



Paying for sustainability: A cross-cultural analysis of consumers' valuations of food and non-food products labeled for carbon and water footprints



Carola Grebitus^{a,*}, Bodo Steiner^b, Michele M. Veeman^c

^a Morrison School of Agribusiness, W.P. Carey School of Business, Arizona State University, 7231 E. Sonoran Arroyo Mall, Mesa, AZ 85212, United States

^b Department of Entrepreneurship & Relationship Management, University of Southern Denmark/University of Alberta

^c Department of Resource Economics and Environmental Sociology, University of Alberta, Canada

ARTICLE INFO

Article history:

Received 17 September 2015

Revised 17 May 2016

Accepted 17 May 2016

Available online 21 May 2016

Keywords:

Canada

Germany

Ground beef

Potatoes

Toilet paper

Yoghurt

ABSTRACT

Increasing environmental concerns of consumers and global supply chains center on the impacts of carbon dioxide emissions and water usage. This study analyzes consumers' preferences for sustainable products as indicated by water and carbon footprint labels, enabling a rare cross-cultural comparison. We conduct discrete choice experiments in Canada and Germany to identify possible cross-cultural effects. Four products were considered contrasting food and non-food staple products, plant-based and animal-based foods, and processed and unprocessed food items. Results from mixed logit models suggest that each national group of consumers is – irrespective of their cultural background – highly heterogeneous in the discounts required for them to purchase products with larger carbon footprints. The non-food product is discounted most with regard to water usage, followed by the plant product, suggesting that consumers make major category distinctions in their evaluations. German consumers are found to have stronger preferences overall for products with lower footprints than Canadian consumers. The nature of the significant differences in results across product categories and countries could aid industry and policy stakeholders in designing targeted footprint labeling initiatives.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

The level of apprehension and concern relating to environmental issues continues to increase, especially with regard to impacts of carbon dioxide emissions on climate (e.g., [IPCC Report 2013](#)), and impacts of human intervention in the global hydrological cycle ([Rost et al., 2008](#)). Food security, nutrition, and poverty alleviation—particularly in poor nations—are threatened by climate change ([FAO, 2015](#)). Increasingly widespread water shortages are forecast for many regions of the globe ([WWAP, 2015](#)), and alarming depletion of major water aquifers are affecting water supply from many groundwater sources ([Richey et al., 2015](#)). These concerns reinforce societal interest in environmentally sustainable processes and products.

While research and innovation to facilitate environmental adaptation is vital, it is also important to encourage changes in consumers' behavior to reduce amounts of climate-relevant emissions and water usage towards more sustainable levels ([Kenward 2010](#)). Despite an increasing literature on numbers of climate change is-

suess, there is still a need for empirical evidence regarding how consumers choose different products in different cultural contexts (e.g., [Ercin and Hoekstra 2012](#); [Verbeke et al. 2010](#); [Nocella et al. 2010](#)). The majority of past studies that have assessed consumers' behavior relative to information about sustainability, typically presented via labeling, has focused on one product or one regional context (e.g., [Teisl 2003](#); [Kimura et al. 2010](#); [Upham et al. 2011](#); [Grebitus et al. 2013](#); [Grebitus et al. 2015](#); [van Loo et al. 2015](#)). In addition to the literature relative to sustainability, this is one of the first studies that contrasts behavior and willingness to pay (WTP), in particular, for different product types (food and non-food) as well as for different consumer segments in terms of distinct regional origins (North America/Europe) in one setting. Previous studies which have accounted for regional and related cultural differences have focused mainly on animal production systems, for example [Nocella et al. \(2010\)](#) in their study of EU consumers' trust on farmers' compliance with certification standards for animal welfare associated with a variety of food products, or [Verbeke et al. \(2010\)](#) analyzing EU consumer attitudes toward production systems in pork and beef. Recently, [Peschel et al. \(2016\)](#) performed latent class analysis using data from Canada and Germany to determine differences in consumer preferences for ground beef and potatoes labeled for sustainability based on objective and

* Corresponding author.

E-mail address: carola.grebitus@asu.edu (C. Grebitus).

subjective knowledge. However, that work did not include non-food products in the analysis. While these mainly EU-based studies have focused on preferences regarding animal welfare issues and food products exclusively, our cross-country study compares preferences of consumers in an EU and North American country for sustainability measures relating to both food and non-food products. Our work does, however, complement, previous studies that focused on local and national brands and different food treatments that have highlighted the importance of accounting for regional differences, not least since there is considerable evidence that consumer behavior can differ across regions (e.g., Erdem, Zhao and Valenzuela 2004; Lusk et al. 2004; Erdem, Swait and Valenzuela 2006; Roshani and Hewege, 2007; Erdem and Chang 2012; Grebitus, Jensen and Roosen 2013).

The main objective of this paper is to analyze the role of sustainability attributes (CO₂ emission and water usage) on product labels for consumers' preferences for a distinct set of food and non-food products, through contrasting consumer valuations (WTP estimates) across two countries (Canada and Germany). The foods chosen include plant-based (potatoes) and animal-based products (ground beef and yoghurt), while the chosen non-food staple product is toilet paper. These represent basic items that enable comparisons of: a food relative to a non-food item, a vegetable relative to animal-based products, as well as a ready-to-eat processed food (yoghurt) relative to largely unprocessed food products (ground beef and potatoes). While these are all commonly consumed items, they encompass a range of carbon emissions and water use: animal products typically have much larger carbon and water footprints than vegetable products and this is accentuated for yoghurt as a processed dairy product.

In light of the increasing role of labeling in the global economy (Guardian, 2015; NPR, 2015), it is of particular interest to consider cross-national differences in preferences for products labeled for environmental sustainability. Consequently, we assess consumers' stated preferences for environmentally labeled products using discrete choice experiments (Louviere et al., 2000) conducted in Canada and Germany. While these countries were chosen to represent a sub-segment of the North-American and European markets, they also represent a distinct set of cultural values with regard to environmental and energy issues. Canada has long been a resource-based economy with more limited concerns for environmental sustainability (Hessing and Summerville, 2007). In contrast, Germany has a longer history of effective environmental activist movements since the 1970s (Jones and Lubinski, 2013), as reflected in the recent complete exit of the country's use of nuclear energy. Furthermore, we anticipate that both countries' cross-cultural differences in materialism – considered relevant for environmental attitudes – are not largely different, noting that previous work has highlighted the relative proximity of Germany and Canada with regard to materialism, relative to the more extreme views on materialism in the US (Kilbourne et al., 2005).

In this study, we focus on carbon and water footprint labeling. Early proponents of ecological labeling such as Rees (1992) defined carbon and water “footprints” as specifying the amounts of CO₂ created and water used during food production, processing, storage, packaging and distribution. To date, pilot projects have been assessed in several countries by retail chains to provide information from product labeling, e.g., ‘Carbon Counted Canada’ (<http://www.carboncounted.com/>). In 2007, the first footprint labels were introduced in the UK (Economist, 2011) but despite findings from surveys in which some 72% of EU citizens expressed support for carbon labeling and favored mandatory labeling (Upham et al., 2011; Minx, 2007), such labels have been slow to be introduced to the market (e.g. Powers, 2011; Stancich, 2011). For example, food retailer Tesco in cooperation with the Carbon Trust – a private company established by the UK government to help creat-

ing a low carbon economy – introduced a carbon footprint label in 2009 but this was discontinued in early 2012 (Financial Times, 2012; Upham et al., 2011).

The remainder of the paper highlights relevant literature (Section 2), presents the methodological approach (Section 3), the results (Section 4) and concluding remarks.

2. Literature

The literature on footprint labeling has benefited from life cycle analyses that have been applied to deal with key policy issues in the international trade context and have frequently focused on the dichotomy of carbon footprints and water footprints. A considerable literature on eco-footprint labeling has focused on agricultural exports related to policy implications of carbon footprint labeling (Edwards-Jones et al., 2009; de Miranda et al., 2012), as well as on global food chains in the context of international trade in general (e.g. Baddeley et al., 2012). Legal aspects of carbon footprint labeling as a means of promoting a green economy have also been addressed by Cohen and Vandenberg (2012).

In the literature on carbon labeling, footprints are usually expressed as a single figure in units of carbon dioxide equivalents. In this regard, Kissinger (2012) has reported a calculation of Canada's external carbon footprint, based on carbon dioxide emissions for food miles of food imports. However, carbon footprint measures are usually generated as part of life cycle analyses (Chapagain and Orr, 2009; Saunders et al., 2006; Notarnicola et al., 2015).¹ Alternative methods, such as experimental auctions, have also been employed to study consumers' attitudes to chocolate bars with different sustainability labels (Vecchio and Annunziata, 2015).

As some studies of footprint labeling have emphasized, consumers' opportunities to familiarize themselves with carbon and water footprint labeling is limited because this is rarely implemented in practice in marketing food. Thus, unfamiliarity may prevent consumers from including such information in their regular decision making. However, based on Guenther et al. (2012), it appears that there is more familiarity with the concept of carbon footprint, rather than with water footprint. Similarly, over time, consumers have become more familiar with nutritional labeling which is now widely used (Upham et al., 2011), but are less familiar with ethical labeling or eco-labeling (e.g., Teisl, 2003). Still, lack of familiarity is particularly evident for the primary unit of carbon labeling, suggesting that if CO₂ equivalents are not meaningful to consumers, they may not include them in the decision process associated with emissions reductions (Liu et al., 2016) or the effectiveness of carbon labeling may be diluted if consumers are distracted by competing attributes such as location designation labels (Onozaka et al., 2015). The literature has also supplied evidence from other labeling contexts, such as organic or fair trade labels, that brand and product familiarity drives consumers' WTP and confidence in labels (Angulo et al., 2003; Krystallis and Chrysosoidis, 2005; De Pelsmacker et al., 2005).

Overall, a range of surveys on eco-labelling indicate a tendency of individuals that are more price-oriented to prefer eco-labeled goods with lower emissions (e.g., Schumacher, 2010). Kimura et al. (2010) studied WTP for carbon footprint labeling on food products (snacks and juice) based on ratings provided by Japanese undergraduate students. Their results showed interactive effects of the accessibility of information and the magnitude of carbon

¹ Shewmake et al. (2015) take such life cycle data further, by providing a model that employs consumers' value of their individual carbon footprint with own- and cross-price elasticities of demand data on carbon emissions from life cycle analysis to simulate shifts in consumer demand.

Download English Version:

<https://daneshyari.com/en/article/881785>

Download Persian Version:

<https://daneshyari.com/article/881785>

[Daneshyari.com](https://daneshyari.com)