissions management; the reality is that the data quality required actually depends on the level of accuracy and the degree of disaggregation required. For example, to report on emissions from a factory in the supply chain may just require that electricity consumption is multiplied by an emissions factor, whereas in order to support the operator to better manage these emissions it may be necessary to look at energy consumption on a machine-by-machine basis. The third is that the search for perfect information may actually be an obstacle to action and that there is an inevitable trade-off between accuracy and action. Good emissions data is not an end in itself. In our view, it is the actions that are taken that really count.

We believe that the practical way forward is for organisations to combine their knowledge of their own supply chains with our increasing understanding of where potential GHG emission "hot spots" might be. For example, we know that transporting produce by air is a major source of GHG emissions and thus extensive use of this mode of transport is likely to represent a significant impact. At the same time, research has also shown that transport is only one of several key sources of GHG emissions and these may be dwarfed by other emissions in the product life-cycle such as the emissions from animal husbandry, food crop cultivation, biomass burning, and waste management.²⁴

Should companies report on their value chain greenhouse gas emissions?

There is a growing expectation that companies will report on the GHG emissions from their value chain. There are strong arguments in support of such reporting – including allowing the company to demonstrate to stakeholders that climate change-related risks have been identified and are being effectively managed; creating an impetus for action; providing a framework for management activity; allowing the company to demonstrate its commitment to action on

GHG emissions; and offering a means for the company and its stakeholders to benchmark its performance against others.

However, we also see a number of challenges faced by companies seeking to report on their GHG emissions. First, the issues around data quality (discussed above) mean that many of the numbers may be highly qualified or of limited value. Second, many aspects of value chain GHG emissions performance cannot be reduced to hard numbers, and the impact of many of the actions/decisions taken – for example, initiatives focused on customer education and labelling – may be difficult to demonstrate. Third, in an attempt to avoid criticism of incomplete reporting, companies may shift their attention to those aspects where numbers – even if extremely uncertain – can be gathered and performance tracked, rather than focusing on those areas where they have the greatest influence on emissions.

In our view, reporting should not drive corporate action; rather companies need to start thinking about their corporate objectives (financial, strategic, responsibility, and value chain-specific) and then identify and implement the actions they need to take as a result. If companies do report this type of information, they should put the reported data into context by providing a clear account of the uncertainties in the reported data, clearly describing the scope and boundaries of the reported data and documenting the key assumptions that have been made.

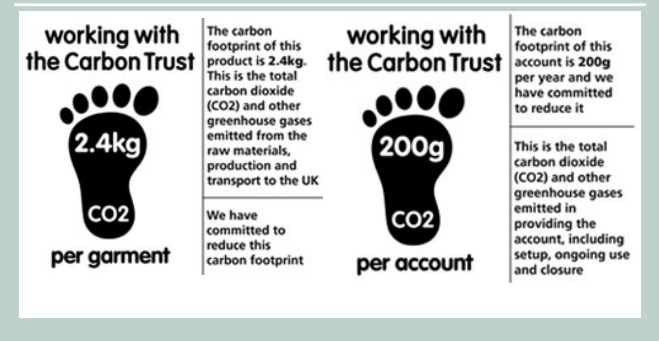
Product labelling: use or ornament?

There is growing interest in product labelling and there are two main drivers for this:

- For many products, their principal climate change impacts relate to raw material production and their usage/disposal.
- Growing consumer interest in the environmental credentials of the products and services that they use.²⁵

Companies have responded by providing an increasing amount of information on the GHG emissions associated with their products. In addition, the Carbon Trust has worked hard on “carbon labels” (see Figure 1), focusing its efforts on food and drink and FMCG products.²⁶ Product labelling can also provide an important accountability mechanism for companies and help focus management attention. For example, in order to retain the Carbon Trust’s Carbon Reduction Label, companies must commit to reducing the emissions associated with the product.²⁷

Figure 1: Sample Carbon Footprint Label (© Carbon Trust)



Going forward, we believe that providing clear and credible information on the GHG emissions of products and services is to be encouraged, especially where this enables consumers to reduce their own GHG emissions footprint. The success of the EU Energy Label – covering electrical goods and cars – has provided an excellent model for other, similar schemes. Furthermore – and we do not underestimate the potential challenge this poses – labelling schemes should give consumers sufficient information to place information on GHG emissions within a broader assessment of the product or service’s social and environment impacts.²⁸

We recognise that we are presently in the experimentation phase with carbon labels and that it is premature to draw firm conclusions on how these labels influence (or will influence) consumer behaviour, or whether consumers will preferentially purchase or use products or services with lower greenhouse gas emissions.²⁹

However, we have a number of concerns about the manner in which practice is evolving that we would like to highlight:

- There are fine lines between labelling, green branding and “greenwash” and companies need to be mindful of where these boundaries lie. The increasing desire of companies to proclaim their environmental credentials and, in particular, their carbon neutrality has been accompanied by a dramatic increase in the number of complaints made to the UK’s ASA (Advertising Standards Authority) questioning the validity of these types of claims.³⁰ There are legitimate concerns that if such claims are brought into disrepute, consumer confidence in carbon labelling may be undermined.
- Carbon labels may not actually be a useful information tool for consumers. Carbon labels have gone beyond FMCG and now include, among others, bank accounts and clothing. Whilst the consumer can readily

understand how energy efficiency ratings for electrical goods can help to reduce his/her carbon footprint and thereby make a contribution³¹ – no matter how small – to combating climate change, one must question whether the proliferation of labels and claims for other products and services may be counter-productive.³² Furthermore, labelling schemes may not align well with the choices that consumers really make or have available to them. For example, when buying milk, consumers are usually more interested in the fat content than the relative environmental performance of different products. Similarly, when consumers are making decisions across heterogeneous products (e.g. a packet of crisps versus a bottle of beer) it is not clear how such labels influence these decisions.

- Company-specific labelling schemes – because of our concerns about inconsistencies in definitions of scope, boundaries, calculation methodologies, etc – may not enable customers to differentiate meaningfully between companies (beyond who those who do and do not report on GHG emissions), a core rationale for providing consumer choice in these areas.
- Carbon labels (or the use of GHG emissions as a measure of performance) may not be the best tool for communicating with consumers and, for example, total life-cycle costs may be a more meaningful and useful measure.
- Companies' value chains are dynamic. A product's emissions profile will change every time there is a change in the value chain, which can make accurate reporting difficult.

Conclusions

The management of value chain-related GHG emissions is in its infancy. We support the efforts being made by companies to assess and manage these emissions more effectively and to develop tools for quantifying and reporting on performance. We believe that these efforts should, over time, provide the framework for a credible, standardised and rigorous approach to evaluating and reporting these emissions. We are also convinced that the business case for action – cost savings, reputation benefits, meeting consumer demand - is increasingly compelling and that a proactive approach to managing these emissions will be an integral part of creating successful and sustainable business models.

We are concerned, though, that the present focus on measuring or gathering definitive emissions data for the purposes of reporting or labelling may, paradoxically, have the effect of moving us away from the core objectives of reducing emissions in a practical cost-effective manner.

In this short paper, we have set out what we see as some of the key challenges/questions and presented our views on the current state of play. We recognise that some of these issues will be addressed as companies get more experience in assessing and managing their supply chain-related emissions. However, we stress again our belief that companies should concentrate on those actions that provide real business benefits (through reducing costs, reducing regulatory and other exposures, identifying opportunities) and make a material contribution to reducing GHG emissions. This is essential to obtain internal management buy-in to this agenda and also to convince stakeholders that companies are committed to taking serious action on this issue. The recommendations we offer below have been formulated with this in mind.

Recommendations

- While it is important that companies have a clear understanding of where within the value chain their most significant GHG emissions can be found, there is little merit in measuring these emissions to the last gram – particularly if the costs are prohibitive and, more fundamentally, such an exercise delays attempts to minimise and manage the associated risks.
- We are concerned that much of the work on value chain GHG emissions is being conducted by companies in isolation, with the likelihood that there is significant duplication of effort in particular in areas (e.g. the development of emission factors for standard/commodity materials such as glass) where there are limited commercial sensitivities at play. We believe there is value in examining the potential to establish an open source model for supply chain-related data, although we acknowledge that there are very real concerns around data quality and the sharing of potentially confidential data that would need to be addressed first.
- Within companies, the responsibility for managing and minimising GHG emissions throughout the supply chain should include those functions – such as finance, sales, and marketing – that have real power within the corporate hierarchy rather than remaining the preserve of the Sustainability/CSR/ Environmental and procurement specialists.

Endnotes

¹ GHG emissions are often described in terms of Scope 1, 2 and 3 emissions, reflecting the terminology in the Greenhouse Gas Protocol. Scope 1 emissions are emissions from sources owned or controlled by the company (and include the generation of electricity, heat or steam, physical or chemical processing, transport in company owned/controlled vehicles, fugitive emissions). Scope 2 emissions are emissions from the generation of purchased electricity that is consumed in owned or controlled equipment or operations. Scope 3 emissions are emissions from other sources not owned or controlled by the company, such as business travel, external distribution, supply chain (e.g. extraction and production of purchased fuels and materials) or the use/disposal of the company's products and services (WBCSD/WRI (2004), *The Greenhouse Gas Protocol* (Geneva: WBCSD), pp. 26-34). <http://www.ghgprotocol.org/files/ghg-protocol-revised.pdf>

² See, generally, our website which provides a comprehensive account of our responsible investment activities: <http://www.insightinvestment.com/uk/responsibleinvestment/>

³ See the climate change section of our website: <http://www.insightinvestment.com/uk/responsibleinvestment/riandcg/engagement/climatechange/>

⁴ Sullivan, R. (2008), *Taking the Temperature: Assessing the Performance of Large UK and European Companies in Responding to Climate Change* (London: Insight Investment). http://www.insightinvestment.com/global/documents/riliterature/367922/taking_the_temperature

⁵ For example, a recent McKinsey survey of operations and senior executives showed that supply chain-related risks are seen as rising sharply, with key factors being the greater complexity of goods and services, higher energy prices and greater financial volatility. However, the survey also noted that, despite the high public profile of climate change and environmental issues, these issues are seen as having little influence on supply chain strategies; improving the company's carbon footprint was cited as a strategic goal by just 4% of respondents (McKinsey (2008), 'Managing Global Supply Chains: McKinsey Global Survey Results', *McKinsey Quarterly*, August 2008).

⁶ See, further, Schuchard, R. Sapru, R., Stewart, E. and Sullivan, R. (2008), 'From Good to Best Practice on Emissions Management', in R. Sullivan (ed.), *Corporate Responses to Climate Change* (Sheffield: Greenleaf), pp. 302-319. In fact, there is an emerging discussion around the concept of 'climate positive', where instead of having zero emissions (or carbon neutrality) as an objective, companies set 'carbon positive' targets where their contribution to emissions reductions is greater than their own emissions.

⁷ Marks & Spencer (2008), *How We Do Business Report 2008* (London: Marks & Spencer), pp. 8, 12. http://corporate.marksandspencer.com/documents/publications/2008/2008_hwdbr_report.pdf

⁸ Presentation to the University of California-Berkeley by Wal-Mart's Senior Vice President for Sustainability, Matt Kistler, April 2008. Reported in <http://www.greenbiz.com/news/2008/04/02/wal-mart-expands-sustainability-efforts-with-coffee-trucks>

⁹ http://www.riotinto.com/ourapproach/7212_sources_of_greenhouse_gas_emissions.asp

¹⁰ BP (2007), *Sustainability Report 2007* (London: BP), p. 36. http://www.bp.com/liveassets/bp_internet/globalbp/STAGING/global_assets/e_s_assets/downloads/bp_sustainability_report_2007.pdf; see also: <http://www.bp.com/sectiongenericarticle.do?categoryId=9021745&contentId=7041006>

¹¹ A recent and helpful summary of various corporate initiatives in these areas can be found in Cogan, D. Good, M., Kantor, G. and McAteer, E. (2008), *Corporate Governance and Climate Change: Consumer and Technology Companies* (Boston, MA: Ceres).

¹² Case-study provided by Sally Havercroft (Group Product Sustainability Manager, British American Tobacco).

¹³ See WBCSD/WRI (2008), 'WRI/WBCSD GHG Protocol Supply Chain and Life Cycle Survey: Summary of Results' (Geneva: WBCSD/WRI). <http://www.docstoc.com/docs/2310852/WRIWBCSD-GHG-Protocol-Supply-Chain-and-Life-Cycle-Survey-Summary>

¹⁴ See, for example, the discussion in Sullivan (2008) (Note 4), pp. 21-24.

¹⁵ See, for example, Sullivan (2008) (Note 4); NextGeneration (2008), *Developing Homes for a Changing Climate* (London: NextGeneration), pp. 21-23. http://www.insightinvestment.com/global/documents/riliterature/367922/dev_homes_changing_climate

¹⁶ An insight into the challenges posed by trying to establish the total GHG emissions profile for a product is provided by Cadbury at: <http://www.cadbury.com/ourresponsibilities/purplegoesgreen/Pages/CarbonFootprint.aspx>

¹⁷ The term carbon footprint is commonly used to describe the total amount of carbon dioxide and other greenhouse gas emissions for which an organisation or individual is responsible (Carbon Trust (2007), *Carbon Footprinting: An Introduction for Organisations* (London: Carbon Trust)).

¹⁸ CDP and IBM (2008), *Making Advances in Carbon Management: Best Practice from the Carbon Information Leaders* (London: CDP). http://www.cdproject.net/download.asp?file=Joint_CDP_IBM_study_June08.pdf

¹⁹ <http://www.cdproject.net/corporate-supply-chain.asp>

²⁰ <http://www.bsigroup.com/en/Standards-and-Publications/Industry-Sectors/Energy/PAS-2050>

²¹ <http://www.carbon-label.com/business/forbusiness.htm>

²² See further: <http://www.ghgprotocol.org/ghg-protocols-product-and-supply-chain-initiative-launched-in-washington-dc-and-london>

²³ This approach is reflected in the GHG Protocol which states: "Accounting for Scope 3 emissions [for example, those relating to extraction of materials and use of finished products] need not involve a full-blown GHG life cycle analysis of all products and operations. Usually, it is valuable to focus on one or two major GHG-generating activities" (WBCSD/WRI (2004) (Note1), p. 29).

²⁴ Carbon Trust (2008a), *Product Carbon Footprinting: The New Business Opportunity* (London: Carbon Trust), pp. 20-22.

²⁵ For example, research by the Carbon Trust and by AccountAbility indicates that around 60% of consumers are asking for credible product information related to the global warming impact of products at the point of sale. See further: http://www.carbontrust.co.uk/News/presscentre/2006/061106_consumers.htm and AccountAbility (2007), *What Assures Consumers on Climate Change?* (London: AccountAbility). <http://www.accountability21.net/publications.aspx?id=1090>

²⁶ For example, Carbon Trust (2008b), 'Case Study CTS055. Working with Tesco. Product Carbon Footprinting in Practice' (London: Carbon Trust). <http://www.carbontrust.co.uk/publications/publicationdetail.htm?productid=CTS055>

²⁷ See, further, <http://www.carbon-label.com/business/forbusinesses.htm>

²⁸ See, for example, the discussion in Berry, T., Crossley, D. and Jewell, J. (2008), *Check-out Carbon: The Role of Carbon Labelling in Delivering a Low-carbon Shopping Basket* (London: Forum for the Future and Lloyd's Register) and Carbon Trust (2008a) (Note 24).

²⁹ AccountAbility (2007) (Note 25), pp. 9-10; Schuchard, R., Berry, T., Skinner, C., Stewart, E. and Uren, S. (2008), *Eco-promising: Communicating the Environmental Credentials of Your Products and Services* (San Francisco: Business for Social Responsibility; London: Forum for the Future). The Carbon Trust highlights research that suggests that 67% of UK consumers would like to buy a product with a low carbon footprint, and that 44% of consumers prefer products that are carbon labelled (Carbon Trust (2008a) (Note 24), pp. 4, 28-29).

³⁰ Wilson, M. (2008), 'Environmental Claims in Advertising: Is Green a Grey Area?' (Henley-on-Thames: World Advertising Research Center). <http://www.warc.com/LandingPages/FeaturedContent/EnvironmentalClaims/ASAEnvironmentalClaims.pdf>; ASA [Advertising Standards Authority] (2008), 'Event Report: Environmental Claims in Advertising. Is Green a Grey Area?' (London: ASA). <http://www.asa.org.uk/NR/rdonlyres/DF623BCD-B9B0-4AAE-A075-2478DFABA0E9/0/EnvironmentalClaimsSeminarReport.pdf>

³¹ See, for example, the case study relating to energy efficient pumps presented in Thiesen, J. and Remmen, A. (2008), 'The Pole Position Project: Innovating Energy-Efficient Pumps at Grundfos', in Sullivan (2008) (ed.) (Note 6), pp. 249-261.

³² Lovett, G. (2007), 'Carbon Copies Create Confusion', *Design Week*, 29 March 2007. <http://www.designweek.co.uk/Articles/134404/Carbon+copies+create+confusion.html>

