Article:
Sullivan, R and Gouldson, A (2016) Comparing the Climate Change Actions, Targets and Performance of UK and US Retailers. Corporate Social Responsibility and Environmental Management, 23 (3). pp. 129-139. ISSN 1535-3958

https://doi.org/10.1002/csr.1364

COMPARING THE CLIMATE CHANGE ACTIONS, TARGETS AND PERFORMANCE OF UK AND US RETAILERS

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Abstract

It is often held that the UK has been something of a leader in its response to climate change, and that the US has been more of a laggard. Whilst much of this debate relates to government policy, in this paper we consider whether this is true when it comes to corporate action on climate change. We use the retail sector to explore this question. This sector is important because of its own greenhouse gas (GHG) emissions and because of the emissions it influences through its supply chains and value chains. On the basis of extensive reviews of corporate reports and other publically available data, we find that companies in the UK are some way ahead of their US counterparts in terms of the actions they are taking (in particular in relation to their willingness to focus on their supply chain-related emissions), the ambition of the emission reduction targets that they are setting for themselves, and (while acknowledging the difficulties in making direct performance comparisons) the rates of improvement in their energy consumption and GHG emissions. We therefore conclude that at least some of the wider claims about the relative performance of the UK and the US on climate change are mirrored in the manner in which corporations are responding to climate change.

Keywords
Corporations, GHG emissions

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1. INTRODUCTION

The United States and the United Kingdom are two of the most important actors in international debates on climate change, both because of their own greenhouse gas emissions and because of the role that they play (including, in the case of the UK, through the European Union) in international discussions around climate change mitigation (i.e. greenhouse gas (GHG) emissions reductions). The perceptions of these actors are quite different. The UK has been seen as a relative leader as a result of its active engagement with and support for international efforts to reduce GHG emissions and of its efforts to reduce domestic GHG emissions; in contrast, the US has been portrayed as something of a laggard, both because of its reluctance to contribute to strong international action on climate change and its unwillingness to introduce domestic measures that would penalise US businesses (see, for example, IEEP and NRDC, 2008; Keleman and Vogel, 2010; ICF, 2012; RobecoSAM, 2013).

One of the questions this raises is whether the relative performance of US and UK companies mirrors these perceptions of the countries more broadly. That is, do UK companies lead or lag their US counterparts on climate change? It is striking that there are very few robust comparative evaluations of corporate environmental or climate change performance in the UK and the US (although see Iles (2007) for an earlier comparative assessment). This paper seeks to address this by comparing the practices, processes and performance of the retail sector. Using the material presented in corporate reports and other publically available data over the past decade, we compare and contrast the actions being taken by UK and US retailers, the actions they are taking (in particular in relation to their willingness to focus on their supply chain-related emissions), the ambition of the emission reduction targets that they are setting for themselves, and the rates of improvement in their energy consumption and GHG emissions.

2. WHY FOCUS ON THE US AND UK RETAIL SECTORS?

2.1 Why Focus on Retailers?

The primary reason for focusing on the retail sector is that it has a significant environmental footprint. It has been estimated that UK supermarkets' emissions through the use of lighting, heating, cold stores and on-shelf refrigeration account for 0.9% of the UK's GHG emissions (SDC, 2008: 40), and that the US retail sector accounts for the largest energy bill and the second largest amount of GHG emissions in the entire commercial sector of the US Economy (RILA, 2012: 14). These numbers are dwarfed by the emissions from the sector's value and supply chains. In the case of the UK, emissions from the sector's value and supply chains – for example, agricultural inputs, food manufacture, transport, storage, distribution, refrigeration and packaging, as well as home cooking – have been estimated to be an order of magnitude higher than the emissions from its own activities and operations (SDC, 2008: 40). In fact, these estimates may actually be an underestimate, with Wal-Mart in its response to the 2009 CDP survey, stating that its believes that its supply chain is likely to have an annual carbon footprint that is at least 100 times greater than its total Scope 1 and 2 emissions[1].

The other reason is that retailers have many characteristics in common with companies in other sectors. For example, they have large operational (specifically, building and transport-related) and supply chain emissions, they face significant stakeholder and consumer pressure, they have highly complex supply chains, and while their overall emissions tend not to be regulated, many of their operational emissions are regulated (e.g. through building codes, through vehicle emission limits). The consequence is that the sector's challenges and experiences are relevant to many other sectors of the economy.

[1] https://www.cdproject.net/en-US/Pages/Search-For-The-File+-search.cdproject.net/responses2/private/WalMart_Stores_Inc_4793_Corporate_GHG_Emissions_Response_CDP7_2009.asp (last viewed, 1 October 2013).

2.2 Why Focus on the US and the UK?

The US and the UK are estimated to be the world's second (after China) and ninth largest grocery markets respectively (IGD, 2013). That is, they are important markets in and of themselves, and because of the insights they might provide into other major retail markets. Moreover, as discussed below, US and UK retailers have provided a significant amount of information and data on their approaches to climate change and energy management over the past decade. This has included extensive commentary and analysis on the market and other drivers for their actions on greenhouse gas emissions and on energy management, allowing us to track the sector's responses to changes in the wider business environment.

3. METHODOLOGY AND SCOPE

Our research focused on the nine largest supermarkets in the UK and the 11 largest retailers in the US (as identified in Deloitte (2012)). The companies we reviewed are listed in Table 1.

Table 1: US and UK Retailers Covered by the Research

UK Supermarkets	US Retailers
• Aldi • ASDA • Co-operative • J Sainsbury • Lidl • Marks and Spencer • Morrisons • Tesco • Waitrose	• Best Buy Company Inc. • Costco Wholesale Corporation • CVS Caremark Corporation • Home Depot Inc • Kroger Co. • Lowe's Companies Inc. • Safeway Inc • Sears Holdings Corporation • Target Corporation • Walgreen Co • Wal-Mart Stores Inc.

The material presented in this article is based, unless otherwise indicated, on a detailed content and data analysis of the data and information presented in companies' sustainability (also widely referred to as 'corporate responsibility' or 'social and environmental') reports (or equivalent corporate publications) and their responses to the CDP (previously the Carbon Disclosure Project)[2]. In total, we reviewed over 110 corporate responsibility (or equivalent reports) and over 60 CDP responses[3]. In addition, we reviewed the additional information provided by many of the companies on their websites and in other communications (e.g. annual reports).

This information has enabled us to determine when climate change and energy-related issues appeared on the corporate agenda, to track the evolution of companies' policies, actions and targets on climate change and energy-related issues, and to track companies' climate change and energy performance over time.

4. SOME COMMENTS ON REPORTING

Almost all (18 of the 20) of the companies covered by this article have produced sustainability reports (or provide equivalent information on their websites) and/or reported to the CDP. The exceptions are Aldi and Lidl. UK retailers have led their US counterparts in this area. Sainsbury's first reported in 1998, Waitrose, Tesco and Marks and Spencer first reported in the early 2000s, and ASDA (part of Wal-Mart), Co-operative and Morrisons had all issued corporate responsibility reports by the mid-

[2] CDP is an investor-backed initiative that, annually, requests information on the risks and opportunities of climate change from the world's largest companies. This information – individual company responses, as well as a series of country, region and issue-specific reports – is made available through the CDP's website. As at 12 March 2013, the CDP had 722 institutional investor (including banks, pension funds, asset managers and insurance companies) signatories representing over $87 trillion in assets under management (https://www.cdproject.net/en-US/Programmes/Pages/Sig-Investor-List.aspx, last viewed 26 January 2014).

[3] The difference between the two numbers reflects (a) the fact that many companies started to report on their sustainability performance a number of years before they started to report to CDP, (b) CDP only requests information from publicly listed companies.

2000s. In the case of the US the first sustainability or equivalent reports from the sector seem to have been produced by Lowe's (in 2004) and Target (in 2005). By 2010, however, all 11 of the US companies covered by this research had produced reports on their sustainability performance and/or had reported to CDP. It is recognise that reporting has not progressed in a linear manner. For example, a review by Matisoff et. al. (2013) concluded that, over the period 2003 to 2010, Japanese and European Union firms have increased the transparency of their reporting to CDP whereas American firms had decreased transparency.

In both countries, corporate reporting on climate change-related issues lagged reporting on energy or sustainability-related issues by a number of years. In the case of the UK, from the late 1990s through to the early-mid 2000s, climate change was generally seen as being an issue of secondary importance and, where it was explicitly identified as a business issue, it was usually presented as part of the company's actions on operational efficiency and/or energy management. A similar picture emerges from the US. Perhaps the most extreme example is Lowe's which issued its first corporate responsibility report in 2004 but only published its first GHG emissions inventory in 2012 (in its first response to the CDP). Other examples include Kroger which produced its first sustainability report in 2007 (Kroger, 2007) and its first GHG emissions inventory in 2009 (Kroger, 2009: 8), and Costco which produced its first sustainability report in 2009 (Costco, 2009) and its first GHG emissions inventory in 2011 (Costco 2011: 13-14).

While there is now a reasonable body of information on the trajectory of the retail sector's actions on climate change, it remains difficult to make robust comparisons between companies or to develop comprehensive long-term trend data for the sector as a whole. The reason is that many of the companies have restated or revised their data over time because of factors such as improvements in their data gathering and acquisition processes, changes in emission factors and calculation protocols, and business changes (e.g. acquisitions, in-sourcing or outsourcing of particular business functions) (see, further, Sullivan and Gouldson (2012)). This problem is compounded by the fact that there is limited consistency in the supplementary information (e.g. on the specific emissions factors used, on the energy used, on the effectiveness of specific emissions reductions initiatives, on changes in the business) provided by companies. This is starting to change with CDP now asking companies to explain why and how their emissions have changed (and, specifically, whether changes are due to business growth, to recalculations, or to the company's actions to reduce GHG emissions).

Despite the difficulties in developing a comprehensive picture of performance across the sector as a whole, it is possible for those companies that have established robust data acquisition and management processes and that have maintained a reasonably consistent approach to reporting over a number of years (e.g. in terms of the scope, assumptions, calculation protocols) to assess trends in the company's performance and to assess the company's performance against its own objectives and targets (for a fuller discussion of methodological issues, see Sullivan and Gouldson (2007, 2012) and Gouldson and Sullivan (2007), and for case-studies on the use and limitations of these data, see Sullivan (2009, 2010) and Sullivan and Gouldson (2013)).

5. THE EVOLUTION OF CORPORATE ACTION

5.1 Corporate Action: Managing Operational Emissions

Improving energy efficiency in buildings and in transport has been a long-running (at least back to the mid-1990s) area of focus for retailers on both sides of the Atlantic. This has been driven primarily by concerns about energy prices, compounded, more recently, by concerns about the effects of policy measures such as emissions trading on energy prices. In relation to buildings, the actions taken by retailers have included upgrading lighting, refrigeration and HVAC systems, installing doors on coolers and freezers, improving the efficiency of fans and other items of electrical equipment, and implementing better energy management systems, control technologies and monitoring processes (see, for example, BRC, 2010, 2012, 2013; RILA, 2012, 2013). They have also engaged with their employees on energy and carbon management, by establishing awareness and education campaigns, creating store-specific energy reduction plans, and providing rewards and incentives for good performance. More recently, retailers have started to focus on reducing refrigerant losses (many refrigerants have high global warming potentials) and testing and using refrigerants with lower global warming potentials.

Renewable energy is a consistent area of focus for both US and UK retailers. A number of the UK retailers have made commitments to sourcing most or all of their electricity from renewable sources. US retailers also purchase significant quantities of renewable energy, and multiple retailers are on the EPA's list of top 20 on-site generators of renewable energy (RILA, 2012: 16). While making a relatively small contribution to their overall electricity consumption, many US retailers have installed renewable energy technologies (e.g. solar, wind) at their facilities.

In relation to transport, companies have taken actions such as purchasing more efficient vehicles, reducing vehicle weights, improving logistics, combining loads and deliveries, and driver training and education (see, for example, RILA 2012: 35-37).

Many of the retailers have committed substantial sums to energy efficiency and renewable energy. Examples include Wal-Mart's 2005 commitment to investing approximately $500 million annually in technologies that increase energy and fuel efficiency in the U.S. (Wal-Mart 2009: 21), Home Depot's statement in its 2012 CDP Response that it had invested over $250 million in systems and energy-efficient upgrades for its stores in the period 2004 to 2010, Tesco's commitment to spending £500 million over the period 2007-2012 on low carbon technologies (Tesco 2007: 25), and the Co-Operative's commitment to doubling its financial support for renewable energy and energy efficiency projects from £400 million to £1 billion by 2013 (Co-operative Group 2011: 9).

Most of these investments can be explained in relatively narrow cost benefit terms, with the retailers expecting the majority of these investments to deliver paybacks of less than three years. For example, a recent report from the (US) Retail Industry Leaders Association (RILA) noted that most retailers act on sustainability investments that they expect to generate a two to three year payback, and that they generally seek rates of return from sustainability-related investments that are similar to those from other capital investments (RILA, 2013: 16-17). RILA also noted that top performing companies may look for paybacks 'as far out as three to five years' (RILA, 2013: 17, 18). These findings align with the most recent CDP report for the S&P500 which noted that 55% of the initiatives (by number) and 92% (by value) of the GHG emission reduction initiatives adopted by the consumer staples sector offered paybacks of less than three years (CDP, 2013: 47).

5.2 Performance Outcomes: Operational Emissions

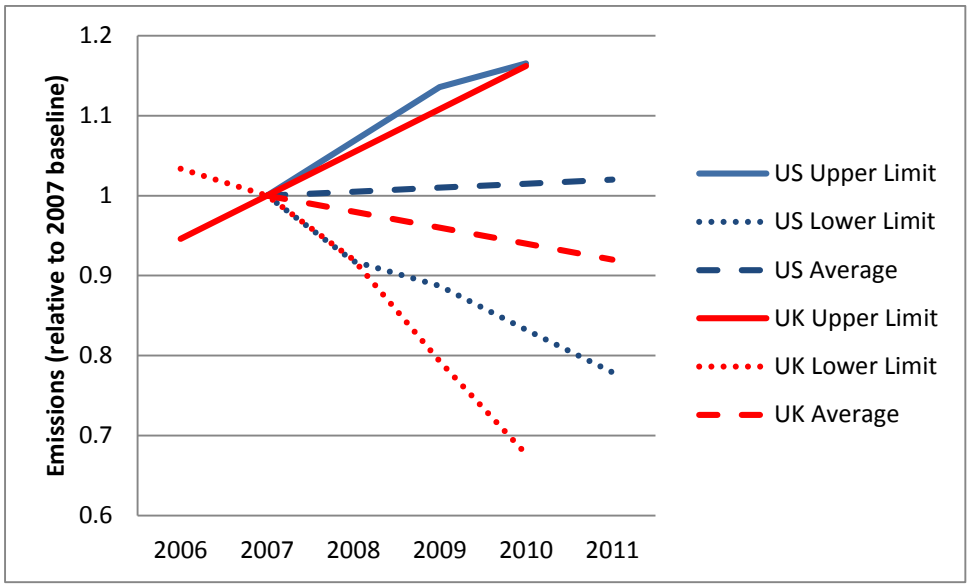
Despite the limitations in the data sets that are available, it is possible to make a broad assessment of trends in GHG emissions from US and UK retailers. Table 2 summarises the data on trends in total greenhouse emissions for those US and UK retailers where at least three years' data are available; these data typically cover most or all of the period 2007 to 2012. These data are illustrated graphically in Figure 1, which – normalising all data to a baseline of 2007 – presents the extremes of the performance outcomes that have been achieved and compares these with the arithmetic average performance for each of the US and the UK.

Table 2: Trends in GHG Emissions for US and UK Retailers

Company	Annual Change in GHG Emissions (%/year)
UK Retailers	
Asda	-3.67 (over 3 years)
Co-operative	-7.69 (4 years)
Marks and Spencer	-3.21 (4 years)
Morrisons	-2.22 (5 years)
Sainsbury's	-0.88 (5 years)
Tesco	+5.28 (4 years)
US Retailers	
Costco	5.23 (over 3 years)
Kroger	2.71 (5 years)
Lowe's	-2.11 (4 years)
Sears	-6.05 (4 years)
Target	0.98 (4 years)
Wal-Mart	2.19 (6 years)

Notes:
1. UK company data based on Sullivan and Gouldson (2013).
2. US company data based on company responses to the 2012 CDP survey.

Figure 1: Comparison of Trends in GHG Emissions from US and UK Retailers



Notes:
1. See Table 2 for sources.
2. All data have been normalised against a 2007 baseline.
3. The UK and US Averages are arithmetic averages across the six UK and six US companies presented in Table 1. It has been assumed that these emissions have changed in a linear manner over the period 2007 to 2011.

The data presented in Table 2 and Figure 1 suggest that there is a significant difference in performance between the best and worst performers in both the US and the UK. The data also suggest that there is a significant difference in the average emissions performance of US and UK retailers, with the average emissions from US retailers increasing by 0.05% per year but the average emissions from UK retailers decreasing by 2% per year. These findings, while interesting, need to be treated with some caution given the relatively short time periods involved and the limitations in the quality of the performance data that are available.

When we dig into the data, we see that – where data are available – both US and UK retailers have managed to deliver consistent improvements in their energy and/or emissions intensity (measured in energy consumption or GHG emissions per unit of floor area). In the case of the UK, retailers have succeeded in reducing their energy and/or emissions intensity by between 2.5 and 5.5% per year over the period 2007 to 2011 (Sullivan and Gouldson, 2013). In the case of US retailers, relatively few have provided at least three years of energy or GHG emissions intensity data. The exceptions, Target and Lowe's, reported that their GHG emissions intensity (measured in GHG emissions per unit of floor area) had reduced by 1.4% per annum (over the period 2007 to 2011) and 4.5% per annum (over the period 2007 to 2010) respectively (Target CDP Response 2012; Lowe's 2012; 59).

5.3 Corporate Targets

UK retailers' targets have evolved substantially over the past decade. Up to the mid-2000s, UK supermarkets' climate change and energy-related targets were primarily process-focused – a typical example was to investigate a specific energy saving technology – and short term (e.g. over the next 12 months) in nature. Where targets related to performance, they were generally defined in relative terms (e.g. to improve the proportion of vehicle fleets meeting a certain efficiency standard, to improve building efficiency, to reduce energy consumption per unit of floor area). From the mid-2000s, UK retailers started to set more precise targets, focusing on specific emissions reductions and performance improvements with an increasing number being set over three or five years, rather than one year. In the main, these targets related to relative rather than absolute performance, for example to reduce GHG emissions per unit of stock transported, to reduce GHG emissions per unit of floor area, to build new stores that were significantly more efficient than their equivalents.

From 2007 there was a major change in the terms of UK retailers' engagement with the issue of climate change, with a much greater emphasis on absolute emission reduction targets, with a broadening of the focus of action from operational emissions to wider supply chain and value chain-related emissions, and with companies setting targets over longer timeframes (see Table 4). These targets are generally underpinned by shorter-term targets, which tend to comprise a mix of process, relative and absolute targets, that apply over a range of timeframes from the forthcoming year to a number of years forward, and that apply to their operations, their supply chains and their value chains.

In contrast, US retailers have focused more narrowly on operational and transport-related emissions (rather than on the wider supply and value chains), and have continued to set shorter rather than longer-term targets (see Table 5).

Table 4: UK Supermarkets' Climate Change Commitments (adapted from Gouldson and Sullivan, 2013: 4)

Company	Overarching Commitments
Aldi	• No published targets.
Asda	• Reduce Asda's carbon footprint by 10% by 2015 against a 2005 baseline.
Co-Operative	• Reduce gross GHG emissions from the Co-operative's operations by 35% by 2017, against a 2006 baseline. • Make the Co-operative's operations carbon neutral by 2012.
Lidl	• No published targets.
Marks and Spencer	• Make Marks and Spencer's UK and Republic of Ireland operations (stores, offices, warehouses, business travel, logistics) carbon neutral by 2012. • Reduce operational GHG emissions by 35%. • By 2015, 25% of Marks and Spencer's food (by turnover) to come from factories that have improved energy efficiency by at least 20%. • Marks and Spencer's top 100 clothing manufacturers to reduce their energy use by at least 10%.
Morrisons	• Reduce total operational (electricity, gas, transport, waste, employee work travel, business miles, refrigeration) GHG emissions by 30% by 2020 against a 2005 baseline.
Sainsbury's	• Reduce operational emissions by 30% in absolute terms and by 65% in relative terms (per unit of floor area) by 2020 compared to a 2005 baseline, as part of a broader target to reduce absolute GHG emissions by 50% by 2030. • Work with Sainsbury's own brand suppliers to reduce carbon emissions across all of Sainsbury's own brand products by 50% in relative terms.
Tesco	• Be a zero carbon business by 2050 without purchasing offsets. • Cut supply chain GHG emissions by 30% by 2020 against a 2008 baseline. • Identify ways to help Tesco's customers halve their carbon footprints by 2020 against a 2009 baseline.
John Lewis Partnership (Waitrose and John Lewis)	• Reduce operational GHG emissions by 15% by 2020/21 against a 2010/11 baseline.

Table 5: US Supermarkets' Climate Change Commitments

Company	Overarching Commitments
Best Buy	• Reduce US carbon footprint by 20% by the year 2020 (over a 2009 baseline) (Best Buy, 2011: 12-13).
Costco	• No emission reduction target (Costco CDP Response 2012).
CVS Caremark	• Reduce total Scope 1 and Scope 2 emissions per square foot of floor area by 15% over the period 2010 to 2018 (CVS Caremark 2011: 47).
Home Depot	• Reduce GHG emissions from upstream transportation and distribution by 20% by 2015 against a 2009 baseline (Home Deport CDP Response 2010, 2011, 2012). • Reduce electricity per square foot in US stores by 20% by 2015 against a 2004 baseline (Home Depot CDP Response 2010, 2011, 2012).
Kroger	• Improve truck fleet efficiency by 40% by 2014 against a 2008 baseline (Kroger 2012: 32). • Reduce stores' overall energy use by 35% by 2013 against a 2000 baseline (Kroger 2012: 31).
Lowe's	• No emissions reduction target (Lowe's CDP Response 2012).
Safeway	• No published targets.
Sears	• No emissions reduction target (Sears CDP Response 2012)
Target	• Reduce total Scope 1 and Scope 2 emissions (in te CO_2e) per square foot by 10% by 2016 against a 2007 baseline (Target CDP Response 2012). • Reduce total Scope 1 and Scope 2 emissions (in te CO_2e) per unit revenue (excluding the credit card segment of Target's business) by 20% by 2016 against a 2007 baseline (Target CDP Response 2012).
Walgreens	• Reduce energy use intensity relative to retail floor space by 5% each year, excluding operational adjustments (Walgreens CDP Response 2011).
Wal-Mart	• Reduce total Scope 1 and 2 emissions from stores, Sam's Clubs, and distribution centres that were in existence in 2005 by 20% by 2012, against a 2005 baseline (Wal-Mart CDP Response 2012). • Eliminate 20 million tonnes of GHG emissions from the lifecycle of the products Wal-Mart sells by 2015 (Wal-Mart CDP Response 2012). • To be supplied 100% by renewable energy (although a target year for this goal has not been set) (Wal-Mart CDP Response 2012). • Double fleet efficiency (i.e. double the number of cases shipped per unit of fuel used) in the United States by 2015, against a 2005 baseline (Wal-Mart CDP Response 2012).

One of the central questions is what effect these targets are likely to have on companies' overall GHG emissions? An analysis by Gouldson and Sullivan (2013) of the targets being set by UK retailers concluded that the targets being set by UK retailers would – if they were all achieved – see the retailers reducing the greenhouse emissions from their operations and transport by more than 1.5% per annum over the period through to 2020.

While, because of the nature of the targets that have been set, it is difficult to make a similar assessment of the likely trajectory of emissions from the US retailers, a number of the companies have commented on how they expect their emissions to evolve over time. These are presented in Table 6. The main point to be made about the information in this table is that, mirroring the comments about the UK retailers above, it demonstrates the on-going tension from a GHG emissions perspective between business growth and efficiency.

Table 6: Projected Changes in GHG Emissions from US Retailers

Company	Expected Changes in GHG Emissions
CVS Caremark	• Absolute GHG emissions are expected to reduce by 0.5% over the period 2010 to 2018, assuming that retail floor area grows by 1.82% per year over this period (CVS Caremark CDP Response 2012).
Home Depot	• Absolute GHG emissions from US stores are expected to reduce by 8% over the period 2011 to 2015, assuming that Home Depot's retail floor does not change substantially over this period (Home Depot CDP Response 2012).
Kroger	• Total GHG emissions expected to remain relatively constant, but emissions intensity will continue to decrease (Kroger CDP Response 2010).
Lowe's	• Scope 1 emissions expected to vary in proportion to the organic growth of the company (Lowe's CDP Response 2012). • Scope 2 emissions expected to increase but Scope 2 emissions per unit of retail floor space expected to reduce by up to 3% per annum for the period 2012-2017 (Lowe's CDP Response 2012).
Target	• Absolute GHG emissions are expected to increase over the period 2011 to 2016 due to an increase in the number of stores and changes in grocery offerings which will lead to increased refrigerant and electricity usage (Target CDP Response 2011).
Walgreens	• Absolute GHG emissions may increase as a result of business growth and new store openings (Walgreens CDP Response 2011).
Wal-Mart	• The improvements in US fleet efficiency is expected to reduce Wal-Mart's Scope 1 and 2 emissions by approximately 4% (Wal-Mart CDP Response 2012).

5.4 Corporate Action: Managing Supply Chain-related Emissions

One notable area of difference between US and UK retailers is in relation to the actions they have taken in their supply chains. The seven UK supermarkets that report on their climate change-related activities all have a range of initiatives directed at reducing GHG emissions from their supply chains. For example, all seven have established programmes to help suppliers improve their environmental performance, with agricultural products being a major focus in this regard, and all talk about the potential for them to deliver significant emissions reductions (and cost savings) through their interactions with their suppliers. The targets and commitments presented in Table 4 above suggest that delivering significant supply chain-related reductions is an integral part of these companies' climate change strategies.

In contrast, from the information provided in corporate responsibility reports and other communications, US retailers appear to have paid relatively little attention to their supply chains (see, generally, RILA (2013: 31)). Where they have engaged with their suppliers, the focus appears to have been on those aspects that directly affect the retailer (e.g. product packaging which has implications for transport), rather than on aspects such as production processes or supplier energy management.

It is important to acknowledge that there are some signs of change. The US Retail Industry Leaders Association (RILA) has suggested that the use of life cycle assessment will grow significantly and has noted that there have been efforts to encourage merchant and sourcing teams to integrate sustainability-related factors (e.g. energy use) into their supplier selection and related processes (RILA, 2013: 32, 38-39). A few US retailers have started to talk about the environmental characteristics of their supply chains. For example, in its 2012 sustainability report Kroger presented two case studies of how two farm suppliers had significantly reduced their carbon footprints Kroger (2012: 15, 16), although it was not clear what contribution Kroger had made to these outcomes. Similarly, in its 2010, 2011 and 2012 responses to the CDP, Target commented that it is rethinking the design of the products and packaging it sells to incorporate sustainable attributes and that it has established a cross-functional Products and Packaging Lifecycle team which focuses on understanding and improving the attributes (including environmental) of its owned and national brand products.

The major outlier among the US retailers is Wal-Mart which has identified its supply chain as an important area of focus, and has set a target of eliminating 20 million tonnes of GHG emissions from the lifecycle of the products it sells by 2015 (Wal-Mart CDP Response 2012). Wal-Mart's actions have included measuring energy use and emissions throughout its supply chain, hosting supplier

conferences, setting goals (e.g. improving energy efficiency by 20% per unit of production in the top 200 factories in China from which Wal-Mart sources directly, against a 2007 baseline (Wal-Mart 2009: 68)), and assessing supplier performance on energy and climate change natural resources, material efficiency, and people and community (Wal-Mart 2009; 37; 2010: 14-16).

On products and customer engagement, both UK and US retailers offer energy efficient (e.g. consumer electronics) and energy saving products (with low energy light-bulbs being particularly popular in both markets). Some also offer wider product ranges, e.g. Home Depot's Eco Options Program offers consumer products that are less likely to have a negative impact on the environment (e.g. energy efficiency, water conservation); these include energy efficient windows and doors, insulation, caulking and sealing products, smart home technology and LED lights (CDP Response 2011). Both US and UK retailers provide customer information on their websites and in stores on green products and green actions.

6. COMPARATIVE ASSESSMENT

The drive to reduce energy use and improve efficiency reflects a fundamental characteristic of the retail sector in both countries, namely that it is highly cost competitive sector, where marginal changes in the sales price of particular items can have a huge impact on the sales or profitability of that product. This suggests that so long as energy prices remain high (and/or there is a meaningful price attributed to GHG emissions through regulation or other means), companies will continue to see a compelling argument to maintain their focus on improving energy efficiency and reducing GHG emissions.

In that context, the emphasis on energy management is unsurprising. US and UK retailers have succeeded in delivering consistent delivering improvements in energy efficiency. It is noteworthy that, far from the opportunities running out, the targets being set suggest that the retailers expect that they will be able to consistently extract more energy savings from their operations for, at least, a further five or ten years. Despite these improvements in efficiency, the reality is that, in both the US and UK cases, business growth and development means that there is constant upward pressure on emissions, and it is unclear whether efficiency gains will run ahead of business growth and business changes over the longer-term. Of course, this latter point must be qualified by acknowledging that business growth in the future may not have similar characteristics to the business growth that we have seen to date. The evidence from the retail sector is that business models do change and that these changes in business models can have a significant influence on GHG emissions. For example, over the period 2000-2010, the UK supermarket sector saw the introduction of extended opening hours, the introduction of online shopping and home deliveries, and customer demand for more fresh foods. These all had the effect of increasing the emissions attributable to the companies, even if (in the case of internet shopping for example) the overall effect on societal GHG emissions may have been positive (e.g. if the GHG emissions associated with the handling, transport and distribution of these goods was less than the emissions that would have resulted from individuals purchasing these goods at a supermarket).

There are many parallels in the journeys that have been taken by UK and US retailers. Both have started by focusing on energy efficiency (which is generally where the most immediate financial opportunities can be found), and then gradually broadening their focus to take a more holistic approach (i.e. focusing on GHG emissions as well as energy use, setting longer-term targets and – in the case of UK retailers at least - broadening the scope of action from their own operations to a wider focus on the supply and value chain). While there are many commonalities it appears that UK retailers are reducing their GHG emissions more quickly than their US counterparts. It also seems to be the case that UK retailers are paying much greater attention to their wider environmental footprints.

Whilst it could be claimed that US practice lags behind the UK, it may not be that simple. It is here that the US political and policy context is likely to be key. Many of the UK retailers point to the period 2005 to 2007 as a critical tipping point that has shaped their response to climate change and carbon (Gouldson and Sullivan, 2012). This period saw a whole array of pressures and events including the publication of the fourth report of the Intergovernmental Panel on Climate Change (IPCC) in 2007, the publication of the UK government sponsored Stern Review on the Economics of Climate Change, the introduction of the EU Emissions Trading Scheme and of national policies directed at reducing GHG emissions, and a significant increase in the level of the UK and European business press attention on

climate change. Companies, at this point, saw high energy prices and strong policy action on climate change as 'inevitable', and the broadening and deepening of their approaches to climate change reflected this view (Gouldson and Sullivan, 2012, 2013). This suggests that, for US retailers to close the gap, they will need to be convinced of the inevitability of strong policy action on climate change, and of the dependability (or longevity) of these actions. Leadership at the corporate level may therefore depend on leadership at the national level.

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