

Consumers and carbon labelling in the food sector - a lifestyle perspective

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Executive summary

Together we are strong: This is the mantra that can be said to underlie the philosophy of green consumerism. Product labelling has during the past three decades emerged as a crucial instrument for transforming the philosophy of green consumerism into actual change. Buy environmentally friendly products to encourage change in the industry, that is what it all comes down to, and product labels allow it to happen by enabling consumers to identify products associated with low environmental impacts.

In recent years, people have started to think about carbon labelling. As the name might give away, a carbon label is a label that in some way or another allows consumers to identify climate friendly products. Given the centrality of the food sector as a source of GHG emissions, a lot of attention has come to be focused on the carbon labelling of food. As of today, though, little is known about the feasibility of carbon labelling food and how it should be done. Would consumers actually use carbon labels, and how could we best communicate through carbon labelling with them to encourage climate smart consumption, which at the end of the day as to be the sole criteria on which to judge the success of any carbon label?

I conducted this study, entitled “Consumers and carbon labelling in the food sector – a lifestyle perspective, during the spring of 2010 to contribute towards a better understanding of these questions and their answers. This study had two main objectives:

- To provide an idea of how receptive consumers are to carbon labelling and what could be done to make them even more so.
- To provide an idea of what forms of communication through carbon labelling with consumers work best.

To achieve these two objectives, a number of carbon labelling schemes were interviewed about their approaches that were then tested on consumers in six focus groups. The conceptual framework for this study was a modified version of Thøgersen’s model of what makes a consumer pay attention to an eco label. This model is based on the fundamental premise that paying attention to an eco label is not an end in itself, but rather a mean for buying eco labelled products, which, in turn, is a mean for the greater goal of protecting the environment. In other words, it frames the use of eco labels as goal-directed behaviour. Thus, for a consumer to pay attention to an eco label, she must at some prior point in time have come to:

1. form a desire to protect the environment.
2. know about eco labels, in particular how they work.
3. believe in product labelling as a suitable strategy for reaching this goal.
4. be attracted by the eco label.
5. trust the information that the eco label conveys.

Carbon labelling, though, is more likely to be successful if it manages to fit in with the complex lifestyles and household dynamics of consumers. It was therefore decided to examine how well six different consumer groups in the food sector matched the five criteria of Thøgersen’s model, and the participants of the six focus groups were thus sampled accordingly.

On the basis of the results of this study, it appears to be the case that consumers are, generally speaking, receptive to the carbon labelling of food, but that the situation could be improved by taking a number of measures. With regard to how to communicate with consumers through carbon labelling, the results varied from group to group, but overall it can be said that there are two different paths which carbon labelling schemes can take; simple labels with clear meaning, or more elaborate labels that rely on the provision of more information to create more room for consumer choice and often more intricate criteria. While the results lead to a number of concrete recommendations, that can be found in the concluding chapter, there is a strong need for additional research into this topic before ideas can be put into practice.

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Chapter 1 - Introduction

Background

Environmental problems of anthropogenic origin have existed in one form, or another, since the days when humans started to conglomerate in cities, cultivate the earth and embark on the long path of development which has brought mankind to where it is today, in the year 2010. The realization that the well-being of societies is closely linked to that of the environment which they exist within has generated a strong focus on the need for sustainable development amongst scholars, governments, international institutions and other organizations. Although a contested concept, the Brundtland report, published in 1987 by the United Nations, defines sustainable development as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN, 1987). In terms of the environment, this means that our use of it must not come at the expense of generations to be.

Therefore, a lot of resources, political will and effort have been invested, worldwide, in solutions aimed at mitigating environmental degradation. Given the role of industry as a source of environmental problems, both in terms of pollution and unsustainable extraction of natural resources, many of these solutions have naturally sought to green the industrial mode of production through various technological innovations (Cunningham, 2008). Consumers have, however, been increasingly recognized, in recent years, as a medium through which significant progress can be achieved with respect to the environment (Greenerchoices, 2009).

This is because market forces ensure that consumers can use their dollars not only to purchase goods and services, but also to achieve change. Boycotts - whereby consumers voluntarily decide not to buy goods from a certain organization, person or country as an expression of protest – served to contribute towards the eventual downfall of the apartheid regime in South Africa during the 1980's and were a powerful political weapon against the British as the Indian people struggled for independence, and thus boycotts constitute a poignant example of the power that consumers wield. A less dramatic, although still efficient, way for consumers to encourage change which they see as positive is the so-called buycott. A buycott is essentially the inverse of a boycott. Instead of abstaining from buying products of a certain origin, buycotting consumers buy products that in their view have positive characteristics, whether they be social, environmental, ethical or a combination of these. In doing so, consumers give the producers of these products a competitive advantage which forces their competitors to change their practices for the better, or face the prospect of losing a segment of the market. In this way, a positive dynamic whereby producers compete for sensitive consumers, by improving their modus operandi, can be created (Boström & Klintman, 2008).

The foregoing discussion on buycotting did, however, ignore one of the prerequisites for such activism on the part of consumers. In order for consumers to consciously buy products with certain hidden qualities, hidden because they are not embodied in the product itself, they have to be able to identify these products. The most commonly used solution to this problem is product labelling. A product label is essentially a piece of information which divulges information on otherwise hidden

characteristics of a product (Salman Hussain, 2000). Product labeling has mushroomed during the past two decades and well-known examples include the Fair Trade label, the German Blue Angel, The Forest Stewardship Council label and various organic food labels. Through these various labels, consumption becomes politicized.

Suffice to say, environmental issues have become the subject of many product labels, in which case they are widely referred to as eco-labels. The practice of buying products that, relatively speaking, are environmentally friendly is often referred to as green consumerism (Boström & Klintman, 2008).

One of the most pressing environmental issues of our time, climate change, has increasingly been linked to the consumption choices of people, during the past decade, and in line with this governments, non-governmental organizations, scholars and businesses have started to think about and develop product labels that reveal the impact of some given product on the climate, thus enabling consumers to make climate smart purchases. Such product labelling is commonly spoken of as carbon labelling, a term which is derived from the fact that carbon dioxide is the GHG which contributes the most to climate change.

It should be noted that while carbon labelling normally refers to the disclosure of information about the greenhouse gas emissions that are associated with a product, the term has a broader meaning in this thesis. Carbon labelling, here, signifies any type of information that is aimed at consumers with the purpose of enabling these to use their power as buyers to reduce the climate impact of the food sector. The reason being that different measures with the objective of reducing the GHG emissions originating in the food sector, via consumers, can be considered as substitutes for each other.

GHGs are gases in the atmosphere that absorb the sun's radiation while only letting it leak out into space very slowly, thereby heating up the lower atmosphere which is a prerequisite for life as we know it today. This is known as the greenhouse effect. The most common GHGs are CO₂, CH₄ and N₂O. However, these gases differ in their degree of potency. CH₄ absorbs 21 times as much radiation from the sun compared to CO₂, while in the case of N₂O this number is 310 (Cunningham, 2008). When assessing the impact of a product on the greenhouse effect, it is commonplace to express all of the GHGs associated with it in terms of CO₂ equivalents, which is also known as the carbon footprint.

The food sector has received a lot of attention when it comes to carbon labelling, which is not all that surprising when it is taken into account that the life cycle of the total amount of food that is produced, in the world, is estimated to cause approximately one third of global GHG emissions that, in turn, are the driving force behind climate change. The field, though, is still in its infancy, and important questions that need to be answered if carbon labelling is to be more than just a fad remain.

1.1 Problem statement and research objectives

Consumers are to carbon labelling what the circulation of blood is to humans, essential that is to say. Without consumers the whole concept falls on its head. It is therefore clear that for carbon labelling to be viable in the long run, carbon labelling schemes must communicate efficiently with consumers, but to do so they must have an idea as to how receptive consumers are to carbon labelling and what could be done to make them even more so, in addition to an idea of what forms of communication through carbon labelling work with consumers.

The question, though, is why we should think about carbon labelling in the food sector, and not just carbon labelling in general? The answer can be found in the fact that industrial sectors differ from each other both in terms of how foods are produced, but also the consumption patterns that are associated with. Consequently, the challenges associated with efficient communication through carbon labelling with consumers are likely to differ depending on the sector under consideration. The German Project Carbon Footprint venture, an influential body in the work to develop international carbon foot printing standards for products, has recognized this fact and thus called for sector-specific approaches. While this is not the case for all carbon labelling schemes, there is a trend towards sector-specific approaches as illustrated by, for instance, the carbon labelling scheme for food which is being developed by KRAV and Svenskt Sigill in Sweden.

As mentioned in the previous section, the last few years have seen a surge of interest in carbon labelling, especially with respect to food, as a tool for fighting climate change through the wallets of consumers and their concern for the environment within which they live. Carbon labelling schemes have been developed, or are being developed, around the world and prominent ones include the British Carbon Trust label, the Swiss Climatop label and the American Carbon Fund label. Even in the developing world attention is being devoted to this subject matter; China has conducted research into the prospects of a carbon labelling scheme within its borders, and Thailand has already developed one, the motivation for this scheme being not only to empower its consumers, but also because they think that it could improve its trade relations with the EU.

Very little, however, is known about the feasibility of carbon labelling and how to effectively link this type of information to consumers who can then choose to act on it. Indeed, Brenton et al. state that “The strong desire to act on carbon labelling has been running ahead of the challenges of measurement and the problems of effective communication through carbon labelling that must be addressed for schemes to be successful” (2008). This is even more so the case when it comes to carbon labelling in the food sector on which only a limited amount of research has been conducted. Consumers and carbon labelling in the food sector is therefore the subject that we will address in this study, with the aim of making an incremental contribution towards a better understanding of how the carbon labelling of food can be made viable in the long term..

The objectives of the study are fourfold:

(i) to establish what the challenges associated with carbon labelling in the food sector are. (ii) to provide an idea of how receptive consumers are to carbon labelling in the food sector and what could be done to make them even more so (iii) to provide an idea of how to communicate effectively through carbon labelling with consumers. (iiii) to provide an idea, on the basis of this study, of what the future might hold for carbon labelling and issue recommendations for further research.

1.3 Conceptual framework

The benchmark for any product label is that consumers actually use them to guide their consumption choices, for otherwise they are toothless as policy instruments. In spite of the plethora of product labelling schemes that has sprung up during the past two decades, very few studies have been conducted with regard to how efficient product labels are in this regard, and the ways in which they could improve.

Most of the early studies on this subject focused on the extent to which consumers recognise and trust labels under the assumption that these are crucial determinants of the use of product labels on the part of consumers. In essence, these studies correlated recognition and trust with a behavioural outcome, meaning the conscious decision of a consumer to buy a labelled product.

However, such an approach is of little use if we want to understand why it is that consumers recognize, trust, pay attention to a product label and the implications the answers to these questions have for the effectiveness of product labelling schemes. The mere existence of a product label in itself does not equate to its use by consumers; we want to know under what conditions a consumer will opt for the desirable behavioural outcome in the form of consciously purchasing a labelled product.

In response to the shortcomings of these models in terms of explaining consumer behaviour with regard to the use product labels, John Thøgersen developed a model with the aim of providing more explanatory power behind the use of product and, in particular, eco labels. This model is based on the fundamental premise that paying attention to an eco label is not an end in itself, but rather a mean for buying eco labelled products, which, in turn, is a mean for the greater goal of protecting the environment. In other words, it frames the use of eco labels as goal-directed behaviour. Thus, for a consumer to pay attention to an eco label, she must at some prior point in time have come to:

6. form a desire to protect the environment.
7. know about eco labels, in particular how they work.
8. believe in product labelling as a suitable strategy for reaching this goal.
9. be attracted by the eco label.
10. trust the information that the eco label conveys.

In this study, we assume that the label itself and the place in which it is made available determine how attractive it is to a consumer. This is because consumers need to be able to access the information, but also be willing to take part of it.

Thøgersen's model was a step forward in that it contributed towards a better understanding of the conditions under which an individual will consciously buy an eco labelled product, but nevertheless it cannot be deemed to be complete. The reason for this is simple: it does not provide any explanations as to what is behind these five factors; it merely takes them as a given. In other words, the preferences and attitudes of consumers are assumed to have been formed within a vacuum; consumers are treated as a homogenous group of people.

In reality, consumers are naturally not a homogenous group but are better thought of as consisting of different segments, or groups. The fallacy of approaching consumers in this way is that a one cap fits all policy is less likely to lead to success than a policy whereby carbon labelling is adapted to the reality of a landscape in which consumers

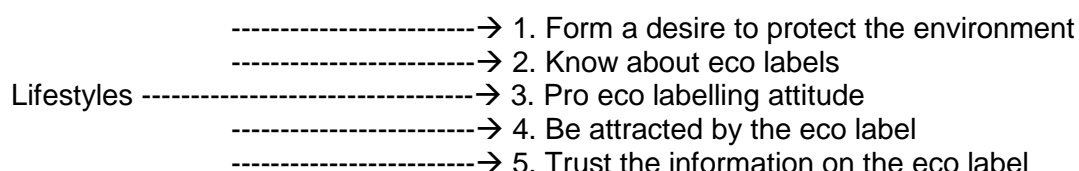
are segmented. The advantage of such an approach is eloquently put forward by Spaargaren and Cohen (2009):

“...Programmes that simply impart information about green products or advise consumers about the adverse impacts of their actions will ultimately prove insufficient in motivating consequential changes. Such directives need to be combined with attractive alternatives that are within the realistic grasp of end-users. In other words, ecologically favourable products and services must fit into the complex dynamics of everyday lifestyles and household dynamics”.

Carbon labelling, it can be said on the basis of this argument, is more likely to be successful if alternatives that mesh well with the lifestyles of consumers are available. For this to happen, though, it is necessary to have information on what consumers of different lifestyles think about carbon labelling, and this is where this study comes into the picture.

How, then, can we delineate meaningful consumer groups that allow us to form an understanding of how receptive different segments of consumers are to carbon labelling and what could be done to make them even more so, in addition to the forms of carbon labelling communication that work best with these different groups? As the excerpt above alludes to, the notion of lifestyles, which has its origin in sociology, is a potentially useful concept for this purpose. Broadly speaking, it is a tool with which the relationship in-between different types of behaviour amongst people - in terms of attitudes, habits, tastes, culture and so forth – and their consumption patterns can be understood. Not surprisingly, this concept has been extremely important to the field of marketing where it allows advertisers to match products with the lifestyles of people, but also to create new lifestyle associations to promote new products. Carbon labelling, it can be said on the basis of the argument put forward by Spaargaren and Cohen, is more likely to be successful if alternatives that mesh well with the lifestyles of consumers are available. For this to happen, though, it is necessary to have information on what consumers of different lifestyles think about carbon labelling, and this is where this study comes into the picture.

In this study, we will draw on a revised version of Thøgersen’s model, which will still be referred to as such, in which the five factors that were outlined above are taken to be a manifestation of a consumer’s lifestyle. In this form, the model assumes the following appearance:



To apply this model to carbon labelling, it is necessary to have a solid understanding of the relationship in-between climate change on the one hand, and the food sector on the other, so as to be able to grasp the challenges related to the carbon labelling of food. Our first aim will therefore be to examine the relationship between the food sector and climate change and apply Thøgersen’s model to the carbon labelling of food. Subsequently, we want to evaluate existing approaches to carbon labelling using this model and then compare these in terms of how well they do with

consumers of different lifestyles. This study has therefore been divided into four chapters, excluding the introduction and conclusion chapters:

Chapter 2 – Climate change and the food sector – in which we look at the relationship in-between climate change and the food sector and apply Thøgersen's model to carbon labelling.

Chapter 3 – Carbon labelling approaches – in which we provide a map of how different approaches to the carbon labelling of food think around the five criteria of Thøgersen's model and analyse these to gain an idea of the ways in which these approaches resemble and differ from each other and why they do so.

Chapter 4 – Consumers, food, climate change and product labelling – in which we look at what the attitudes and perceptions of consumers of different lifestyles are with respect to the first three criteria of the model. The main objective of this chapter is to gain an idea of how receptive consumers of different lifestyles are to the carbon labelling of food and what could possibly be done to make them even more so, and to evaluate the approaches of chapter three accordingly.

Chapter 5 – Communicating with consumers through carbon labelling – in which we examine what forms of communication through carbon labelling work best with consumers of different lifestyles, or in other words the fourth and fifth criteria of Thøgersen's model.

The key findings and conclusions will then be presented in the final chapter alongside a discussion of the limitations of this study, a discussion of what the future holds for carbon labelling on the basis of the results of this study, recommendations and a concluding commentary by the author on what carbon labelling has to say about climate change policy in general.

1.3 Research questions

On the basis of the problem statement, research objectives and conceptual framework, these are the research questions which this study will address¹:

1. What is the relationship in-between the food sector, climate change and carbon labelling?
 - 1.1 What is the relative importance of the food sector as an emitter of greenhouse gases?
 - 1.2 What are the sources of greenhouse gases in the food sector and how important are they?
 - 1.3 How could carbon labelling help to reduce the impact of the food sector on the climate?
 - 1.4 What is the scope for reducing the carbon footprint of the food sector?
 - 1.5 What methods do the schemes, which were considered for this study, use to estimate the carbon footprint of food produce and what degree of assurance do they afford consumers with?

¹ These research questions have as their basis the model by Thøgersen as applied to carbon labelling at the end of Chapter 2.

- 1.6 What are the issues surrounding climate change and carbon labelling in the food sector?
2. What are the existing approaches to carbon labelling?
 - 2.1 What arguments do these approaches put behind carbon labelling?
 - 2.2 What scope have these approaches got with respect to carbon labelling?
 - 2.3 How do these approaches try to build consumer trust?
 - 2.4 What are the different types of carbon labels?
 - 2.5 Where can these labels be made available?
 - 2.6 What do these schemes think about carbon labelling within a wider context of food labelling?
3. How receptive are consumers of different lifestyles to carbon labelling and what could be done to make them even more so?
 - 3.1 What are the most important attributes of food for consumers of different lifestyles, and in what order?
 - 3.2 What do consumers of different lifestyles know about climate change and its relationship to the food sector?
 - 3.3 What do consumers of different lifestyles know and think about eco-labelling, in general, and to what extent do they use them to guide their consumption choices in terms of food?
 - 3.4 What are the views of consumers of different lifestyles on large quantities of information about the products which they buy, and how do they respond to this situation?
4. What forms of carbon labelling communication work with consumers of different lifestyles?
 - 4.1 What are the advantages, and disadvantages, that consumers of different lifestyles perceive in different types of carbon labels and which are the most unpopular and popular labels?
 - 4.2 What factors do consumers of different lifestyles identify as important for building consumer trust in a label?
 - 4.3 Where would consumers of different lifestyles prefer carbon labels to be made available?
 - 4.4 In the case of comparative carbon labels, where should the product boundaries for comparisons be drawn according to consumers of different lifestyles? What factors facilitate trust in carbon labelling amongst consumers of different lifestyles?
 - 4.5 Would a carbon labelling bonus scheme make consumers more likely to purchase carbon labelled food produce?

1.4 Methodology

The aim of this section is to present the research instruments which were used to answer the four research questions. The instruments used to answer research questions one and two will be discussed separately. Research questions three and four drew on the same method to generate data, and will therefore be discussed under the same heading.

1. What is the relationship in-between climate change, the food sector and carbon labelling?

To answer this research question, an extensive literature review was carried out. Sources that were consulted included scientific journal articles, books, reports, relevant websites and other monographs.

2. What are the different approaches to carbon labelling?

Interviews with experts working at carbon labelling schemes that are operational, or in development, was deemed as the best way of collecting information on different approaches to carbon labelling. Six schemes were interviewed, in total. There were, however, three exceptions to the use of interviews to answer this research question, as will be discussed further below. All of the interviews, bar one that was done via email, were conducted by telephone. An interview schedule that was modelled after the relevant sub-research questions was put together for the interviews. This is what it looked like:

1. Why do you think carbon labelling is a good and viable way of fighting climate change?
2. What does your carbon labelling scheme do to inform consumers about your label and how it works?
3. What type of label have you opted for, and why so?
4. Where is this label made available to consumers, and why so?
5. How does your carbon labelling scheme attempt to facilitate consumer trust?
6. What is the scope of your carbon labelling scheme, and why so?
7. What does your carbon labelling scheme think about the trend towards multiple labels on food products and how might it affect consumers?

A table outlining the interview subjects, the carbon labelling scheme they work for, its country of origin and the way in which the interviews were conducted is produced below:

| Scheme | Country | Interview subject | Conducted by |
|-------------------------|----------------|--------------------------|---------------------|
| Climatop | Switzerland | Heinz Schmid | Telephone |
| BIOIS | France | | Telephone |
| The Climate Conservancy | USA | Steve Davis | Telephone |
| Casino | France | Pauline Bartos | Telephone |

| | | | |
|-------------------------|--------|--------------|-----------|
| Krav and Svenskt Sigill | Sweden | Anna Richter | Email |
| Concious Brands | Canada | Rob Sinclair | Telephone |

Originally, the plan was to include a carbon offsetting scheme, known as carbonfund.org, in the research of this thesis. However, nobody at this scheme responded to the interview requests that were put forward to them. To preserve the intended scope and structure of the thesis, it was decided to include carbon offsetting even though no interview was conducted with an expert at such a scheme. Information on carbon offsetting and how it works was collected from the website of carbonfund.org, which was complemented with the ideas and thoughts of the author of this thesis.

The two other exceptions arose for the reason that two of the most commonly used ways of encouraging consumers to buy food products that are associated with low emissions, namely food miles and the airfreight logotype, are not associated with any particular carbon labelling scheme and thus it was not possible to talk to a particular scheme about their use. As will be understood during the course of the subsequent two chapters, these two types of carbon labels are fraught with controversy, but given their widespread use it was chosen to include them, in the discussion, in spite of this fact. Information on the food miles and airfreight labels was collected through a literature review.

3. What are the views of consumers of different lifestyles on issues surrounding climate change, its relationship to the food sector and carbon labelling?;
4. What are the advantages, and disadvantages, that consumers of different lifestyles perceive in different types of carbon labelling communication?

Focus groups were chosen as the best research instrument for generating the data necessary to answer research questions three and four. Focus groups are widely used for marketing research and their interactive nature provide ample scope for obtaining data on not just what people think, but also the reasoning behind their thinking; this is why focus groups were favoured for answering research questions three and four.

Before discussing the details of the focus group sessions that were conducted for the purpose of answering research questions three and four, we need to return to the notion of consumers and lifestyles. Delineating people into lifestyles is an inherently complex matter since it is, generally speaking, impossible to pigeonhole people. Lifestyles tend to overlap, as illustrated by the popular notion of a champagne socialist who drinks champagne in the most elegant of saloons while professing to the ideals of Marx. However, as stressed before, the idea of linking lifestyles with products to make them more sellable has been proven by the success businesses have had with this approach. Overlapping lifestyles is no longer an issue since a company only cares about the particular lifestyle that is of relevance to their product. Inasmuch, the concept of lifestyles can be said to be more useful than it is explanatory. In our case, we are interested in the lifestyles that can be said to be related to the food sector, in view of the fact that our topic of interest is how consumers of different lifestyles relate to the carbon labelling of food. What, then, are the lifestyles that can be said to have a bearing on how consumers relate to food?

To answer this question, one would normally rely on a so-called lifestyle segmentation survey, which is based on questionnaires handed out to consumers, and then the data from these questionnaires is analysed to distinguish different lifestyles. To date, however, no such lifestyle segmentation survey has been conducted with regard to the food sector. Given the time and resource constraints that this study was subjected to, it was not possible to conduct such a survey for the sake of delineating the lifestyles that are of relevance to the food sector.

Instead, it was decided to delineate the lifestyles that are of relevance to the food sector on the basis of what consumers want from food. Drawing on this approach, the following lifestyles were identified:

Gastronomy – People for whom food is an end in itself, who take great pleasure in cooking and the culinary arts.

Family – Parents who need to provide a whole household food and a good diet for their children while balancing this against the other demands of family life.

Sport – People whose strong interest in sports and consequent need for a balanced and nutritious diet characterises their relationship to food.

Environmental – People who have a strong pro environmental attitude and want to eat sustainably produced food with low environmental impacts.

Indifferent – People who have no special relationship to food; they do not live to eat, but eat to live.

Animal – People who are concerned about the welfare of animals and want to make sure that animals do not have to suffer excessively in the food industry, whether they be vegetarians or want to make sure that their meat or dairy products were produced in an ethical manner.

Snowball sampling was used to find participants for the eight focus groups. This was deemed to be the best sampling method, as it did not require excessive amounts of resources and time.

The focus groups were organized around a questionnaire, which can be found in the appendix, consisting of two parts. The first part focused on consumer knowledge, attitudes and perceptions with regard to climate change, its relationship to the food sector and product labelling. The second part asked the participants to rank a set of carbon labels and the places in which they would like these to be made available. A short presentation about the subject was given before part one, and an additional presentation on the carbon labels and the thinking behind them was given before part two. When all of the participants had finished part one, they were asked to comment and offer their views on question five, seven and nine. After having finished part two, they were then asked to comment on question eleven and thirteen. It was thought that these particular questions needed to be further elaborated upon by the participants as not only their answers were of interest, but also the thinking behind those answers.

1.4 Scope and limitations

The focus groups were conducted in Sweden. Therefore it should be kept in mind that the discussion, conclusions and recommendations of this thesis were reached within a Swedish context, and that one ought to be careful with extrapolating these results to other countries.

Chapter 2 - Climate change and the food sector

Introduction

It is conceivable that the most fundamental question concerning the carbon labelling of food is why scarce resources should be spent on labelling food to enable consumers to reduce the carbon footprint of their food consumption. Are the GHG emissions of the food sector significant enough to justify such labelling? In order to answer this question, it is necessary to have a firm understanding of the relationship in-between the food sector on the one hand and climate change on the other. Providing an answer to this question is therefore the first aim of this chapter.

However, the diverse and segmented nature of the food sector means that an understanding of the relationship in-between the food sector and climate change does not provide the whole picture with respect to the carbon labelling of food. An understanding of the relative importance of sub-sectors and the different stages in the life cycle of food as sources of GHG emissions is equally important. The discussion on the relationship in-between the food sector as a whole and climate change will therefore be followed by an inquiry into the relative importance of sub-sectors and the different stages in the life cycle of food as sources of GHG emissions. This allows us to answer a number of important questions, the first of which is whether there is space for emissions reductions in the food sector, and if so the ways in which such reductions could be brought about, which in turn allows for an understanding of the different ways in which carbon labels could reduce the carbon footprint of the food sector. In addition to shedding light on these matters, this discussion also enables an evaluation of the extent to which different methods for estimating the carbon footprint of food produce offer consumers assurance.

As much as the carbon labelling of food is a matter of science and statistics, it is to an equal extent a matter of efficient communication and appealing to consumers. In the concluding section of this chapter, in which the answer to the second main research question is provided, the discussion will therefore build on the scientific narrative of the relationship in-between the food sector and climate change by focusing applying Thøgersen's model to the carbon labelling of food.

However, no discussion about the relationship in-between climate change and the food sector is complete without an overview of climate change and why it is thought of as a problem by most scientists, as this is the problem which carbon labelling seeks to address, which is why this chapter will begin with a brief discussion on climate change itself.

2.1. Climate change

The global, as well as local, climate is subject to change for natural reasons that include volcanic eruptions, the so-called Milankovitch cycles, changes in ocean currents, impacts with extraterrestrial bodies and other natural phenomena. Such transformations of the global climate are thought to have led to the extinction of the dinosaurs 65 million years ago and more recently the ice age which came to an end 10 000 years ago. During the past century the global average temperature has increased by approximately 0.6 degrees Celsius and it is predicted that if this trend

continues the world will, by the end of the 21st century, be warmer than it has been at any point during the last two million years. As a consequence of this change in the global climate, the arctic ice cap is now 40 % thinner than it was a century ago and the glaciers around the world are retreating at a fast pace (Cunningham, 2008). This time around, however, there is a strong consensus that humans are to blame for the change in the global climate rather than nature.

In 2007, the Intergovernmental Panel on Climate Change published a report that argues in very strong terms that it is unlikely that the current trend of global warming can be explained by natural causes. Climate models, the report contends, produce accurate simulations of the warming of the world's climate that has taken place during the last century when anthropogenic GHG emissions, as well as natural forces, are taken into account. However, when the same models exclude human factors, the result of the simulations is a cooling of the climate during the same time span. The report therefore concludes that it is very likely that the heating up of the global climate, which is being observed, is the result of human activities that have increased the concentration of GHG:s in the atmosphere since the advent of the industrial revolution some 250 years ago (IPCC, 2007).

The ramifications of global warming are ambiguous, but mostly negative. For example, research has shown that it will in all likelihood lead to more extreme weather, such as hurricanes and droughts, in the future, which would increase the chances of catastrophes that threaten human lives, infrastructure and property (IPCC, 2007). Moreover, the aforementioned melting of the arctic ice cap will raise sea levels, thus threatening to submerge low-lying regions of the world such as Bangladesh and numerous islands in the pacific ocean. Agriculture will also be impacted by the change in the global climate, although these consequences will be ambiguous in view of the fact that some areas would benefit from an increase in temperature while others would not (Easterling et al., 2007). The whole world would be affected by global warming, but not uniformly. Developed countries are likely to suffer less severe consequences given that they have the means to, at least to an extent, adapt to a changing climate, whereas developing countries would be left at the mercy of nature. Eco-systems are also expected to undergo drastic changes as the climate gets warmer. Polar bears in the arctic region, for instance, are finding it increasingly difficult to hunt and thereby survive as their habitat is melting away. Compounding the problem of climate change is also the large degree of uncertainty that surrounds it and its consequences – it is not known for sure how things will pan out in the end, but it is fairly certain that climate change would entail substantial economic costs as well as social costs that cannot be monetarized. It is for these reasons that global warming has sparked a great deal of concern and risen to the top of policy agendas all over the world.

In the light of the dire consequences that global warming would result in if it were allowed to proceed unchecked, there is now a consensus among governments, nongovernmental organizations and even businesses that greenhouse gas emissions resulting from human activities must be cut. The Kyoto Protocol, which stipulated the aim of its signatories cutting down their GHG emissions to such a level that harmful anthropogenic interference with the climate system would be avoided, constitutes the most high profile effort to reduce GHG emissions worldwide, as of today. Nevertheless, it has not been a resounding success due to reasons that are beyond the scope of this chapter, and the prospects of a new substantial treaty to replace the Kyoto Protocol once it expires in the year of 2012 look bleak. The problematic air surrounding multilateral climate talks has, however, not prevented actors on a lower scale and in the private sphere from launching innovative initiatives to curb climate change. Carbon labelling is one such initiative that draws on the

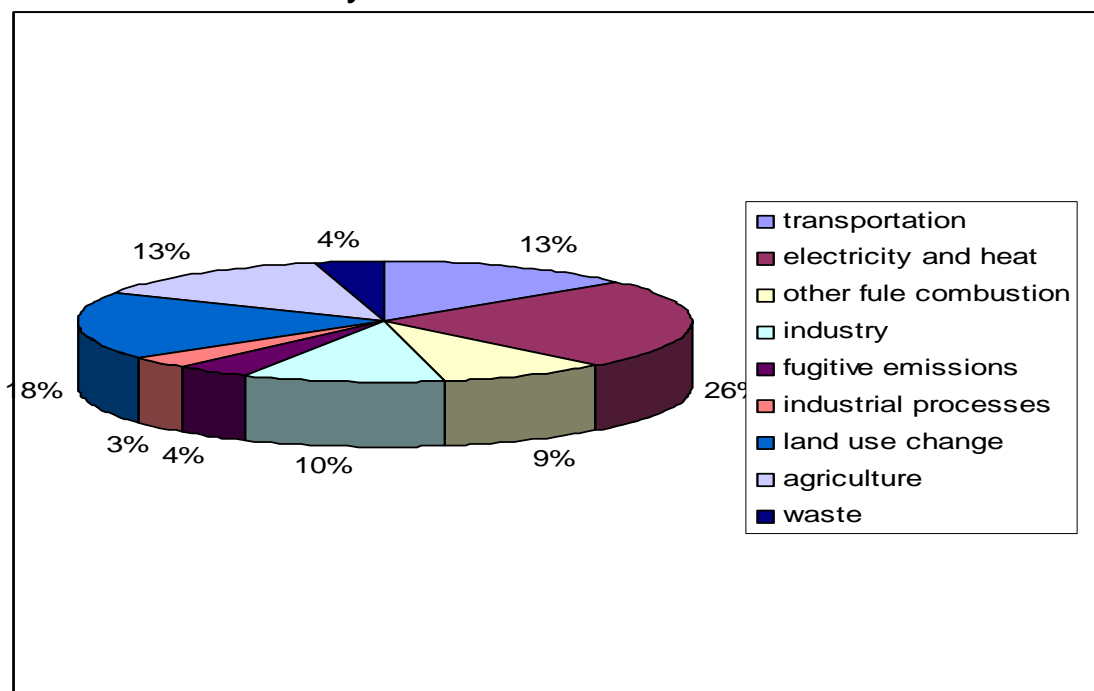
environmental concerns of consumers to change the practices of producers towards becoming more climate friendly.

2.2. The importance of the food sector as a source of greenhouse gases

When examining the impact of the food sector on climate change, we are not merely interested in the emissions that arise due to the production of food, but its whole lifespan, namely production, transportation, shopping, consumption and disposal. Such assessments are predominantly executed by way of life cycle analysis. One thing that must be kept in mind when it comes to life cycle analyses is that the results of a life cycle analysis depend on the boundaries that were set for it. In other words, two life cycle analyses of the same system can yield widely different results if they have different boundaries. Moreover, it should also be noted that while the food sector increases the concentration of GHG:s in the atmosphere both by emitting GHG:s and land conversion, this analysis is only concerned with direct emissions, seeing as there is little data available on the effects of the latter.

To date, there are no studies that divulge information on the total amount of GHG:s that are associated with the food sector on a global level (Sonesson et al., 2009). Such data is, however, available for the agricultural sector and is presented in figure 1. below.

Global GHG emissions by sector



(World Resources Institute, 2005)

As can be seen in figure 1., agriculture is a significant source of GHG emissions with its share standing at a total of 13%, thereby making it the third largest source of GHG:s in the world. While this is a significant share, it does not tell the whole story in view of the fact that this diagram only looks at the production of food as opposed to its whole life cycle, which we are interested in, that also includes transportation, shopping, consumption and disposal. The de facto GHG emissions of the food sector are therefore likely to be much higher than 13 %.

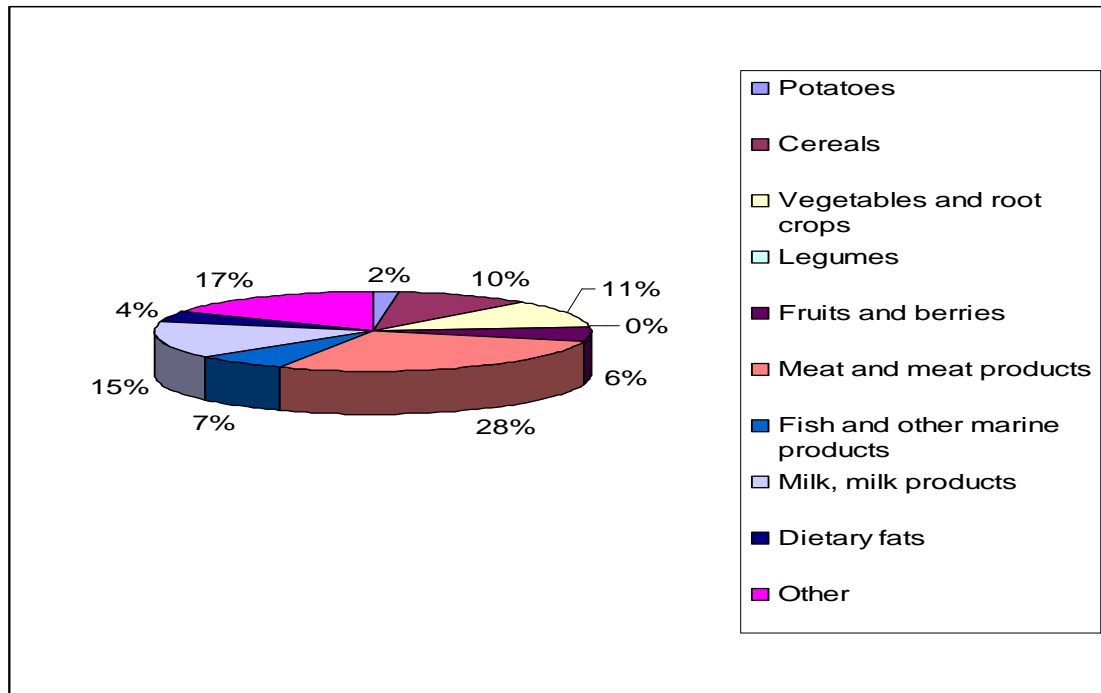
To gain insight into the role of the food sector, as a whole, in climate change, we have to turn to a more regional level where data is available. A study - published in 2006, by the research centre of the European Commission - on the environmental impact of products, based on a life cycle analysis, estimated that food related activities account for 29,3% of the GHG:s emitted in the European Union (European Commission Joint Research Centre, 2006). A similar study has been conducted in the United States, although it only covered the production and transportation stages of the life cycle of food, and it found that the food sector is responsible for 16% of its GHG emissions (Weber et al., 2008). This figure is much lower than that of the European Union, but this can – in part, at least – be explained by the fact that this study excluded the GHG emissions that result during the consumption stage of the life cycle of food, whereas the study by the research centre of the European Commission did include this stage. Another statistic that provides an idea of the significance of the food sector as a source of GHG:s, on a global level, is the estimate that 18% of all greenhouse gas emissions in the world could be attributed to animal products alone (Steinfeldt et al., 2006). With this information in mind, it is clear that the food sector constitutes an extremely important source of GHG:s.

However, whereas the gas that contributes the most to global warming is CO₂ at 64% (Cunningham, 2008), this is not the case in the food sector where N₂O and CH₄ constitute the most important GHG:s (UNEP, 2009).

We will now break down the total amount of greenhouse gases emitted by the food sector into sub-sectors in order to gain insight into the impacts that different product categories have on the climate. However, due to the fact that there is no available information on the total amount of GHG:s associated with the food sector globally, it follows that here too data on a more regional scale has to be consulted. The cases of the Netherlands, Sweden and the United States have been chosen for this purpose. It should be noted that these case studies only look at the production and transportation parts of the life cycle of food.

2.2.1. The case of Sweden

Food related GHG emissionis by sub-sectors in Sweden

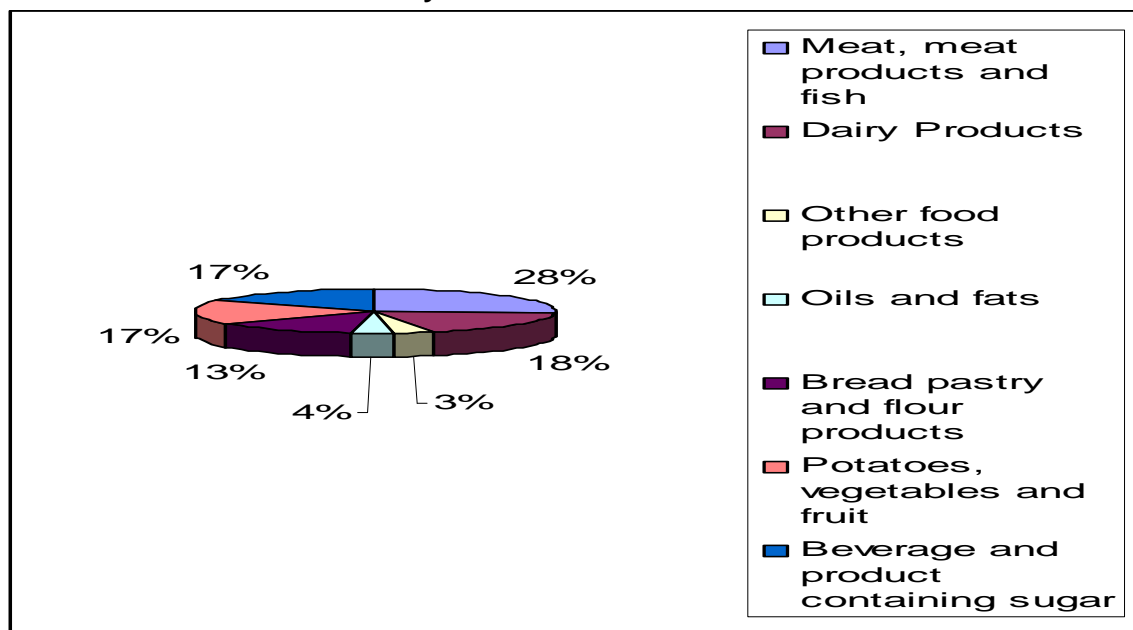


(Wallén et al., 2004.)

From figure 2. it can be deduced that half of the emissions in Sweden can be traced back to products of animal origin. Vegetables, fruit and potatoes put together, meanwhile, only make up about one fifth of the total amount of GHG emissions. Most of the other emissions are due to cereals, beverages and snacks.

2.2.2 The case of the Netherlands

Food related GHG emissions by sub-sectors in NL

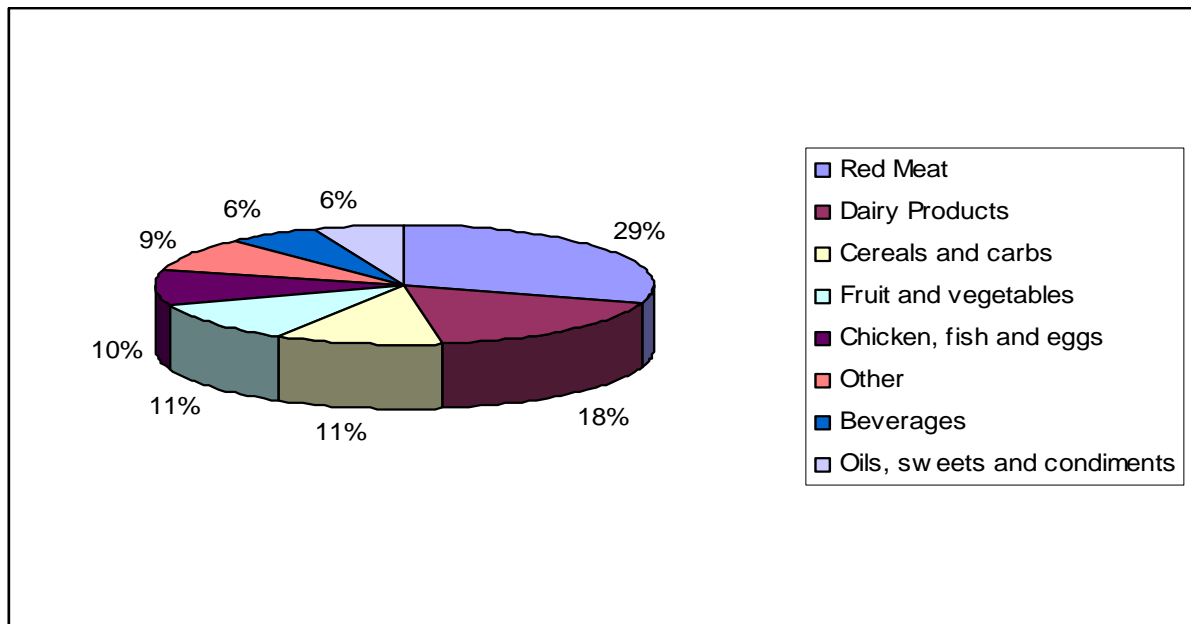


(Kramer et al., 1999)

Figure 3. tells us that as in the case of Sweden, in the Netherlands products of animal origin are responsible for about half of the total GHG emissions. Vegetables, potatoes and fruit account for approximately 15% of the total amount of GHG emissions. Here too, most of the other emissions are due to cereals, beverages and snacks.

2.2.3 The case of the United States

Food related GHG emissions by sub-sectors in the United States



(Weber et al., 2008)

As can be seen in figure 4, products of animal origin constitute the main source of GHG emissions in the United States, as well, with a share of 58%, which is significantly higher than in the cases of Sweden and the Netherlands. Fruits and vegetables, on the other hand, only account for 11% of the emissions – a less significant share than in the two other cases. The remaining 29% of emissions are made up of cereals, beverages, dietary fats and other products.

Even though there are slight variations in-between Sweden, the Netherlands and the United States with respect to the amount of GHG emissions that are associated with different product categories, a coherent picture emerges: Products of animal origin cause the largest amount of greenhouse gas emissions, whereas vegetables and fruit are associated with much smaller emissions. As will become evident during the subsequent section on the sources of greenhouse gas emissions in the life cycles of seven selected products, there are significant differences within food groups, as well, with regard to their emissions.

2.3. Sources of greenhouse gas emissions within seven selected food chains

We will now look at the sources of GHG emissions within different product categories in the food sector. The products that have been selected for this analysis are beef, pork, poultry, fish, fruit and vegetables, dairy products and grains. These have been chosen for the reason that they are staple foods in most diets around the world, but also because they correspond to the most GHG intensive product categories in the case studies discussed above. The whole life cycle of these products – encompassing production, distribution, shopping, consumption and disposal – will be taken into consideration for this analysis. The focus will, however, be on identifying so-called carbon hotspots in the life cycles of these seven products.

2.3.1 Beef

Several studies on the climate impact of beef production have been conducted worldwide. These studies have yielded widely different results, some of which can be explained by differing methodologies, namely the system boundaries that were set for the life cycle analyses, others by different methods of production. The span, with regard to the GHG emissions of beef, identified in the literature stretches from 13 kg in Ireland (Casey & Holden, 2006) to 36 kg in Japan (Ogino et al., 2007). The greenhouse gas intensity of Japanese beef is, for example, due to the fact that Japanese beef production is heavily dependent on imported feed for the cows and calves.

When it comes to the sources of the GHG emissions related to beef, most of them originate in the production stage, whereas transportation, shopping, consumption and disposal are of less importance (Sonesson et al., 2009). The study by Casey and Holden (2006) on the environmental impacts of beef production in Ireland, for instance, showed that enteric fermentation – a digestive process in ruminant animals, such as cows, that leads to emissions of CH₄ – concentrate feed, diesel and electricity are the largest contributors of GHGs associated with Irish beef – all of which occur during production stage of beef. Another study, conducted by Cederberg et al. (2009), on the GHG emissions of Brazilian beef, similarly pointed out the production of beef as the culprit, although enteric fermentation accounted for most of the emissions seeing as the Brazilian beef industry uses very little energy in its production.

2.3.2 Pork

As of today, there are very few studies on the impact of the pork industry on climate change. A study by Basset-Mens and van der Werf (2005) compared the relative efficiency of three pork production scenarios in terms of their GHG emissions – good agricultural practices according to French production rules, a French quality label scenario called red label and organic agriculture. The results showed that the impact of the good agricultural practice scenario was 2.3 kilo of GHG emissions per kilo of pork, 3.46 for the red label and 3.97 for organic agriculture. Cederberg & Darelus (2001) performed a study on the GHG emissions of pork in Sweden and reached the conclusion that one kg of pig meat generates 4.8 kilos of GHGs. The GHG emissions associated with pork are evidently much lower than those of beef, which is explained by the fact that pigs are monogastric animals and are therefore not subjected to

enteric fermentation which, as previously mentioned, is a large source of GHGs in the beef industry.

Similarly to beef, though, the majority of the GHGs related to pork are emitted during the production stage of its life cycle. Cederberg & Darelus found that in the case of Swedish pork, pig feed is responsible for half of the emissions during its life cycle. Fossil fuels, primarily related to pig feed, meanwhile, cover 30% of the emissions. The study on French pork yielded similar results. Yet another study, also conducted in Sweden, estimated that the production stage of pork is responsible for as much as 92.4% of the GHGs associated with it (Håkansson et al., 2005).

2.3.3 Poultry

As in the case of pork, there are not many studies available on the climate impact of poultry, and all of the studies that have been conducted are concerned with chicken, but these still serve as useful indicators seeing as chicken dominates the poultry market. Research on the amount of GHGs emitted per kilo of chicken has yielded estimates ranging from 1.7 to 5 kilos (Sonesson & Wallman, 2009). The low emissions related to chicken are in large part due to their efficient transformation of feed into energy and proteins (Sonesson & Wallman, 2009).

Concerning the origins of the GHG emissions associated with chicken, the most significant one is the production stage of the life cycle where, similarly to pork, the feed of the chickens is to blame for the majority of the emissions (Ellingsen & Aanondsen, 2006). However, research by the Danish life cycle analysis database has shown that the GHG emissions of frozen chicken are much higher than those of its unfrozen equivalent, and therefore this is also an important source to take into consideration when it comes to chicken (DEFRA, 2006).

2.3.4 Fish

Seafish, a UK organization conducting research on seafood, executed a study, in 2008, on the GHG emissions of different types of fish. The study found that one kilo of frozen cod from Russia resulted in 4.1 kg of emissions, whereas for salmon farmed in the United Kingdom the equivalent number was 3.27, and in the case of canned tuna from Spain 2.88. Most types of fish that were looked into, 11 in total, had emissions similar to those described above (Seafish, 2008).

The study also decomposed the emissions of the different kinds of fish into production, transport and refrigeration. For frozen Russian cod, it was established that the production stage accounted for 3.5 kilos of its total emissions, whereas transport and refrigeration made up 0.1 and 0.5 kilos respectively. The corresponding numbers for salmon farmed in the United Kingdom were 3.2, 0.05 and 0.02 kilos respectively. With regard to canned Tuna from Spain, these numbers were 1.8, 0.9 and 0.18 kilos. As can be deduced from these results, the majority of the GHG emissions from fish are emitted during its production, while transportation and refrigeration, relatively speaking, have little significance. The only exception was when fish was air freighted to be delivered fresh to the point of sale, in which case the significance of the transport stage of the life cycle increased considerably. During the production stage the main source of emissions is fuel used in the fishing boats (DEFRA, 2006).

2.3.5 Fruit and vegetables

A number of studies focusing on the role that vegetables and fruit play in climate change have been carried out. Carlsson-Kanyama published a study, in 1998, that examined the greenhouse gas emissions per kilo of tomatoes and carrots consumed in Sweden. With regard to the tomatoes, Carlsson-Kanyama estimated that tomatoes grown in Denmark, the Netherlands, Spain and Sweden generated 5.6, 4.1, 0.81 and 4.2 kilos of GHG emissions. As for the carrots, it was estimated that those produced in Italy, Sweden, Denmark, the Netherlands, Germany and the United Kingdom stood for 0.63, 0.28, 0.4, 0.48, 0.48 and 0.48 kilos respectively (Carlsson-Kanyama, 1997).

The estimates given in the Carlsson-Kanyama study vary widely, which can be explained by differences in the production stage of the life cycle, but also the role of transportation. Vegetables and fruit, in general, produce only small amounts of GHGs when they are grown in a suitable climate (Sonesson et al., 2009). However, to grow tomatoes in an unsuitable climate such as Sweden most of the year, the tomatoes have to be cultivated in greenhouses, and these require energy to be heated up, which produces additional GHG emissions. This is why tomatoes grown in an unsuitable climate often produce more emissions than tomatoes grown in their natural climate, despite the fact that these have to be transported a long distance to get to the, in this case, Swedish market. However, the use of less GHG intensive fuels, such as geothermal or solar energy, to heat up the greenhouses could change the balance and make it more beneficial from a climate perspective to grow tomatoes locally where the climate is not suitable otherwise. Other things equal, though, vegetables and fruit that have to be transported to get to a market generate more emissions than their local counterparts.

2.3.6 Dairy products

The climate implications of dairy production have been extensively studied. A literature review of the available material on the relationship in-between the dairy sector and climate change, by De Jong & Sevenster (2008), found estimates, for the production stage of the life cycle, in the range of 0.8 – 1.4 kilos of GHGs per kilo of milk. Processing and transportation of milk, moreover, tends to add 0.1 kilos of emissions. When it is taken into consideration that 70% of milk consists of water, milk produces in-between 3.1 and 3.8 kilos of GHGs, which is similar to the emissions of pork, chicken and fish (Sonesson et al., 2009).

The same study concludes that enteric fermentation of cows is the biggest source of GHG emissions of the life cycle of milk with a total share of 30%, while the enteric fermentation of other dairy cattle, namely calves and bulls, adds another 15-20%. The feed which cows are given is the second most significant source of GHG emissions in the dairy sector with a share, depending on the production methods employed, varying from 20 to 44%. It is thus obvious that just like in the case of the other products of animal origin that have been discussed here, the production stage of the life cycle of milk is the most significant, while transportation is relatively insignificant. However, the electricity used for storing milk in a cool place so that it does not expire prematurely plays a notable role, according to the authors of the literature review, although they do not provide any estimates for its contribution to the total amount of GHGs associated with the dairy sector.

2.3.7 Grains

We will now look at the GHG emissions of rice and wheat, on which only a few studies have been carried out. Blengini & Busto (2008) looked at the GHG emissions of rice produced in Italy and found that one kilo of rice produces 2.9 kilos of emissions. Wheat is less intense in GHG emissions. A study by Biswas et al. (2008) established that the production and transportation of one kilo of wheat, grown in western Australia, to where it is sold, generates 0.17 kilos of GHG emissions.

Most of the GHGs related to rice occur during its production. The study by Blengini & Busto (2008) found that emissions from rice paddies, in the form of methane, account for 68% of the total associated with rice, while fertilizers and transportation add another 9 and 6% respectively. The production of rice thus appears to be the main source of GHGs in its life cycle. Biswas et al., meanwhile, estimated that the use of fertilizers to grow wheat lead to 39% of its total amount of emissions, while transportation came in at a significant 14%. All of the other impacts occurred during the production of wheat, so production also dominates the emissions of the life cycle of wheat, although transportation is an important factor as well.

The preceding analysis of the seven selected product categories comes to show that there is very little homogeneity amongst food products with respect to both the amount of GHG emissions that they generate and the sources of these. For most of the products that were examined, production was the main stage of the life cycle when it came to the emission of GHGs, though. Nevertheless, the impact of transportation, shopping, consumption and disposal is, in absolute terms, the same and should not be neglected, when thinking about how to reduce the emissions of the food sector, because of relativism.

2.4. Potential for reducing greenhouse gas emissions within the food sector

In this chapter, it has thus far been established that the food sector is a major source of GHG emissions that, in turn, constitute the fuel for climate change. This is why carbon labelling in the food sector has garnered so much attention amongst scholars, governments, businesses and nongovernmental organizations around the world. However, a carbon label can only serve its purpose, namely to reduce the amount of GHGs associated with the food sector, provided that there is space for such reductions. This section will therefore be devoted to discussing the scope for reducing the carbon footprint of the food sector and the ways in which this could be done.

2.4.1 Reducing the GHG emissions associated with the production of food

It is beyond the scope of this chapter to give an in-depth look into how the GHG emissions related to the production of different food products could be reduced, as this is a very complex matter, but some general points can be made. In the case of beef production, to begin with, it is vital that animals grow quickly as this reduces the NO₂ emissions per kilo of beef (Sonesson & Wallman, 2009). Furthermore, with

regard to meat in general, it is important that the feed which animals are given is climate efficient (Wallén et al., 2004). Concerning the agricultural sector as a whole, ensuring energy efficiency and phasing out fossil fuels in favour of other, more climate friendly, forms of energy would serve to reduce the GHG emissions associated with the food sector (Wallén et al., 2004). Efficient use of fertilizers and other chemicals used in agriculture would also benefit the climate. As for fish, allowing fish stocks to replenish would be conducive towards reducing emissions, as it would be easier for boats to find the fish and catch it, thus saving fuel. In conclusion, there is ample scope for reducing the GHG emissions that are generated as a result of the production of food.

2.4.2 Reducing the greenhouse gas emissions of the food sector through dietary choices

In the preceding case studies where the total GHG emissions of the food sectors in Sweden, the Netherlands and the United States were broken down into sub-sectors, it was shown that different product categories have different effects on climate change. Products of animal origin – such as beef, pork, chicken, fish and milk – are much more intensive in greenhouse gases than vegetables, fruit and other non-meat products. Thereby, it follows that greenhouse gas emissions could be reduced if people substituted meat and milk for non-meat sources of food. Research has, for example, shown that a meal consisting of tomatoes, rice and pork is nine times as GHG intensive as a vegetarian meal consisting of potatoes, carrots and dry peas (Carlsson-Kanyama, 1998). However, reductions in emissions could be achieved even if people did not replace their meat consumption with non-meat sources of nutrition. Significant reductions would result if, for instance, consumers substituted half of their beef consumption in favour of chicken which is a much more climate friendly type of meat. Dietary choices thus have a potential role to play in mitigating the climate impact of the food sector.

2.4.3 Eating locally produced food as a way of reducing the carbon footprint of food

One way of reducing the carbon footprint of the food sector which has garnered a lot of attention not just amongst academics, but also the media and the wider public, is the practice of buying food which has been produced locally, the idea being that in this way the GHG emissions that are caused by the transport of food are reduced. As will be pointed out later on in the next section of this chapter, though, this notion is far from being uncontested.

2.4.4 Reducing emissions by reducing the waste of food

Cutting down on the amount of edible food that is wasted by the producers and consumers of food is another conceivable way of lessening the pressure which the food sector exerts on the climate. The way in which this would work is simple: less food waste means less demand for food, which will cause the supply of food to drop, thus eliminating the GHGs that otherwise would have resulted had the food been wasted. Extensive studies have shown that the amount of food that is wasted by consumers and producers is staggering. In the USA, for instance, a study has

estimated that between 40 and 50 % of the food that is edible is wasted somewhere along its life cycle. The same study estimated that American consumers, on average, waste 14 % of the food which they purchase, and in total the waste of food on the part of American households is estimated to add up to 43 billion dollars (Food Production Daily, 2009). Suffice to say, reducing the amount of food that is wasted along the life cycle of food would go a long way towards reducing the carbon footprint of the food sector.

2.4.5 Carbon offsetting

Carbon offsetting is a financial instrument whereby consumers, companies, governments and other organizations can reduce their respective carbon footprints by paying for the reduction of emissions elsewhere, for example through reforestation programs, renewable energy and methane collection and combustion (Carbon Footprint, 2009). The carbon footprint of the food sector can thereby be reduced if firms and consumers pay to offset the emissions that result from their production and consumption of food.

It is thus clear that there is space for emissions reductions within the food sector. By improving production practices in the food sector, reducing waste and the distance which food has travelled before it is sold, consumers reconfiguring their diet to become more climate friendly or paying for carbon offsets, the toll of the food sector on the climate can be significantly reduced. These ways of reducing the carbon footprint of the food sector also constitute the ways in which carbon labelling can enable emissions reductions. These can be framed in different terms - as will become evident in the discussion on different carbon labelling approaches in the following chapter.

2.5 Estimating the carbon footprint of food produce

The fundamental aim of all carbon labelling schemes is to provide consumers with information which allows them to make climate friendly consumption choices. It therefore follows that a prerequisite for carbon labelling is an estimate of how much GHG emissions a product has generated. However, as of today, there is no agreed upon framework for estimating the carbon footprint of food produce. In this section, we set out to evaluate the methods used by the carbon labelling schemes under consideration in this thesis for estimating the carbon footprint of food produce in terms of how accurate they are. This discussion will build on the preceding analyses of the relative importance of the different stages in the life cycle of food. A table outlining the methods used by the schemes under consideration and the stages of the life cycle of food which they cover is produced below:

| Scheme | Method | Scope |
|-------------------------|---------------------|-----------------|
| Climatop | Life cycle analysis | Cradle to grave |
| BIOIS | Life cycle analysis | Cradle to grave |
| The Climate Conservancy | Life cycle analysis | Cradle to grave |
| Casino | Life cycle analysis | Cradle to grave |

| | | |
|-------------------------|--|-----------------------------------|
| KRAV and Svenskt Sigill | Does not estimate the carbon footprint of food produce | Not relevant |
| Conscious Brands | Life cycle analysis | Cradle to consumption |
| Food miles label | The distance which food has been transported | Transport stage of the life cycle |
| Airfreight label | The way in which food has been transported | Transport stage of the life cycle |
| Carbon offsetting | Life cycle analysis | Depends |

2.5.1 Food miles

Food miles is a method that estimates the carbon footprint of food produce by looking at the distance which food has travelled; the longer the distance, the greater the emissions are assumed to be. Our previous analysis of the relative importance of the different stages in the life cycle of food as sources of GHG emissions does, however, suggest that food miles is not a particularly accurate method for estimating the carbon footprint of food produce. There are primarily two reasons for why this is the case. First off, food miles does not take the other stages in the life cycle of food into account. As was noted earlier on, the production of food tends to be the dominant source of GHG emissions for most product categories, and given that the methods and inputs used to produce food differ widely from country to country, but also on a local level, the problem with food miles is that it fails to take into account that even though a product has travelled a shorter distance, the way in which it is produced might mean that it would actually be more climate friendly to import this product provided that the lower emissions resulting from the production of this product outweigh the extra emissions which result from the longer distance which it has to be transported. A concrete example of this problem is put forward in the discussion on the sources of emissions in the life cycle of vegetables. The second way in which food miles appears to be flawed in terms of estimating the carbon footprint of food produce is related to the fact that it only looks at the distance which food has been transported and does not take into account how this food was transported. Different modes of transportation generate different levels of GHG emissions; shipping is normally better than transportation by land, while transportation by land tends to produce fewer emissions than airfreight. In conclusion, food miles performs poorly when it comes to estimating the carbon footprint of food produce.

2.5.2 Airfreight

Using the fact that a product has been air freighted to draw conclusions about the emissions generated by food produce is similar to food miles in that it only looks at the transportation stage of the life cycle of food. Unlike food miles, though, airfreight looks at the way in which a product has been transported, namely airfreight as this is commonly regarded as the least climate friendly form of transportation, as opposed to the distance it has travelled. However, much like food miles, using the fact that a product has been air freighted to estimate the carbon footprint of food produce suffers from the fact that it does not take the other stages of the life cycle of food into consideration; production in particular. It can therefore be concluded that while

airfreight is a better approximation of a product's carbon footprint, it is still fairly inaccurate in terms of estimating the carbon footprint of food produce.

2.5.3 Life cycle analysis

As was explained earlier on in this chapter, a life cycle analysis is a method for estimating the environmental impacts, in our particular case GHG emissions, that result from the production, transport, consumption and disposal of a product. Life cycle analyses are widely considered to be the most accurate method for estimating the carbon footprint of food produce for this reason. However, there are different types of life cycle analyses. To begin with, a life cycle analysis can be partial which means that only certain stages of the life cycle of a product are included in the analysis. Depending on the stage or stages which are excluded as well as the product under consideration, this can have a bearing on the results which a life cycle analysis leads to. Only Conscious Brands of the schemes under consideration in this thesis has opted for a partial life cycle analyses, though. The boundaries set for a life cycle analyses also influence the results of such an analysis, as was pointed out earlier on in this chapter. In spite of the apparent advantages of a life cycle analysis for estimating the carbon footprint of food produce; this method is not without its own flaws and question marks. There are primarily two reasons for why this is the case. Firstly, the estimate of a product's carbon footprint which a life cycle analysis comes up with is only a freeze frame of that product's carbon footprint. This is because life cycle analyses are static and do not take the dynamic nature of supply chains into account. Consider the following example. A supermarket which sells flour decides to carbon label their own brand of flour and decide to do this by way of a life cycle analysis. They come up with a carbon footprint for the flour and communicate it to consumers in some unspecified way. However, after a few months the producer of the wheat which the supermarket uses to produce flour finds out that there is a different type of fertilizer which is cheaper and therefore decides to change the fertilizer which they use. While it is impossible to say what effect this has on the carbon footprint of the supermarket's flour, it is fairly certain that it will be different from the one come up with through the supermarket's life cycle analysis, and thus the information on the carbon label in question is no longer accurate. The fact that most life cycle analyses of food produce do not take land use change, which results from agricultural production, into account constitutes another problem. The IPCC has estimated that the increase in the concentration of GHG:s in the atmosphere which can be attributed to land use change is equivalent to the emissions caused by one quarter of the world's current fossil fuels consumption; a significant amount, in other words. While life cycle analyses are superior to food miles and airfreight as ways of estimating the carbon footprint of food produce, we can nevertheless conclude that life cycle analysis as a method for estimating the carbon footprint of food produce is not devoid of problems.

Conclusion

Thus far, our analysis of the relationship in-between the food sector and climate change has come to show us that the food sector accounts for a large part of the global GHG emissions, which serves to high-light the need for new policies, technology and instruments which can decrease the emissions originating in the food sector and thus contribute towards mitigating climate change. Carbon labelling goods and services, in our case food, has been thought of by many as an instrument

through which the bargaining power of consumers could be transformed into emissions reductions. However, there are unanswered questions concerning how to communicate efficiently with consumers through carbon labelling and the knowledge and opinions which consumers have on climate change, its relationship to the food sector and product labelling, all of which were identified, in the conceptual framework, as factors which conceivably have an influence on how consumers respond to the carbon labelling of food. The rest of this chapter will now be devoted to applying Thøgersen's model to the carbon labelling of food.

If we apply Thøgersen's model to carbon labelling, it follows that for carbon labelling to be successful, consumers must be aware of climate change and, moreover, think of it as a problem. So-called climate sceptics are not likely to consciously purchase carbon labelled products for the simple reason that in their view, climate change is either a fabricated narrative or widely exaggerated, so why do something about a problem that does not exist? Consumers with little or no knowledge about climate change and, in particular, its relationship to the food sector are also less likely to consciously purchase carbon labelled food produce; not because they contest the reasoning behind it, but because the solution of a problem only comes after it has first been recognized. Moreover, consumers need to have at least a basic idea about eco labelling in general and believe in it as an efficient instrument for addressing environmental problems. Even if consumers are aware of climate change and consider it to be a problem, it is not necessarily the case that they will use carbon labels during their food shopping, for the reason that consumers might have objections to eco labelling in general, or carbon labelling in particular, as instruments for mitigating environmental problems. There are a number of reasons for why this might be the case. To begin with, many question eco labelling and in a broader context the notion of ecological modernization on the basis that, in their view, the root cause of anthropogenic environmental degradation is not the absence of green consumption and production patterns, but consumption itself; to those who adhere to this view, eco labelling merely green washes the real problem. A more likely obstacle to the carbon labelling of food, though, is the fact that consumers look for several attributes in food, and the question is to what extent low environmental impacts guide people's food consumption. Price, freshness, taste, supporting local farmers, brand and social and cultural associations are all attributes in food which compete with low environmental impacts. Another, more plausible, hurdle for carbon labelling and eco labelling in general is that consumers may harbour doubts about the efficiency and merits of such schemes, which could lead to consumers ignoring eco and carbon labels. They might also have objections centred on green washing and possible negative external consequences, such as developing countries losing out because of carbon labelling; particularly in the case of food miles and airfreight labelling.

Carbon labelling schemes will, however, never experience a tangible amount of success unless they manage to communicate efficiently with, or in other words attract, consumers, as Thøgersen's model also suggests. The question, then, is what do we mean by efficient communication with consumers? At its most basic level, efficient communication with consumers can be thought of as the provision of information to consumers that has meaning and is useful, while also being trustworthy. How do carbon labelling schemes go about trying achieving this while also taking into account the complex realities, which were discussed in the preceding paragraph, surrounding carbon labelling to make it an efficient instrument for fighting climate change that leads to actual reductions in emissions levels in the food sector? This is the subject matter of the following chapter, in which we will look at nine existing carbon labelling schemes and how they have tried to overcome these challenges.

Chapter 3 - Carbon labelling approaches

Introduction

Seeing as carbon labelling is an instrument which relies on consumers to have an effect, it is by no means an exaggeration to say that the future of carbon labelling is conditional upon the extent to which carbon labelling schemes manage to get consumers on board. As was discussed in the preceding chapter, though, there are many challenges associated with engaging consumers; carbon labelling, in other words, is a tricky matter. There are, in essence, two questions which need to be answered. First, how receptive are consumers to carbon labelling, and what could be done to make consumers even more receptive to it? Second, how does one communicate efficiently through carbon labelling with consumers?

In this chapter, we will look at what eight carbon labelling schemes think about carbon labelling and how they have gone about trying to make consumers use such labels when they shop for food, so as to reduce the carbon footprint of the food sector. Put another way, we are interested in what these schemes have to say about the points that make up Thøgersen's model, which was presented in the conceptual framework and applied to carbon labelling in the concluding section of chapter two. The data on six of these schemes was obtained through telephone and email interviews, while the data for the other schemes was obtained through secondary sources such as websites and journal articles. The chapter begins with an overview of the eight schemes and their respective approaches, and concludes with a discussion aimed at answering the third research question.

3.1 Results


In this section, the data obtained through the interviews with the six carbon labelling schemes is presented scheme by scheme. The seven questions which were put to the schemes can be found in the methodology section of the first chapter. In addition to the interviewed schemes, this section also provides a discussion on food miles and airfreight labelling as well as carbon offsetting.

3.1.1 Climatop

| Type | Country | Established | Website |
|-------------|-------------|-------------|--|
| Award label | Switzerland | 2007 | www.climatop.ch |

1. The argument for carbon labelling

Surveys conducted by Climatop indicate that consumers want more information on the environmental impacts of products to be able to make informed purchases. Climatop aims to meet this demand by carbon labelling food and other products. In doing so, the idea is that market forces create a dynamic which leads to a reduction in the emissions of the food and other sectors.

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| 2. Educating consumers on carbon labelling | <p>According to research carried out by Climatop, the average consumer is ill informed on climate change and its relationship to the food sector and consumption. Climatop thus recommends its clients to provide consumers with information on these issues to have them understand the benefits as well as potential of carbon labelling, but leaves it up to them to decide exactly how this is done. The website of Climatop contains some basic information on the label and how it could contribute towards a more climate friendly society.</p> |
| 3. The label | <p>The Climatop label is awarded to products that have been proven to have the smallest carbon footprint within their product category. The thinking behind this approach is that research, conducted by Climatop, indicates that consumers have difficulties in making sense out of a quantitative carbon footprint, and therefore a simple label is better. Providing consumers with clear, simple and concise information that does not require a lot of interpretation is, according to Climatop's managing director Heinz Schmid, more likely to lead to success.</p>  |
| 4. Where the label is made available to consumers | <p>Climatop lets its clients decide where the label is made available, but the most common alternatives are putting it on the product packaging itself, in pamphlets or on the internet.</p> |
| 5. Building consumer trust | <p>In order to assure consumers that the information conveyed by the Climatop label is accurate and reliable, all carbon footprint results have to be verified by an independent third party.</p> |
| 6. Scope | <p>The Climatop label is not confined to the issue of climate change, but takes other environmental problems into account as well, in addition to ensuring that the standards set by the International Labour Organization are adhered to in the production of labelled products. The rationale behind this broader scope is that Climatop wants to guard itself against the possibility of a backlash if consumers find out that products carrying its label are harmful in some other way than climate change.</p> |
| 7. Consumers and large quantities of product information | <p>Climatop recognizes the risk of consumers becoming saturated with information on the product packaging of the food which they buy, but does not believe that this necessarily</p> |

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| | <p>has to be a problem. The reason being that it is hypothesized that consumers screen for the information which they are interested in. Furthermore, Climatop does not believe that there is a viable solution to this potential problem given that it would be practically impossible to create a label which took every conceivable issue, which consumers might be concerned about, into account.</p> |
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3.1.2 Casino


| Type | Country | Established | Website |
|-------------------|---------|-------------|--|
| Comparative label | France | 2006 | www.groupe-casino.fr |

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| <p>1. The argument for carbon labelling</p> | <p>Before work on the Carbon Index, as Casino's carbon labelling scheme is called, Casino conducted a survey which indicated that consumers want more information on the environmental impacts of the products which they buy. This is why Casino decided to carbon label all of its products. Such labelling would, according to Casino, serve to green supply chains and make consumers more aware of climate change and how consumption, in large part, drives it.</p> |
| <p>2. Educating consumers on carbon labelling</p> | <p>Casino works under the hypothesis that most consumers know very little about climate change and how it relates to their consumption, and therefore promotes awareness on these issues and how the Carbon Index could lead to positive change on its website, in pamphlets and in radio adds.</p> |
| <p>3. The label</p> | <p>The Carbon Index is a comparative label that consists of two elements, which are depicted to the right. Research conducted by Casino indicated that consumers only take in-between two and four seconds when deciding whether to buy a product or not, and therefore Casino has opted for putting a simple label, which consists of a leaf with a quantitative carbon footprint on it, on the front of the product packaging. Casino, however, believes that it is important for consumers to be able to compare products easily; something which they think is difficult to do with only a quantitative carbon footprint. For this reason, Casino has put a colour scale on the back of the product packaging that shows how big the carbon footprint is relative to that of other products. It is important to note that this scale does not compare products within a product category. This label also has a link to Casino's website where consumers can find more</p> <div data-bbox="943 1032 1347 1751" data-label="Image"> </div> |

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| | information on the Carbon Index and related issues. The idea is that since consumers make their shopping decisions so quickly, consumers can take part of this comparative label at home, much in the way that people read the packaging of cereals while they are having breakfast. |
| 4. Where the label is made available to consumers | The Carbon Index is put on the product packaging of every Casino product, but can also be found on Casino's website and in pamphlets. Casino's thinking on this issue is that consumers should be able to access this information in the way which is most convenient for them. |
| 5. Building consumer trust | Casino relies on independent third party verification to facilitate consumer trust. This is so that consumers can be assured that the information on its label is scientifically valid and not green washing. |
| 6. Scope | As of today, the carbon index only takes climate change into account, but the scope of the label might be expanded to encompass other environmental and social issues at a later stage. Casino started with climate change because they felt that they had the necessary resources and expertise to carbon footprint their products with relative ease. |
| 7. Consumers and large quantities of product information | Casino has conducted research into how consumers respond to large quantities of information on food products, but the results have been contradictory: While consumers want more information on the environmental, socioeconomic and ethical aspects of the products they buy, they also think that there is too much information on the packaging of food products. Casino does, however, think that consumers will eventually adapt by looking for the labels that they are interested in. |

3.1.3 The Climate Conservancy

| Type | Country | Established | Website |
|-------------------|---------|-------------|--|
| Award/Comparative | USA | 2006 | www.climateconservancy.org |

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| 1. The argument for carbon labelling | <p>Given the role of consumers and their lifestyles as drivers of climate change, the Climate Conservancy views carbon labelling as an instrument through which consumers could also be a part of the solution. Recent experience has, however, led the Climate Conservancy to question the viability of a carbon labelling. Mainly due to two reasons. First, based on the research conducted by the Climate Conservancy, it is dubious whether consumers would be willing to integrate global warming into their consumption decision-making when it comes to food, given that most consumers are rather busy and want their food shopping to go fast. Second, because, so far, the response the Climate Conservancy has gotten from producers has been luke warm at best.</p> |
| 2. Educating consumers on carbon labelling | <p>The Climate Conservancy has uploaded information onto its website about climate change and how it in large part is fuelled by current patterns of consumption to inform consumers about its label and why it makes sense.</p> |
| 3. The label | <p>The Climate Conservancy has opted for a three-tiered comparative, award label where the three tiers are platinum, gold and silver. The climate conscious label, as it is called, is depicted to the right. A product with a carbon footprint that is 10-40% smaller than the national average within its category is awarded the silver label, while for gold and platinum these numbers are 41-70 and 71 %, or greater, respectively. This approach was opted for because it was thought that consumers would find this label less difficult to interpret than a quantitative carbon footprint. However, as already mentioned, the Climate Conservancy is pessimistic about the prospects of its label, and has therefore developed a diet guide as an alternative. This guide is depicted at the end of this table. The idea is that since consumers appears to be reluctant to screen for and pay attention to carbon labels, they could instead be provided with a diet guide on the climate friendliness of different types of food produce. This would eliminate the need for consumers to actively screen for labels, since they could use the information obtained from the diet guide to make their diet more climate friendly. The guide, though, only compares food produce within a given</p>  |

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| | product category, since the Climate Conservancy does not believe that consumers would be willing to substitute meat for vegetables, for instance. |
| 4. Where the label is made available to consumers | The climate conscious label can be presented on the product packaging, in pamphlets and on the internet, even though the Climate Conservancy thinks it is very unlikely that consumers will actively search for this kind of information on the internet. |
| 5. Building consumer trust | The Climate Conservancy requires the carbon footprint of a product to be verified by an independent third party in order to assure consumers that the information which they are given is reliable and reasonably correct. The Climate Conservancy has also opted for being a non-profit organization and being transparent about its activities to avoid suspicions of green washing. |
| 6. Scope | Due to a lack of resources, the Climate Conservancy only focuses on the issue of climate change. However, the Climate conservancy reserves the right not to label a product if it is suspected that it is harmful in some other way, such as over fishing, for example, and in this way the Climate Conservancy tries to label products that are responsible on a general level. |
| 7. Consumers and large quantities of product information | The Climate Conservancy is concerned about the possibility of consumers becoming saturated with information since their research has shown that consumers want their shopping to go fast and do not want to get bogged down in information. |

The Climate Conservancy's diet guide

- To use your pocket guide:
1. Cut along outer black line
 2. Fold on grey lines

| CARBOHYDRATES | | FRUITS & VEGGIES | | DAIRY, EGGS, MEAT | |
|--|--|---|--|---|--|
| <p>Cookies & Crackers Pasta Breads, Bagels, Pastries Cereal Tortillas Rice & Rice Mixes</p> | | <p>Canned Fruits & Vegetables</p> <p>OTHER</p> <p>Chocolate Candy Frozen Desserts Frozen Foods</p> | | <p>Eggs Cheese Milk, Cream & Yogurt Chicken Seafood Beef, Bacon & Ham</p> | |
| <p>THE CLIMATE CONSCIOUSSM SHOPPER'S GUIDE</p> <p>Version 1.1 May 2009</p> <p>The Climate Conservancy's</p> | | <p>THE CLIMATE CONSERVANCY</p> <p><small>The Carbon Footprint of the Food System (CFOFS) is a report published by The Climate Conservancy based on life cycle assessments and review of published research. © 2009. All rights reserved.</small></p> | | <p>When you shop, be Climate Conscious.</p> <p>Key</p> <p>180g CO₂e per serving 250g CO₂e per serving 400g CO₂e per serving 800g CO₂e per serving 1,100g CO₂e per serving 1,500g CO₂e per serving 2,000g CO₂e per serving 5,000g CO₂e per serving</p> | |
| <p>Know what you're buying</p> <p>The products we buy every day take energy to make, and making energy usually means releasing greenhouse gases like CO₂ to the atmosphere. Agriculture and animal production systems release other powerful greenhouse gases like N₂O and CH₄.</p> <p>These add up. More than half of the average American's "carbon footprint" is tied to the things we buy.</p> | | <p>Learn more</p> <p>Visit www.climateconservancy.org</p> <ul style="list-style-type: none"> - for more information about the greenhouse gases embodied in products you buy; - to find out which companies are working with the Climate Conservancy to lower their emissions; - to download the most recent version of this guide | | <p>Using this guide</p> <p>The color of foods listed corresponds to the range of greenhouse gas emissions typically required to produce a single serving of that food.</p> <p>Those interested in reducing their climate impact may choose to reduce consumption of foods with higher emissions per serving.</p> <p>Other ways of reducing your impact may include:</p> <ul style="list-style-type: none"> - Choosing products bearing the Climate ConsciousSM logo; - Opting for locally produced or organic products; - Reducing food waste. | |

3.1.4 Krav and Svenskt Sigill

| Type | Country | Established | Website |
|-------|---------|-------------|--|
| Award | Sweden | 2007 | www.klimatmarkningen.se/ |

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| 1. The argument for carbon labelling | KRAV and Svenskt Sigill decided to collaborate on a carbon labelling scheme for food in light of the food sector's significant role in climate change and research which has shown that consumers as well as producers are keen on playing a part in tackling this problem. A survey, conducted by KRAV and Svenskt Sigill, indicated that 80% of Swedish consumers want information which allows them to choose climate friendly food produce. |
| 2. Educating consumers on carbon labelling | To inform consumers about the label and its purpose, KRAV and Svenskt Sigill have launched a website which contains information on the relationship in-between the food sector, climate change and its label, as well as links to other websites with relevant information. |
| 3. The label | While the label itself is yet to be designed as the project is still in development, it is going to be an award label. At the beginning, KRAV and Svenskt Sigill considered the option of creating a label based on carbon declarations arrived at through life cycle analyses, but opted against this format in the end. Instead, they decided to develop a label based on a range of sub-sector specific climate criteria, much in line with existing organic food labels which stipulate certain criteria that a product has to meet if it is to be labelled. These criteria would consist of various measures that have been scientifically proven to reduce the GHG emissions of food produce, such as renewable electricity. The reasoning behind favouring climate criteria rather than carbon declarations is that life cycle analyses fail to incorporate the dynamics of food production which are very important for the carbon footprint of a food product. Inasmuch life cycle analyses are static, if an element of a food product's supply chain changes, the carbon footprint which consumers are presented with is no longer going to be accurate. Moreover, KRAV and Svenskt Sigill are sceptical about the ability of consumers to understand carbon declarations in various forms, whether they be comparative or quantitative. Providing consumers with simple and easy to understand information is key, they believe, and when consumers buy a product bearing the KRAV and Svenskt Sigill carbon label, they will know that concrete measures that have been scientifically proven to reduce GHG emissions have been taken in the production of that product, and this is in their opinion more trustworthy than carbon declarations. |

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| 4. Where the label is made available to consumers | Given that the label itself is yet to be designed, it has not been decided where it will be made available to consumers, but on the packaging of products is a likely alternative. |
| 5. Building consumer trust | KRAV and Svenskt Sigill will require verification of an independent third party that climate criteria are being adhered to for a product to be labelled. |
| 6. Scope | KRAV and Svenskt Sigill operate according to the principle that overall sustainability is the desired objective with regard to supply chains, and that a focus on climate change must not come at the expense of other environmental, socioeconomic and ethical problems. In order to avoid this pitfall, KRAV and Svenskt Sigill require labelled products to be covered by some other labelling scheme that encompasses these other aspects of sustainability. |
| 7. Consumers and large quantities of product information | KRAV and Svenskt Sigill have not devoted a whole lot of attention to this issue, especially since their label would cover most issues of sustainability, which, in turn, would eliminate the need for consumers to browse through a lot of information. |

3.1.5 The Bio Intelligence Service


| Type | Country | Established | Website |
|-------------|----------------|--------------------|--|
| Comparative | France | 1989 | www.biois.com |

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| 1. The argument for carbon labelling | BIOS views carbon labelling favourably because it draws on the potential of consumers as change agents to mitigate climate change and its related problems. By choosing climate friendly products consumers send a message to other producers and in this way the actions of consumers can lead to the greening of supply chains; carbon labelling is what enables this to happen. |
| 2. Educating consumers on carbon labelling | BIOIS is of the view that for carbon labelling to be viable, it is essential to inform consumers about the potential hazards of climate change and how this problem, in part, is caused by consumers themselves, but also how carbon labelling could enable them to be a part of the solution, |

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| 3. The label | Simple and accessible information is, according to BIOIS, key for communicating with consumers through carbon labelling. Information on the climate credentials of a product ought to come in the form of an easy to understand scale which allows consumers to make quick comparisons. Another option which would be aimed at raising awareness amongst consumers with regard to the relationship in-between climate change and consumption, is to put the carbon footprint of a consumer's shopping basket on the receipt. |
| 4. Where the label is made available to consumers | BIOIS believes that making carbon labels available to consumers in places where it is convenient for them to take part of this information should be the guiding principle when deciding where a carbon label ought to be presented. Options include the product packaging, on the receipt as previously mentioned, the internet or a combination of these. |
| 5. Building consumer trust | BIOIS views independent third party verification of carbon footprints as the most important trust facilitating mechanism, so as to assure consumers that companies are not merely green washing their products. |
| 6. Scope | BIOIS considers it to be important that a product label focuses on one issue so as to avoid confusion amongst consumers. However, BIOIS is also of the view that focusing on only one aspect of the impacts that a product has on the environment, society and so forth is undesirable. Therefore, they have come up with the idea of placing three environmental indicators that are of particular concern for a sector on the product packaging. In the case of food, these would be climate change, water use and the recyclability of a product. |
| 7. Consumers and large quantities of product information | While being aware of the problem, BIOIS has, as of today, not conducted any research into this issue. |

3.1.6 Conscious Brands

| Type | Country | Established | Website |
|-------------|---------|-------------|--|
| Comparative | Canada | 2005 | www.carbonlabels.org |

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| 1. The argument for carbon labelling | Conscious Brands looks at carbon labelling as an important tool for raising awareness about climate change and greening supply chains in the food sector through consumers, but also as a way of enabling companies to take action to reduce the emissions associated with their products. |
| 2. Educating consumers on carbon labelling | Conscious Brands lets its clients decide on how to inform consumers about climate change, its relationship to what they consume and how their carbon label could serve to make the food sector less GHG intensive. |
| 3. The label | <p>The Conscious Brands carbon label consists of a leaf and the product's carbon footprint in a quantitative form. The idea is that through this label producers will send consumers a clear message that they are committed to reducing the GHG emissions associated with their products and that they are transparent about their impact on the environment. In presenting the carbon footprint quantitatively, Conscious Brands believes that consumers are given an unambiguous and precise measure of a product's impact on the climate, which can serve to raise awareness amongst consumers and enable these to compare products in terms of their quantitative carbon footprints.</p>  <p>The logo features a stylized leaf with the text '101g' above it. Below the leaf, the text 'co2' is written in a large, bold, lowercase font, followed by 'CARBON' and 'LABELS.ORG' in a smaller, uppercase font.</p> |
| 4. Where the label is made available to consumers | While the Conscious Brand carbon label can be put on the product packaging itself, they believe that the average consumer is too busy to look for labels while shopping, even if they are very concerned about climate change, and that the label is best made available on the internet so that consumers can access this type of information in the comfort of their own homes. |

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| 5. Building consumer trust | To assure consumers that the carbon footprint on its label is reasonably correct, Conscious Brands requires these to be verified by an independent third party. |
| 6. Scope | Conscious Brands recognizes the need for a view of sustainability that extends beyond climate change, but nevertheless a scarcity of resources has meant that the label is only concerned with climate change. |
| 7. Consumers and large quantities of product information | The managing director of Conscious Brands said the amounts of information that consumers are provided with when they go shopping is a problem, since it is unlikely that they will pay attention to it. Food product packages have come to resemble “NASCAR cars” in his view; a reference to the large quantities of advertisements that are to be found on NASCAR cars. This is why Conscious Brands favours putting their carbon label on the internet rather than on the packaging of products itself. |

3.1.7 Food miles and airfreight labelling

| Type | Country | Established | Website |
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| 1. The argument for carbon labelling | Due to the fact that food miles and airfreight labelling are not associated with any particular scheme, there is no coherent argument in favour of their use. In the case of food miles, arguments tend to focus on reducing the impact that food has on the climate. Food miles, though, has also emerged as an important marketing instrument for locally produced food. Arguments favouring airfreight labelling, on the other hand, tend to only focus on reducing the GHG emissions of the food sector. |
| 2. Educating consumers on carbon labelling | Since food miles and airfreight labelling are not the product of a particular scheme, there are no explicit measures aimed at educating consumers about their use and how they relate to climate change and its relationship to consumption. |

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| <p>3. The label</p> | <p>Food miles and airfreight labels are relatively simple in their execution. A food miles label usually comes in one of two formats; a label which states that a product was produced locally, such as the label depicted to the top right, or a label with the distance that the product has travelled. The assumption underlying the food miles label is that the longer produce has travelled, the greater its carbon footprint is. Airfreight labels, meanwhile, tend to consist of a simple airplane logotype which signifies that a product has been air freighted. The assumption underlying this label is somewhat different from that of food miles, though, as the focus, here, is on the way in which a product has been transported, and not the distance. Given that airfreight is the most GHG intensive form of transportation, today, the argument goes that choosing not to buy air freighted food will lower the carbon footprint of the food sector. The advantage of these two labels is that they are hypothetically relatively easy for consumers to comprehend; there is no need for interpreting carbon footprints and the labels themselves are simple and easily implemented given that this type of data is easily obtainable for businesses.</p> <div data-bbox="970 215 1321 869" data-label="Image"> </div> |
| <p>4. Where the label is made available to consumers</p> | <p>Usually on the product packaging.</p> |
| <p>5. Building consumer trust</p> | <p>When it comes to trust, these labels have no particular mechanisms to assure consumers of that, for instance, buying locally produced apples leads to less emissions than buying apples that have been imported.</p> |
| <p>6. Scope</p> | <p>The food miles and airfreight labels do not take other environmental issues into account, in view of the fact that they are basically just pieces of information on the transport characteristics of a product. It could be argued, though, that labelling food as locally produced is a way for retailers to let consumers know that it is fresh, but also that they are supporting local farmers.</p> |

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| 7. Consumers and large quantities of product information | Seeing as these labels are not associated with any particular scheme, it was, naturally, not possible to answer the seventh question on carbon labelling within a wider context of food labelling. |
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3.1.8 Carbon offsetting; for instance the carbonfund.org scheme

| Type | Country | Established | Website |
|------|---------|-------------|--|
| - | USA | - | www.carbonfund.org |

| | |
|--|--|
| 1. The argument for carbon labelling | There are several carbon offsetting schemes in operation, worldwide, as of today. The arguments in favour of carbon offsetting all tend to focus on the need to reduce the carbon footprint of our consumption patterns, while some go as far as to promote the idea of a carbon neutral society in which all emissions are offset through the planting of trees and investment in renewable energy. |
| 2. Educating consumers on carbon labelling | Most carbon offsetting schemes promote themselves by providing consumers with information on the threat of climate change, its relationship to what they consume and how carbon offsetting could contribute towards solving this problem. Most schemes also provide consumers with an explanation of carbon offsetting and how it works. |
| 3. The label | Carbon offsetting can be used to influence consumers in a number of ways. One alternative is for a business to offset the emissions it generates and advertise this to consumers. The idea is that this raises the image of the company thus increasing its competitiveness, which could serve to make other businesses follow suit. Another option is to offer consumers the possibility to offset the emissions associated with their shopping basket at the point of purchase. A third option is to label products which have had their emissions offset. |
| 4. Where the label is made available to consumers | Since carbon offsetting is not necessarily a label per se, it can be made available through a variety of media. Pamphlets, tv and radio adverts if businesses offset their emissions and want to advertise this to consumers, at the point of purchase or on the product packaging itself if it is indeed a label. |

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| 5. Building consumer trust | Most carbon offsetting schemes draw on independent third party verification in order to assure consumers that emissions are actually offset in accordance with the claims being made. |
| 6. Scope | Existing carbon offsetting schemes only tend to focus on climate change, which is understandable due to the fact that it would be difficult to integrate other environmental and social aspects into a carbon offsetting scheme. |
| 7. Consumers and large quantities of product information | It was not possible to attain any information on how carbon offsetting schemes think around this particular issue. |

Conclusion

The eight carbon labelling schemes that were surveyed in this chapter all have one thing in common; they attempt to reduce the carbon footprint of our consumption patterns through the provision of information that enables consumers to make climate smart consumption choices, thus stimulating the greening of supply chains. In this chapter we looked at what these schemes think about primarily two questions, namely “How receptive are consumers to carbon labelling, and what could be done to make consumers even more receptive to it?” and “How does one communicate efficiently through carbon labelling with consumers?”. The data collected for and presented in this chapter paints a picture in which the schemes exhibit similarities on some points, but diverge in their approaches on others.

To begin with, all of the schemes put forward similar arguments regarding the appeal of carbon labelling. The general view was that consumption is a significant driver of climate change and that by providing consumers with information about the effects products have on the climate, reductions in emission levels could be brought about. However, opinions diverged in-between some of the schemes when it came to the outlook of carbon labelling. The European and Canadian schemes were, generally speaking, positive about the prospects of carbon labelling and grounded this optimism on research which had indicated a demand amongst consumers for more information on the environmental impacts of products. This optimism, though, was not shared by the American schemes which were interviewed. Originally, two American schemes were interviewed, but only the Climate Conservancy made it to the final cut because the other scheme, Carbon Label California, has ceased its activities. Both of these schemes, though, were sceptical about the potential of carbon labelling in the US because their research had indicated that American consumers were not particularly interested in the environmental impacts of their consumption choices.

Most of the schemes, with the exceptions of food miles and airfreight labelling, were of the view that educating consumers about the relationship in-between climate change on the one hand and the food sector on the other, as well as how carbon labelling works, is essential for the success of carbon labelling. Some of the schemes

differed in how they went about doing this, though. Climatop and Conscious Brands leave it up to their clients to decide on how to educate consumers, while the other schemes do this themselves in some form or another. Regardless of whether the schemes, clients or both are in charge of educating consumers on these issues, the methods for doing so tend to be the same, namely information posted online, in pamphlets and in other adverts. There are no official measures in place to educate consumers on food miles and airfreight labelling since these are not associated with any particular scheme, but in spite of this there is arguably a certain degree of diffusion of information about these labels since they often get discussed in the public media. The other carbon labelling schemes did, however, it has to be stressed, believe that educating consumers increases the extent to which carbon labels are used in the food and other sectors.

The schemes did, however, exhibit significant differences in-between each other with respect to how they attempt to communicate with consumers through carbon labelling, especially when it came to the labels they had opted for. Most of the schemes, seven to be precise, that were examined in this chapter have opted for so-called carbon declarations, namely information, in some form, about the carbon footprint of a product which allows consumers to make climate smart consumption choices. The ways in which these schemes display carbon declarations differ widely, though. The Conscious Brands scheme uses quantitative carbon footprints to enable consumers to compare products, while Casino and BIOIS draw on a scale that allows consumers to gauge the environmental impacts of a product in comparison with other products in general, or as in the case of BIOIS, within a product category. The Climate Conservancy has also gone for a comparative label, although of a somewhat different format. While the previous schemes intend to allow consumers to compare all products, the Climate Conscious label only covers products that have been proven to have a carbon footprint smaller than the national average for the relevant product category. The other carbon declaration schemes, though, use labels that do not enable consumers to make comparisons of any sort. The Climatop label, to begin with, is only awarded to products that have been proven to have the smallest carbon footprint within a product category. As was noted during our overview of food miles labelling, such labels can be put on any kind of food produce provided that the retailer has reliable information on how far it was transported. Products can also be airfreight labelled at the discretion of the retailer, naturally on the condition that it was indeed air freighted. Carbon offsetting, meanwhile, draws on the notion of climate neutral consumption. The scheme by KRAV and Svenskt Sigill stands out in that it refutes carbon declarations on the basis that they provide consumers with too little assurance, and favour an approach based on climate criteria instead. What does all this information tell us about different forms of carbon labelling communication with respect to the labels per se? A couple of trends can be delineated. Carbon labels, to begin with, can be used to allow consumers to easily identify relatively climate friendly food produce, but it can also be used to allow consumers to identify products that are relatively harmful, namely in the form of comparative labels. Comparative labels, moreover, can either cover all products, or be awarded, as is the case with the Climate Conscious label. Food miles and airfreight labelling, on the other hand, can neither be described as award or comparative labels, which is due to the simple fact that they can be used at the discretion of retailers and offer consumers with little or no assurance that local food produce is indeed more climate friendly. Life cycle analysis was the most common method for estimating the carbon footprint of food produce with only the food miles and airfreight labels drawing on methods other than life cycle analysis. The essence of the approach adopted by KRAV and Svenskt Sigill means that the question of how to estimate the carbon footprint of food produce is not of any relevance for this scheme. With the exception of the food miles and airfreight labels, all of the schemes had chosen their method for estimating the

carbon footprint of food produce on the basis of what they thought was the most accurate way of estimating the carbon footprint of food produce and thereby provide consumers with reliable and trustworthy information. The labels under consideration also differed in terms of their scope. The Casino and Conscious Brands labels were only concerned with climate change. The other schemes, though, had integrated broader sustainability related concerns, albeit to different a different extent. The Climate Conscious and Climatop schemes attempt to make sure that the products that they label are not harmful in some other way than climate change. BIOIS and KRAV and Svenskt Sigill, on the other hand, have taken this a step further and designed labels of which climate change is but one aspect and that are built around the idea that the mitigation of one problem cannot come at the expense of solving another. Casino and Conscious Brands did, however, recognize that ideally a carbon label should take more issues into account, but nevertheless a lack of resources on the part of both schemes has meant that their focus is restricted to climate change thus far. Airfreight labelling only focuses on the impact that the airfreight of food has on the climate, but food miles can arguably be said to have a broader scope, as was noted in the overview of food miles labelling.

How did the schemes go about assuring consumers that the information on their labels is correct? Not counting food miles and airfreight labelling, most of the schemes drew on independent third party verification to assure consumers that the information they are provided with is reasonably accurate. All of the schemes that were interviewed identified this as a key instrument for building consumer trust. However, some of the schemes had taken additional measures. Both the Climatop and the Climate Conservancy schemes, for instance, had chosen to be non-profit organizations so as to assure consumers that there are no conflicts of interest, and in addition to this both of these schemes tried to be as transparent as possible about their activities. In addition to this, as was mentioned in the preceding paragraph, these schemes had also taken measures to ensure that their products are not harmful in ways other than climate change. The previously mentioned Carbon Label California Scheme was the only one which correlated consumer trust with the organization or institution that is behind a label. The thinking of this scheme on this particular issue was that consumers are more likely to trust a label that is backed by an organization which people put a lot of trust in, such as states, non-profit organizations and other respected institutions. Unlike the other schemes, food miles and airfreight labelling have no trust mechanisms in place.

Information in itself is not of any value unless it is made available to people, and the same principle applies to carbon labelling. How did the schemes make their information, in the form of their respective labels, available to consumers? All of the schemes thought along similar lines; information should be made available where it is most convenient for consumers to access, but their approaches to doing this differed somewhat. Most of the schemes identified the packaging of products, store shelves, the Internet and pamphlets as suitable locations for making information available to consumers. BIOIS were also thinking about making the carbon footprint of a shopping basket available on the receipt, as an awareness raising measure rather than an explicit attempt to get consumers to opt for climate friendly food produce. Conscious Brands, though, stood out in that they were very pessimistic about the packaging of food products as a location for making carbon labels available to consumers; the reason being a concern that consumers risk becoming indifferent as they are bombarded with more and more information. Instead, they thought that the Internet was a more suitable option since it would give the consumer the option of looking up carbon labelled food products on the Internet.

In conclusion, through the analysis of this chapter, we see that there is an array of approaches to carbon labelling in the food sector. The interviewed schemes thought along similar lines regarding the virtues of carbon labelling, but the American schemes were pessimistic about its outlook while the European and Canadian ones were fairly optimistic. However, when it came to the communication of information through carbon labels, the schemes diverged in their approaches. The data and analysis of this chapter will serve as the basis for the next two chapters in which we try to gain an idea of how receptive consumers of different lifestyles are to carbon labelling and what forms of communication work best.

Chapter four - Consumers, food, climate change and product labelling

Introduction

In the previous chapter, we looked at what eight different schemes had to say about carbon labelling. The focus was twofold: First, gaining an idea of how receptive these schemes thought consumers are to carbon labelling and what could be done to make them even more so? Second the ideas that the schemes had about how to communicate efficiently through carbon labelling with consumers? In this chapter, we will seek to add clarity to the first of these two questions.

Six focus groups were conducted in Sweden for this purpose. Each group represented one of the six consumer groups with regard to food that were outlined and explained in chapter one, and the participants of these groups were chosen accordingly. As mentioned, already, the principal purpose of this chapter is to shed light on how receptive consumers are to carbon labelling and what could be done to make them even more so. In accordance with Thøgersen's model as applied to carbon labelling, we want to know the extent to which consumers think of climate change as a problem; the attributes consumers look for in food; what consumers know about the relationship in-between the food sector and climate change; what consumers know and think about product labelling. Through the use of questionnaires and discussion under the supervision of a moderator, these six focus group sessions provided data on what different types of consumers think about these issues. The chapter begins with an overview of the results and ends with a discussion aimed at answering the third research question.

4.1 Results

The results are presented, group-by-group, in tables divided into the four topics of interest.

4.1.1 The gastronomy group

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| The attributes that consumers look for in food. | The more tangible attributes of food were given a large weight by the participants of the Gastronomy group. Taste and freshness were particularly popular attributes in this group. Although to a lesser extent, some augmented benefits of food were also identified as important: Locally produced food and ethical treatment of animals were both singled out as important attributes by some of the participants. Nutrition was the only intrinsic attribute of food that was, by and large, ignored by the participants of the gastronomy group. |
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| Consumer perceptions of climate change | All of the participants in the gastronomy group were of the view that climate change is for real and that measures need to be taken to curb it and thus mitigate its related threats. |
| Consumer knowledge with regard to the relationship between climate change and the food sector | By and large, the participants of the gastronomy group appeared to have a good understanding of the food sector's role in climate change. They also had a good idea about the relative importance of different stages in the life cycle of food as sources of GHG emissions. The only point on which they did not do particularly well was the fourth question in which they were asked to rank vegetables, chicken and beef in terms of how climate friendly they are, although the majority of the participants still gave correct answers. |
| Consumers and product labelling | A majority of the participants in the gastronomy group thought of product labels as being important to their consumption choices. Some of the participants said that they prefer organic food since, in their view, it has a better taste and is free from pesticides, which was why they thought of labels as important. Moreover, labels were also drawn on by some of the participants to identify locally produced food and ensure that animals were treated in an ethical way during the production phase. The participants were, overall, sceptical about the environmental merits of eco labels, though. Most of the participants expressed the opinion that while they do believe that the criteria behind eco labels are good for the environment, too few people care about them for eco labelling to have a discernable positive effect. Only two of the participants thought there were too many labels on the product packaging of food. |

4.1.2 The family group

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| The attributes that consumers look for in food. | The intrinsic attributes of food were singled out as the most important ones by the participants of the family group, albeit with one exception. The nutrition, price, taste and the freshness of food were all singled out by a majority of the participants as top three attributes. The only exception was that three participants identified brand as being one of the top three attributes. |
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| <p>Consumer perceptions of climate change</p> | <p>Most of the participants of the family group adhered to the view that climate change is a threat that needs to be dealt with. However, two participants indicated that they were undecided on this issue.</p> |
| <p>Consumer knowledge with regard to the relationship between climate change and the food sector</p> | <p>All but one of the participants of the family group thought of the food sector as significant for climate change. The results were not as positive when it came to the question in which the participants were asked to identify the biggest source, generally speaking, of GHG emissions in the life cycle of food; only two participants answered the production of food. Most of the participants were, however, able to rank vegetables, chicken and beef correctly in terms of how climate friendly they are.</p> |
| <p>Consumers and product labelling</p> | <p>Product labels did not appear to play an important role for most of the participants of the family group. The general attitude within the group, during the discussion, appeared to be that while they were not negatively inclined towards product labelling, they quite simply did not have the time to look for them while shopping. One of the participants did, however, say that if there is an eco labelled alternative to a product of a specific brand, which he wants to buy, he would choose it. The participants did, however, think that eco labels do serve to improve the environment. This was reflected in the discussion in which most of the participants believed that as long as a large enough number of people buy labelled products, eco labelling can make a difference. One of the participants said that "every consumer has to pull his straw to the haystack". A woman in the group did, however, question the criteria behind eco labels and argued that labels were in some cases being awarded on the mere basis of a company expressing an intention to become more environmentally friendly. She based this on a documentary that she had seen. Excess amounts of information on the product packaging of food did appear to be a problem, though. Most of the participants argued that they quite simply did not have the time to take the information that can be found on the product packaging of food into consideration while shopping. One woman did, however, disagree with this point of view and argued that eco labels are usually clearly visible on the product packaging and not buried in the nutritional content declaration or in some other piece of text that also can be found on most food products.</p> |

4.1.3 The sport group

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| The attributes that consumers look for in food. | The core attributes of food and low environmental impacts were identified by most of the participants of the sport group as being of particular importance. The nutrition, taste and freshness of food were all placed in the top three by a majority of the participants. Three participants also placed low environmental impacts amongst the top three attributes of food. |
| Consumer perceptions of climate change | Almost all of the participants of the sport group were of the view, although to different extents, that climate change is a problem that needs to be tackled. |
| Consumer knowledge with regard to the relationship between climate change and the food sector | The results were poor when it came to assessing the importance of the food sector for climate change, though, in the sport group. With the exception of two participants, the whole group thought of it as significant, but not as significant as other sectors. The group did somewhat better when it came to identifying the most important stage in the life cycle of food as a source of GHG emissions, though; four participants answered production while three answered transport. Surprisingly, though, given the results of questions three and four, all of the participants were able to rank vegetables, chicken and beef in terms of their GHG intensity correctly. |
| Consumers and product labelling | Product labels appeared to be of importance for the majority of the participants of the sport group. In the discussion, one participant said that he would always buy eco labelled products if such alternatives were available and clearly visible in the shops. Another participant, though, said that product labels carry little significance for him since he has what he termed an “ingrained shopping routine”. In spite of this, the participants were mostly sceptical about the merits of eco labelling. The problem that most of them identified in eco labelling was that not enough people buy eco labelled products for such labels to make a difference, but added that regardless of whether a label does anything for the environment, they liked buying organic food that is free from pesticides and other additives. Too many labels on the product packaging of food did not appear to be a problem, though. |

4.1.4 The environmental group

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| <p>The attributes that consumers look for in food.</p> | <p>Not surprisingly, low environmental impacts were identified as one of the most important attributes of food by most of the participants in the environmental group alongside the more traditional attributes of food. All but one participant placed low environmental impacts in the top three, while the nutrition and quality of food were identified as top three attributes by a majority of the participants.</p> |
| <p>Consumer perceptions of climate change</p> | <p>All of the participants of the environmental group were of the opinion that climate change is indeed a problem that needs to be confronted.</p> |
| <p>Consumer knowledge with regard to the relationship between climate change and the food sector</p> | <p>The environmental group did well with respect to the questions designed to test their knowledge on the relationship in-between climate change and the food sector. Only two participants gave an incorrect answer to question three “How significant is the food sector for climate change”, while in the case of question four only one participant got it wrong. All of the participants were able to rank vegetables, chicken and beef correctly in terms of how climate friendly these types of food are.</p> |
| <p>Consumers and product labelling</p> | <p>Product labels were important for the consumption choices of the participants of the environmental group. On the basis of what was said during the discussion on this question, it appeared to be the case that most of the participants of the environmental group buy eco labelled products if there is such an alternative. One participant, however, remarked that as much as he would like to buy eco labelled products, he rarely did so. As for the views of the participants on the merits of eco labelling, most were of a positive opinion. Only one participant was hesitant to lavish praise on the environmental merits of eco labels due to scepticism about the strictness of the criteria behind eco labels. None of the participants were of the view that there are too many labels on the product packaging of food. The participants did not have much to say on this issue, but a woman in the group remarked that while there is a lot of information on the product packaging of food, labels themselves are usually easy to distinguish without much effort as they are generally kept separate from the nutritional information etc.</p> |

4.1.5 The indifferent group

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| <p>The attributes that consumers look for in food.</p> | <p>Generally speaking, the participants of the indifferent group identified the tangible attributes of food as being important. The taste, price and freshness were all singled out as top three attributes by most of the participants of this group.</p> |
| <p>Consumer perceptions of climate change</p> | <p>The majority of the participants of the indifferent group thought of climate change as a problem which needs to be mitigated.</p> |
| <p>Consumer knowledge with regard to the relationship between climate change and the food sector</p> | <p>The participants of the indifferent group had mixed results when it came to the topic of the relationship in-between climate change and the food sector. Four participants thought the food sector was significant for climate change, but nevertheless the rest of the group answered “significant, but not as significant as other sectors”. When it came to the issue of carbon hotspots in the life cycle of food, the group performed quite poorly with a majority of the group singling out the transportation stage as the most important one. Somewhat surprisingly, though, all but one of the participants were able to rank vegetables, chicken and beef correctly in terms of how climate friendly they are.</p> |
| <p>Consumers and product labelling</p> | <p>Most of the participants in the indifferent group indicated that product labels are important to their consumption decisions. Some of the participants said that, other things equal, they prefer eco labelled products, but that price is always the deciding factor. Only one participant said that she buys labelled products even if they are more expensive than their unlabelled counterparts. A man in the focus group said that while he cared for the welfare of animals, labels are insignificant to him when he goes shopping for food. To ensure that animals were treated in an ethical manner, he said that he buys his meat directly at the farm gate. The results were mixed when it came to the environmental merits of eco labels, though. During the discussion, most of the participants agreed that it was difficult for them to make a statement about this statement since they knew so little about the criteria behind eco labels. Many of the participants did, however, believe that too few consumers buy labelled products for these to have any discernable positive impact on the environment.</p> |

4.1.6 The animal group

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| The attributes that consumers look for in food. | The ethical treatment of animals was, not surprisingly, identified as a particularly important attribute of food by the participants of the animal group, alongside some of the more tangible attributes of food. Freshness and taste were rated as one of the top three attributes of food by most of the participants. All but one of the participants identified the ethical treatment of animals as one of the top three attributes of food. |
| Consumer perceptions of climate change | All of the participants of the animal group were of the opinion that climate change is a problem and needs to be dealt with. |
| Consumer knowledge with regard to the relationship between climate change and the food sector | Most of the participants of the animal group had a solid idea of the food sector's significance for climate change. The results were a bit worse for the question on the stage in the life cycle of food that generally causes the largest share of emissions, with three participants answering transport, but still four participants answered production. The group did very well when it came to ranking vegetables, chicken and beef in terms of how climate friendly they are, though; all of the participants were able to rank them correctly. |
| Consumers and product labelling | Most of the participants of the animal group said that product labels are important for their shopping decisions. Some of the participants said that they try to buy eco labelled products as often as they can, but that in most cases these are restricted to milk, eggs and in some instances meat. One participant did, however, say that he did not have an opinion since his wife does most of the shopping. A majority of the participants had faith in eco labelling as an instrument for mitigating environmental problems. Not much was said on this subject during the discussion, though. Too much information on the product packaging of food did not appear to be a problem for the participants of this group, with nobody identifying it as a problem. |

Conclusion

In the conceptual framework it was argued that paying attention to an eco label is a mean for buying eco labelled products which in turn is a mean for the greater goal of protecting the environment. In this sense, the use of carbon labels can be framed as goal directed behaviour on the part of consumers. In the concluding section of

chapter two, it was suggested that for a consumer to pay attention to a carbon label, she must at some prior point in time have come to:

- form a desire to mitigate climate change and an awareness of the food sector's contribution to this problem.
- know about product labelling, in particular how it works.
- believe in product labelling as a suitable strategy for mitigating climate change.
- be attracted by the carbon label.
- trust the information that the carbon label conveys.

The first three of these five criteria can be said to be the determinants of how receptive a consumer is to the carbon labelling of food, whereas the final two are concerned with how to effectively through carbon labelling. In this chapter, we look at the extent to which consumers of different lifestyles had come to fulfilling the first three of these criteria, the main objective being to provide an idea of how receptive consumers of different lifestyles are to the carbon labelling of food and what could be done to make them even more so.

The question at hand, therefore, is what can we say about this subject on the basis of the results presented in this chapter? If we begin by taking the attributes that the six consumer groups look for in food into consideration, we see that the tangible attributes of food, such as taste and freshness, tend to be the most important attributes for consumers, regardless of their lifestyles. This result should not come as a surprise, for it would be foolhardy to suggest that anybody buys food mainly for the sake of protecting the environment, or in our case mitigate climate change. We do, however, see certain differences in-between the groups with regard to what we could term the attributes of secondary importance. Generally speaking, these matched the criteria upon which the focus groups were formed, which suggests that the sampling was successful. In the environmental group most of the participants identified low environmental impacts of food as being of an important factor with regard to what they look for in the food they buy; in the animal group a majority of the participants singled out the ethical treatment of animals; and so forth. Drawing on this result, it is conceivable to say that consumers with a strong pro environmental attitude constitute the most attractive target group for carbon labelled food, which was to be expected. However, we are interested in the differences in-between these groups in terms of the first three criteria of Thøgersen's model, seeing as such information gives us a good idea of the likelihood that a certain segment of consumers will pay attention to carbon labels, and the measures that could possibly be undertaken to increase the likelihood of these consumer groups using carbon labels.

Let us start with the first criteria, namely that for a consumer to pay attention to a carbon label, she must at some previous point in time have come to recognize climate change as a problem that has to be dealt with. The results indicate a clear trend: a concern about climate change and a desire to do something about this problem seems to be a widely held view amongst consumers irrespective of their lifestyles. As a matter of fact, not a single participant in any of the focus groups disagreed with the statement "Climate change is a threat which has to be dealt with". Therefore, it can be said that consumers in general meet the first criteria of Thøgersen's model.

However, as was argued at the end of chapter two, thinking of climate change as a problem is not enough since consumers must conceivably also be aware of the food sector's significance for climate change in order to see the point of buying carbon labelled food. The results were generally positive in this regard, but not entirely so. With the exception of the sport group, a majority of the participants in every group thought of the food sector as significant for climate change. Differences were more pronounced with regard to the two other questions designed to test the knowledge of the participants on the relationship in-between the food sector and climate change, though. Most of the participants of the family and indifferent groups gave an incorrect answer to the question "Which stage in the life cycle of food generally emits the most GHG:s?". Excluding this question, most consumers seem to have a pretty good awareness of the food sector's role as a driver of climate change; in every group a majority of the participants were even able to rank vegetables, chicken and beef correctly in terms of their climate friendliness, which suggests that the average consumer is not ill-informed with regard to this topic.

Thøgersen's model also suggests that a consumer who pays attention to a carbon label must have come to know about product labelling and believe in it as a good strategy for mitigating climate change. The results presented in this chapter indicate that consumers overall know about the concept of product labelling. Indeed, excluding the family group, most of the participants in all of the groups identified product labels as having a certain degree of importance for their food shopping decisions. In the case of the family group, their non-use of product labels was not due to a lack of knowledge or scepticism about labelling, but rather a lack of time due to the pressures of family life. The groups did, however, exhibit differences when it came to assessing the environmental merits of eco labelling. A majority of the participants in the family, sport and gastronomy groups were sceptical about whether eco labelling actually makes a difference, or not, while in the remaining groups most of the participants had a more positive attitude. The scepticism expressed by the first three of these groups was in large part due to the notion that not enough consumers use eco labels for them to make a discernable impact, but also doubts regarding the strictness and nature of the criteria behind eco labels. Too many labels or excess amounts of information on food did not appear to be a problem for any of the groups with the exception of the family group who felt that looking for labels while shopping with children, or on the way home from work, was too much of an inconvenience.

Generally speaking, consumers seem to meet the first three criteria of Thøgersen's model. Most consumers appear to recognize climate change as a problem and believe that measures must be taken against to curb this problem and its potentially harmful consequences. Moreover, most consumers seem to have a basic awareness of the food sector's significance as a source of GHG emissions, as well as the existence and workings of eco labels. However, the only point on which the results were less positive was the faith that consumers place in eco labelling as an instrument for mitigating climate change. Informing consumers more about the inherent dynamics of eco labelling – the more people commit to buying labelled products, the larger the gains will be – as well as the nature of the criteria behind eco labels could conceivably improve the situation and make carbon labelling more viable. As for the role that lifestyles played in forming these particular results, this factor was probably of significance for the environmental group, which was to be expected, but in the cases of the other groups it is more difficult to draw any direct conclusions as to whether lifestyles played a role in shaping the attitudes of these consumers. The problem is a general lack of causality, which can be traced back to the conceptual framework. To illustrate this problem, it is helpful to consider why it is that people who practice sports should have less of a clue about the food sector's significance for climate change than parents. Other factors that were not included in

the model must have played a role here. The most likely culprits are probably socioeconomic factors; education in particular. It would not be far fetched to suggest that people with a higher education are more likely to be well informed on climate change since they are also more likely to have an interest in following the news, public debate and so forth. However, consumers also have to be attracted by carbon labels and trust the information they convey to pay attention to them. So what forms of carbon labelling communication work with consumers of different lifestyles? This is the subject matter of the next chapter.

Chapter 5 - Communicating with consumers through carbon labelling

Introduction

The results that were presented and discussed in the previous chapter paint a picture in which consumers in general tend to think of freshness as the most important qualities of food, while augmented benefits such as low environmental impacts are of secondary importance. As was stressed, though, this should hardly come as a surprise; people quite simply do not buy food to protect the environment. However, the fact that consumers appear to value eco labels and use them in their shopping decisions, coupled with an awareness of climate change and how it relates to the food sector, means that it would not be an exaggeration to say that favourable conditions for carbon labelling do exist. As Thøgersen's model suggests, though, a consumer who pays attention to a carbon label must also have been attracted by it and trust the information on it. The attractiveness of a label can be said to consist of two distinct elements, namely the label itself and where it is made available to consumers. In this chapter we will seek to provide an idea of what approaches that consumers of different lifestyles prefer, as well as consider the question of whether a carbon labelling bonus scheme could possibly increase the prospects of carbon labelling.

5.1 Results

The results are presented, group-by-group, in tables divided into the four topics of interest. An exact breakdown of the questionnaire results is provided in the appendix. The labels are referred to in the way they were in chapter three, for instance the "Casino label", the "Climate Conscious diet guide" etc.

5.1.1 The gastronomy group

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| The labels | The participants of the gastronomy group gave high ratings to the more simple labels and vice versa for the more elaborate ones. The food miles label was the most popular one, with the Climatop and airfreight labels coming in on second and third place respectively. During the discussion, it became clear that the preference for locally produced food amongst the participants was the main reason for so many of them choosing the food miles label as the best one, and not a concern for the climate per se. The Climatop label proved to be popular because of its simple design – one participant remarked that "The CO ₂ in big text on the label lets you know what it is about without the fuss of the other labels" – but also because of its clear meaning. As for the labels that received low ratings, the labels by Casino and KRAV and Svenskt Sigill proved to be the most unpopular ones. With respect to the Casino |
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| | label, most of the participants felt that it was too cluttered and impractical for quick shopping. When asked if they might read the label at home, as is Casino's idea, nobody answered yes. As for the label by KRAV and Svenskt Sigill, one participant remarked that its meaning was difficult to comprehend. One man in the group said that instead of carbon labelling, it would be a better and more convenient idea for companies to set up food stores where they only sell climate friendly food produce, as this would eliminate the need to think about and look for labels on products. |
| Consumer trust | The organization that is behind a label as well as accurate information were both identified by a majority of the participants in the gastronomy group as conducive to building consumer trust. |
| Where to make the labels available to consumers | The most popular option was to have carbon labels made available on the product packaging, followed by shelves in second place and pamphlets in third place. Most of the participants were of the view that it would be best to make the labels available at the point of purchase, since they had a hard time seeing themselves browsing the internet for this kind of information etc. |
| To what extent would consumers be willing to substitute food to make their diets more climate friendly? | All but one of the participants in the gastronomy group indicated that they would not be willing to substitute food to make their diets more climate friendly. |
| Carbon labelling bonus scheme | Most of the participants answered that a carbon labelling bonus scheme would not make them any more likely to purchase carbon labelled food produce. |

5.1.2 The family group

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| The labels | Generally speaking, the participants of the family group preferred the more simple labels and gave low ratings to the more complex ones. The Climatop label proved to be the most popular one in this group, while the airfreight and food miles labels came in second and third place respectively. It became clear, during the discussion, that the Climatop labels popularity was due to the fact that it was simple, easy to understand and did not require consumers to sift through information on the label. The airfreight and food miles labels were popular for the same |
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| | <p>reasons, namely their simplicity and ease of use. The Casino, Climate Conscious label and diet guide, Conscious Brands and KRAV and Svenskt Sigill labels were all ranked in the bottom three by a majority of the participants in this group. The Casino label was disliked for the reason that the participants felt it was too complicated and had too much information on it for them to attach any importance to it when shopping for food. The label by KRAV and Svenskt Sigill was given a low rating by some of the participants because they thought the criteria behind it were too complex and that it would therefore be difficult for them to assess whether the label has a discernable impact or not. Although most of the participants liked the three tiered rating system of the Climate Conscious label, they found the criteria behind it to be too difficult to understand, especially because it looks at CO2 emissions per dollar, which they could not see the point of. As for the Conscious Brands label, the participants were of the view that it was “useless” as they did not know what constitutes a high carbon footprint, nor could they see themselves comparing products on the basis of a quantitative carbon footprint.</p> |
| Consumer trust | <p>Accurate information, third party verification and the organization behind a label were all identified as factors which facilitate consumer trust.</p> |
| Where to make the labels available to consumers | <p>The product packaging was by far the most popular option to make carbon labels available with all of the participants identifying it as the best option. The same went for the store shelves in second place. The receipt was also a popular option with a majority of the participants identifying it as the third best option. The view of the participants in this group was that it is highly unlikely that they would actively search for carbon labels on the internet or in pamphlets, and that the best option would be to have them available in stores since it is there they make their shopping decisions.</p> |
| To what extent would consumers be willing to substitute food to make their diets more climate friendly? | <p>A strong majority of the participants in the family group indicated that they were not willing at all to substitute food to make their diets more climate friendly.</p> |
| Carbon labelling bonus scheme | <p>Most of the participants in this group did not think that a carbon labelling bonus scheme would make them any more likely to buy carbon labelled food produce.</p> |

5.1.3 The sport group

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| The labels | <p>The more complex labels were popular with the participants of the sports group. The Casino label was the most popular one if we look at the group as a whole. The label by KRAV and Svenskt Sigill was the second most popular one, while the Climate Conscious label and diet guide also did well. Most of the participants in the sport group wanted to be able to easily make comparisons in-between different products and rated the Casino and Climate Conscious labels highly for this reason. The label by KRAV and Svenskt Sigill was also viewed favourably because the participants liked the fact that it takes a broader view of sustainability as opposed to just focusing on climate change. There was quite a spread with regard to the labels that were unpopular in this group. Carbon offsetting was the most unpopular one, but the label by Conscious Brands as well as the Climatop and airfreight labels also got significant amounts of negative feedback. Carbon offsetting proved to be unpopular amongst the participants of the sports group as they did not believe that it leads to the emissions reductions it promises to deliver, but also because, other things equal, they did not consider it to be an ideal path towards a less carbon intensive economy in view of the fact that it, in their view, does not do anything to correct the GHG intensive consumption habits of consumers. The Conscious Brands label, meanwhile, was not viewed favourably for the reason that the participants could not attach any significance to a quantitative carbon footprint, although one participant remarked that he liked the unambiguous nature of a quantitative carbon footprint. The potential for incorrect carbon declarations resulting from food miles labelling was the primary reason for the negative ratings which the participants of this group gave the food miles label. The Climatop label, on the other hand, was given negative ratings for primarily two reasons: the fact that it does not allow for comparisons in-between products, but first and foremost because they thought it is not possible to determine if a product has the lowest carbon footprint within a product category. The Climate Conscious diet guide was unpopular amongst some of the participants because of the format in which it is presented; they said that they would in all likelihood not bother to read a pamphlet and then keep this information in mind while shopping.</p> |
| Consumer trust | <p>The participants of the sports group singled out accurate information and the organization behind a label as being of particular importance for building consumer trust.</p> |

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| Where to make the labels available to consumers | The most popular place to make carbon labels available for all but one of the participants of this group was the product packaging of food. The second most popular option was store shelves. The third most popular option was the receipt of food. The participants said that having the carbon labels on display in stores would make it more likely that they paid attention to them, since they could not see themselves browsing for this kind of information when not shopping. |
| To what extent would consumers be willing to substitute food to make their diets more climate friendly? | The majority of the participants in the sport group were not willing to substitute food to make their diets less GHG intensive. |
| Carbon labelling bonus scheme | Most of the participants of this group said that a carbon labelling bonus scheme would not make it more likely that they would purchase carbon labelled food produce. |

5.1.4 The environmental group

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| The labels | The participants of the environmental group responded positively to the more complex labels. The Casino and Climate Conscious labels were the most popular ones by far amongst the participants of this group, with all of the participants identifying the Climate Conscious label as one of the three best, while for the Casino label this number was four. The Climatop label was also held in high regard by a majority of the participants. The strong support for the Climate Conscious label mainly came down to two factors: the fact that it allows for comparisons, but also its simple design and way of communicating with consumers. The participants liked the three-tiered rating system, which they thought was simple and efficient, and that clear criteria were set for each tier. The Casino label was popular much for the same reasons, namely that it allows for comparisons and is intuitively easy to use with the colour scale. The Climatop label, on the other hand, received strong support because of its simplicity and clear meaning. As for the less popular labels amongst the participants of the environmental group, the food miles and airfreight labels were given negative feedback as well as the label by Conscious Brands and carbon offsetting. The unpopularity of the food miles and airfreight labels was due to the view that they do not provide a true idea of a food product's carbon footprint. One participant did, however, |
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| | <p>remark that the use of airfreight labelling is probably better than food miles labelling given the large quantities of GHG emissions that airplanes account for. Carbon offsetting was viewed unfavourably by most of the participants of this group because they felt that it diverts attention from the anthropogenic causes of climate change by, as one participant put it, letting “consumers buy themselves free from guilt”. One participant disagreed with this view, though, since he thought it was better that something is done rather than nothing, but also because it maintains a certain focus on climate change which could serve to contribute towards long term policy developments. The Conscious Brands label, meanwhile, was disliked because most of the participants felt that it did not contain any useful information.</p> |
| Consumer trust | <p>Third party verification, the organization behind a label and accurate information were all identified as trust building factors by a majority of the participants of the environmental group.</p> |
| Where to make the labels available to consumers | <p>All of the participants of the environmental group singled out the product packaging of food as the best place to make carbon labels available. Store shelves came in second place, while the internet was ranked as the third best option if we look at the group as a whole. The participants in the environmental group pretty much agreed that it would be best to put carbon labels on the product packaging itself since they felt this was the place where they would be most likely to pay attention to such labels. Most of the participants did, however, also think that it would be a good idea if the carbon labelling schemes had databases over all of the products that they have labelled.</p> |
| To what extent would consumers be willing to substitute food to make their diets more climate friendly? | <p>Most of the participants of the environmental group expressed a willingness to substitute food to make their diets more climate friendly.</p> |
| Carbon labelling bonus scheme | <p>A strong majority of the participants of this group said a carbon labelling bonus scheme would not make them more likely to purchase carbon labelled food products.</p> |

5.1.5 The indifferent group

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| The labels | <p>The simple labels were popular amongst the participants of the indifferent group. The Climatop label was the most popular one, while the food miles and airfreight labels were identified as top three labels by a majority of the participants in the group. The popularity of the Climatop label came down to its simple design and clear meaning. One participant remarked that he thought it was less cumbersome than most of the other labels which, in his opinion, contained too much information. The food miles and airfreight labels were popular for the same reason, namely their simplicity and clear meaning. The more elaborate labels were not popular with the participants of the indifferent group, though. The Casino, Climate Conscious label and diet guide as well as the Conscious Brands label were all given predominantly negative feedback. In the case of the Casino label, the participants were of the opinion that it was unclear and had too much information on it for it to be practical when shopping. While some of the participants in the group liked the three tiered rating system of the Climate Conscious label, most felt that the criteria behind this rating system were too complex and that it did not have very much meaning for this reason. The diet guide, meanwhile, was given negative feedback because most of the participants could not see themselves adapting their diets to make them more climate friendly, and therefore thought of it as useless. As for the Conscious Brands label, the general view seemed to be that it was not climate friendly shopping.</p> |
| Consumer trust | <p>Accurate information and the organization behind a label were identified by most of the participants of the indifferent group as being conducive to building consumer trust.</p> |
| Where to make the labels available to consumers | <p>All of the participants of this group identified the product packaging of food as the most appropriate place to make carbon labels available, while store shelves and pamphlets came in second and third place respectively. Most of the participants in the group felt that it would be most convenient for them to look for carbon labels while shopping, and that the probability of them looking up this kind of information on their own behalf was rather low. One participant did, however, remark that carbon labels could be put in the pamphlets which advertise special offers and other deals.</p> |

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| To what extent would consumers be willing to substitute food to make their diets more climate friendly? | The majority of the participants of the indifferent group indicated that they would not be willing to substitute food to make their diets more climate friendly. |
| Carbon labelling bonus scheme | A majority of the participants of the indifferent group answered that a carbon labelling bonus scheme would make them more likely to purchase carbon labelled food products. |

5.1.6 The animal group

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| The labels | <p>The participants of the animal group liked the more intricate labels. Not surprisingly, given its scope, the label by KRAV and Svenskt Sigill was the most popular one, but the Casino label and the Climate Conscious diet guide also received positive feedback by a majority of the participants. The popularity of the KRAV and Svenskt Sigill label was much in thanks to its broad scope and the fact that food products that do not meet certain criteria in terms of animal welfare cannot be awarded the label. The Climate Conscious diet guide was viewed favourably as most of the participants were of the view that current levels of meat consumption are detrimental both in terms of animal welfare and the environment, and that it would be good if consumers were given information that could serve to encourage them to cut down on their meat consumption. The labels that were given negative feedback by the participants of the animal group were mixed. Carbon offsetting was the most unpopular one by far, while the airfreight label was also the subject of bad feedback from most of the participants of the group. The negative feedback that was given to carbon offsetting was, in large part, due to scepticism amongst the participants with regard to whether its actually possible to make accurate carbon offsetting calculations. One participant noted that carbon offsets through investment in renewable energy does not necessarily lead to cuts in emissions, and suggested that carbon offsetting is more of a marketing ploy than a potent instrument for fighting climate change. The airfreight label was disliked because of the low degree of assurance that estimating the carbon footprint of food produce by looking at the way in which food produce has been transported affords consumers with.</p> |
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| Consumer trust | Most of the participants of the animal group identified accurate information and the organization behind a label as being trust facilitating factors. |
| Where to make the labels available to consumers | The product packaging of food was ranked as the most popular option to make carbon labels available by the participants of the animal group. Store shelves were identified as the second best place while the receipt made it into third place. Most of the participants were of the view that carbon labels ought to be presented at the point of purchase as they could not see themselves actively reading pamphlets or browsing the internet for such information on a regular basis. One participant did, however, remark that even though he probably would not use the internet to gain this type of information, he thought it would be “cool” to have it available on a website in the form of a database or something similar. |
| To what extent would consumers be willing to substitute food to make their diets more climate friendly? | The majority of the participants of the animal group indicated that they would be willing to substitute food to a large extent to make their diets more climate friendly. |
| Carbon labelling bonus scheme | All but one of the participants of this group answered that a carbon labelling bonus scheme would not make it more likely that they would buy carbon labelled food produce. |

Conclusion

The results tell us a number of important facts. They tell us what type of labels work. They tell us what makes consumers trust these labels and moreover they also tell us where carbon labels ought to be made available to consumers. They also tell us that broadly speaking, carbon labels can be divided into two distinct categories, namely those whose format stress simplicity and those whose format stress the importance of providing consumers with the information necessary to really broaden the scope for consumer choice. In addition to this, the results give us an idea of what labels and lifestyles work together.

Let us begin our discussion of carbon labelling communication by considering the labels themselves. As hinted at in the preceding paragraph, the labels, based on the positive feedback that they got, can be divided into two distinct categories. The first category is made up of labels that focus on simple labels with clear meaning. From our sample of labels, the Climatop label as well as the airfreight and food miles labels

fit into this category of carbon labels. However, the popularity of these labels differed. The food miles and airfreight labels were well received by the indifferent, family and gastronomy groups, who liked their simplicity, but was derided by most of the participants of the three other groups on the basis of the low degree of assurance that they afford consumers with. All of the groups, with the exception of the sport group, either gave the Climatop label positive feedback or did not identify it as one of the worst labels. Its simplicity, clear meaning and methodology meant that it seemed to hold some sort of appeal to most of the participants across the six groups. To move on, though, it could very well be the case that the label by KRAV and Svenskt Sigill fits into this category of labels too, but the participants of most groups found it to be a bit confusing, in particular the criteria behind it. It is conceivable, though, that the feedback on it would have been more similar to that of the other simple labels if the participants had actually been presented with an actual label, as opposed to just the idea behind it which might have made it a bit too abstract. The second category of carbon labels, meanwhile, is less clear-cut, but consists of labels that are based on the idea of providing consumers with as much choice as possible through various types of information. Most of these more elaborate labels are of the comparative type. The comparative labels differed in terms of their respective formats and the feedback they got. The Conscious Brands label was given a lot of stick by most of the participants across the six groups. The general feeling was that a quantitative carbon footprint is devoid of meaning and useless for comparing products with one another. Only a few participants liked this label, and those who liked it did so because they thought a quantitative carbon footprint was unambiguous and trustworthy. The Casino label was also designed with the idea of enabling consumers to make comparisons in mind. Its format is very different, though, in that the label consists of a colour scale that allows consumers to see how climate friendly a product is in comparison with others. While no participants said anything about checking the label at home, this label was popular with most of the participants in the sport, environmental and animal groups who liked the fact that it also covers products that are not climate friendly relatively speaking. The Casino label was rather unpopular amongst the participants of the other three groups, though. Many of those who voiced criticism against it did so because they felt it was too impractical and elaborate to go hand in hand with quick and convenient shopping. The Climate Conscious label was immensely popular, for pretty much the same reasons as the Casino label, with the participants of the environmental group, but also received considerably good feedback from the sport and animal groups. The criteria behind the three tiers of the Climate Conscious label were confusing for most of the participants in the other groups, although a few of them did say that they liked the three-tiered system. As for the alternative labels, namely carbon offsetting and the Climate Conscious diet guide, the feedback was pretty negative. With regard to carbon offsetting, the problems that most of the participants seemed to associate with it were the notion that it merely smoothes over the problem of climate change as opposed to doing something about its causes and a general scepticism regarding its ability to reduce the emissions that it promises to do. The Climate Conscious diet guide, meanwhile, did not make much of a bang except for in the animal group where its pro vegetarian implications were highly rated,

However, any person could draw a carbon label, stick it to a product and urge consumers to buy products with this label on it to save the world from the potential nastiness of climate change. Unless this person was a robot, programmed to conduct life cycle analyses of food, sent back in time to stop us consumers from turning Tellus into a cheap Venus replica – scientists believe that once upon a time there were oceans on Venus, much like on Earth today, but due to a runaway greenhouse effect these first evaporated into the atmosphere, and then eventually into space only to be gone forever, leaving behind a planet that was getting hotter and hotter as the

carbon cycle had broken down, and today Venus is so scorchingly hot that led would actually melt on its surface – it is not very likely that we would trust the information on this home made carbon label. What, then, makes consumers trust the information conveyed by carbon labels? The results presented in this chapter gives us a clue as to the nature of the answer to this question. All of the groups singled out accurate information and the organization behind a label as being of particular importance, but interestingly only the participants of the environmental and animal groups appeared to correlate accurate information with third party verification.

Let us assume that our friend is indeed a robot from the future, and that his carbon labels are legitimate, but that instead of putting them on the product packaging of food, he puts them on the notice board that can be found on the wall of his carbon labelling workshop. Would these labels usher in a new era of climate friendly consumption? No, they would not, however attractive they might be. Although this was an extreme example, it comes to prove a very important point with regard to carbon labelling, which is that regardless of how brilliant a carbon label might be, it is going to be as useful as violence is for peace if consumers cannot access this information. According to the results of this study, our time travelling robot should put his carbon labels on the product packaging of food, and if that is not possible on the store shelves. Regardless of their lifestyles, most of the people who participated in the focus groups were of the view that it would be convenient if carbon labelling is linked to the shopping itself, since only a few participants could see themselves browsing for this kind of information either online or in pamphlets.

Our analysis of the results, thus far, suggests that, broadly speaking, there are two approaches that work with consumers when it comes to carbon labelling in terms of the label itself: simple and more elaborate approaches. Having a well respected and trusted institution behind a label that conveys accurate information builds consumer trust. Moreover, putting carbon labels on the product packaging of food appears to be the best option in terms of where to make carbon labels available to consumers. Lifestyles did appear to be of relevance as the animal, environmental, family, indifferent and gastronomy groups all produced results, with regard to the labels, that were in line with what was expected from them. However, the results of the sport group suggest that lifestyles cannot be the only factor at play here as it is difficult, if not impossible, to explain why people who enjoy practicing sports are more favourably inclined to elaborate carbon labels. Socioeconomic factors, education in particular, probably have a role to play here too. Two questions remain, though. First, what should the scope of comparative labels be? Second, would a carbon labelling bonus scheme make consumers more likely to purchase carbon labelled food produce? In the first case, with the exception of the animal group, the results suggest that comparative labels should aim to enable consumers to compare products within a product category. As for the prospects of a carbon labelling bonus scheme, only the participants of the indifferent group appeared to be receptive to such a scheme, which is not too much of a surprise given the large weight they attached to the price of food.

Chapter 6 - Key findings, recommendations and conclusions

Becoming carbon neutral is only the beginning. The climate problem will not be solved by one company reducing its emissions to zero, and it won't be solved by one government acting alone. The climate problem will not be solved without mass participation by the general public in countries around the globe. – Rupert Murdoch

Introduction

Tapping the potential of consumers as change agents is the fundamental idea that underlies carbon labelling. Given the role of the food sector as a driver of climate change, a lot of attention has naturally been devoted to the prospects of carbon labelling food. However, carbon labelling will only be viable in the long term insofar consumers are receptive to it and carbon labelling schemes manage to communicate efficiently with consumers. To gain an idea of how receptive consumers are to the carbon labelling of food and what could be done to make them even more so, in addition to establishing what forms of communication through carbon labelling that work best, we used a model of the determinants of consumers paying attention to eco labels developed by Thøgersen, with the addition that, unlike the original model, it assumed that these determinants were, in turn, dependent on the lifestyles of consumers. We identified a set of different approaches to carbon labelling, in chapter three, and put these to the test in chapter four and five.

In this chapter, we set out to present the key findings of this study and provide recommendations for carbon labelling schemes and future research. The chapter is then rounded off with a concluding discussion on carbon labelling, environmental policy and the need for behavioural changes if societies are to be viable in the long run.

6.1 Key findings

In this section, we set out to present the key findings of this study. The findings are divided into two separate parts. First, the extent to which consumers are receptive to carbon labelling and what could be done to make them even more so. Second, what forms of communication through carbon labelling work best with consumers.

6.1.1 How receptive are consumers to carbon labelling?

Generally speaking, consumers attach a large weight to the tangible attributes of food, such as freshness and taste, in their shopping decisions. This result was to be expected in view of the fact that very few would venture to argue that consumers buy food with the aim of protecting the environment. However, consumers still appear to attach a certain degree of importance to the invisible characteristics of food. The intangible qualities of food that consumers identify as relevant for their consumption decisions appear to be dependent on the lifestyles of consumers. For instance, consumers with a strong pro-environmental attitude are more likely to look for food that is associated with low environmental impacts; while gastronomists have a stronger interest in purchasing locally produced food. Consumers might not buy food for the sake of protecting the environment, but on the basis of the secondary attributes they look for in food there appears to be space for product labels, as

consumers appear to be interested in reducing the negative impacts, which they are particularly concerned about, of their consumption habits.

Thøgersen's model postulates that a consumer who pays attention to a carbon label must at some point have come to: recognize climate change as a problem and want to do something about it; recognize the link in-between consumption and climate change; know about product labels and think of these as an appropriate instrument for tackling climate change; be attracted by a label and trust the information conveyed by it. The first three of these criteria can be thought of as describing the extent to which consumers are receptive to the carbon labelling of food and data on how well consumers match these criteria would allow us to figure out ways in which consumers can be made even more receptive to carbon labelling in the food sector. The fourth criteria, meanwhile, is concerned with how to communicate efficiently with consumers through carbon labelling. As our analysis in chapter four came to show, consumers seem to meet the first three criteria of Thøgersen's model. Most consumers appear to recognize climate change as a problem and believe that measures must be taken against to curb this problem and its potentially harmful consequences. Moreover, most consumers seem to have a basic awareness of the food sector's significance as a source of GHG emissions, as well as the existence and workings of eco labels. However, the only point on which the results were less positive was the faith that consumers place in eco labelling as an instrument for mitigating climate change. As for the role that lifestyles played in forming these particular results, this factor was probably of significance for the environmental group, which was to be expected, but in the cases of the other groups it is more difficult to draw any direct conclusions as to whether lifestyles played a role in shaping the attitudes of these consumers. To illustrate this problem, it is helpful to consider why it is that people who practice sports should have less of a clue about the food sector's significance for climate change than parents. Other factors that were not included in the model must have played a role here. The most likely culprits are probably socioeconomic factors; education in particular. It would not be far fetched to suggest that people with a higher education are more likely to be well informed on climate change since they are also more likely to have an interest in following the news, public debate and so forth. It does, however, appear to be the case that consumers, overall, are positively inclined to the idea of carbon labelling food produce.

6.1.2 What forms of communication work through carbon labelling?

How, then, can consumers be attracted to carbon labels and made to trust the information these labels convey? As was explained in the conceptual framework, this is a question of the format of the label itself, where it is made available and the factors that facilitate consumer trust in a product label. With regard to the question of format, we saw that labels can broadly speaking be divided into two distinct categories: simple labels with clear meaning and more elaborate labels. Our results showed that, with the exception of the Climatop label which received positive feedback across all of the six groups, consumers tend to favour one of these two groups of carbon labels; which one depends to a large extent on the lifestyles of the consumers under consideration.

Having a well respected and trusted institution behind a label that conveys accurate information helps to build consumer trust the information being conveyed by a carbon label. Putting carbon labels on the product packaging of food appears to be the best option in terms of where to make carbon labels available to consumers. Lifestyles did

appear to be of relevance as the animal, environmental, family, indifferent and gastronomy groups all produced results, with regard to the labels, that were in line with what was expected from them. However, the results of the sport group suggest that lifestyles cannot be the only factor at play here as it is difficult, if not impossible, to explain why people who enjoy practicing sports are more favourably inclined to elaborate carbon labels. Socioeconomic factors, education in particular, probably have a role to play here too. Lifestyles did not appear to be of much relevance with regard to the factors that facilitate trust in a carbon label and where such labels should be made available.

6.2 Recommendations

In this section, we outline the recommendations that arise from the results of this study. These will be divided into two parts: recommendations aimed at carbon labelling schemes and recommendations for future research.

6.2.1 Carbon labelling

Inform consumers about carbon labelling and how it works – The results that were presented in chapter four indicated that consumers, overall, are receptive to carbon labelling. However, there was one point on which consumers were not unambiguously positive, namely the perceived merits of eco labelling as an instrument for mitigating environmental problems. Many of the participants were sceptical about whether enough consumers would buy eco labelled products for such labels to have a positive effect on the environment. Many of these were also sceptical and, in some cases, confused about the criteria behind eco labels. It goes without saying that providing consumers with better and more understandable information about the criteria behind carbon labels is bound to increase the confidence of consumers in that buying carbon labelled food produce actually does make a difference for the climate. It is also worth stressing to consumers that the success of an eco label is directly related to the extent to which consumers use it.

Link climate friendly consumption to other attributes that consumers look for in food – As our discussion in chapter four came to show, consumers tend to look for different attributes in food and often these attributes can be linked with a certain lifestyle. It is conceivable that carbon labelling in the food sector would be more successful if carbon labelling schemes tried to link climate friendly food to other attributes. The idea of a carbon labelling bonus scheme is based on this idea of linking climate friendly food with other attributes, in this particular case the price of food. Climate friendly food could also be framed as healthy food not only in terms of the environmental benefits it has, but also because healthier food is generally speaking associated with less GHG emissions. Connecting these two attributes could arguably make consumers who are interested in healthy food, and there are a lot of them, more receptive to carbon labelling. A similar case could be made for linking animal welfare to climate friendlier meat production, too. Free grazing cattle, for instance, generate less emissions and thus it could be argued that animal welfare and climate friendly food are complementary. The success of linking fuel efficient cars that allow car owners to save money on gas to the environmental benefits that these have vis-à-vis their less efficient counterparts is a classical example of how environmental attributes can be linked to another attribute to encourage environmentally friendly consumption.

Matching carbon labels and lifestyles – In the conceptual framework it was argued that carbon labelling would be met with more success if schemes develop approaches that fit with the lifestyles and household dynamics of consumers in the food sector. The results of chapter five indicated that lifestyles are a determinant of what type of label - simple labels with clear meaning versus more elaborate labels that rely on more information to give consumers more scope for choice - consumers prefer. Other things equal, the format of a carbon label ought to depend on its intended target group.

In the case of a comparative carbon label; enable comparisons of products within the same category – With the exception of the animal group, a majority of the participants in all of the groups said that they would only be willing to substitute food to a lesser extent to make their diets more climate friendly. Therefore, it makes the most sense for comparative carbon labels to enable comparisons within a product category.

Getting the message across to the consumer – Irrespective of lifestyles, consumers seem to prefer having carbon labels available at the point of purchase; primarily on the product packaging of food. However, much in thanks to the fact that alternative ways of making carbon labels available are fairly cost efficient, making carbon labels available at the point of purchase and more unconventional avenues are not mutually exclusive. Carbon labelling schemes should therefore try to put their labels on the product packaging of food, but in view of the low costs of maintaining a website, it would arguably be a good idea to make such information available online as well, as this gives consumers the choice of where to access such labels and their contents. The key with respect to the question of where to make carbon labels available is that these should be available in the places where consumers feel that they can access them conveniently, and as the results of chapter five came to show, this tends to be at the point of purchase.

Facilitating consumer trust – The principal factor which most of the participants in the six focus groups identified as being important for building consumer trust was accurate information. The central question, though, is what assures consumers that the information conveyed by a carbon label is reasonably accurate. The focus group results suggested that the organization behind a label is an important factor for consumers in general, while independent third party verification was important for consumers who traditionally have given it a lot of thought to what they consume, in our case the environmental and animal groups. It is therefore recommended that carbon labelling schemes are either back by or collaborate with an institution or organization that is held in high esteem by most people. However, mindful of the fact that linking carbon labelling with official institutions is by no means a simple task, it must be recognized that independent third party verification has an important role to play in assuring consumers that the information conveyed by carbon labels is reasonably accurate. All consumers might not be aware of the concept of third party verification, but nevertheless it can be used as a defence against possible accusations of green washing, and thus has significant value. What does our discussion of consumer trust say about the prospects of food miles and airfreight labelling? The fact that consumers attach such a large weight to the accuracy of the information they are provided with suggests that food miles and airfreight labelling are not good ideas in spite of their apparent simplicity and popularity with most of the participants in some of the focus groups. These consumers obviously did not draw a line in-between their desire for accurate information with the low degree of assurance that food miles and airfreight labelling are associated with in terms of estimating the carbon footprint of food produce. Over time, though, it would only be natural to

assume that consumers would pick up on this through media scrutiny and chances are that the returns of food miles and airfreight labelling decline with the passage of time. Does this mean that food miles and airfreight labelling should be completely forgone? Not necessarily. These two forms of labelling are both cost efficient and popular with certain segments of consumers, and probably do have a place in the supermarkets. The key is simply not to make any claims regarding these labels; just make them available to consumers and then these can use them as they wish according to the best of their knowledge.

The importance of informing consumers of other ways to be more climate friendly – As was noted in the discussion of chapter two, a significant amount of the food that is produced is wasted throughout the supply chain but also by consumers themselves in equal measure. It follows that by reducing waste, producers and consumers also reduce their food carbon footprint. And given the importance of waste as an indirect source of emissions, carbon labelling schemes should also think about incorporating criteria that encourage less waste on the part of producers into their labels, seeing as reducing waste might be a good alternative way of slashing down emissions. Informing consumers of the importance of food waste as a source of environmental problems, in our particular case GHG emissions, could go a long way towards encouraging more climate friendly consumption. Yet still none of the schemes under consideration in this thesis had thought about doing that.

6.2.2 Recommendations for future research

Lifestyle segmentation of consumers in the food sector – One of the biggest problems associated with this study was the lack of data on the lifestyles that are of relevance for understanding consumption patterns in the food sector and thereby the factors that could conceivably influence how a consumer views the carbon labelling of food. A proper segmentation of consumers in the food sector would conceivably lead to better quality data as compared with the criteria on which the six focus groups were formed. It is therefore recommended that research aimed at identifying the consumer groups that are relevant and of interest to the carbon labelling of food is carried out.

How can the ideas concerning carbon labelling and lifestyles in the food sector be implemented? – On the basis of the results of this study, it is possible to argue that carbon labelling would be more successful – in terms of consumers using them to guide their purchasing decisions – if alternatives that merge well with the lifestyles and household dynamics of consumers are available. The question, though, is how do you actually go about implementing this idea and turn it into practice? The obvious answer is to simply make these alternatives available, but this ignores the potential for interaction in-between different approaches. For instance, how would consumers react to there being several different types of carbon labels that draw on different methodologies and criteria, and even more so within the same store? It is clear that many questions concerning how to implement this idea remain and therefore it is recommended that further research is conducted with regard to this issue, to gain an idea of whether it is feasible and if so how it could be done.

Developing a model that incorporates socioeconomic as well as lifestyle factors – As was evident during the analysis of chapter four and five, lifestyles did not provide a sufficient explanation for some of the results, and it was evident that factors that were not included in the model used in this thesis were at play. To fully understand the determinants that shape the ways in which consumers relate to the carbon labelling

of food, it is therefore necessary to develop a new model that takes these exogenous variables into account. The most conceivable candidates for such variables are socioeconomic factors, education in particular.

Conclusion

Environmental policy can loosely be described as the provision of regulations and incentives to avoid market failures and promote sustainability. If we accept this definition of environmental policy, it follows that national governments are not the only ones in a policy capacity; non-governmental organizations and businesses can also formulate and implement environmental policy. Carbon labelling is a good example of this. Most schemes are non-state actors that through the medium of product labelling attempt to provide efficient incentives for climate friendly consumption, which fits perfectly with our definition of environmental policy.

However, the success of carbon labelling schemes is directly correlated with the extent to which consumers use them. In this study, we looked at what could be done to make carbon labelling a successful environmental policy instrument in this regard, and its results have been rehashed ad infinitum, so let us stop for a moment and think about product labelling as an environmental policy instrument. What does it mean for us and the societies we all live in?

It is easy to be dismissive of policy that relies on the behaviour of end users for its success, but its weakness can also be said to be its greatest strength: It affords consumers with the ability to act as change agents through their consumption choices. If the ideal to which all democracies aspire to is participatory governance, then product, and in our case carbon, labelling is an excellent instrument for facilitating a society in which we not only elect our own representatives, but can also contribute towards incremental change, which we see as positive, by doing something so simple as choosing to spend our money on goods and services that have proven low environmental impacts. Product labelling can therefore be said to be about so much more than the problems existing schemes address; it is also an example of a new form of governance in an era in which democracy is assuming new meaning with the emergence of social media that have come to revolutionize the provision of and access to information; much authority is delegated to institutions that try to build accountability through means other than representative democracy, think the EU and its commitment to transparency and accountability as a mean for tackling the democratic deficit of which it is at times accused. The world we live in has gotten far too complex for a dozen of elected middle aged men to understand all that which takes place in it and formulate efficient policy, and democracy is arguably being redrawn as a result of this process. Product and carbon labelling are crucial mechanisms through which democracy can still be maintained in a world that nobody seems to have the full picture of, and this is why it is so important that academics, businesses and governments try to figure out how to make it work. This study was an attempt at contributing towards this objective.

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Appendix

The focus group questionnaire

Carbon labeling in the food sector - What's your view?

Part 1.**Question 1.**

Climate change is a problem that has to be dealt with. To what extent do you agree with this statement?

| | | | | |
|-------------------|--|---------|--|----------------|
| Strongly disagree | | Neutral | | Strongly agree |
| | | | | |

Question 2.

How significant is the food sector for climate change?

- 1) Significant
- 2) Significant, but not as significant as other sectors
- 3) Not significant

Question 3.

Generally speaking, which stage in the life cycle of food accounts for the majority of the GHG emissions of the food sector?

- 1) Transportation
- 2) Production
- 3) Consumption

Question 4.

Rank beef, vegetables and chicken in terms of how climate friendly they are.

| | |
|----|--|
| 1. | |
| 2. | |
| 3. | |

Question 5.

How important is a product label for your shopping decisions?

| | | | | |
|------------------|--|---------|--|----------------|
| Very unimportant | | Neutral | | Very important |
| | | | | |

Question 6.

What are the top three attributes you look for in food?

| | Price | Freshness | Taste | Nutrition | Low environmental impacts | Animal welfare | Locally produced food | Brand |
|----|-------|-----------|-------|-----------|---------------------------|----------------|-----------------------|-------|
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |

Question 7.

In buying eco labeled products I help to improve the environment. To what extent do you agree with this statement?

| | | | | |
|-------------------|--|---------|--|----------------|
| Strongly disagree | | Neutral | | Strongly agree |
| | | | | |

Question 8.

What factors help you with building trust in a label? Tick the circles as appropriate.

- ☐ – Third party verification
- ☐ – The familiarity of a label
- ☐ – The organization behind a label
- ☐ – Accurate information

Question 9.

There are too many labels on food products. To what extent do you agree with this statement?

Part 2.

Question 10.

Rank your top and bottom three labels out of the sample with which you were provided.

Top three labels

| | L1. | L2. | L3. | L4. | L5. | L6. | L7. | L8. | L9. |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. | | | | | | | | | |
| 2. | | | | | | | | | |
| 3. | | | | | | | | | |

Bottom three labels

| | L1. | L2. | L3. | L4. | L5. | L6. | L7. | L8. | L9. |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. | | | | | | | | | |
| 2. | | | | | | | | | |
| 3. | | | | | | | | | |

Question 11.

Where would you prefer for such labels to be made available? Rank the top three alternatives.

| | Product packaging | Store shelves | Pamphlets | Internet | On the receipt |
|----|-------------------|---------------|-----------|----------|----------------|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |

Question 12.

To what extent would you be willing to substitute food to make your diet more climate friendly?

- 1) To a large extent
- 2) To a lesser extent
- 3) Not at all

Question 14.

Would a carbon labeling bonus scheme make it more likely that you purchase carbon labeled food produce?

- 1) Yes
- 2) Not sure
- 3) No