

UK Supermarkets

2009 carbon benchmark report



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The Project Partners

ENDS Carbon is a new initiative established in April 2009 by the University of Edinburgh Business School and the ENDS Report, the UK's leading monthly journal for environmental policy and business. ENDS Carbon works with companies to measure and compare corporate performance on climate change and to identify best practice, enabling more effective carbon management.

The University of Edinburgh Business School runs an innovative Carbon Management MSc programme with the School of Geosciences, and a Foreign and Commonwealth Office funded programme for Finance and Investment for a Low Carbon Economy. It is developing a centre for research in business and climate change

ENDS Carbon builds on the success of the Business School's Carbon Benchmarking Project, launched in 2007 and guided by an advisory board with representatives of Carbon Disclosure Project, Climate Group, DEFRA, FTSE, GRI, Insight Investment, Aviva Investors and WWF.

ENDS Carbon is developing carbon index and benchmarking projects with *Management Today*, the *ENDS Report*, *Marketing* magazine, and other partners, as well as providing the analysis for the Green Business Awards.

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Executive summary

Supermarket companies have a very important role to play in climate change mitigation. Their direct greenhouse gas emissions (GHG) are modest but significant (perhaps 1% of UK total emissions). Their indirect influence via supply chains and customers is even greater.

This provides supermarket companies with a large opportunity to make a contribution to reducing GHG emissions. Benchmarking is a well established tool used by the business sector to improve business efficiency and effectiveness. This project aims to apply benchmarking methods to carbon management and support supermarket companies’ activities in this area.

The benchmark evaluates supermarket company performance in a number of categories. Benchmarking each was not always straightforward and difficulties were found in accurately comparing supermarket companies with differing business models and practices.

The seven largest supermarket retailers in the UK were included in this benchmark survey – ASDA/Wal-Mart, Co-operative, Marks and Spencer, Morrisons, Sainsbury’s, Tesco and Waitrose. The focus was on UK food retail operations mostly using data from 2007.

All companies were assessed on the basis of public domain information reported on their websites and in their CSR and sustainability reports. For many of the more qualitative indicators, this data alone provides a reasonable basis for making comparisons between companies.

In addition, all companies were invited to complete a confidential questionnaire that asked for additional data. This was primarily to enable a detailed analysis of energy efficiency, fuel/logistics efficiency, and refrigerant gas management efficiency. ASDA/Wal-Mart, Marks & Spencer, Tesco and Waitrose provided a response. This data has been provided on a confidential basis and where this data is used, individual company performance been anonymised.

Energy efficiency

We compared company electricity usage by looking at supermarket companies’ most energy intensive practices: refrigeration, lighting, and HVAC (heating, ventilation and air conditioning). In each case the energy use attributed to the use-type was normalised using a quantity factor such

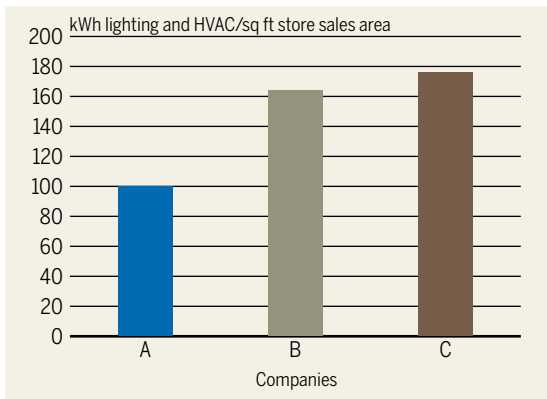
TABLE E.1 Performance categories used to compare supermarkets	
Direct carbon management	Indirect carbon management
• Energy efficiency	• Supply chain carbon management
• Low carbon electricity supply	• Customer carbon management
• Refrigeration gas management	• Advocacy and capacity building
• Distribution efficiency	
• Internal carbon management quality	
Source: ENDS Carbon	

as linear metres or square feet. Overall energy efficiency in refrigeration was quite similar between companies. In contrast, energy efficiency levels for lighting and HVAC varied a great deal – the most energy efficient company used 50% less energy for lighting than the least; the most energy efficient company for HVAC used half as much energy as the least.

Electricity supply

Companies can also improve the carbon performance of their stores by reducing the carbon content of the electricity they use. Working out the carbon ‘content’ of electricity is complicated by questions of double counting and ‘additionality’. For this reason, we do not consider renewable electricity paid for by the Renewable Obligation subsidies to count as having reduced carbon content (this follows the Department for Environment Food and Rural Affairs’ (DEFRA) recent ruling). As a result, the only way companies in the sector have so far successfully reduced the carbon content of electricity is via combined heat and power (CHP). One company purchased nearly 75% of its electricity from this source, greatly reducing the carbon emissions associated with its energy use.

FIGURE E.1 Combined lighting and HVAC efficiency



Source: ENDS Carbon

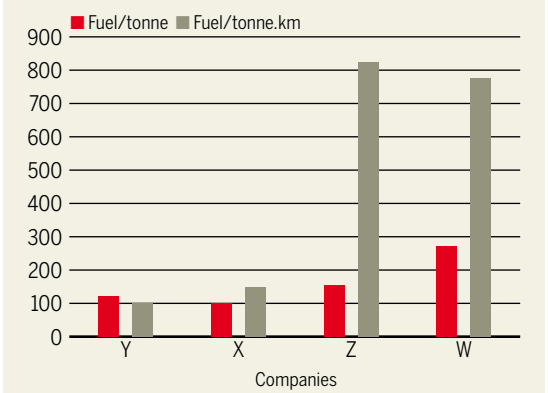
F-gas

Fluorinated greenhouse gases (f-gases), used in refrigeration are the second biggest source of direct GHG emissions for the sector. The benchmark compared companies’ f-gas leakage (weighted for global warming potential) per linear metre of refrigeration. The most carbon efficient company was 25% better than the least efficient.

Distribution

Transporting goods from distribution centres to stores is the third highest source of direct carbon emissions for supermarket companies. There are opportunities for efficiency gains from fuel switching, driver training, vehicle choices, transport methods, logistical partnerships, and distribution strategy. Companies were benchmarked on the efficiency of their distribution using fleet fuel efficiency (fuel/km), as well as logistics efficiency (fuel/tonne delivered), and fuel/km.tonne. Supermarket companies have similar average fleet fuel efficiency, but have very different levels of logistics efficiency. Larger companies are much more efficient than smaller ones due to economies of scale. The most efficient companies used 80% less fuel per kilometre-tonne as the least.

FIGURE E.2 Logistics efficiency



Source: ENDS Carbon, IGD

TABLE E.2 Areas of substantial difference in carbon performance

Management of direct emissions	Management of indirect emissions
• Energy efficiency (lighting and HVAC) • Logistics efficiency • Strength of targets for reduction in carbon emissions and other related areas	• Depth of involvement with supply chains in carbon management • Use of farm assurance standards to drive low-carbon farming practice • Customer-focused product information relating to carbon • Support for external research • Interaction with government on legislation

Source: ENDS Carbon

Corporate carbon management

We evaluated the quality of companies’ approaches to managing their own carbon emissions by comparing policy, targets, integrating carbon management into performance management systems, and public carbon reporting. Most companies demonstrate substantial action in all areas. However, some companies have more stretching and ambitious targets than others over the next few years. Tesco has an annualised target of 5.6% compared to the sector average of 3.7%. M&S also aims to go carbon neutral by 2012.

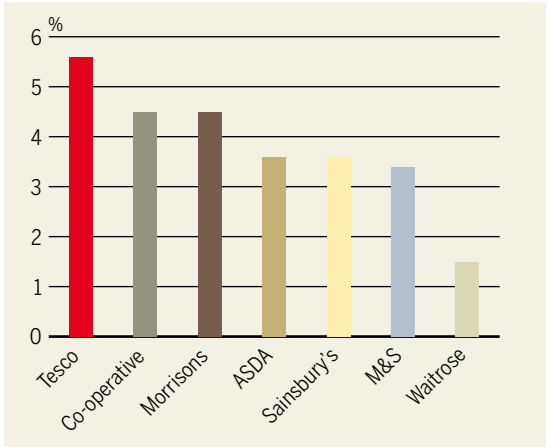
Supply chain carbon management

The carbon emitted by supermarket companies’ supply chain dwarfs their own direct emissions, by as much as seven times. They offer the greatest opportunity for long-term reductions. We compared companies by looking at their efforts to gather supply chain carbon data, to identify carbon hotspots, to use farm assurance standards to drive farmer behaviour, and to reduce supply chain packaging. Asda and Tesco are beginning to systematically ask their suppliers for carbon information. Waitrose uses an independent environment-focused assurance scheme for its farmers.

Customer carbon management

Customer choice and behaviour have big climate change impacts. Supermarkets have significant ability to inform and influence customers. We evaluated company activities in customer awareness campaigns, recycling, waste avoidance, enabling low carbon choices, customer travel avoidance, and providing information on the carbon embedded in specific products. Tesco and M&S have gone furthest on air-freight labelling, but Co-operative and Waitrose argue against this approach because of the trade benefits to poor countries it brings. All companies encourage customer bag reuse – M&S makes customers pay for them. Tesco, ASDA and Waitrose lead on home delivery services, which reduce emissions associated with customer travel.

FIGURE E.3 Carbon targets: annualised reductions



Source: ENDS Carbon

Advocacy and capacity building

Mitigating climate change will require strong action from government and other social actors. It is important that companies support this. We compared each company’s involvement in lobbying and engagement with government on this issue; we also looked at employee and public education programmes, and the extent to which companies were supporting external research activity. Most companies in the sector are engaged in the political process, often at CEO-level, calling for more action on climate change. Several companies have mounted public and employee-focused campaigns, and are funding various research programmes – Tesco’s £25m for a sustainable consumption research initiative stands out.

Conclusions

As a whole, we found that the supermarket sector is taking climate change seriously and is demonstrating proactive management across the full range of carbon management activities. However, there are substantial differences in the relative performance of companies, in the areas identified in Table E.2.

It is apparent there is a strong desire by this sector to continue to improve their carbon management and minimise their business impacts; this benchmark is designed to help these processes.

Introduction

The business sector has a very important role to play in climate change mitigation. It is directly responsible for a third of UK emissions, and companies’ decisions about products and supply chains influence a significant proportion of the rest of the UK’s emissions. Effective action by companies to manage carbon is vital to our collective effort to avoid the worst forms of climate change.

Performance benchmarking is an established tool used by companies to improve the operational efficiency and effectiveness. Since the 1970s companies have used benchmarking to evaluate their strengths and weaknesses and to identify best practices to emulate. This report seeks to apply benchmarking methods to supermarket companies’ climate change management, in order to support the sector’s efforts to improve on performance in this area. By taking a narrow focus – concentrating just on supermarket companies and just on the topic of climate change, we believe it is possible to provide an additional level of valuable analysis when compared to generic evaluation frameworks such as the Business in the Community (BiTC) Corporate Responsibility index.

Supermarket companies’ direct greenhouse gas emissions are modest compared to the most energy-intensive companies (e.g. electricity utilities, steel and cement producers). But some of their activities – especially refrigeration and road transport – are quite carbon intensive. Their overall greenhouse gas contribution totals around 1% of UK emissions, so is not negligible. Their indirect influence on emissions is even more significant. One supermarket company estimates that the emissions generated by its supply chain in producing the goods that it retails are seven times greater than its own emissions; and those generated by its customers in consuming them is three times greater. Their overall carbon ‘footprint’ is therefore substantial – and probably in the top 10 business sectors.

This provides supermarket companies with an opportunity to make a contribution to reduce emissions, both by improving their own energy and carbon-efficiency, and by supporting and encouraging suppliers and customers in reducing theirs. In researching the sector we have identified a number of major ways in which supermarket companies are doing this, and

TABLE 1.1 Performance categories used to compare supermarkets

Direct carbon management	Indirect carbon management
• Energy efficiency	• Supply chain carbon management
• Low carbon electricity supply	• Customer carbon management
• Refrigeration gas management	• Advocacy and capacity building
• Distribution efficiency	
• Internal carbon management quality	

Source: ENDS Carbon

this report seeks to evaluate their performance across each of them.

We have divided the benchmark into the performance categories in Table 1.1. This report is organised around each of these eight topics.

Many supermarket companies are investing significant resources in climate change. In the face of the global recession it is more important than ever that these resources are invested effectively. This report aims to help them with this task.

Benchmark scope and methods

The seven largest supermarket retailers in the UK were included in this benchmark survey – ASDA/Wal-Mart, Co-operative, Marks & Spencer (M&S), Morrisons, Sainsbury's, Tesco and Waitrose.

What counts as a 'supermarket' retailer is not easy to define precisely. Our focus is on large-scale food retailers because food retail is a particularly carbon-intensive activity, mainly because of the need for refrigeration, and other factors such as the practice of air-freighting some food products.. However, many food retailers also engage in other retail activities of various kinds to varying extents, and some are even engaged in activities like banking and farming. Where possible we have excluded non-retail activities that are easy to disaggregate. We have also tried to correct for differences in the proportion of food/non-food sales, for example, by using specific indicators to measure refrigeration efficiency rather than relying only on higher-level total store energy efficiency data.

Most of the companies in the survey derive the bulk of their turnover from the UK, but two (Tesco and ASDA/Wal-Mart) derive substantial revenues from overseas – the latter gains the vast majority from elsewhere. We have focused our research on UK-based emissions, and UK-driven carbon management activities.

The survey employed two methods of data collection and analysis:

1. *Survey of published information.* All seven main companies in the sector have all been assessed on the basis of public domain information reported on their websites and in their CSR and sustainability reports. For many of the more qualitative indicators (see in particular section 3 on indirect emissions), this data alone provides a reasonable basis for making comparisons between companies.

2. *Confidential survey.* All companies were also invited to complete a confidential questionnaire that asked for additional private data. This was primarily to enable a detailed analysis of energy, fuel/logistics, and refrigerant gas management efficiencies. Such comparisons are not possible based on public domain data. Four companies (ASDA/Wal-Mart, M&S, Tesco and Waitrose) responded wholly or partly to the questionnaire, which has greatly aided the scope of analysis that this benchmark provides. This data has been submitted on a confidential basis and while this report contains tables indicating performance, individual company results have been anonymised. Every participating company has received a confidential briefing about its performance on each metric. In future iterations of this benchmark we hope more companies will provide private information.

Scoring system

The benchmarking survey compares companies using a mix of quantitative data and qualitative evaluations. Our qualitative evaluations are expressed by a combination of narrative description and a simple scoring system. The scoring system has four scoring levels (0-3), with 3 reflecting the research team's view of best practice and zero being no activity. We also recorded 'no information' where we have been unable to find information on a company's activity. In some areas we have also used descriptive tables indicating "Full", "Partial" or "No" initiatives in a performance area.

Please note that in many areas, carbon management is in its infancy, so there is not yet any formally defined 'best practice' to benchmark against. In this report we have offered a view of best practice by making judgements about what we believe to be the most exemplary practices identified from the benchmark participants. In future benchmarks, we hope to gather evidence that shows which practices are most effective at delivering emissions reductions – and so are demonstrably 'best' practices.

There is still some debate as to how relevant some categories are to effective carbon management and overall company climate strategies. For instance, the jury is still out on whether carbon labelling, air-freight labelling, local foods, and at least some kinds of offsetting are effective climate-change strategies. The goal of this report is to draw comparisons between companies undertaking similar initiatives in order to share views of best practice. Where there is unresolved debate on a particular issue (e.g. carbon labelling) we make this clear in the text and ask the reader to form their own view of good practice. Having said this, we believe it is generally better for companies to attempt new initiatives than to do nothing. It is only by experimenting that we can learn what is effective. Proactive supermarket companies in the sector should be commended for trying programmes that appear to have the potential for creating significant reductions.

Ensuring comparability

One of the major challenges for this benchmark has been to ensure that we are comparing companies on a like-for-like basis. All companies in the sector are different. We have had to work hard to identify indicators that take account of their differences in a way that allows meaningful comparisons to be made. This means identifying indicators that can be 'normalised' to take into account the fact that some companies, for

example, are larger than others or sell more refrigerated products than others. Overall we think believe we have been reasonably successful in doing this. But there are some areas where we have not identified indicators which correct for potentially significant differences between companies. In some cases this is because there is debate about whether a difference between companies should be taken into account. For example in order to make an overall comparison of companies' energy efficiency, should we take into account the fact that some companies have more 24 hour opening than others? The answer depends on the purpose of the benchmark. Our benchmark aims to provide a high level overview of relative carbon efficiency. As a result we are not proposing to correct for 24 hour opening. In future iterations of the benchmark, we may develop multiple versions of indicators to provide greater insight into the underlying causes of variations in performance.

On some issues we would like to correct for a difference between companies, but have not been able to collect sufficiently detailed data. For example, many companies fill their empty trailers with goods from suppliers (sometimes known as backhauling). This increases their own emissions, while reducing those from the overall grocery distribution system. Unfortunately, the data does not seem to be available to correct for this.

Consultation

The production of this benchmark has involved consultation with the companies involved and a number of experts (see Acknowledgements), based on a detailed benchmark design document. Detailed comments were received from three companies, with brief feedback from the others. Broadly, the initial design was considered appropriate, but there was some debate on the treatment of some issues (e.g. whether or not to give credit to companies for purchasing 'green tariff' electricity, or for using biodiesel). In the

end, only minor changes were made to some indicators (e.g. in the Distribution indicator our proposal to normalise fuel consumption by volume was rejected in favour of normalising by weight).

During the consultation phase it became clear that there was widespread demand among the companies for at least the first version of the benchmark to be conducted on a partly confidential and anonymous basis. This is reflected in the content of the report and the Terms of Reference for the project.

The companies covered by this benchmark were all shown a copy of this draft report before publication in order to confirm the accuracy of data. In some cases this led to changes in scoring as new information came to light and the inclusion of more contextual in some sections.

As we later note in our conclusion, having now completed this first benchmark we know

there is much to do in further improving the design of our indicators, and strengthening the quality of data we analyse. As this area of management develops we intend to continuously refine and improve the design of our benchmarking framework.

Project outputs

The project has two main outputs, a public report and a confidential company-specific report. The latter was sent only to the four sponsoring companies and provides tailored performance information for each of the indicators, including detailed performance comparisons against an anonymised peer group for the indicators based on confidential data. The reports aim to compare company carbon management practices and, where possible, their effectiveness. By doing so, we hope to make carbon management excellence in this sector more visible.

Direct carbon performance

Some 80–95% of supermarket companies’ direct carbon emissions come from three sources: electricity use from facilities and equipment, fossil fuel use in distribution of goods to stores, and refrigerant gas leakage.

Energy use in stores

As Table 2.1 illustrates, electricity accounts for 50%–60% of the direct emissions of the supermarket sector. There are two fundamental ways that companies can reduce the carbon emissions associated with their store energy consumption: increase energy efficiency, or reduce the carbon content of the energy supplied by, for example using combined heat and power generation. This section looks at energy efficiency, Section 2 looks at energy supply.

There is significant scope for supermarket companies to reduce this energy consumption through energy efficiency measures. Companies with newly developed ‘green’ or ‘environmental’ demonstration stores are reporting energy efficiency savings of up to 60% compared to traditional stores. These are attributable to factors such as building design, use of CHP and cold air retrieval systems, refrigeration

upgrades, use of natural light and use of automatic lighting control systems. While some of these initiatives are not applicable to existing stores, experimenting in this way can identify significant potential carbon efficiencies for wider implementation across existing and future store developments. Waitrose argues the case for concentrating resources on roll out of efficiency improvements across all stores.

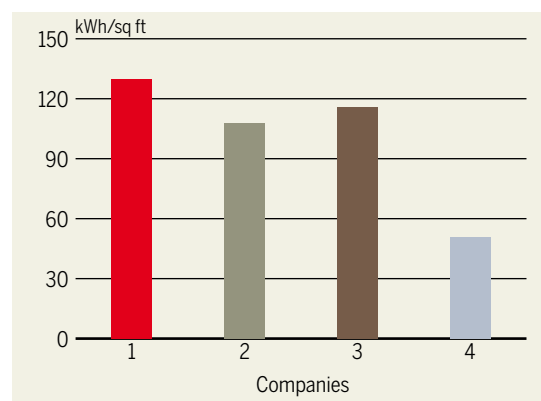
Benchmarking energy efficiency

Evaluating which companies have been most effective in this area is not straightforward. It is not possible to compare company performance meaningfully using simple indicators such as energy use per square foot of store space. The most important reason for this is that the companies in this survey vary significantly in the amount of refrigerated food that they retail as a proportion of their overall activity. This is critically important because food refrigeration is the most energy intensive aspect of supermarket retail activity. As a result, a simple metric like energy use per square foot of store sales area says more about the proportion of refrigerated food that companies sell than it does about energy

1 Includes both UK and Ireland operations
2 Includes carbon associated with green tariff electricity calculated on standard DEFRA grid conversion factors.
3 Distribution emissions for Tesco are an estimate. Carbon footprint from “diesel” was used

TABLE 2.1 Distribution of direct carbon emissions					
Emission report year: 2007	Tesco	M&S ¹	Morrisons	Co-Op ²	Waitrose
Total (tonnes CO ₂ e)	2,250,000	469,000	1,236,448	684,905	251,574
Electricity	54.60%	56.50%	48.00%	62.37%	63.8%
Distribution	12.00% ³	12.15%	12.00%	16.47%	17.6%
Refrigerant gases	26.19%	30.06%	23.50%	18.02%	No data
<i>Note. This table does not provide a complete or robust basis for comparing companies' performances and is only included here to provide an indication of the significance of different emissions areas</i> <i>Source: ENDS Carbon</i>					

FIGURE 2.1 Overall energy efficiency in stores



Note: graph based on confidential data provided
Source: ENDS Carbon

efficiency. Figure 2.1 supports this: company 4 sells much less food/sq ft than the others and its energy use per square foot is lower as a result. The benchmark would be misleading if it portrayed one company as more carbon efficient simply because it sells more of more of one category of product than another.

As a result of these difficulties, this benchmarking project has addressed this issue by comparing company's energy efficiency in each of the three main areas for energy use: refrigeration, lighting, and HVAC (heating, ventilation and air conditioning). In each case we are comparing energy use attributed to the use-type divided by a quantity factor which takes into account the fact that companies are different sizes. The indicators are:

- kWh attributable to refrigeration/linear meter of refrigeration
- kWh attributable to lighting/sq foot of store sales area
- kWh attributable to HVAC/sq foot of store sales area

While these indicators avoid the food/non-food issue mentioned above, they are not perfect. Companies vary in the kinds of refrigeration they use (e.g. fridges vs freezers) and HVAC

energy is not just a function of store area, but is also affected by other issues such as the extent of refrigeration and geographic location. There is also the question about whether companies calculate store-sales area in a comparable way⁴. However, a balance must be struck between the comparability offered by the indicator and the availability of data (and cost of data collection).

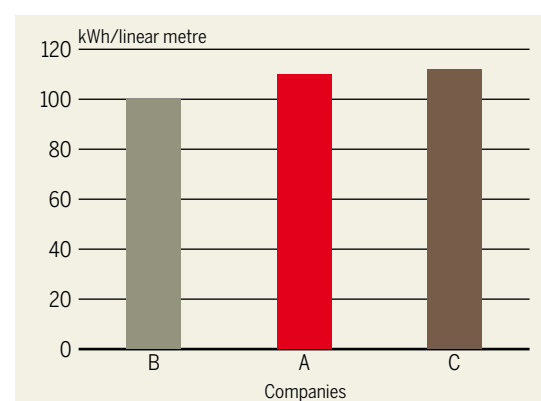
A further advantage of breaking the indicator down into this level of detail is that it provides supermarket companies with more detail about their relative strengths and weaknesses.

Energy efficiency of refrigeration

This is measured in kWh of energy attributable to refrigeration divided by linear metres of refrigeration. Three companies provided data on this indicator.

Company B is 10% and 12% less energy intensive than companies A and C. This may be partly as a result of a major (£55m) refrigeration upgrade programme undertaken by Company B in recent years. The company reports it has delivered significant energy efficiency gains. Company B also undertakes a variety of good practices including using night-blinds, doors on frozen food cases, off-cycle defrost and energy efficient fans.

FIGURE 2.2 Energy efficiency of refrigeration



Source: ENDS Carbon

⁴ Two of the three companies provided both gross store area and store sales areas and for these two sales area as a percentage of gross area was about the same (+/- 1%), however the third company did not supply data.

The companies concerned do not all currently measure electricity consumption of refrigeration directly across their whole estate and instead estimate it based on those stores that use submetering. Similarly the data on linear metres of refrigeration is estimated by companies. Company C estimates an error range of +/-10% for their linear meters estimate. If this level of estimation error is duplicated by the other companies, and if similar errors for electricity consumption estimates exist, then the variance of performance on this indicator is within the margin of error in the data – and so should be treated with caution.

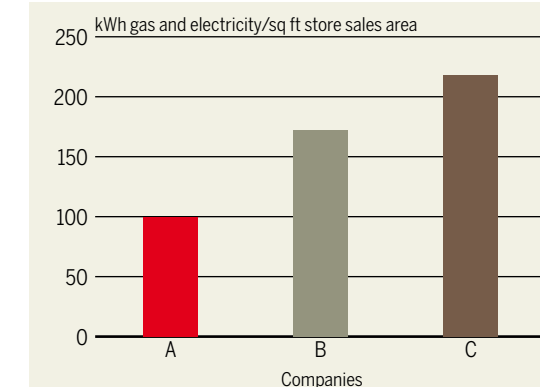
Refrigeration is responsible for carbon associated with F-gas leakage as well as energy (see section below). We discuss performance in this area in the f-gas section below.

Energy efficiency of lighting and HVAC

The picture is rather different for lighting and HVAC. Again, three companies provided data, but this time it appears to show large differences in performance between them. For lighting, the worst company (B) uses 50% more electricity/sq foot than the best (A).

For HVAC, the least efficient company (C) uses over twice as much energy per square foot

FIGURE 2.4 Energy efficiency of HVAC



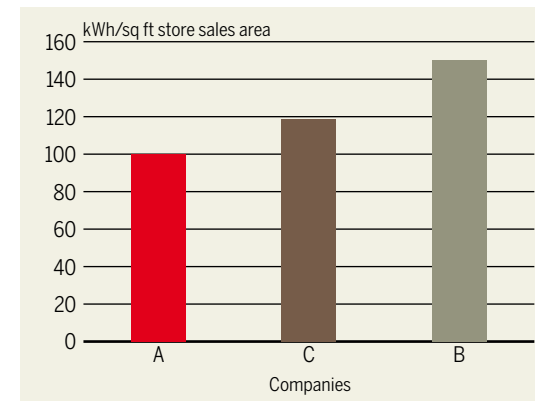
Source: ENDS Carbon

as the best (A), and company B is also much less efficient than the best.

In both cases, the scale of these differences is very large indeed – an order of magnitude greater than the variance for refrigeration. It is possible that some of this difference is due to estimation errors. The companies only have submetering for lighting and HVAC in some stores and so they have extrapolated from these few stores to their overall businesses.

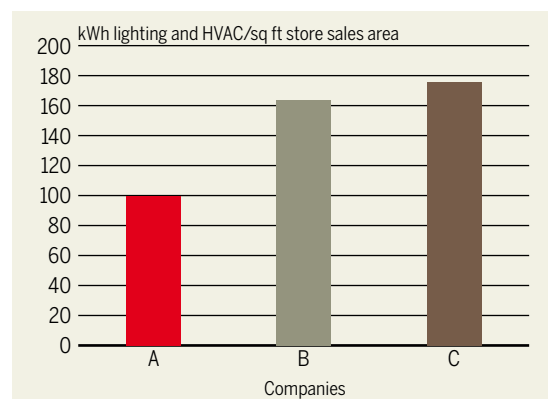
However, if you combine HVAC and lighting (see Figure 2.5), there is still very substantial variance. Company A uses only about 60% of the energy per square foot of sales area than the other companies. So errors in allocation of energy consumption between lighting and HVAC cannot explain the variance. It is possible that some of the difference might arise if Company A used a much broader definition of store sales area than the other companies. This seems unlikely. The scale of the difference in performance indicates, that even taking account of these issues, Company A seems to be significantly more energy efficient than the others in these areas. This may be the result of the large scale energy efficiency capital investment programme that Company A is undertaking (currently running at over 3% of

FIGURE 2.3 Energy efficiency of lighting



Source: ENDS Carbon

FIGURE 2.5 Combined lighting and HVAC efficiency



Source: ENDS Carbon

annual profits), which has so far delivered a 50% fall in its electricity consumption since 2000.

Low carbon electricity supply

In addition to energy efficiency, companies can improve the carbon performance of their stores by reducing the carbon content of the electricity they use. In theory, this should be a fairly straightforward exercise. Companies could simply buy electricity from generating companies that use wind or other renewables. Many such electricity suppliers market such electricity under various 'green tariffs'. Alternatively, they could construct their own renewable generation equipment. And some companies have done these things. Unfortunately in the UK, attributing carbon content to the resulting electricity is problematic. Indeed, DEFRA rules⁵ now prohibit companies from counting such energy as having reduced carbon content.

The central issue is that the UK government has established a system of indirect subsidies for renewable electricity generation. Under this system generators of renewable electricity are awarded Renewable Obligation Certificates for every MWh of renewables they generate. This

subsidy is considerable, accounting for as much as 70% of the revenue associated with, say, a wind farm. They in turn sell these certificates to supply companies who use them to help meet their government targets for renewable electricity provision. The electricity suppliers pass on the costs of these ROCs to their customers. This has two implications. Firstly, all electricity customers whether buying 'green tariff' or not pay for the subsidy for renewables. This, arguably, means that all customers deserve to take credit for the provision of renewable power backed by ROCs, not just the customers who buy 'green tariff' electricity. Secondly, the existence of the system raises doubts about the extent to which customers of green tariffs are paying for renewable electricity to be generated that wouldn't have been generated anyway – the so called 'additionality' question. The additionality issue applies whether the electricity is generated by an electricity generation company or by a wind farm built by a supermarket company. The key factor is whether the generation of renewables receives and sells ROCs.

This is a simplification of a very complicated issue, but the upshot is that DEFRA has recently recommended that the carbon conversion factor for all green tariff electricity for which ROCs are received should be the same as that for ordinary grid electricity⁶ and not a lower carbon rating. DEFRA's calculations for the carbon content of grid electricity already factor in the effect of renewables, so this at least has the merit of avoiding double counting.

The ROC issue is not an absolute barrier to reducing the carbon content of electricity. If a supermarket chose to generate renewables and not sell ('retire') the ROCs it received, the problems discussed above would not arise. It would deserve full credit for reducing its emissions. However, because ROCs are such a generous subsidy, such electricity would be much more expensive than grid electricity. Unsurprisingly, this approach has

⁵ <http://www.defra.gov.uk/news/2008/080616a.htm>
⁶ <http://www.defra.gov.uk/environment/business/envrp/pdf/conversion-factors.pdf>

not been significantly taken in the supermarket sector to date.

The uncertainty about whether or not ROC-backed renewables should be counted as having a lower carbon content has meant that some companies in the supermarket sector have not made any attempt to purchase renewable electricity. Four companies, Waitrose, M&S, Sainsbury's, and Co-operative have done so. Both Waitrose and Co-operative procure 100% green tariff electricity, and the latter has, as a result, stated electricity-related carbon emissions that were very low for the sector. Waitrose, on the other hand, took the view that it was not appropriate to net off green electricity procurement from its company carbon footprint. This decision has stood them in good stead as the current DEFRA guidelines now prevent companies from claiming carbon reductions from green-tariff supply.

CHP

Another way to reduce the carbon content of electricity supply is to use Combined Heat and Power (CHP) systems. Where conventional power stations waste the heat they generate (e.g. by releasing it into the air through cooling towers), CHP plants put this heat to use, dramatically increasing the overall efficiency of the system. CHP systems are not part of the Renewables Obligation scheme and so avoid the ROC subsidy issues described above.

A recent study on CHP found that for every 1,000 MWe (megawatt equivalent) of installed capacity in the UK, CHP plants resulted in 0.76 MtC (megatonnes of CO₂e) emissions saving vs. a UK fossil fuel basket, and 0.51 MtC of emissions savings against a total UK energy basket (including nuclear and renewable energy)⁷.

Two companies source a significant proportion of their electricity from CHP. By purchasing 74% of electricity from CHP sources, M&S reduces the average emissions intensity

of their electricity by a third. The lower carbon content of electricity that they enjoy gives them a significant advantage compared to their peers in terms of the carbon efficiency of their energy use.

Distribution

Supermarket companies are heavy users of Britain's roads. Collectively they transport over 60 million tonnes of goods a billion kilometres a year, consuming some 300 million litres of diesel fuel. This generates significant carbon emissions – 800,000 tonnes, or somewhere between 10–20% of supermarket companies' total direct emissions.

While it is less in terms of CO₂ equivalent (CO₂e) than from f-gas leakage and in store energy use, distribution is an area where considerable efficiency gains can be made. Good practices include:

- use of fuel efficient vehicles
- driver training on fuel efficiency
- fuel switching (i.e. to biofuels, though see discussion below)
- improve logistics efficiency by reducing mileages and increasing load efficiencies.
- Back-hauling/front-hauling (see below).

Companies are exploring all these approaches, some of which are being coordinated by the Institute of Grocery Distribution (IGD).

Benchmarking distribution

There are a number of factors which complicate carbon performance comparison associated with supermarket distribution.

The biofuels debate

Doubts have been raised about one of the carbon reduction strategies described above: the use of biofuels. In principle growing crops that can be converted into fuel is attractive from a carbon perspective. As the crop grows it removes carbon from the atmosphere, releasing it when the fuel is combusted, resulting in a dramatically reduced overall carbon footprint. However, in practice,

⁷ Department for Business and Enterprise Regulatory Reform, DUKES 2006, Energy Trends

the carbon saving offered by some biofuels is doubtful. The farming and refining processes used for growing crops produces greenhouse gas emissions. When these are taken into account, the carbon balance becomes less attractive. In some cases it even turns negative – that is to say biofuels can produce more carbon emissions than conventional fuels. One of the main reasons for this is that some biofuel crops (e.g. rapeseed) make extensive use of nitrogen fertilizer which results in significant emissions of nitrous oxide from the soil. This gas is potent greenhouse gas whose significance is only recently becoming fully understood⁸. In addition, concerns have been raised that the conversion of cropland to biofuels may be responsible for increased pressure for deforestation (with resulting carbon emissions) and high food prices (which may be undesirable for other reasons).

All seven supermarket companies reviewed have made public statements regarding biofuel use in the past. As the debate continues, several companies have put their biofuel implementation targets on hold; in addition, a number of other companies are waiting for a clearer picture on the topic before they decide whether to implement a company biofuel programme.

As a result, this survey has not sought to evaluate the additional carbon efficiency of the supermarket companies that use biofuels extensively. We think there is too much doubt surrounding the carbon factors⁹ for commonly used forms of biodiesel to make such an exercise meaningful. As better data on biofuel origination and carbon contribution becomes available in the future we will review this stance.

Another complicating factor is ‘back-hauling’ and ‘forward-hauling’, where empty lorries are used for purposes other than transporting the supermarket’s goods. For example, in an effort to improve the overall efficiency of the distribution system, some supermarket companies divert their empty lorries, after completing a delivery

to a store, to transport their supplier’s goods to the supermarket company distribution centre. This has the effect of reducing carbon emissions for the system overall but possibly increasing the emissions for the supermarket company. While the supermarket’s lorry would have done the journey anyway, it would have been empty and so consumed slightly less diesel. Forward hauling, on the other hand, is where a supplier’s lorry delivers a supermarket company’s goods to a store on its way back from delivering its own products to a supermarket company’s distribution centre. This practice reduces the supermarket company’s emissions and those of the system overall, while increasing those of suppliers. Allocating carbon savings associated with back-hauling and forward-hauling is complicated and requires data that is not readily available, so we have had to ignore these factors for this benchmark. The practice only accounts for a relatively small proportion of journeys so this is not yet a very major issue. However, various initiatives (e.g. see IGD’s Efficient Consumer Response (ECR) initiative¹⁰) are likely to make this more important in the future.

Core factors

Putting these complications to one side, the carbon efficiency of distribution is a function of two main factors: the fuel efficiency of vehicles and the distance they have to travel to deliver goods. Fuel efficiency is a function of the size of vehicles and their engine efficiency. A large lorry filled to capacity uses less fuel than two smaller vehicles carrying the same total load. Distance travelled is itself a function of the geographical dispersal of stores and distribution centres, the quantity of goods that have to be distributed, and the efficiency of the distribution system. To benchmark distribution performance we have to measure these various factors.

We also have to normalise data in some way to correct for the fact that some supermarket

⁸ <http://www.rsc.org/chemistryworld/News/2007/September/21090701.asp>
⁹ i.e. the net amount of carbon emitted per litre of biofuel
¹⁰ www.igd.com/ecr

companies are much larger than others and so distribute a substantially greater quantity of goods than others. It is not straightforward to correct for quantity. The products retailed by supermarket companies come in all shapes, sizes, and weights. The two primary options are to measure quantity in terms of volume or weight. Trailers tend to fill their capacity in volume terms before weight, making volume the limiting factor, and the best quantity metric to use. However, different supermarket companies measure their volumes in a variety of different ways (pallets, cases, cubic meters) making comparison difficult. We therefore have opted to use weight as the basis for comparison. Also, the IGD has collected data using this method already.

Quantity is not the only factor affecting efficiency; some companies have further to travel than others. From the perspective of overall carbon efficiency of a company’s distribution of goods from its distribution centres to its stores, this factor should not be corrected for. All things being equal, more dispersed companies will emit more carbon. They can, in theory, reduce emissions by becoming more geographically concentrated. One of our benchmark metrics is therefore fuel/tonne delivered.

However, geographical dispersal is the result of historical factors associated with the development of the business and not easy for companies to address. Also, to some extent it is to do with the fact that some companies service more remote communities than others – for example in the fringes of the British Isles. Given that these consumers arguably have a right to the services of supermarket companies, companies should not be penalised for geographical dispersal. As a result, we are also using a benchmark metric of fuel/km.tonne. This corrects for distance as well as quantity of goods.

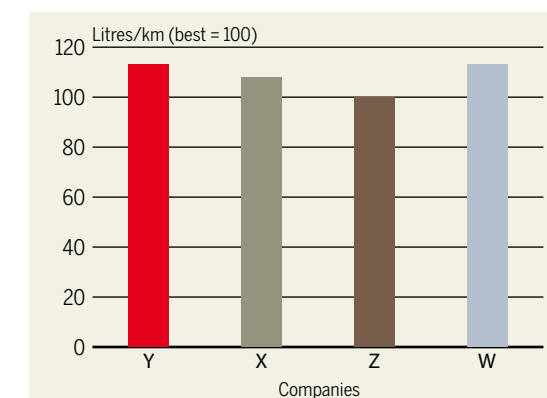
The IGD already collects data from companies on some of these factors as part of its ECR initiative. In order to avoid duplication and

minimise costs for benchmark participants, we have opted to use data provided to the IGD with the permission of the companies involved. We are grateful for their help in supplying this data.

Fuel efficiency

This data reveals that companies have fairly similar aggregate fuel efficiencies (litres/km travelled). This may well change in future years. Some companies appear to be investing more heavily than others in alternative power sources for their vehicles; and it is possible that some forms of biofuel may emerge as uncontroversial and significantly lower in carbon content – increasing the carbon efficiency of vehicles in the future.

FIGURE 2.6 Fleet fuel efficiency



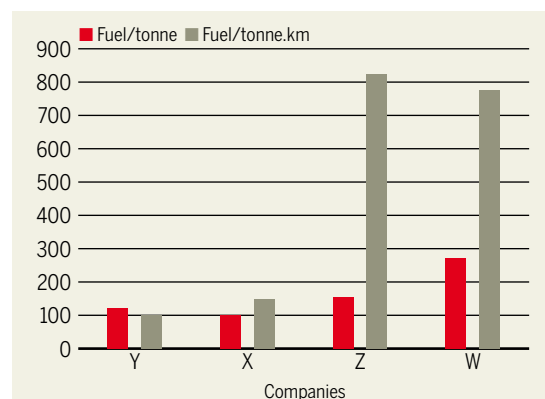
Source: ENDS Carbon, IGD

Logistics efficiency

While the companies’ vehicles operate with roughly the same degree of fuel efficiency, the same is not true of the carbon efficiency for distribution systems. As the following chart indicates, two companies are dramatically more efficient overall than the other two.

This seems to be primarily a function of scale. Companies X and Y have much larger distribution operations than companies W and

FIGURE 2.7 Logistics efficiency



Source: ENDS Carbon, IGD

Z. For example, Company Y transports nearly ten times the quantity of goods company Z distributes, and covers seven times the distance company Z travels (i.e. nearly 70 times the km.tonnes distributed), however, its economies of scale and efficient logistics planning means it uses only seven times more fuel. As a result, on average, it can run larger lorries and use much more of their carrying capacity.

There are also significant differences between the two larger companies and between the two smaller ones. In both cases, one company uses more fuel to deliver each tonne, but this seems to be mainly because they travel greater distances per tonne delivered, with the result that company Y has higher overall efficiency (fuel/km.tonne) than company X and company W than company Z.

F-gases

When the results were in from the first round of supermarket carbon footprints, one of the big surprises was just how large the contribution of refrigerant gas leakage was to their overall emissions. While the volume of f-gases released is small (tens of tonnes), these gases have several thousand times the global warming potential (GWP) of CO₂. The main F-gas used by the

sector is R404a has a GWP of 3784¹¹, for example. This means that f-gases account for 18–30% of emissions for supermarket companies, when adjusted for GWP.

Reducing f-gas leakage

Companies reported using a variety of techniques to reduce f-gas leakage, such as installing pressure alarms to identify leakage more quickly, improving installation and maintenance programmes, and replacing old equipment with newer fridges. The Carbon Trust and the Institute of Refrigeration have joined forces to implement RealZero, a knowledge-sharing project with an aim to cut refrigerant leakage and improve the environmental performance of refrigeration equipment.

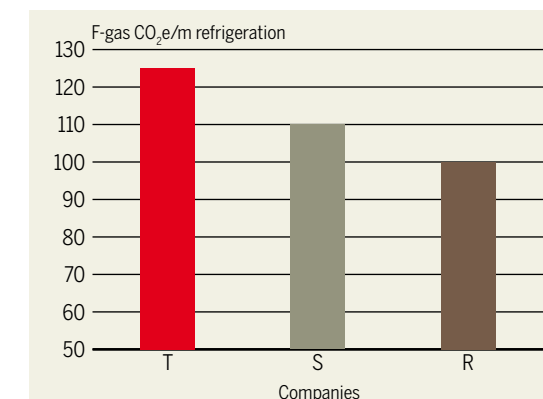
One long-term solution being explored by several companies is replacement of f-gases with other refrigerants with lower GWP. Ironically, CO₂ is the favoured successor – its GWP is thousands of times lower than typical f-gases (GWP=1). However, at present these alternatives are not as reliable, efficient (so requiring more energy input), or cost effective. The refrigeration industry also needs to invest in the training of engineers to support new technologies. They are only used on a trial basis within the sector. The refrigeration specialist from one participating company estimated that it would be several years before low-GWP refrigerants comprised a significant proportion of supermarket companies' refrigerants. When looking outside of the supermarket sector, Coca-Cola has recently installed over 30,000 HFC-free low-GWP fridges. Given that over 70% of Coca-Cola's carbon footprint is from their refrigeration equipment, this is an obvious priority area for the company.

Benchmarking f-gas leakage

To compare the management of f-gas leakage, we have chosen to use annual tonnes of refrigerant

¹¹ IPCC (2001) Climate Change 2001, Table 6.7

FIGURE 2.8 F-gas efficiency



Source: ENDS Carbon

used for top-up (weighted for GWP) divided by linear metres of refrigeration as our indicator.

The amount of f-gas used for top up is a good proxy for the amount of leakage in a given year. It has the advantage of being relatively easy to measure, because it has to be purchased, and because there is an EU directive¹² which requires companies to compile data on this and report it to DEFRA.

To enable effective comparisons between companies, we need to make two corrections: we need to correct for GWPs of the different f-gases used and for the fact that some companies use more refrigeration than others.

Correcting for GWP. While supermarket companies mostly make use of the same f-gas – an HFC called R404a – they also make use of other gases. R404a comprises over 90% of the total f-gases used for two companies and over 75% for the third responding company. The varying GWP must be corrected for in order to benchmark.

Correcting for size. A large supermarket company uses much more refrigeration than one of the smallest companies. This needs to be corrected for. We considered normalising using food revenue but to correct for this. But this introduces distorting factors such as the fact that companies vary in their food pricing strategies (high end vs budget). One company suggested we use linear meters of refrigeration as a crude but less distorting measure of the quantity of refrigeration used by different companies.

F-gas benchmarking results

Three companies provided data against this indicator. Company R appears to have significantly lower f-gas leakage than the others, Company S leaks 15% more and Company T 25% more per metre of refrigeration. This seems to be a significant variation.

Some of this variation in performance might result from inaccuracies in the data. Companies are required under the EU F-Gas directive to

provide data to DEFRA on f-gas leakage, so we assume relatively small estimation errors for this data. However, data on linear meters of refrigeration is estimated by companies. Company T estimates an error range of +/-10% for their linear meters estimate. If this level of estimation error is duplicated by the other companies, this error may explain at least part of the difference, but given that the best company is 25% better than the worst, it seems unlikely that estimation errors account for the whole difference. Other factors such as age of refrigeration equipment, type, maintenance, and monitoring programmes may have a significant role to play. More detailed investigation would be useful. M&S has recently announced a target to reduce refrigeration leakage by 50% by 2015. This sector-leading target indicates the scale of carbon efficiency that could be possible in this area.

Corporate carbon management

This section is based primarily on a survey of company websites and corporate responsibility reports. In some sections (particularly Performance management integration) we have also made use of additional data supplied by the companies who responded to the questionnaire.

¹² http://www.fluorocarbons.com/en/debate/regulatory_developments/f_gas_regulation.html

Climate change policies

Best practice: *policy has formal status and is approved by the Board. It includes: commitments to address both direct and Scope 3 emissions; both UK and global operations; specific objectives and explicit reduction targets with a reasonable timeline; establishes a continuous review and improvement process; defined accountability for implementation.*

Companies need clear policies on climate change in order to enable change effectively. Policies create public commitments and goals that guide decisions throughout the company in the intended direction. Strong climate change policies, supported by the company CEO and senior leadership, will encourage staff action. In order to be most effective, a company climate policy should include specific objectives and explicit targets with a reasonable timeline, cover all global operations, create a requirement for monitoring and review, and be binding to all staff. Good corporate climate change policy will take into consideration both internal direct GHG producing activities, and relevant indirect GHG emissions, such as from the supply chain, customer use, and end of product life. As a result, this project chose to evaluate the relative quality of different company policies in the sector.

This proved more challenging than anticipated. It was often difficult to decide what to count as a company “policy”. On a narrow definition, a company policy is a statement, signed-off by the board, that sets out the company aims, commitments and procedures on a topic. On this narrow definition, the majority of companies in the survey do not have, or do not publish their climate policies. On the other hand, most companies include in their CSR reports and websites statements of various kinds about strategies, plans, and actions taken towards climate change. However, it is often hard to determine whether the activities described in these communications are formal commitments backed by the CEO and the board, against which

the company expects to be held accountable; or whether they are aspirational plans that could be revised at any time.

Another problem is that all of the companies in the sector have over-arching policies on environmental issues that do not specifically reference climate change, and it is hard to judge their precise implications for this topic.

In the case of the John Lewis Partnership (owner of Waitrose), a requirement to address environmental issues goes beyond ‘mere’ board-sanctioned policy commitments. Included in the Partnership’s constitution is a requirement to “take all reasonable steps to minimise any detrimental effect its operations may have on the environment, and to promote good environmental practice.”

Both climate change initiatives and plans, and broad environmental policies are important, but we believe they are not a substitute for explicit climate change policies expressly endorsed by the board. Our survey did uncover some policy documents relating to aspects of climate change. We describe them below.

Climate change policies (narrow definition)

A number of supermarket companies have begun implementing specific policies that focus on mitigating GHG emissions. M&S, Waitrose and Co-operative have established “new vehicle” or “green vehicle” policies. These vehicle policies set requirements that new vehicles must be low-emission, such as diesel or hybrid models. Waitrose is supporting an industry project to develop electric or hybrid electric vehicles or high bio-content fuels made from renewable sources such as biomethane from waste, jointly with Cenex, the UK’s national Centre of Excellence for Low Carbon and Fuel Cell Technologies. Co-operative’s vehicle policy defines the maximum g/km of CO₂ allowed in company vehicles and sets a reduced limit for 2010 and 2012. Specifics on types of diesel

motors acceptable were also outlined by Co-operative.

Co-operative also established a sales policy for large kitchen appliances, mandating that only “A” rated or above appliances could now be sold by the group. M&S takes a similar approach and choice edits out all appliances under an “A” rating. Through its five Food&Home stores Waitrose retails a small volume of John Lewis branded electrical appliances – John Lewis has set a policy to sell more than 90% ‘A’ or ‘A+’ rated white goods, (currently 95%). All John Lewis own brand refrigeration appliances are HFC free.

Waste management was another area that some companies have already implemented a policy. Most companies have outlined policies around waste segregation and sustainable waste management respectively.

In the area of buildings, M&S requires construction suppliers to follow a sustainable construction manual. Waitrose also has a Sustainable Construction Framework for its buildings, representing construction policy and principles that includes commitments on energy efficiency. Its parent, John Lewis, also has a high level climate change statement in the ‘Our Views’ section of its website.

In order to address the high carbon intensity of emissions from business air travel, M&S has established a business travel policy that focuses on rail travel and car sharing whenever possible. In addition, M&S has provided a clear policy on four climate topics; these include company positions on carbon trading, carbon offsetting, biodiesel, and carbon labelling.

The M&S “Plan A” document could be considered as an example of an overarching company policy document. Plan A is comprehensive and outlines company guidelines, goals, scope, and actions directed at climate change and other sustainability issues. Plan A is a good example of how a company can clearly and effectively communicate their sustainability

and climate change plans to both staff and the public. However, Plan A is perhaps more of a collection of initiatives than a policy statement. Tesco’s climate change strategy also outlines an array of useful initiatives covering: setting an example, working with others, and empowering customers.

Co-operative outlined their new Sustainable Development Policy in their 2007/2008 sustainability report. This overarching policy considers company contributions to climate change and as a policy is shown to influence business strategy.

Climate change policy (broad definition)

If the definition of “policy” is used more loosely to include terms such as: strategy, plans, priorities, principles, values, etc., then all companies in the survey can be considered to provide a substantial amount of policy information (see summary table below).

Most supermarket companies have set large overall reduction targets, often focusing on overall energy use per sq metre. Many retailers have further broken their climate change strategies into specific areas to help focus work in the carbon intensive areas. These areas include: energy, refrigeration, distribution, supply chain, and customer behaviour. Not all companies have yet outlined plans to address their indirect carbon obligations, such as from the supply chain. Those companies that have are still in the preliminary stage and will need more time to build understanding before developing subsequent policies.

Direct emissions such as energy use, refrigeration, and distribution are being measured by all seven companies reviewed. Reduction plans and targets have been established by these companies and several companies have linked employee bonuses to their climate reduction targets, a subject that will be covered in a following section.

TABLE 2.2 Carbon policy

Corporate carbon management	ASDA	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
Clear policy	2	2	3	2	2	2	3
Support of leadership	3	3	3	3	3	3	3
Explicit targets	3	3	3	3	3	3	3
Review and improvement process	2	3	3	3	2	3	2
Scope (includes direct?)	2	2	2	2	2	2	2
Staff accountability	3	3	3	2	No info	3	3
Publicly reported emissions data	2	3	2	1	2	1	3

Source: scores based primarily on public data

From the information available, these climate policies and plans are global in nature, covering all operations under the respective business. Support from leadership on these plans was generally implied rather than explicitly stated. For example, several CEOs have made public statements regarding their companies' intent to take action on climate change. Additionally, a CEO statement including climate change commitments is a common fixture in company CSR reports. A number of the companies linking carbon reduction progress to staff performance were especially focused at the senior management level, a clear indicator of real intent.

While almost every company is now reporting their climate change activity and progress towards reduction targets, only four, Tesco, M&S, Sainsbury's and Waitrose, indicate they review policy to accommodate new learning. Tesco, for instance, outlines that all of their key performance indicators (KPIs) are reviewed annually to ensure relevancy.

Targets

Best practice: *overall annualised carbon emissions intensity reduction goal of over 5% per year (or equivalent in absolute terms); additional consistent targets for specific performance areas.*

The extent to which companies reduce carbon emissions is a function of their ambition as expressed in their goals and targets. Companies may fail to meet targets, but setting them helps

orient management activity towards achieving them, and creates a degree of accountability for doing so. All companies surveyed by this report have set targets relating to carbon emissions (or a proxy like electricity consumption), but there is significant variation of the ambition represented by these targets.

Carbon neutrality

One company in the sector, M&S, has a target to be carbon neutral by 2012. It aims to achieve this primarily by reducing its own emissions, and then offsetting the rest. Other companies have indicated they believe offsetting cannot substitute for achieving emissions reductions and so they remain focussed on working to deliver reductions in key areas to minimise their impacts. There are two key questions here: how effective are the offsets that M&S buys to deliver carbon neutrality? And how much will it rely on offsets rather than delivering direct emissions reductions? If M&S buys the very highest quality offsets, where the 'additionality' and durability of the offsets is beyond dispute, and if (as it has stated) it only buys offsets once it has already done all it can to reduce its operational emissions, then it will arguably be delivering more net emissions reductions than its peers in the sector. If, on the other hand, the additionality and durability of its offsets are in doubt, or if it delivers disappointing operational emissions reductions, then this strategy will by no means

TABLE 2.3 Carbon targets

Company	Annualised reduction ^a	Target percentage reduction (CO ₂ e intensity unless otherwise stated)	Target year
Tesco	5.6%	50%	2020
Co-operative (using sub-targets)	4–5% ^b	25% electricity, 20% refrigerant, 15% distribution	2012
Morrisons	4.5% (absolute target not intensity) ^c	17% (absolute reduction)	2010
ASDA	3.6%	20%	2012
Sainsbury	3.6% ^d	25% energy use, 15% distribution	2012
M&S (ex CO ₂ e- neutral commitment)	3.4% ^e	25% electricity, 20% distribution	2012
Waitrose ^f	1.5%, 1.3%, 1.5%	10%, 20%, 60% ^g	2010, 2020, 2050

a To work out annualised emissions targets we asked what annual percentage reduction would be needed each year to deliver the overall target reduction. This is like a 'compound interest' calculation.

b The Co-operative Group has no overall target but separate ones for electricity, refrigerant and distribution. These were converted to CO₂e targets by multiplying the electricity target by the proportion of Coop's carbon emissions that we estimated arises from each area (our estimates are imprecise given that Co-operative Group's carbon data includes ROC-related emission reductions); then annualised as in the previous note; then combined to give a total CO₂e equivalent target.

c Morrisons' target is expressed in a unique way. It aims to "Reduce its Carbon Footprint cumulatively by 36% by 2010" (with 2005 as base year). This translates into delivering reductions of some 533,000 tonnes over 5 years. But the cumulative nature of this target means that each year it calculates the saving relative to 2005 and then adds it to the previous year's reduction. In 2006 it emitted 129 ktCO₂e less than 2005 and in 2007 it emitted 245ktCO₂e less than 2005, giving a cumulative total of 374ktCO₂e saved compared to what it would have emitted at 2005 emission rates. On this basis, even if it achieves no further incremental reductions in 2008 and beyond, Morrisons will have exceeded its target in 2008 (indeed it could even afford to increase emissions somewhat and still do so). How does this compare with its peer group? Morrisons could exceed its target by maintaining 2007-level emissions up to 2010. If it were to do this, then its annual emissions will be somewhere around 17% less than they were in 2005. This is around average for the sector. However, unlike its peers, Morrisons' target is expressed in absolute not intensity terms. This means that if Morrison grows its business significantly through the period (e.g. opening new stores), its target will become more demanding in intensity terms, perhaps overtaking Tesco and Sainsbury. If, on the other hand, its business shrinks, its target will be less ambitious.

d Sainsbury has no overall target but separate ones for depot and retail energy efficiency, and distribution. The same approach used in calculated an overall target for Co-operative and Waitrose (footnotes 13 and 17) was applied to Sainsbury.

e M&S's efficiency target relates to energy efficiency and distribution. Given CO₂e associated with stores and offices is 50% of total CO₂e, a 25% store energy target is roughly equivalent to a total reduction target of 12.5%. We also added similar targets for warehouses and offices and fuel efficiency.

f Waitrose has three overall targets for 2010, 2020 and 2050. It also has a 20% store energy target and a 15% distribution efficiency target, which are slightly more ambitious than the overall targets. They work out at the equivalent of 2.3% per annum.

g Waitrose targets are currently under review and the long-term target is expected to be revised upwards to 80% reduction by 2050.

Source: ENDS Carbon

deliver sector-leadership. M&S has recently announced a 50% f-gas reduction target by 2015, which would equate to a 5.4% annualised reduction in Table 2.3. So the signs are looking good for M&S.

Carbon intensity targets

Companies differ in the relative strength of their targets for reducing carbon emissions through their own activities. All companies in the sector have announced targets to reduce carbon emissions intensity. Comparing these targets is not straightforward. Different companies aim to achieve different percentage reductions over different time periods. Also, some companies have partial targets relating to electricity, say, rather than for overall carbon emissions. However, with the exception of Morrisons (see below), it is possible using various assumptions (see footnotes to table) to standardise these targets in order to give a corrected annualised reduction in CO₂e that is implied by the target. This provides a rough measure of the relative strength of targets.

As Table 2.3 indicates, if you do not take account of M&S's ambitious carbon neutral target, Tesco's targets are the most demanding within the sector.

Waitrose stated that they are in the process of reviewing their environmental targets including their CO₂ emissions reduction targets, to bring them in line with the revised government targets (recently increased with the Climate Change Act).

Another detail to point out is that, with the exception of Morrisons (see footnotes), all companies use carbon intensity targets. While, in the end, absolute emissions reductions are necessary, expressing targets in terms of intensity, provides a better measure of company's performance in managing carbon, rather than reflecting growth or shrinkage in market share etc. Most targets used by the sector are based on store floor area, but one is

based on turnover. This raises comparability issues¹⁴.

Another way of benchmarking targets is to compare them against UK government goals. These require a 26% absolute reduction on 1990 levels by 2020 and 80% by 2050. These both translate into absolute targets of about 3.3% per annum. Morrisons absolute target compares favourably with these. However, these are absolute targets, not intensity targets and so are not comparable with those of the rest of the companies in this benchmark. To make them comparable we need to take account of the companies' future growth. If we follow the approach taken by the Carbon Trust Standard, and correct for economic growth of 2.5% per annum, then to match the Government's target companies would need to have intensity targets of approaching 6% per annum, roughly in line with those at the top of the above table.

Performance management integration

Best practice: *integrates effectively weighted and relevant carbon emissions targets into the individual performance objectives and assessments for all senior managers in the top three levels of management, including the board; and for store managers. Regular review of progress against targets.*

If they are serious about achieving their carbon reduction targets, companies must motivate their managers to align behaviour with their company policies and targets. When it comes to core business goals like increasing sales or containing costs, companies routinely ensure that managers have corresponding individual performance goals. The same is not always true for environmental goals.

This benchmarking exercise has sought to evaluate the extent to which supermarket companies have integrated their carbon reduction targets with their performance management system. We have looked at this question at two levels: store managers and senior managers.

¹⁴ Over the long-term in a country like the UK with restricted land availability, it seems likely that turnover growth will exceed floor area growth over the long-term. If so, store area targets would be harder to achieve than an identical turnover target. However, if we experience a protracted recession, turnover may shrink faster than floor area, reversing this equation.

TABLE 2.4 Performance management integration

Corporate Carbon Management	ASDA	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
Use of carbon-related metrics in company PMS for managers	3	3	3	2	No info	2	2
Source: ENDS Carbon							

Store managers

Of the companies for which we have data (6 out of 7 companies) all indicate that every store manager has targets that are relevant to achieving carbon emissions reductions; for example relating to store energy efficiency, carrier bag use, and waste. These targets are fully integrated with the store managers' general performance management system. To give an example, for one company this means that performance against targets is reviewed on a monthly basis, with any issues and problems flagged and communicated to senior management hierarchy. Failure to meet targets in this area is considered alongside other targets, failure to meet a number of targets will have negative financial implications for the individuals concerned. This level of integration indicates that carbon targets will be given serious attention by store managers.

We have not gathered data about the weight assigned to carbon emissions-related targets compared to other kinds of target. It seems likely that some targets are given more importance than others. With the level of detail we have gathered it has not been possible to say whether any company's approach is significantly more effective than another's. Some companies are limited in terms of how they can incentivise employee performance. For example the John Lewis Partnership (which Waitrose is a part of) shares its profits equally amongst all of its partners (employees). The bonus it pays is not performance related but based on the overall financial performance of the business.

Senior managers

At the senior management level, the picture is more varied. Two companies informed us that 100% of their senior managers have carbon-emission-related targets. In both cases, these targets apply to the top three tiers of managers, right up to board level. Another two companies report that a subset of their senior managers have these targets; one of which indicated that the subset comprises senior operational managers with responsibility for carbon intensive areas (e.g. logistics, buying, retail development etc.). One company has reported that it does not have targets for senior managers, and two have not provided data.

In some companies targets apply to senior managers at board level, in others they also apply to the next two levels of managers reporting to the board. Again, the level of data we have been able to gather does not allow us to comment on the relative quality of these targets or their implementation.

The widespread integration of carbon emissions metrics into the performance management systems of supermarket companies is encouraging, and indicates that their efforts in this area are being taken seriously. However, given that in some companies targets may not reach the most senior management, this may be a problem for alignment, and ultimately achievement, of goals.

Carbon reporting

Best practice: *reporting is transparent and easily accessible; uses accurate data and follows accepted standards; is comprehensive including Scopes 1, 2 and*

TABLE 2.5 Publicly reported emissions data							
Publicly reported emissions data	ASDA	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
Transparent	yes*	Yes	yes	yes*	yes*	yes	yes
Accuracy	yes	Yes	yes	yes	yes	yes	yes
Segmented	yes*	Yes	yes	yes	yes*	yes*	yes
Comprehensive	yes	Yes	yes	no	yes	no	yes
Verified	yes	Yes	yes*	no	no	no	yes*
Source: ENDS Carbon							

3; segments emissions data by geography and activity; and data is verified by a qualified external third party.

Public corporate CSR or sustainability reporting is an important part of building a company’s reputation and enabling accountability. Public reports also allow stakeholders to understand the CSR and sustainability issues companies are exposed to, to learn how they are managing them, and to assess the company’s performance.

This project included an assessment of the quality of corporate reporting on climate change. For supermarket companies, climate change is only one of a large number of issues included in their CSR reporting. Nevertheless, overall the companies in this survey provide a high quality of publicly reporting of their climate change data. For all companies a significant amount of emissions data was available on company websites and in specific company reports. Six of the seven companies reviewed published a CSR report (or Corporate Report or Sustainability Report) in 2007–08. In addition, five of six eligible supermarket companies submitted their emissions data and climate relevant information to the Carbon Disclosure Project (CDP) (although one of these companies, Morrisons, did not release their CDP data to the public). Note that in the UK the CDP specifically targets and invites FTSE listed companies to respond to its voluntary survey and that neither Waitrose nor Co-operative are FTSE listed.

This benchmarking exercise gauges climate change reporting on the following factors:

level of transparency, overall data accuracy, comprehensiveness of information provided, segmentation of the information by scope, country or activity, and whether the information was subjected to a 3rd party verification.

While not invited to make a submission to the CDP, we have assessed Co-operative as one of the top reporting supermarket companies; their 140 page sustainability report provided in-depth analysis of greenhouse gas emissions in various activities, and was externally verified. Finally, Tesco and ASDA/Wal-Mart, were listed on CDP’s Climate Leadership Index, a measure ranking companies on the amount and quality of information submitted to the CDP.

The lack of external third party verification of data was a weakness for many company reports. Three companies do not have any external verification, and two companies have overall verification of their reports, but no specific or only a “limited assurance” verification of their carbon data. In comparison, two companies (ASDA and Tesco) included specific verification of their carbon data. In general, verification can add an extra level of quality and credibility to company reports. Specific verification of carbon data provides further assurance of reliability and accuracy. Waitrose and Sainsbury’s data appears to be less complete than other companies reviewed, omitting refrigerant gases from their totals, however Waitrose has confirmed their intention to publicly report this information this year.

Indirect carbon performance

Supply chain carbon management

Management of carbon in the supply chain is an important element of emissions that supermarket companies can influence. One company estimated that 60% of the emissions associated with their business arise from their supply chains, compared to 30% from customers, and 10% from direct operations. No supermarket companies have done a comprehensive evaluation of supply chain emissions as yet. However, analysis and discussion of the following factors provides an understanding of the supermarket companies that are taking more responsibility for the emissions in their supply chain, and ultimately influencing reductions.

Goals

While suppliers have primary responsibility for their own carbon emissions, supermarket companies recognise some level of accountability for their supply chain emissions¹⁵. Six of the seven reviewed supermarket companies signed onto the British Retail Consortium’s “A Better Retailing Climate” (BRC). One of the initiative’s five key goals was directly focused on supporting suppliers to reduce their climate impacts.

Many companies have initiatives directed at their supply chain, a number reviewed carbon footprints of specific products, often comparing their options available. As a result, there are examples where companies have changed suppliers. For example, one company changed the sourcing of its orange juice supply from Brazil to Spain in order to reduce food miles to the UK market. Other strategies included labelling air freighted produce, holding supplier forums to

share best practices in energy efficiency etc. and implementing policy and measures to address carbon in the supply chain. Part of the £100 million Sustainable Technology Fund that Tesco has created will be allocated to supply chain carbon management.

Every grocery retailer also acknowledged the opportunity to reduce food miles by focusing on local food suppliers. ASDA has focused on local foods as a core initiative area and is currently perhaps the most active, making over 3000 local products available in 2007. Some companies have won awards in this area – for example, Waitrose won an award from Business in the Community for its local and regional sourcing, which covers 1400 products. Many of the other companies had implemented different levels of local food initiatives and only two companies appeared to be at the planning stage in this area.

Supply chain emissions data

Best practice: asking for high quality emission data from large and/or carbon intensive suppliers.

Tesco and ASDA (or their parent company Wal-Mart) represents best practice by attempting to systematically gather supplier emissions data information. Through their involvement with the Carbon Disclosure Project Supply Chain Leadership Collaboration Tesco has requested emissions data from over 130 suppliers, representing 70% of sales in the UK. Other companies have conducted some small scale requests for information from specific product categories, but have not integrated this into an annual, formalised programme. In addition some companies have conducted detailed product-

15 It is worth noting that several companies in the survey own elements of their supply chains. Morrisons has a food processing business and Co-operative and Waitrose have farming businesses. Here there is a direct responsibility to manage supply chain emissions.

specific carbon labelling initiatives which require narrowly focused supply chain carbon data collection (see customer information section below).

Identifying carbon hotspots

Best practice: *systematically identify and prioritise carbon hotspots in the supply chain; establish reduction targets for priority hotspots; implement interventions.*

In addition to seeking data from suppliers, several companies have done high level surveys, often using third party research consultants, to identify carbon intensity ‘hotspots’ in their supply chain. Tesco has initiated a total supply chain input-output analysis and expect the results in 08/09. There have been various one-off initiatives by supermarket companies using consultants to identify hotspots. M&S has assessed hotspots across 5,000 food products and are focussing on food processing (refrigeration and other carbon factors) and meat production. ASDA has used Life Cycle Assessments which identified on-farm production as one hotspot; and logistics analysis which identified air freight and part-filled containers on imports as others. It is difficult to compare the respective effectiveness of these initiatives at this stage.

Amongst the respondents, the key carbon hotspot areas included: agriculture, meat and dairy production, refrigeration, food processing, clothing care, soft drinks, alcoholic drinks, food wastage, air freight, and inefficient logistics (e.g. shipping half empty containers).

Initiatives taken to address carbon hotspots at this point were varied and difficult to compare. Some of these initiatives included working with farmers to develop an on-farm tool to benchmark and mitigate adaptation measures, developing carbon management KPIs, consolidating materials and loads, holding seminars with various suppliers to share best practice in

refrigeration, food processing, and meat production. As yet, no supermarket company has undertaken a comprehensive company wide supply chain analysis with prioritisation of issues based on factors such as carbon intensity and ability to influence.

Using farm assurance standards to drive carbon efficient farming practice

Best practice: *farm suppliers are required to comply with a farm assurance standard that requires farmers to manage and reduce fertiliser inputs; and verifies compliance.*

It is well recognised that one of the most carbon intensive areas of supermarket supply chains is agriculture, specifically methane generated by farm animals and nitrous oxide arising from fertiliser use. We have focused on the latter category (although the former could merit measurement in a future benchmark). Farmers can significantly reduce their nitrous oxide emissions by applying fertiliser more efficiently. Supermarket companies can influence farmers by requiring careful management of fertiliser inputs in the ‘farm assurance’ standards they require their suppliers to satisfy. Four supermarket companies responded to our enquiry on this issue. All have formal farm assurance schemes for domestic farmers which include fertiliser use and management, although the standards vary in their main focus (eg food safety, animal welfare, food quality). The table below describes the standards each supermarket company requires its farmers to meet. It is difficult to differentiate further on this factor without a thorough analysis of the different standards and their carbon focus and stringency. The LEAF Marque approach used by Waitrose does stand out for two reasons: it is independent, and there is a high level of transparency about its operation. In future versions of the benchmark we hope to be able to analyse this area in more detail.

TABLE 3.1 Company farm assurance standards

	Standard	Classification
Waitrose	Linking Environment And Farming (LEAF) Marque ¹⁶	External, independent scheme
M&S	Field 2 Fork	Internal scheme, developed in association with LEAF
Tesco	Nature's Choice	Internal Scheme, farms independently audited
ASDA	DEFRA National Farm Assurance Scheme	Internal Scheme
Source: ENDS Carbon		

Two of the three non-responding supermarket companies also referred to farm assurance schemes in their public reporting. Although neither of them paid direct reference to climate change in their report and only one of them, the Co-Operative Group, moved beyond pesticides focus to include consideration of fertilizers.

Supply chain packaging

Best practice: *explicit packaging reduction targets adopted with a short time-frame for both own-brand packaging and all packaging; implement reduction initiatives company wide substituting for less carbon-intensive materials, closed loop processes, and designing out waste.*

All supermarket companies are signatories to the Courtauld Commitment: a voluntary agreement supporting less packaging and food waste. Given the large carbon footprint associated with food production, food waste is a major source of unnecessary emissions. However, this topic is not covered in this benchmark due to limitations on data available. Instead we have focused on packaging. Courtauld includes commitments to design out packaging waste growth by 2008; and to deliver absolute reductions in packaging waste by 2010. The first of these has been achieved. Five companies have set explicit additional supply chain packaging reduction targets: Morrisons and Co-Operative Group committed to 15% of own-brand products by 2010, M&S aims for a 25% reduction of non-glass products by 2012. Sainsbury's set a 5% reduction target for 2010. Tesco and ASDA set

the most ambitious reduction targets: Tesco set a target of 25% of own-brand and branded products by 2010. In comparison, ASDA set a 25% goal on own-brand products and 20% goal for all packaging by end of 2008.

Tesco's key initiatives include moving bulk products and packaging closer to the point of sale, reformulating products into concentrates, and reducing unnecessary packaging (including making packaging thinner or using different materials where possible). ASDA best practices include reduction of plastic and carton board packaging on their entire organics range. Waitrose, M&S, and others are improving packaging recycling labelling on their products. Other initiatives include: increasing the content of recycled materials in packaging, “closed loop” and “design out waste” schemes, and introducing products with packaging that can now be reused and recycled.

Customer carbon management

Customer behaviour and the purchase decisions that they make at the supermarket can create significant reductions in greenhouse gases. One company estimated that carbon emissions associated with customer travel and product use totalled three times the company's own emissions. While these emissions are primarily the responsibility of customers themselves, supermarket companies have some ability to influence them. Customer carbon management strategies can involve providing consumer's with access to low carbon product choices, enabling

¹⁶ LEAF Marque covers: environmental policy, targets and objectives, consideration of the environmental impact of all crop protection practices, pollution control and waste management (including waste minimisation) soil management and crop nutrition, energy and water efficiency conservation.

TABLE 3.2 Supply chain							
	ASDA	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
Farm assurance	2	2	2	3	No info	No info	No info
Packaging	3	3	2	1	1	1	1
Target	25%, 2008 (own brand), 20%, 2008 (all packaging)	25%, 2010 (own brand and branded)	25%, 2012 (all non-glass)	0% growth, 2008	15%, 2010 (own brand)	5%, 2010 (overall vs. \$ turnover), 25%, 2010 (produce)	15%, 2010 (own brand)
Local food programme	3	2	1	3	2	2	2
Supply chain work	3	3	2	2	1	No info	1
Source: ENDS Carbon							

increased low carbon product use, increase recycling opportunities to reduce the overall waste stream, and promote home-delivery services which reduce customer travel. This benchmark investigated each of these areas in turn. As a reminder, this qualitative assessment is intended to give the reader an idea of the many initiatives presently being undertaken in the supermarket sector. No weighting has been incorporated into the assessment and readers should use caution when considering directly comparing the value of one initiative with another.

Low carbon choices available to customers and low carbon product use by customers

Low carbon choices available to customers
Best practice: *large scale initiatives including hundreds of products across all categories, enabling the customer to attain relevant and reliable information on low carbon choices.*

Low carbon product use by customers
Best practice: *widespread customer engagement on low carbon product use through multiple large scale initiatives; including sales goals for low carbon products and behaviour changing strategies.*

From a climate change perspective,

supermarket companies can positively influence customers’ product decisions towards low carbon choices through a “supply-push” approach. Competitive pricing, good product positioning, and adequate supply for low carbon products may increase customer uptake and deliver greenhouse gas reductions.

Many key initiatives to improve access to choice and use were being implemented by all companies evaluated. These initiatives in the period reviewed included: reusable shopping bags and disposable bag avoidance, wash at 30 awareness, carbon labelling, customer information and awareness, energy efficient light bulbs, energy efficient appliances, and product innovation. Rather than attempting to compare very different initiatives between companies, this benchmark has compared initiatives common to multiple companies.

This section combines low carbon *choices* available to customers and low carbon product *use* by customers. During the review process it was found that some initiatives were exclusively choice focused, like energy efficient lighting and A/A+ rated appliances, or use focused, such as reusable bags and wash at 30. However, initiatives like customer information and carbon labelling were determined to be worthy of consideration in both choice and use categories.

Reusable shopping bags and disposable bag avoidance

Best practice: *reusable shopping bags initiatives were implemented in every store; customer financial incentives to encourage reusable bag use and dissuade plastic bag usage; strong bag reduction targets; reducing the carbon impact of the plastic bags still used.*

Switching from plastic to reusable shopping bags may provide a climate impact: some informal estimates put the GHG emissions reduction at 3kg CO₂e per reusable (cloth) bag, though it is not clear how reliable this data is. All seven supermarket companies reviewed had a reusable shopping bag programme in place that included a customer awareness component. In 2007 all companies set a target for a 25% reduction in the environmental impact of plastic bags, most aiming to reach their target by the end of 2008. Both Tesco and Sainsbury’s raised their reduction target to 50% for the end of 2008 after reaching their 25% target early. More recently the larger food retailers set a further plastic bag reduction goal of 50% by May 2009, aspiring towards 70% in the longer term.

Several innovative approaches were taken to increase customer uptake of reusable bags and decrease the impacts of plastic bags given out. Tesco and Co-operative both offered donations to goodwill projects if customers purchased reusable bags. Tesco also incentivised Clubcard members by offering points to members that

reused bags. Tesco also now uses degradable plastic bags and M&S reached 100% post-consumer plastic in their bags in May 2008. Waitrose is also transitioning to 100% recycled content in their plastic Bags for Life and 33% in standard carrier bags. Waitrose has focussed on in store communication materials and the training of its staff to help reduce customer usage of single use carrier bags. M&S took a position to discourage the use of plastic bags and started charging customers 5p per bag.

Low carbon product use

Best practice product use: *awareness campaigns (e.g. wash at 30 °C), product advisory labelling, product redesigns to facilitate lower-carbon use.*

Five supermarket companies report initiatives to move customers towards lowering their washing machine temperature to 30 degrees. With 75% of the carbon footprint for clothing considered to be from the washing, drying, and ironing process, reductions in this area can create a significant decrease in GHG emissions. ASDA reported re-engineering a clothing line to enable it to be washed at 30°C and avoid energy intensive dry cleaning. ASDA also added “wash at 30” labelling onto their clothing line and developed an own brand detergent line that would work at the lower 30 degree temperature. Tesco and M&S also relabelled clothing with “wash at 30” instructions and Tesco also placed wash at 30 logos on products. M&S supported a Wash at

TABLE 3.3 Reusable bags							
	ASDA	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
Programme implemented	full	full	full	full	full	full	full
Target set	25%, end 2008	50%, end 2008	25%, end 2008	25%, end 2008	25%, end 2008	50%, end 2008	25%, end 2008
Incentivised programme	no	full	no	no	no	no	no
Disincentives to plastic use	no	no	full	no	no	no	no
Plastic bag-recycled content or degradable	no	full	full	partial	no	no	no
Source: ENDS Carbon							

TABLE 3.4 Wash at 30°C							
	ASDA	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
Programme Implemented	full	full	full	partial	No info	full	No info
Labeling	partial	full	full	partial	No info	no	No info
Product Redesign/Placement	full	no	no	partial	No info	partial	No info
Communications Initiative	partial	no	full	partial	No info	partial	No info
Source: ENDS Carbon							

30 campaign conducted by the Climate Group and Sainsbury's moved to selling Wash at 30 detergent. Waitrose will be adding wash at 30 this year²³.

Carbon labelling

Best practice product labelling: *air freight labelling already on all relevant products; in-store pilot projects underway with a range of products labelled using product footprinting standards; targets for a labelling significant proportions of products.*

Carbon labelling has some potential as a method to inform customer decisions on climate change. Several companies in the sector (ASDA, Tesco, M&S, Waitrose) have embarked on projects to quantify with reasonable accuracy the carbon emitted in the production of a product category. Many of these projects have been undertaken in collaboration with the Carbon Trust and are informed by the new PAS 2050 labelling standard. While carbon labelling has proved useful as a means for identifying carbon intensity in the production process,

there is debate about whether it is useful as a means of driving customer behaviour – until several competing products in a category are labelled customers will not be able to choose the low carbon variant. Even then there is a question about how many customers will make choices based on such labels.

Another, simpler proxy approach to carbon labelling was adopted by M&S, Tesco, and Morrisons is to add an ‘air freight’ label to all products that have been transported by plane. Co-operative and Waitrose argue that this raises questions about the balance between carbon and the economic benefits to developing countries created by air-freighting their fresh produce to UK markets. Waitrose also recently lobbied against the Soil Association's intended restriction of its organic certification to non air freighted products (an intention which is it has now retracted). The question about how to make trade offs between carbon emissions and economic development is a difficult one.

17 There are some concerns about the validity of including product redesign in Wash at 30. There is a need to be clear that product quality is not compromised to maintain durability.

TABLE 3.5 Carbon labelling							
	Asda	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
Considered approach	full	full	full	full	full	full	full
Programme implemented	full	full	full	No	full	no	no
Air freight labels	no	full	full	rejected	partial	no	rejected
Research stage	partial	full	full	No	partial	no	no
Pilot products in store	full	full	no	No	no	no	no
Note: interpreting this table requires particular care given the trade offs issue discussed above							
Source: ENDS Carbon							

Customer information and awareness

Best practice: *Company wide in-store engagement campaigns using multiple communication channels; covering product specific issues and climate change in general.*

All supermarket companies have implemented customer awareness programmes to stimulate low carbon actions. Many of these have focused on reusable shopping bags and washing at 30. Morrisons and Waitrose promote a “love food hate waste” campaign, Sainsbury's has a customer energy pledge and water saving initiative, and M&S has established a Greener Living section on their website. Tesco and Co-operative have done the most in the Customer Information and Awareness sphere. Tesco has included energy efficiency reductions in their catalogues, created a Greener Living website and brand, and runs Greener Living promotions, labels their packaging reductions at the store shelf, and provided a low carbon leaflet to customers. Co-operative Foods also created a special website dedicated to action on climate change, held awareness events, ongoing awareness campaigns, and engaged customers in a special membership drive for climate action. Both Tesco and Co-operative showed leadership in customer information and awareness, and did a good job of communicating the variety of efforts undertaken. These two companies showed the most initiative to bring information to the wide variety of customer types using many different communication strategies and media. Their approaches were the most comprehensive, focusing on the wide range of climate issues.

Energy efficient light bulbs

Switching to energy efficient light bulbs is one of the most often used examples of a tangible customer action towards climate change mitigation. Not surprisingly, all supermarket companies reported the sale of energy efficient light bulbs as one initiative that they had

undertaken. Tesco has arguably done the most in energy efficient light bulb sales as a result of a number of initiatives they implemented including: creating a policy to carry only LED Christmas lights, doubling the shelf space for energy efficient light bulbs, permanently halving the price of all energy efficient light bulbs, and running a successful promotional campaign to sell ten million bulbs.

Energy efficient appliances

All supermarket companies that sold appliances carried energy efficient A and A+ ratings. ASDA reported retailing A++ appliance rated models and provided a helpful website search tool that allowed customers to search for products based on their energy efficiency rating. Co-Operative claimed to be the first retailer to implement a policy which allowed stores to only carry “A” rated or above large appliances. This policy necessitated the withdrawal of 12 existing product models.

Excluding ASDA, finding product energy efficiency rating information, especially from company websites and discerning between A and A+ or higher products, was not easy. Improvements could be made by companies in this area, enabling more informed customer decisions. Some companies (e.g. Waitrose and Morrisons) do not retail significant quantities of electrical appliances so this indicator does not apply.

Customer recycling

Best practice: *annual increases in the amount of recyclables collected; recycling facilities at every location; ambitious targets; wide range of materials accepted, recycling information on all packaging.*

Recycled aluminium generates just 5% of the carbon emissions compared to those associated with the production of aluminium from raw materials. As a result, for some categories

of waste, recycling offers the potential for large carbon savings, as well as avoidance of unnecessary use of landfill. All supermarket companies have been involved in recycling initiatives for some time, many allowing local municipalities to locate collection bins on their parking lots. One company, ASDA, was conducting a trial run at 2 locations to take back all packaged materials. Morrisons, was very active in 2007 installing 588 new “bring banks”. The company also recycles cell phones, Christmas cards, and launched an award winning “Recyclopedia” which profiled over 2500 products. Tesco incentivized recycling of cell phones and ink cartridges with club card rewards, the company also accepted Christmas Cards and implemented clothes and textiles recycling at 450 locations. M&S also had strong recycling initiatives including: hangers, Christmas cards, and a £5 donation incentive for clothing recycling. Waitrose also accepted plastic carrier bags at every store and incentivised the return of cell phones.

Customer deliveries

Customer delivery best practice: *more than 2% of total sales from goods delivered to the customer; year on year increases; deliveries made using low-emissions vehicles.*

Delivering food products directly to a customer’s door is considered an underutilised way of reducing customer vehicle mileage and the associated emissions. Estimates of customer vehicle emissions from trips to the store have been put at the same level as company emissions from distribution. One company reported each delivery vehicle can save 6000 customer trips to the store every year. As supermarket companies have started running delivery services, some have been able to move their fleets to low or zero emission vehicles. Five of the seven supermarket companies reviewed currently offer food delivery services. Based on sales in this area as a proportion of total revenue, Tesco is the sector leader in customer deliveries, with 5% of their revenue coming from deliveries. Tesco’s home delivery service is seeking to eliminate use of carrier bags, utilizing reusable food boxes

TABLE 3.6 Customer deliveries

	ASDA	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
Programme implemented	yes	yes	yes	yes	no	yes	no
% of total sales	2%	5%	No info	1%	no	No info	no

Source: ENDS Carbon

TABLE 3.7 Customer carbon management

	ASDA	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
Reusable bags (C-Use)	1	3	3	2	1	3	1
Wash at 30 (C-Use)	3	2	3	2	No info	1	No info
Carbon labeling (C-Use and C-Choice)	1	3	2	Rejected*	1	0	Rejected*
Customer information (C-Use and C-Choice)	1	3	2	1	1	2	3
Energy efficient lighting (C-Choice)	2	3	2	2	2	2	No info
A and A+ appliances (C-Choice)	2	1	2	n/a	n/a	1	3
Recycling	2	2	2	2	2	2	2
Deliveries	2	3	1	2	No info	1	No info

* 'Rejected' indicates that the company has considered by rejected carbon labelling on fair trade grounds

Source: ENDS Carbon

instead. Waitrose's home delivery service will take back customer bags for recycling. Waitrose has also introduced other options for delivering and transporting products to the customers home including cycle trailers for free loan at 37 of its stores for customers arriving by bike.

Advocacy and capacity building

Supermarket companies, like other major companies, can play an important role in climate change mitigation through public support for government policy that stimulates climate action. Lobbying of government and participation in governmental legislative consultation processes can contribute to significant milestones not otherwise possible. Conversely, business lobbying to block government policy can significantly harm society’s efforts at climate change mitigation. Such activity would be inconsistent with the climate change policies of supermarket companies, so effective governance is required to ensure that lobbying activity is in line with wider public positions.

Similarly, there is a great need to develop better understanding of carbon emissions from the supermarket sector, and how to better manage them. Building capacity in the UK to develop this understanding is important, for example, through funding of independent research projects. Support for company led public awareness campaigns can create a much needed and timely understanding of the climate challenge with the general public, and given supermarket companies are large employers there are substantial opportunities to encourage carbon emissions reductions through employee awareness raising.

CEO public policy intervention

CEO leadership best practice: *regular speeches on climate change describing the company’s commitments and arguing for more action.*

Public statements by company leadership can be influential externally; helping to support and

shape policy decisions made by governments, and establish future expectations of company business partners and suppliers. Internally, CEO public statements help employees understand the level of seriousness their company has towards an issue, motivating change.

Of the four confidential survey participants, all reported that their CEOs and in some cases their Chairman had made public statements about climate change and policy intervention in 2007/8. The main methods of delivery were through public speeches, news releases, university lectures, and conferences. It was not easy to identify a clear leader in this area but both M&S’s CEO Stuart Rose and Tesco’s Terry Leahy were considered to be the loudest supermarket company CEO voices on climate change in the sector. We could not find any information on CEO public speeches on climate change policy from the three companies who did not participate in the survey.

Positive lobbying activity and legislation consultation involvement

Best practice: *regularly lobbying government for more effective action on climate change; leading collective industry lobbying groups; encouraging customers to engage in lobbying activity.*

Best practice: *participating regularly in consultative reviews, leading working groups, and involvement in climate change consultative processes; evidence of effectiveness in positively influencing policy. Strong internal governance to prevent harmful lobbying activity that is inconsistent with company policies on climate change.*

Six of the seven supermarket companies showed evidence of lobbying activity in favour of more ambitious carbon emissions reduction regulations. One of the most common lobbying approaches was to act as a signatory on the Bali Communiqué and subsequent Poznan Communiqué letters sent to government delegates at UN Climate discussions in 2007 and

2008. Four supermarket companies signed onto both letters. Both Tesco and M&S were also active as members and associates of the Climate Group. Waitrose is an active member of the Prince of Wales's Corporate Leaders Group on Climate Change.

Of six CSR reports reviewed (neither Wal-Mart/ASDA had a 2008 CSR report available), Co-operative was the only company to highlight an involvement in “lobbying” activity on climate change, though several other companies reference dialogue with policy makers and other kinds of input to the public policy process. Though this may be more a difference in tone than substance. Additionally Co-operative also outlined their policy on lobbying. Co-operative, Tesco, M&S and Waitrose provided evidence of involvement of legislative consultative processes. M&S reported activity on energy efficiency and Carbon Reduction Commitment, and their CEO sits on the Prime Minister's business council with a focus area in climate change. Co-operative provided lobbying or consultation support on eighteen different climate change issues. Some of their efforts included legislative consultation on renewable energy transport fuels, addressing the inaugural meeting of the Scottish Parliament's cross-party group on climate change, and motivating over 22,000 of their members to get involved with lobbying their MP on the national Climate Change Bill. Waitrose reported policy involvement on issues including carrier bags, packaging and waste. In addition, top executives at various supermarket companies attend regular meetings with Government ministers to discuss issues of mutual concern, which includes environmental issues.

The four responding companies all had established governance arrangements to ensure lobbying activity undertaken by company representatives was consistent with their climate change policy. Three of the companies conducted their lobbying through government and external

affairs departments, ensuring internal sign off on all activities. Regular meetings with company CSR teams were held to guide and establish lobbying positions. One respondent company established a senior working group chaired by the Chairman to set lobbying priorities and direct their public affairs activity on climate change.

Research project funding

Best practice: *substantial (0.2%+ of turnover), long-term funding for external research into aspects of climate change issues related to the sector.*

Note-Access to total expenditure data from confidential survey participants was limited.

All four confidential survey participants acknowledged funding external organisations dedicated to climate change research. The evidence provided was limited and included general contributions to organisations such as the Climate Group and WWF. Tesco appears to have allocated significantly more funding than other companies to external research, in both absolute terms and relative to their size (£25m over five years to the University of Manchester). These funds will be put towards developing a Sustainable Consumption Institute at the University.

We found no information on external funding details from the three non-respondent supermarket companies.

Several companies reported making internal investments into research projects on climate change. Investment into research involved: carbon labelling, carbon footprinting of products, smart packaging, input and output analysis of supply chain carbon hotspots. Several pilot projects were also considered as part of company research, these included: eco-stores, sustainable construction, low emission delivery vehicles, and eco-factories. M&S reports investing £200m in its ‘Plan A’; some of which is on research and capacity building. Tesco reports allocating a £100m fund to develop new

sustainable technologies within its operations. Various companies have told us about large scale investment programmes to replace or upgrade capital equipment and to improve buildings in order to increase energy efficiency.

ASDA's parent Wal-Mart, has created fourteen Sustainable Value Networks, each focused on a specific environmental issue such as greenhouse gases or packaging. These value networks were essentially joint internal and external projects, utilizing a range of stakeholders and building internal capacity.

Public education campaigns

Several of the public education campaigns on climate change overlap with the information outlined in the Customer Carbon Management section above. All seven supermarket companies were involved in public education campaigns that were business wide. The least contributing company still implemented a reusable bag campaign and provided informational features in their company magazine.

Awareness campaigns included a variety of methods such as: “how to shrink your carbon footprint” leaflets, in-store information sessions, mail-out green info booklets, participation at festivals, informative websites, sales promotions, educational facilities, and personal action campaigns. Tesco's Greener Living website appears to have been popular, receiving 17,000 hits/week. Tesco also mailed a Green Advice booklet to ten million homes. M&S was involved in supporting the Climate Group's “Wash at 30” campaign, which had a scope that went beyond the company's direct customer base.

Employee communication initiatives

Best practice: *communicating about action on climate change to all employees included specialized training for key staff, created personal accountability*

and business unit accountability, enabled staff buy-in, and shared internal benchmarking to instill an atmosphere for healthy competition towards improvement.

Three of the responding companies were involved in very robust employee engagement initiatives relating to climate change. The fourth acknowledged that all staff were engaged in the need to use less energy but did not provide information on the scope of this initiative. Of the three non-responding supermarket companies, no information could be found for two of them. Morrisons reported an energy saving training programme for its 110,000 staff, which contributed to a 5% reduction in energy use. Tesco, M&S, and Waitrose were all active in this category. All three companies appointed and trained energy champions within their stores and departments. Tesco also held a “green the office” initiative that was led by senior management, and delivered a two-hour Climate Change road show that was seen by all store managers. M&S and Waitrose have established energy monitoring systems with targets that improved staff awareness of energy use and allowed staff to benchmark against similar stores. Additionally, M&S held a green week which provided staff with energy saving tips and the use of a carbon calculator. Waitrose sent staff an energy savings manual that provided guidance on how to use energy efficiently. Waitrose also partnered with Lancaster University to run 120 procurement employees and suppliers through a responsible agronomy course.

TABLE 3.8 Advocacy and capacity building							
	ASDA	Tesco	M&S	Waitrose	Morrisons	Sainsbury's	Co-Operative
CEO public policy intervention	2	3	3	2	No info	No info	No info
Lobbying activity	1	2	2	2	No info	1	3
Legislation consultation participation	1	1	2	2	No info	0	3
Bali Communiqué Signatory	no	yes	yes	yes	no	yes	no
Poznan Communiqué Signatory	no	yes	yes	yes	no	yes	yes
British Retail Consortium, Better Retailing Climate Signatory	yes	yes	yes	yes	no	yes	yes
External research project funding	2	3	2	1	No info	No info	1
Internal research projects	2	3	3	1	No info	1	2
Public education campaigns	1	3	2	3	2	2	2
Employee communication initiative	2	3	3	3	2	No info	No info
Source: ENDS Carbon							

Conclusions

We draw two broad conclusions from this benchmarking survey. First, as a whole, the supermarket sector is taking climate change seriously and is demonstrating proactive management both with regard to direct emissions and, more modestly, with regard to customers and suppliers. Many of the initiatives reviewed were comprehensive and are often fairly advanced in their implementation.

Secondly, the benchmarking survey has identified substantial differences in the relative performance of companies. Large differences were visible between the strongest and weakest companies in the following areas:

Management of direct emissions

- Energy efficiency (lighting and HVAC)
- Logistics efficiency
- Strength of targets for reduction in carbon emissions and other related areas

Management of indirect emissions

- Depth of involvement with supply chains in carbon management
- Use of farm assurance standards to drive low-carbon farming practice
- Customer-focused product information relating to carbon
- Support for external research
- Interaction with government on legislation

In some cases this is a function of their relative size and economies of scale (e.g. logistics). In others, some companies have (on average) newer stores with newer equipment which gives an energy efficiency advantage. Where this is reason

for differences in performance it can be difficult for less-efficient companies to close the gap with the most efficient. For example, it is virtually impossible for a small company with a dispersed network of stores to match the logistics efficiency of a large one with a concentrated network. On the other hand, there are other areas of carbon performance where it is relatively easy for any company to move to a leadership position. For example, it would possible for any company to change their farm assurance standards to require more efficient use of fertilizer by their suppliers. In many areas of carbon management, targeted investment and more management attention could close the gap.

In some cases the difference between more or less carbon efficient, seems to relate to level of aspiration: some companies simply seem to have greater ambition than others in their attempt to respond to climate change – as the relative strength of company targets makes clear. Having said that, ambition is not the same as delivery. It is one thing to set a demanding target, and another to achieve it.

The biggest opportunities for supermarket companies to have an impact on climate change mitigation are probably not in relation to their own carbon emissions, but by leveraging their influence with their supply chains and their customers. There are huge potential carbon savings available in the production and the consumption of food - switching to less methane-intensive sources of protein (i.e. less meat), adopting less nitrogen-intensive farming practices (i.e. less fertilizer), using less air-freight while not switching to carbon intensive local

alternatives (e.g. growing crops in gas-heated northern European greenhouses). These changes cannot be driven by supermarkets alone, but require decisions to be made by customers or by farmers or both. But supermarkets have a unique position to influence these two groups and we are only just beginning to see how they might use it.

At this point, readers would probably like us to pin our colours to the mast and say which companies are best and which worst overall. However, in this, the first version of the benchmark we have decided not to name names, at least not in any overall sense. We are not yet confident enough of the quality of the data we are using, and of our methods and indicators to offer strong claims about sector leaders or laggards. Furthermore, much of the data we are using has been supplied on the understanding that companies' anonymity will be protected. This prevents us from publishing our conclusions about the relative overall performance of companies. Hopefully in future years we can be more forthcoming.

Given our goals in undertaking this benchmarking study, the main objective is not to name an overall winner, but to provide the companies within the sector with useful material to inform their carbon management activity. We are optimistic that the report, together with our additional private feedback to companies, will enable them to develop further.

This benchmark report is intended to be the first of a series. We know there is much to do in improving the design of our indicators, and strengthening the quality of data we analyse. It is also clear that in many areas carbon management is in its infancy, so there is not yet any 'best practice' to benchmark against. This means that for some of the categories in this benchmark our evaluations must be considered provisional. For example, it may turn out that air-freight labelling is, in the end, not considered a desirable device for informing consumer behaviour. As this area of carbon management develops we look forward to refining and improving upon the design of our benchmarking framework to reflect emerging understandings of best practice. We have already identified a series of enhancement proposals for the second iteration of the benchmark report (planned for next year). We will be discussing them with the companies concerned in the hope that they will participate again. We welcome any suggestions from readers of this report.

We also hope to broaden participation in the benchmark by recruiting other supermarket companies operating in the UK and elsewhere to the project. ENDS Carbon is also developing other sector-based carbon benchmarks using similar principles. We would welcome expressions of interest from companies.