Is 2022 the right time for widespread food carbon labels?

Introduction

Global greenhouse emissions (GHG) must be reduced dramatically over the next decade in order to prevent average global temperatures reaching a critical limit of 1.5^0C (IPCC, 2018), breaching planetary boundaries (Rockstrom et al., 2009) and realising some of the most disastrous impacts economic growth is bringing with a fast changing climate (Klein, 2014). As part of a Special Report the Intergovernmental Panel on Climate Change (IPCC) estimates that 21-37% of GHG emissions come from the global food system including; agriculture & land use, transport, retail and consumption (Shukla et al., 2019). This brings particular importance on transformations to our food system which can bring about significant reductions in GHG emissions. Individual behavioural change in dietary choices has an impact on the magnitude of GHG released from food production (Poore and Nemecek, 2018) and is increasingly becoming a focus point for interventions.

Vandenbergh, Dietz and Stern (2011) called “time to try carbon labelling” over 10 years ago, as a low cost, relatively quick and feasible method to reduce GHG emissions, through changes in individual choice and organisational behaviour. Widespread adoption of carbon labelling has not been realised since then (Taufique et al., 2022), however, more recently there have been moves in the food industry towards carbon labelling systems (Birch, 2020; Iqbal, 2021).

This case study will explore how carbon labelling is currently being used, and how it’s impacts might affect behaviour change in reducing emissions; from the perspective of individual choice and corporate impetus on reducing GHG emissions directly and through the supply chain. The study will focus on how potential changes in environmental knowledge and perception from both individual consumers and organisations can influence carbon labeliing, and why 2022 may provide a better platform for widespread food carbon labelling to build from than back in 2011.

What is Carbon Labelling?

Carbon labelling collates information about GHG emissions associated with a product, which is represented to consumers before purchase; for food this would usually be found on packaging. The reasoning behind deploying this intervention in relation to GHG emissions is the impact it can have on the consumption and production behaviours of individuals, organisations and governments (Torma and Thøgersen, 2021).

For individuals the aim is to create a behavioural nudge (Thaler and Sunstein, 2008) towards choosing food items with a lower carbon footprint. Well designed labelling initiatives can help to bridge the gap in knowledge on the link to the food we buy and GHG emissions emmited in production and consumption, along with overcoming some of the barriers in finding information or understanding the data for food related emissions (Thøgersen and Nielsen, 2016).

Carbon labelling as a GHG mitigation adaptation has the advantage of feasibility (Taufique et al., 2022), in particular in a food system which has complex systems of regulation and governance and could be deployed at pace against more expensive technical solutions. Some customers would be willing to pay an increased price for carbon labelled food but it is considered unlikely that a large proportion of customers will actively use labels to dictate choice (Feucht and Zander, 2018). Research has shown environmental labelling does not have a high preference against other types of food labels such as Protected Designation of Origin (POD) (Gracia and de-Magistris, 2016), and studies show improvements in the application of labeling schemes are required (Upham, Dendler and Bleda, 2011; Zhao et al., 2012).

The application and design of carbon labelling can have a significant impact in the way people understand and analyse a label and ultimately the outcome in behaviour change seen (Figure 1). Ordinal labels such as green, amber and red indicators have been shown to have better engagement than certificate-based labels (Thøgersen and Nielsen, 2016). Beyond the visual design of a label, the way it is presented is important such as adding text and information and the label being designed as a warning of the environmental impact it will have rather than purely informational (Carrero et al., 2021).

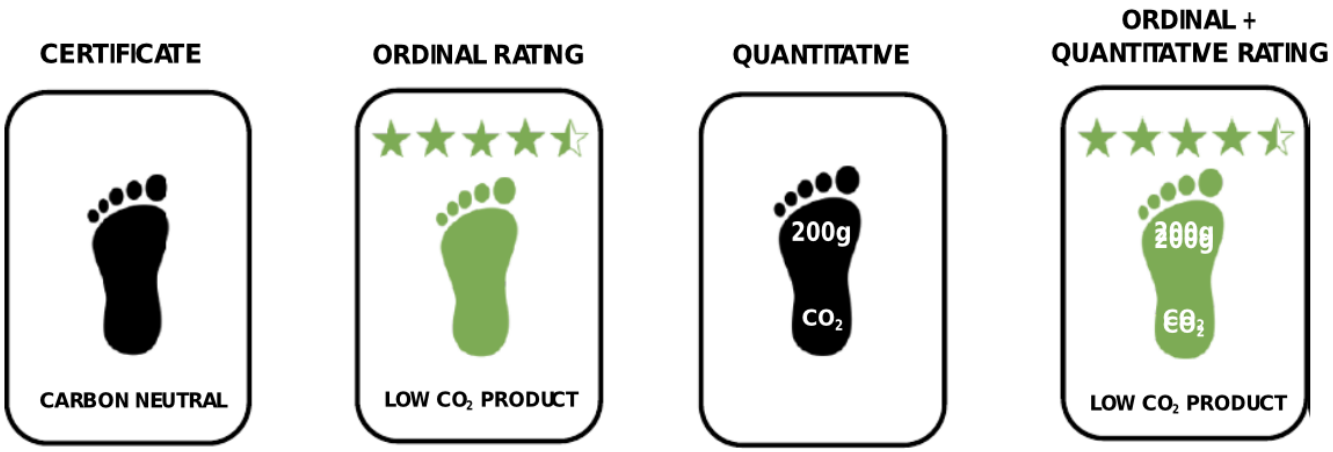

Figure 1. Examples of varying carbon label design (Taufique et al., 2022)

Carbon labelling is not a new intervention with many variations of labels already being deployed with academic research into the area increasing over recent years. Many barriers exist to widespread implementation including; varying carbon accounting processes and measurement methodologies and standards differing across the world (Liu, Wang and Su, 2016). Notably in 2007 Tesco pledged a wide scale plan to put carbon labels across its range (Boardman, 2008), only for this to fall apart in 2012 because of complexities and lack of adoption from the rest of the market. Since that date sporadic initiatives have been implemented without widespread global carbon labelling being realised.

Consumer environmental knowledge and concern

Citizens play a larger role in GHG gas reduction than simply being a consumer, with society, culture and knowledge available in the public domain all having an important role to play in behaviour to reduce emissions (Niamir and Creutzig, 2020). It has been shown that there is a good level of interest in carbon labelling schemes from consumers (Gadema and Oglethorpe, 2011) but the information does not always have the desired impact or can lead to confusion (Schaefer and Blanke, 2014).

Public knowledge around the environmental risks of areas such as the greenhouse effect can positively influence the choices customers make around green issues (D'Souza, Taghian and Lamb, 2006). Reversely, in the absence of this knowledge you could expect consumers to be less likely to make choices towards environmental protection and carbon labels to become less effective in changing behaviours. Peoples relationship with environmental knowledge can also move to environmental concern, leading to a better impact in behaviour change from carbon footprinting and labelling (Thøgersen and Nielsen, 2016). Some research does indicate that general concern for environmental issues diminishes when buying products, which may weaken the link between environmental concern and carbon based buying behaviours (Grunert, Hieke and Wills, 2014).

Consumers do not have a good understanding of the link between food and GHG emissions, and clear labelling could be an intervention which could support choice away from products with higher emissions (Camilleri et al., 2019; Vandenbergh and Nielsen, 2019). The limitation of the success or preference of carbon labelling can be found in consumers understanding of what the information on a label might mean. One study found 72% of UK supermarket shoppers with a preference for carbon labelling - while 89% in the same study find it confusing to understand or interpret these labels (Gadema and Oglethorpe, 2011). When these labels are re-designed using more intuitive designs such as traffic light schemes, this understanding can be significantly improved (Rondoni and Grasso, 2021).

Corporate Behaviour

Much of the current research and literature around carbon labelling is focused on individual behavioural response (Zhao et al., 2012; Thøgersen and Nielsen, 2016), though carbon labelling can have significant impacts on organisational behaviour and onward behaviours through the supply chain (Taufique et al., 2022). However, research into the role of corporations in reducing GHG emissions is lacking.

Scope 3 GHG emissions are not directly controlled by an organisation but are found with goods and services across the value chain. This includes producers and suppliers, and their role in food production and farm management can have an significant impact on GHG emissions (Yue et al., 2017). Food items can have up to 50 times more environmental impact across differing producers (Poore and Nemecek, 2018), so choice and selection of suppliers across a value chain can lead to a significant reduction in GHG emissions. The use of carbon labelling by a retailer could influence the behaviour of suppliers and choices which are made across the supply chain, a benefit beyond the well documented choices of individual consumers.

Many stakeholders such as consumers, retailers, suppliers and governments have an influence on how carbon label information might impact behaviour, however, as seen in supermarkets adoption of sustainable coffee accreditation such as ‘Fair Trade’; sustainability standards can be led by corporations rather than through consumer demand (Ingenbleek and Reinders, 2013). Although environmental information provided by carbon labelling can have an impact on corporate behaviour, the complexity of power structures amongst stakeholders and lack of transparency can have an negative response on the amount of change realised (Bullock, 2015). Eco-labelling standards have been shown to have wide differences in how they are developed and used by companies which has an effect on their legitimacy or assurance which dictates the influence on behaviour (Castka and Corbett, 2016). This power dynamic leads to concerns over company ‘greenwashing’ (Cohen and Vandenbergh, 2012); where marketing activities overstate the real environmental impact of a company’s actions . Robust governmental policy around reporting and standards could help to alleviate this risk as well as better NGO auditing of carbon label standards (Lyon and Maxwell, 2011).

Carbon Labelling in 2022

To analyse the current opportunity for wide scale carbon labelling in the scope of this study, changes in consumer awareness and impacts of environmental reporting standards are brought against some of the previously discussed barriers to adopting widespread carbon labelling schemes.

Confusion around carbon labelling and the general lack of knowledge around food and GHG impact in a population is a reason carbon labelling has struggled to make progress. However, this trend seems to be changing with younger consumers now more likely to have environmental knowledge and make purchasing decisions around environmental concerns (Mohd Suki, 2013). Environmental concern and challenges to economic narratives are being seen more widely; in particular relation to climate change and economic growth (Klein, 2014; Raworth, 2017). The increase in the use of publicly available Carbon Footprint calculators (Mulrow et al., 2019) and the increasing deployment of Carbon Literacy across society (Chapple et al., 2020) look to build the interactions and base knowledge of the general public. Increased citizen based knowledge, leading to increased environmental concern, can have an impact on pro-environmental behaviour (Steg and Vlek, 2009) which could see a more receptive environment for carbon labels to flourish in.

Increased policy focus on reporting and reducing GHG emissions along with net-zero commitments might have also positive impact on the uptake of carbon labelling (Taufique et al., 2022). Policies like the mandatory reporting of climate-related financial information from April 2022 (Department for Business, 2021), and new national net-zero targets like the 68% legislative reduction in GHG in the UK by 2030 (*Climate Change Act*, 2008) could see corporations increase their activity in greenhouse gas reduction and improved understanding of supply chain impact. Companies are becoming more aware of the significant environmental risks in the supply chain and reporting on emissions is becoming prevalent (CDP, 2021). The workload of researching and gathering data was part of the reason cited by Tesco for the failure of their carbon label project (Vaughan, 2012), however, new food tech innovations from companies like Foodstep are making carbon footprint data from food readily available covering emissions from across the supply chain (Foodsteps, 2022).

Limitations and Further Research

The scope of this case study was focused on consumer knowledge and behaviour and corporate reaction in relation to carbon labels. However, there are many other factors which might determine a widespread uptake of carbon labelling on food items and the impact they might have on reducing GHG emissions of food production and consumption (Vandenbergh and Nielsen, 2019). A broader understanding of how carbon labelling might be impacted by political, sociological and reactions to the current impacts of climate change would need to be explored to find the key areas of development required to make mass adoption of carbon labelling a reality.

Consumer preference of carbon labels was considered against knowledge and environmental concern, but other socio-demographic factors should be considered to fully understand this impact on the efficacy of carbon labels on shoppers. Research has shown females, older people and people on higher incomes all might relate better to carbon labelling as well as level of education having an impact (D'Souza et al., 2007; Mostafa, 2016). Better understanding of these demographics might help the design and implementation of carbon label schemes.

In particular, further investigation should be made into the impact privately implemented carbon labelling schemes may have on government policy and activity. The proliferation of schemes could influence governments to bring in widespread legislation, which could in turn support the growth and trust in the systems. Analysing the impact of newly legislated mandatory schemes such as in France would provide some interesting insights (Huet, 2021).

Conclusion

Carbon labels can have an impact on the behaviours of consumers, corporations and governments; potentially reducing the GHG emissions associated with food production and consumption. Widespread adoption of labelling on food has not been realised, despite it being a relatively quick, cost effective and feasible option against more complex policy and technological interventions. The impact carbon labels could have on companies' scope 3 emissions in the supply chains is not well understood and could lead to significant changes in how production is undertaken, and emissions reductions associated with this.

Consumers do not have a good level of knowledge on the relationship between food production and consumption and the release of GHG emissions which can cause damaging climate change impacts. Previous labelling schemes have been confusing and there is limited understanding by the general public to what these might mean; which limits the way consumers behave when purchasing. However, there is evidence of general acceptance of the need for carbon labelling, which indicates the problem can be resolved with engagement and climate education.

Previous failures in carbon label schemes do not demonstrate widespread adoption of this intervention is not now possible. Increased understanding of environmental impacts, knowledge around carbon footprinting and changes in the corporate and political landscape in recent years may make current plans more easily realised. A holistic understanding of what makes carbon labelling more likely to succeed, like citizen education and robust company reporting standards will help in creating a better platform to take this GHG reduction intervention into food retailers across the globe.

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