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Large UK retailers' initiatives to reduce consumers' emissions: a systematic assessment

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Abstract

In the interest of climate change mitigation, policy makers, businesses and non-governmental organisations have devised initiatives designed to reduce in-use emissions whilst, at the same time, the number of energy-consuming products in homes, and household energy consumption, is increasing. Retailers are important because they are at the interface between manufacturers of products and consumers and they supply the vast majority of consumer goods in developed countries like the UK, including energy using products. Large retailers have a consistent history of corporate responsibility reporting and have included plans and actions to influence consumer emissions within them.

This paper adapts two frameworks to use them for systematically assessing large retailers' initiatives aimed at reducing consumers' carbon emissions. The Framework for Strategic Sustainable Development (FSSD) is adapted and used to analyse the strategic scope and coherence of these initiatives in relation to the businesses' sustainability strategies. The ISM 'Individual Social Material' framework is adapted and used to analyse how consumer behaviour change mechanisms are framed by retailers. These frameworks are used to analyse eighteen initiatives designed to reduce consumer emissions from eight of the largest UK retail businesses, identified from publicly available data.

The results of the eighteen initiatives analysed show that the vast majority were not well planned nor were they strategically coherent. Secondly, most of these specific initiatives relied solely on

providing information to consumers and thus deployed a rather narrow range of consumer behaviour change mechanisms. The research concludes that leaders of retail businesses and policy makers could use the FSSD to ensure processes, and measurements are comprehensive and integrated, in order to increase the materiality and impact of their initiatives to reduce consumer emissions in use. Furthermore, retailers could benefit from exploring different models of behaviour change from the ISM framework in order to access a wider set of tools for transformative system change.

Keywords

Sustainability; Framework for strategic sustainable development; Sustainable consumption; Retailers; Influencing behaviours;

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1. Introduction

Businesses shape how consumers consume. Companies that serve consumers directly have become adept at presenting themselves as powerful and trustworthy actors for the good of the environment. Yet this presentation may not be reflected in what they do and how they organise their plans for successful outcomes. This paper takes one aspect of consumption, carbon emissions at home, and one business sector, retailers, and examines initiatives, between 2007 and 2013, declared by the largest companies operating in the UK. It seeks to identify possible opportunities for retailers to increase the success of their initiatives, through both improving planning coherence and widening their perspectives on mechanisms for consumer behaviour change. It uses two complementary systematic frameworks, and is based on retailers' own reporting.

1.1. Retailers and consumer behaviour at home

Governments have declared that individual citizens will have to cut their own greenhouse gas (GHG) emissions if global emissions reduction targets are to be achieved (Jackson, 2009, OECD, 2011). Policy makers, businesses and non-governmental organisations have attempted to design initiatives to reduce in-use emissions. Yet in developed markets, such as the UK, people are using an increasing number of energy-consuming products in their homes (Owen, 2012) and GHG emissions arising from domestic product use continue to rise (Department for Energy and Climate Change, 2014); total amount of electricity consumption by household domestic appliances between 1970 and 2013 grew by around 1.7 per cent per year. Consumer electronics was the largest consuming category in 2013, followed by wet appliances, lighting, cold appliances and cooking (Department for Energy and Climate Change, 2014). Interacting systems of user practices, technologies, institutions and businesses are at play here (Shove, 2003, Spaargaren, 2011, Tukker et al., 2010, Foxon, 2011).

Within these interacting systems the role of large retail businesses is important for five reasons. Firstly, retailers influence people's needs, desires, lifestyles and product choices through their role as intermediaries (Stewart and Hyysalo, 2008), through pricing (Shankar and Bolton, 2004), promotion, shelf space allocation and shelf positioning (van Nierop et al., 2011, Kök et al., 2009). Secondly, retailers are adept at representing their views of consumer needs to government (Marsden and Wrigley, 1995, DEFRA, 2010). Thirdly, retailers' scale of possible influence on social norms seems also large; on the one hand, almost every person in the UK visits shops regularly and, on the other, the retail sector directly employs one in eight workers (British Retail Consortium, 2014). Fourthly, retailing has become increasingly concentrated (Jones et al., 2005) with few large chains accounting for most consumer spending; the top four grocery retailers in the UK now have two thirds of all grocery sales (Mintel, 2013) and thus increased buyer power with suppliers (Inderst and Wey, 2007). Finally, then, these large retailers have been increasingly the gatekeepers between manufacturers and consumers through their global supply chains (Huber, 2008). Through these supply chains, large retailers influence the specifications and standards of the goods they commission from suppliers to sell (Stewart and Hyysalo, 2008). Since, the vast majority of consumer goods in developed markets are sold through large retailers, in shops or online, these retailers act as choice editors (Charter et al., 2008) for what consumers are able to purchase for use at home.

1.2. Retailers and corporate responsibility for consumption emissions

Large retailers in general have a consistent history of corporate responsibility reporting, have recognised the importance of climate change to sustainability, and made emission reduction commitments for their own operations (Gouldson and Sullivan, 2013). Retailers' choices about the assortment of goods that they stock, and how they display, price, promote and suggest methods of use for them, have an influence on shoppers' purchase decisions, and therefore, ultimately, on usage. It is therefore important to analyse their plans and actions for the types of goods that generate carbon emissions from the use of the products they sell. There has been research on retailers' assortment strategies and space allocation choices in the interests of corporate responsibility, but largely focused either on Fairtrade products (Nicholls, 2002, Jones et al., 2003) or organic and Fairtrade food products (van Nierop et al., 2011, van Herpen et al., 2012), with the exception of Carrero and Valor (2012) who examine retailers' assortments for a broad range of ethical and environmental issues. There has also been research on the role of labelling schemes for relative energy efficiency in use, some of them devised by retailers (Heinzle and Wüstenhagen, 2012, Horne, 2009). Berry et al.(2008), McKinnon (2010), Upham and Bleda (2009) and Upham (2011) have examined retailers' use of carbon labelling schemes and their potential impact across the whole value chain. However, there is a gap in research focused solely on the influence of retailers on consumer emissions, whilst energy-consuming products in the UK are purchased predominantly from large retailers (Mintel, 2014). Therefore there is an importance in understanding what retailers have done for consumer emissions reduction relating to domestic goods.

Researchers have examined shoppers and shopping behaviour and how it is influenced from a number of disciplines; examples are from psychology (Dholakia et al., 2010), history (Blaszczyk, 2000, Trentmann, 2004, Spiekermann, 2006), sociology (Cochoy, 2007), social psychology (Gabriel and Lang, 2006) and operational research (Kök et al., 2009). Recently, behavioural science has increased its impact in policy making, for example through Thaler and Sunstein (2008), and practical guidance has been published for policy makers seeking to influence consumer behaviour change, based on considering three academic perspectives; behavioural science, social psychology and social practice theory, some examples of this are Southerton et al. (2011), Dolan et al. (2010) and van Bavel et al. (2013). Given the breadth of research on how shoppers can be influenced, then, there are gaps in research examining retailers' strategies that explicitly set out to influence consumer behaviour in the use phase of energy consuming goods, or goods that are serviced through energy consuming appliances, such as clothing.

1.3. Research Objectives

Changes in carbon emissions from consumption are needed and retailers are a means of influencing consumption emissions. Retailers can influence the selection of products and services at the shopping stage, and also the usage behaviour at home. The aim of the paper is a structured assessment of the initiatives that retailers have publicly declared that they've undertaken in these two areas of influence, against criteria that are set out within a well-known strategic sustainable development framework. There are two aspects to this assessment; what has been their strategy for the design of the initiatives and how they frame consumer behaviour change, from the selection of mechanisms used.

The objectives of this research then, are, firstly, to identify possible gaps in the strategic planning for these retailers' initiatives, using the attributes and general design of a framework for strategic sustainable development, set out in Table 1 below, and, secondly, to identify possible gaps in the framing used in the selection of mechanics for influencing consumer behaviour change, shown in Table 2 below.

The paper is structured as follows. Section 1 has described the relevance and importance of retailers to consumer behaviour and the research gaps and objectives. Section 2 makes the case for the research frameworks and methods used, describing also the eighteen identified initiatives. Section 3 analyses those initiatives using the frameworks. Section 4 discusses the results, their validity and limitations. Section 5 concludes with suggestions for policy makers and retailers for future use of the research methods.

2. Methods

2.1. Framework for Strategic Sustainable Development

The Framework for Strategic Sustainable Development (FSSD) is a planning method that has been successively developed since the early 1990's (Robèrt, 1994, Holmberg, 1995, Holmberg and Robèrt, 2000, Missimer, 2013), and has been used by businesses in order either to design programmes of action, in dialogue, that work toward their vision of sustainability, whilst meeting their customers' needs, or to create engagement (Broman et al., 2000, Holmberg and Robèrt, 2000). It has also been used as a unifying framework to complement other methods, tools and concepts for sustainable development, either for addressing sustainability from a full sustainability perspective, or to assess whether this has been the case, see Hallsted et al. (2010) for references, and, in broader contexts, in Lifecycle Analysis (Ny et al., 2006) and analysis of Planetary Boundaries approaches (Robèrt et al., 2013).

The FSSD can be likened to a building having five levels and each level is constructed on top of the preceding one. While each level has a purpose in its own right, the building is an integrated whole; the design of each floor being coherent with the other floors, or levels. This framework is useful to answer the research objectives in this study because, if retailers' initiatives were likely to be successful in meeting their objectives, they would have been well planned, in that they would be designed like a whole building, with the declared definition of the scope (first level) and the specified desired outcome (second level) lining up with the strategy (third level), the actions undertaken to achieve it (fourth level) and all the tools (including those for monitoring, assessment and competence-building) needed to operationalise the actions (fifth level); the levels relate to each other to form a unified whole, whilst both being interdependent and having logical and consistent elements linking the levels.

Bratt et al. (2011) elaborated the FSSD, using it as an assessment framework for criteria development for existing eco-labelling schemes. The present study also elaborates the FSSD to assess pre-existing activities, but by using it to evaluate possible planning gaps in strategy for retailers' initiatives that are stated to have been designed to reduce carbon emissions in use. This has been undertaken by analysing data in the public domain, which largely comprises data that retailers have chosen to make available, through corporate reports. This set of data is a subsystem in itself. The full FSSD has not been engaged because published reports do not necessarily make visible

the businesses' whole system approach to sustainability. Therefore it is the general design and attributes from the FSSD that are used, in seeking to identify such gaps in the publicly stated processes that would seem to reduce the likelihood of achieving what the retailers themselves set out to achieve. The FSSD has been adapted to derive questions that can be asked of each retailer initiative so that it can be used to assess their internal coherence, as shown in Table 1. Its strength lies in the clear linkages between the five levels addressed by these questions.

Table 1

FSSD-derived model for this study, adapted from Bratt et al. (2011), in that questions have been derived for each level, to identify possible gaps in strategic planning

1. Systems Level	The Systems Level describes the overarching system in which the planning and acting takes place. Is there evidence of a clear, underlying, systemic scope, and across a number of years, for all the initiatives connected with consumer carbon emissions reduction described in corporate reporting from this business?
2. Success Level	The Success Level describes the overall principles that are fulfilled in the system, above, for favourable outcomes. Is there a defined objective for the initiative? If so, is it linked to a higher level scope?

3. Strategic Guidelines Level	The Strategic Guidelines Level describes the strategic guidelines for planning and actions towards the objective, how the desired favourable outcomes are to be achieved. A prominent role is played by a process called 'backcasting', by which the future successful outcome is imagined, following by the steps to reach that outcome (Dreborg, 1996).
	    a. Are strategic guidelines visible to reach any objective and prioritise criteria?
	    b. Are there strategies or plans set out, step-wise?

4. Actions Level	This level describes various actions, or proposed actions, specified by the organisation. These actions should be prioritised with respect to the strategic guidelines, as above, in order to maximise the chance of reaching the desired success in the system.
	    a. What are the concrete actions?
	    b. Are they prioritised?

5. Tools Level	The Tools Level describes the methods, tools and concepts used to manage, measure and monitor the actions, in order to make strategic progress to success.
	    a. Are there tools explicitly stated to monitor or assess the outcomes of the actions?
	    b. If so, are they relevant, in that they are able to monitor the actions or assess the outcomes of them, against the defined, or assumed, objective?

Using the FSSD-derived model, with a focus on consumer use carbon emissions, allows for an analysis of whether there is coherence from scope to objectives to actions and tools used for one specific group of initiatives (carbon emissions in the use phase of products sold) published in the retailers´ corporate responsibility reports.

2.2. Models of consumer behaviour change mechanisms
For the second objective of the research there is a need to identify perspectives that have been developed to describe drivers of change in user behaviour and practice. Southerton et al. (2011)

originated an 'Individual Social Material' (ISM) framework of three contexts for consumer behaviour change mechanisms, to enable policy makers to assess which of them underpin particular interventions. The three contexts are derived from several disciplines. The *individual* context refers to attitudes of individual consumers being influenced so as to change their behavior. The *social* refers to social norms, cultural conventions and consumer practices. The *material* refers to products and infrastructure that enable or constrain ways of behaving. Southerton et al. (2011) also offer an analysis of thirty cases of State and civil society sustainable consumption behaviour initiatives. It concludes that there were gaps in the systematic monitoring and reporting of these behaviour change initiatives and that most of the interventions aimed at incremental, rather than radical, behaviour change. Furthermore a large number of these cases focused on the individual context, and the authors call for approaches that integrate the three contexts, drawing a lesson that targeting multiple contexts appears to have greater impact. The ISM framework was itself the basis for a policy report written for the Scottish Government (Darnton and Evans, 2013), which notes the disciplinary dominance of different approaches. There are different disciplinary perspectives underpinning consumer behaviour change contexts in the field of environmental sustainability covered elsewhere, for instance, in Southerton et al. (2004, 2011) (social context) and Abrahamse et al.'s (2005) review of intervention studies aimed at household energy conservation (social psychology context).

However, the very simplicity and accessibility of the ISM framework means it could be equally of interest to businesses, as to policy makers, in seeking to influence consumer behaviour change. It is used for this research because it combines factors from multiple disciplines in a clear way that makes it possible to analyse identified initiatives to assess which of the three contexts has been addressed, as shown in Table 2. It complements the FSSD-derived model because it helps to evaluate retailers' framing of consumer behaviour change content within the initiatives, whereas the former assesses the strategic coherence of their planning.

Table 2: ISM Framework for behaviour change initiatives

Mechanisms employed in behaviour change address at least one context		
Individual context	Social context	Material context
Theoretical basis: Behavioural economics/science and psychology	Theoretical basis: Social psychology and sociology	Theoretical basis: Sociology/theory of practice
Example Mechanisms		
Economic incentives Information giving Promoting environmentally friendly alternatives	Use of social institutions Cultural tastes Community-based initiatives	Infrastructures and technologies Design of products
Factors that influence behaviour in these three contexts		
Values Beliefs Attitudes A consumer's personal evaluation of costs and benefits Emotions Agency Skills Habit	Roles and identity Social norms Tastes Meanings Opinion leaders Institutions that influence groups of individuals Networks and relationships	Infrastructures Technologies, research and development strategies and funding Objects Formal and informal rules, regulations and policy instruments Consumers' time and scheduling
Retailer devices that can be used to influence consumers		
Price and price promotions (Shankar and Bolton, 2004) Advertising material designed to appeal to individuals, rationally or emotionally (Vakratsas and Ambler, 1999, Stafford and Day, 1995) Point of sale information (Broeckelmann and Groeppel-Klein, 2008) Product packaging (Gómez et al., 2015, Löfgren et al., 2008)	Social media, through which groups self-identify by electronic 'word of mouth' (Chu and Kim, 2011, Smith et al., 2007) Shared cultural understanding through, for instance, advertising designed to appeal to shared engagement, or opinion leader endorsement, or through workplace initiatives (Southerton et al., 2011)	The assortment of products and shelf space given to them (Kök et al., 2009, Borin and Farris, 1995) Product shelf positioning (van Nierop et al., 2011)

Source: Southerton et al.(2011), Darnton and Evans (2013) and extended by the authors to include, and categorise, retailer devices.

2.3. Using the two frameworks sequentially

These two frameworks are used in sequence. The retailers' initiatives were assessed by applying the five Levels of the FSSD and then assessed for evidence of the consumer behaviour mechanisms employed, using the ISM framework. This enabled the internal coherence of the retailers' public statements to be assessed together with the implicit models of consumer behaviour change underpinning them.

2.4. Identification and analysis of retailers' initiatives

Initiatives were defined as actions, or proposed actions, that retailers declared were designed to reduce consumer carbon emissions at home. Eight of the UK's largest retailers were selected for analysis. These were the largest 4 grocery retailers, representing 67% of UK grocery market sales between them (Mintel 2012), the largest home improvement retailer, the largest health and beauty retailer, the largest clothing retailer and the largest department store group (these last two also have considerable grocery retailing interests, accounting for another 8% of the UK market). For each of them, a number of texts originating from 2007 to 2013 were analysed. The initiatives were found by systematic search for the words 'consume*' and 'customer' within the Corporate Responsibility reports. This resulted in the identification of eighteen initiatives that had the declared aim of reducing consumer emissions. Then, more information on each of these was found through searching webpages and other publicly available material. Each of the initiatives was then examined using the questions shown in Table 1. Then the initiatives were analysed through the ISM framework shown in Table 2, by identifying 'Example Mechanisms' or 'Retailer devices' from the Table and categorising them.

3. Analysis of the initiatives

3.1 Summary of the results

Through the systematic search, eighteen retailer initiatives were identified. Table 4 in the Appendix describes these and the data sources. Applying the questions in Table 1 and identifying the mechanisms of consumer behaviour change underpinning the business's initiatives in Table 2, resulted in a comparative analysis of both the strategic coherence and the underpinning behaviour change contexts. Table 3 presents these results.

Table 3: Analysis of initiatives

Initiative	Systems level Is there evidence of a clear, underlying, systemic scope, and across a number of years, for all the initiatives connected with consumer carbon reduction described in corporate reporting from this business?	Success level Is there a defined objective that constitutes success, and if so, is it linked to a higher level scope?*	Strategic Guidelines Level Are there (a) strategic guidelines for prioritisation and (b) step-wise plans?	Actions level (a) What are the concrete actions, or proposed actions? (see Appendix for further detail and timescale) (b) Are they prioritised?	Tools level Are tools explicitly stated (a) to monitor or assess actions? (b) if so, are they relevant to reaching the objective?	What seem to be the assumed behaviour change contexts? I: Individual S: Social M: Material (based on Table 2 categorisation)
1. Asda: employee carbon footprints	No	No. Walmart, Asda's US parent company, had a greenhouse gas emissions reduction target that included consumer use but did not quantify it separately from supply chain reductions	(a) No (b) No	(a) 4 employees took a household 'Sustainability Challenge' (b) No	(a) Yes, employees monitored their usage emissions over an unspecified period (b) Yes	I, S
2. Asda: energy efficient TVs trial	No	No	(a) No (b) No	(a) A trial to remove standby buttons on some TVs. (b) No	(a) No (b) No	M
3. Boots: product carbon labelling	No	No	(a) No (b) No	(a) Through a carbon footprint on two shampoos, promoted lower temperature hair	(a) No (b) No	I

				washing to customers (b) No		
4. B&Q: 'eco products'	Yes; consumer emissions from products sold are explicitly included in consideration, and consistently	Yes, and is linked to the scope: the aspiration is that every customer's home is zero carbon or generates more energy than it consumes, by 2050 (from 2012)	(a) Yes (b) Yes; the number of products meeting criteria increase by year towards total targets	(a) B&Q-defined 'eco products' are made available and promoted to customers (b) Yes, implied through the proportion of products they represent	(a) Yes (b) Yes, in part.	I, M
5. B&Q: choice editing	Yes and see above.	Yes, as 4 above	(a) Yes in part (b) Yes	(a) A 'Range Sustainability Buying Standard', leads to products being withdrawn from sale over time. (b) Yes, implied through the proportion of sales they represent	(a) Yes (b) Yes, in part	I, M
6. B&Q: loft insulation trial	Yes and see above.	Yes, as 4 above	(a) No, reported as a trial (b) No	(a) Two trials run on loft installation (b) No	(a) Yes (b) Yes	I, M
7. John Lewis: energy efficient appliances	No	No	(a) No (b) No	(a) A range of energy efficient appliances is sold and promoted in stores (b) No	(a) No, other than for one short-term labelling trial (b) No	I, M
8. Marks & Spencer: low carbon products and	No	No	(a) No (b) No	(a) Various promotions and incentives to help customers reduce carbon emissions and	(a) No (b) No	I, S, M

services				energy use in their own homes (b) No		
9. Marks & Spencer: wash clothes at 30°	No	No	(a) No (b) No	(a) 'Wash clothes at 30°' message in point of sale materials and on clothing labels (b) No	(a) No, except for one small consumer survey (b) No	I
10. Marks & Spencer: product carbon labelling	No	No	(a) No (b) No	(a) Assistance given to development of a carbon labelling scheme, not subsequently implemented (b) No	(a) No (b) No	I
11. Marks & Spencer: carbon footprint campaign	No	No	(a) No (b) No	(a) 'Carbon Footprint' communication campaign (b) No	(a) No (b) No	I
12. Morrisons: product carbon labelling	No	No	(a) No (b) No	(a) Explored methodology for a carbon labelling scheme, not subsequently implemented (b) No	(a) No (b) No	I
13. Morrisons: energy efficient lightbulbs	No	No	(a) No (b) No	(a) Sales promotion of energy efficient light bulbs (b) No	(a) No (b) No	I
14. Sainsbury: energy	No	No	(a) No (b) No	(a) Energy efficient own brand household	(a) No (b) No	I (in part)

efficient products				electrical goods; range development and promotion (b) No		
15. Sainsbury: energy advice and supply	No	No	(a) No (b) No	(a) 'Energy Shop' offered insulation advice (b) No	(a) No (b) No	I
16. Sainsbury: own brand detergent	No	No	(a) No (b) No	(a) Reformulated own brand detergent to wash at lower temperature (b) No	(a) No (b) No	I
17. Tesco: product carbon footprint labelling	Yes. Up to 2013, reports include statements about the importance of Tesco leading and guiding consumers to reduce emissions arising from use of products they sell	Yes, from 2009, and is linked to the scope: to find ways to help our customers reduce their own carbon footprints by 50% by 2020	(a) No (b) No	(a) Carbon labelling of individual products, reaching a maximum of 525 (b) No	(a) Yes (b) No	I, M
18. 'Together' group campaign, included by B&Q, Marks & Spencer and Tesco	No	Yes: to help UK households reduce carbon dioxide emissions by one tonne over three years from 2007	(a) No (b) No	(a) Communications campaign to consumers to encourage carbon saving pledges (b) No	(a) Yes (b) No	I, S

*If no defined objective, an objective is assumed for the purpose of analysis at the next three levels: 'to achieve a carbon emission reduction per household on an annual basis', see section 3.2.2

3.2 Commentary on the results

3.2.1 The Systems Level
Two retailers, B&Q and Tesco, related the initiatives to scope boundaries within their reports, in terms of stating that they seek to help consumers to reduce use emissions, and these two have done so consistently across a number of years. Asda's parent company, Walmart, have a similar approach for the whole international business, but Asda's UK reporting does not mirror this. Other retailers have abandoned consumer use emissions as a declared focus, following its inclusion intermittently from 2007 to 2009.

The broader context is that most retailers have either explicitly or implicitly drawn the boundaries of their carbon emissions to exclude consumer use of products they sell, in total. However, they also frequently acknowledge, in the same reports, that they do have influence on consumer behaviour. Not one of these retailers chooses to give a rationale for not including usage emissions in their overall boundary, even where responsibility for influencing consumption is acknowledged elsewhere in the report.

3.2.2 Success Level
The two companies who declare a consistent objective relating to carbon emissions reduction in use (B&Q and Tesco) also indicate consideration given to the criteria for success, in that there are descriptions of how certain categories of goods have been selected for focus in the context of overall domestic-use emissions, and both declare an element of external oversight to this selection. The success criteria for these two, and for the 'Together' campaign, are defined in terms of household carbon emissions reduction. For the other retailers, there is no description of the overall principles being fulfilled to achieve favourable outcomes. For instance, certain categories of goods are chosen for attention without explanation; often these are electrical items. The need to comply with 2009 European regulation for the design of electrical items (which was primarily focused on energy in use) was presumably an underlying objective for a number of initiatives in the years up to 2009, but only B&Q explicitly include it as such. The lack of overall success criteria leads to a difficulty in assessing the remaining levels for the other initiatives. Therefore, for the purpose of the analysis, an assumed objective has been used: 'to achieve a carbon emission reduction per household on an annual basis' (consistent with the three above) and this has been used to assess the Strategic, Actions and Tools levels for all the initiatives.

3.2.3 Strategic Guidelines Level
Little evidence was found that the initiatives were selected or prioritised using strategic guidelines, other than by B&Q. Only B&Q shows clear evidence of plans designed to lead towards the declared Success Level; there is a target for 2020, which is a step toward the 2050 goal. There are plans that set out how buying teams are progressively to achieve a greater proportion of products that will save energy, within the ranges of products that they decide will be stocked. These include clear choice editing of defined 'Red List' products, which will not be stocked by 2020; for example, patio heaters.

3.2.4 Actions Level
Most of the actions are small in scale, relative to the tens of thousands of products sold by these large retailers, and limited in the time during which they were applied. The exceptions to this, that

is, those of material scale in terms of the number of products impacted and the length of time of activity, are B&Q 'eco products' and choice editing, and Marks & Spencer's 'Wash at 30°'. Since only B&Q have strategic guidelines, then none of the others analysed can have actions being prioritised in accordance with such.

3.2.5 Tools Level

Only B&Q and Tesco demonstrate measurement and monitoring tools. Both use external bodies to validate their actions. B&Q calculate energy saved by using a model that estimates the annual energy saving from each of the energy efficient products sold and multiplying this by the number of those products sold, compared to standard mainstream alternatives. Therefore this does not take account of energy saved from products that would have been sold if they had not been edited by buying teams, but nor does it take account of any type of rebound effect. B&Q also monitor and publicise the proportion of their sales that meet their defined 'Eco Product Guidelines'. In contrast, Tesco measure the number of individual items that were Carbon Footprint labelled and what proportion of customers had bought at least one, therefore the measure of progress made is not directly relevant to the objective of halving customers' carbon footprint by 2020; this follows from the lack of criteria for prioritisation at the Strategic Guidelines Level.

3.2.6 Summary of FSSD analysis

B&Q only can be said to have a fully coherent, planned approach to consumer use emission reduction. For instance, for its initiative to edit choice within its ranges, the objective is to increase the proportion of products meeting their own published criteria for products that save energy in use, so the buying teams edit the choice such that other products are not available to be purchased. Then, at the Strategic Guidelines Level, step wise plans are set out to achieve this objective and, at the actions level, prioritised instructions are given to buying teams as to how this will be achieved. Tesco's carbon labelling initiative also exhibited a number of the characteristics of coherent planning, however, strategic guidelines are missing from the data available. Other than these, the initiatives mentioned by retailers in their reports are inconsistently described across the years, suggesting that they were either single acts of opportunistic good intent or 'learning by doing' projects. However, and in contrast, it is B&Q and Tesco that demonstrate prioritised actions, linked to strategy, although, only B&Q come close to being transparent about how they are prioritised. However, Tesco gave up carbon labeling in early 2012 and, from 2013, their aim to help consumers halve their own carbon footprint by 2020 is barely mentioned.

This is by no means to indicate that other retailers' initiatives had no value, but that, from the available public data, the majority would appear to have been, at best, 'pilot projects' rather than strategically planned approaches.

3.2.7 ISM

Assessment of the initiatives, using the ISM framework, and based on the description of them, reveals that seventeen of the eighteen initiatives assumed an individual context of behaviour change. Nine of them used only this context and nine relied on information imparted only through packaging and point of sale materials. Only three assumed a social context, based on the description of them. One initiative used the social context of the workplace to encourage employees to learn about changed lifestyles for lower carbon emissions at home, demonstrated by some of their colleagues.

Seven initiatives targeted the material context, two of which included editing out products on the basis of carbon emissions in use. However, only B&Q both exhibited strategic choice editing and published a purposeful product design guide, in order to reduce consumption emissions. Whilst a number of other retailers declare, from time to time, intentions to reduce choice of less environmentally efficient products, no evidence of planning for these has been found.

4. Discussion

4.1. Findings in comparison with other studies

The FSSD is based on a full sustainability perspective, in that the full scope of sustainability is considered. This is not the case when considering only initiatives in the public domain, and only those designed to affect carbon emissions, and in one phase of the life cycle only, therefore this research is not directly comparable to other assessments that use the full FSSD. Without having knowledge of the full sustainability perspective of each business, it is not possible for this research to identify any risks that the initiatives analysed were suboptimal, and perhaps created path dependencies, and precluded focus on initiatives that would have represented better steps towards sustainability. However, and with this limitation, the results are similar to Bratt et al. (2011), which also employed the FSSD as an assessment tool, in that it seems likely that processes were not as effective as they could have been, due to gaps in the steps taken to define and plan them.   Another important point is the lack of apparent consideration of any rebound effects by any of the retailers; direct and indirect rebound effects of household efficiency improvements are not trivial (Chitnis et al., 2014) and one retailer had actively encouraged rebound behaviour (Chitnis et al., 2013). Exclusion of rebound effects perhaps reflects tension between these very large retailers' overall objective to increase sales, and their taking responsibility to reduce overall carbon emissions.

The broad results revealed through the ISM are strikingly consistent with those observed by Southerton et al. (2011), in that there is a lack of integration of the three contexts. It may indicate that, then, there is scope for retailers to include mechanisms from wider contexts, for successful outcomes. This similarity of results might indicate that the ISM framework is particularly sensitive to the social context, a context that is underemployed. Alternatively, perhaps, retailers may lack understanding of the mechanisms for addressing the social context, or perceive it as less important to successful behaviour change initiatives than the framework assumes. Further research to operationalise and test this framework across more cases and in depth would be of value. The analysis at the Tools level has revealed gaps in systematic monitoring and reporting, also consistent with Southerton et al. (2011) findings.

4.2. Validity of findings: FSSD

The extent to which retailers include, within their reports, their responsibility for carbon emissions arising from the use of products they sell, varies across time for each retailer and is not consistent across retailers in the same sector; the scope for what they choose to report is not declared. The reports are not designed for consumers, but for professional and academic commentators and stakeholders. Therefore the representativeness of both the corporate reporting and the consumer communication materials accessed for this research is not known, but likely to be incomplete. The reports have been augmented by Internet searches for original consumer communication materials, but it seems likely that this will have missed details of the earlier initiatives, as these are not necessarily continuously available. Nevertheless, as retailers seek to be thought well of by

stakeholders and their customers, and the research relates to customer-facing activities, it has been assumed that most initiatives seen by retailers to have been of any importance, will have been identified in the public domain. Indeed, a common theme from the analysis is that there are a number of initiatives that have been publicised that would appear to have had very little material or strategic significance. However, a limitation is that retailers may simply not have chosen to make publicly available all the steps of their processes, or indeed, experimental initiatives undertaken in the field of consumer behaviour change for environmental benefit.

In using publicly available data exclusively, it is recognised that public communication by businesses does not equate with corporate practice and therefore limits the depth of this assessment. Corporate responsibility reporting has been researched extensively in terms of its goals and benefits (Herzig and Schaltegger, 2006), its norms (Brown et al., 2009), trends (Kolk, 2003) and effectiveness (Adams and McNicholas, 2007). There are less stringent directives for it than those for financial reporting, although there are voluntary, standardised guidelines, such as the well-used Global Reporting Initiative (2012), which some of these retailers have used. Nevertheless the FSSD is meaningful because the set of initiatives reported upon represents a system in itself.

The majority of the initiatives lacked a definition of success, and therefore an assumption was made in order to analyse the Strategic, Actions and Tools level. This may have misrepresented what the businesses actually sought to achieve. Nonetheless, it is insightful to use this adaption of the FSSD to review the consistencies and patterns of initiatives included, across the body of material, by retailer, in their own terms and in what they chose to communicate over time.

4.3 Validity of findings: ISM
It was straightforward to attribute the initiatives to one or more of the three sets of mechanisms. However, this might have been time consuming if all the consumer communication materials for each of the initiatives had been fully available for analysis. More fundamentally, the use of publicly available materials exclusively for this research means that it did not include considerations that may have been made inside the businesses and not made public, about consumer communications. This might have included choices retailers made because they may, at least in the short term, be acting against their own commercial interests by deploying mechanisms that might reduce short term profitability, for instance by withdrawing products from their shelves.

4.4 Validity of findings: the use of corporate material
A further limitation in the selection of corporate material sourced from the internet is that it included current pages, in the main. From 2012 some retailers' webpages were copied so that they remained available for analysis by the researcher, however this was not systematically undertaken until late 2013. Therefore some webpage information from 2007 to 2013 has been missed. Webpage information provision, if not backed up fully by formal reports, allows companies to update information and possibly 'lose' history of previous targets that had been set, and perhaps missed, for instance. Furthermore two of these retailers' corporate responsibility reports are now no longer available on line and had to be requested of the companies concerned (see Appendix).

4.5 Theoretical compatibility and validity
The use of the FSSD-derived framework has enabled an analysis of the strategic coherence of the planning of interlinked levels of businesses' initiatives, within the system of what is publicly available, yet the strategy for deciding what is made available is not transparent, and this represents

a limitation. Nevertheless, businesses may benefit from this assessment since it identifies, in its own terms, what might be regarded as missing from what is put into the public domain.

Whilst coming from different fields of theory, the FSSD model and ISM framework have been successfully used in sequence. The ISM framework itself combines factors and influences from a number of disciplines and therefore it is complementary to the FSSD model, which itself sets out to be a systematic approach that can be applied to many circumstances. The use of the ISM framework, following the FSSD-derived framework, can be seen as an analysis of the retailers' framing of the consumer behaviour change content at four levels; at the Success level, in terms of the context in which the objective, if it exists, is defined, and at the Strategic Guidelines Level, in terms of the three contexts being appropriate for planning, and at the Actions level, the prioritised actions towards the objective, and at the Tools level, to identify gaps in measures and monitoring.

5. Conclusion

For retailers and policy makers planning to undertake consumer behaviour change initiatives, the FSSD model forces consideration of inter-linkages between strategy and systems over time. In using publicly available data only, this research does not make a judgement on the overall strategic scope and coherence of retailers' policies towards consumer interventions in the interests of environmental benefit. However, it has shown that there is broad scope to improve the externally communicated coherence and apparent planning of retailers' initiatives designed to help their customers reduce their emissions. For the majority, there may also be scope to increase the efficiency and effectiveness of their resources deployed in such initiatives by them being transparent about how they are framed within a whole system approach. Use of the FSSD's backcasting principle, with the full sustainability perspective, would ensure that 'the specific actions….are flexible platforms for further investments in the right direction' (p16,Broman et al., 2000) and this would allow the potential rebound effects to be surfaced and dealt with.

However, complying with a planned strategic approach might be at odds with adopting a genuine 'learning by doing' strategy, illustrated by some retailers through individual initiatives; some of the earlier initiatives in Marks and Spencer's 'Plan A' seem to have been insubstantial 'one-off' actions, albeit consistently reported and reflected upon in later reports. These may have been pilot approaches, to be built upon, for a more robust interlinked approach in subsequent years, but this would be a further study. This is in contrast to the use of opportunistic use of positive, but single-occurrence, context-less, stories about consumer emissions reduction successes, often under the heading of 'Case Study' within material such as a sustainability report.

Demonstrable adherence to a planning approach of any kind does not necessarily indicate a successful outcome for sustainability, since good planning across the levels could happen for inconsequential initiatives. In terms of a successful outcome in their own terms, few of the initiatives showed good planning or linking across each of the levels. Of those that did, B&Q's is the most coherent and internally consistent across time. Tesco's carbon labelling programme had substantive content at four of the five levels, however, arguably, its definition of the scope of sustainability at the top level was wanting, certainly in the context of a full sustainability perspective, and the scope itself was inconsistent over the years. It was dropped completely, in 2012.

The ISM model offers an interesting approach to expanding the mechanisms that retailers and policy makers could use to influence consumer behaviour change and so to create both a broader and deeper approach to designing initiatives for success. It appears that retailers have tended to favour information provision alone. Initiatives that also reflect social and material contexts may be more successful in driving behaviour change to reduce consumption emissions. This raises questions for the future direction, scale and scope of consumer behaviour change initiatives led by retailers.

Acknowledgments

Appendix

Table 4

Retailers and relevant initiatives 2007-2013

Retailer (in alphabetical order) and rationale for selection	Data sources	Initiatives identified (where no year is shown, applies across the years)
Asda, second largest grocery retailer, the UK subsidiary of Walmart	Sustainability and Responsibility Reports, Walmart (2008, 2009, 2010, 2011, 2012, 2013) Asda website (2014)	1. In 2012 four employees took part in a sustainability plan to reduce their own carbon footprints. It is reported that they reduced their carbon footprint by between 14% and 37% as a result. The process and results were promoted widely to other employees. 2. In 2007 a trial reported that Asda's electronics team to remove standby options on Asda brand televisions. No subsequent information given.
Boots, the largest health and beauty retailer, owned by Alliance Boots	Corporate Social Responsibility Reports, Alliance Boots (2013, 2014) Corporate Social Responsibility Reports, Alliance Boots (2007, 2009, 2010, 2011, 2012) These reports were sourced in hard copy, directly from the company archive by request. Product Carbon Footprinting, The Carbon Trust (2014)	3. In 2007 two shampoo products underwent a trial with the Carbon Trust footprint label, following a detailed study having been done with the Carbon Trust. Benefits of using cooler wash water were described in-store as reduction in energy bills and emissions and in improved hair health.
B&Q, UK home improvement retail market leader, the UK subsidiary of Kingfisher plc	Corporate Responsibility Reports, Net Positive Reports, Kingfisher plc (2007, 2008, 2009, 2010, 2011, 2012, 2013b) One Planet Home Action Plan, B&Q (2012, 2013b) Loft Clearance Trial (Department of Energy and Climate Change, 2013) Being Responsible (B&Q, 2014) Kingfisher Net Positive data collection methodology (2013a) B&Q Range Sustainability Buying Standard	4. From 2009, consumers have been able to buy a large number of affordable B&Q-defined 'eco products'. Eco products are defined through detailed verification criteria developed by external experts, defined in terms of the most important energy-using products. Their number, and the proportion they represent of all products sold, are measured. 5. A 'Range Sustainability Buying Standard' exists, which leads to less sustainable products being withdrawn from sale, over time. Thus, choice editing is employed such that

	(2013a)	consumers' behaviour is constrained by what B&Q make available for sale. 6. From 2011, trials were undertaken to make it easier for consumers to undergo loft insulation with a loft clearance service. This was described as a behavioural trial (Department of Energy and Climate Change, 2013) but had a very low consumer response rate.
John Lewis Partnership, UK department store market leader	Corporate Social Responsibility and Sustainability Reports, John Lewis Partnership (2007, 2008, 2009, 2010, 2011, 2012, 2013b) 'Bringing Quality to Life' (2013a) 'Energy efficiency ratings explained' (2014a) (John Lewis Partnership, 2014a) 'Lightening the energy load' (2014b) 'A-rated appliances for energy efficiency' (2014c) Department of Energy and Climate Change (2014)	7. A range of energy efficient appliances is sold and promoted in stores. No detail about how they have qualified to be described as such. The initiative relies largely on information provision together with some, unspecified, choice editing. A trial with the UK Government Department of Energy and Climate Change ran from Sept 2013 and June 2014, to test the impact of presenting customers with information on lifetime running costs on appliance point-of-sale materials in store.
Marks and Spencer, the largest clothing retailer	How We Do Business Reports, Marks & Spencer (2007, 2008, 2009, 2010a, 2011, 2012a, 2013a) Plan A Commitments, Marks & Spencer (2010b) The Key Lessons from the Plan A Business Case (2012b) 'Together' campaign (The Climate Group, 2007) 'Plan A' website (Marks and Spencer, 2013b)	8. Low carbon products and services: the M&S Energy business incentivised reduction (at launch in 2008) by offering vouchers to households who achieved year on year energy reductions. In 2012 a 'My Plan A' website sought to generate public consumer pledges to environmentally beneficial behaviours. Another statement was made about editing choice of electrical items. However, in 2012 M&S stopped selling electrical items entirely. 9. A multi-year campaign in stores and on clothing labels to promote washing clothes at 30°. The stated benefits were originally the electricity and CO_2 emissions saving. Later, communication material emphasised the potential to save money. 10. In 2007, supported the work of the Carbon Trust to develop a carbon labelling scheme, not subsequently

		implemented.
		11. In 2007, a 'Carbon Footprint' communication campaign was run with WWF and the Women's Institute.
Morrisons, fourth largest grocery retailer	Corporate Responsibility Review reports (2013, 2014) Corporate Social Responsibility Reports, Morrisons (2007, 2008, 2010, 2011, 2012) . These reports were sourced directly in digital format, from the company by request.	12. In 2007 and 2008, it was stated that they were exploring product carbon labelling with a view to contributing to an agreed methodology 13. In 2007, sales of energy efficient light bulbs were promoted and the stated aim was to end sale of incandescent light bulbs by 2010, one year before legislation required
Sainsbury, third largest grocery retailer	Corporate Responsibility Reports, J Sainsbury plc (2007, 2008, 2009, 2010, 2011, 2012, 2013) Consumer Futures (Forum for the Future, 2011)	14. From 2008 to 2010 there were intermittent statements and actions on the intention to develop their range, and on provision of information and advice for energy efficient own brand household electrical goods. 15. From 2010 to 2013 an Energy Shop offered advice about insulation and energy provision services 16. In 2007 an own brand detergent was reformulated to work at lower wash temperatures.
Tesco, UK grocery retail market leader	Corporate Responsibility Reports, Tesco (2007, 2008, 2009, 2010a, 2011, 2012, 2013b) Sir Terry Leahy speech (Tesco plc, 2010b) 'Carbon Footprinting our UK products' (Tesco plc, 2013a)	17. Help consumers to halve their carbon footprints by 2020; carbon labelling on large range of affordable products (up to 2012). At its maximum, 525 individual products were carbon labelled.
B&Q, Marks & Spencer and Tesco, as part of a coalition of 15 businesses and NGOs	The Climate Group (2007, 2009), Marks and Spencer (2008)	18. 'Together' campaign from 2007 to 2010; a consumer engagement campaign designed to help every UK household reduce carbon dioxide emissions by one tonne over three years by demonstrating that many small actions add up to make a difference. Public communication to consumers was supported by statements from large consumer businesses, to encourage individual consumers' carbon saving pledges.

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