



Help the climate, change your diet: A cross-sectional study on how to involve consumers in a transition to a low-carbon society



Joop de Boer^{a, *}, Annick de Witt^b, Harry Aiking^a

^a Institute for Environmental Studies, VU Amsterdam, Amsterdam, The Netherlands

^b Biotechnology and Society Section, TU Delft, Delft, The Netherlands

ARTICLE INFO

Article history:

Received 17 July 2015

Received in revised form

29 November 2015

Accepted 1 December 2015

Available online 7 December 2015

Keywords:

Climate change

Mitigation

Consumers

Meat eating

Local and seasonal food

ABSTRACT

This paper explores how the transition to a low-carbon society to mitigate climate change can be better supported by a diet change. As climate mitigation is not the focal goal of consumers who are buying or consuming food, the study highlighted the role of motivational and cognitive background factors, including possible spillover effects. Consumer samples in the Netherlands ($n = 527$) and the United States ($n = 556$) were asked to evaluate food-related and energy-related mitigation options in a design that included three food-related options with very different mitigation potentials (i.e. eating less meat, buying local and seasonal food, and buying organic food). They rated each option's effectiveness and their willingness to adopt it. The outstanding effectiveness of the less meat option (as established by climate experts) was recognized by merely 12% of the Dutch and 6% of the American sample. Many more participants gave fairly positive effectiveness ratings and this was correlated with belief in human causation of climate change, personal importance of climate change, and being a moderate meat eater. Willingness to adopt the less meat option increased with its perceived effectiveness and, controlling for that, it was significantly related to various motivationally relevant factors. The local food option appealed to consumer segments with overlapping but partly different motivational orientations. It was concluded that a transition to a low carbon society can significantly benefit from a special focus on the food-related options to involve more consumers and to improve mitigation.

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1. Introduction

Experts and policy-makers increasingly agree that in order to mitigate climate change a transition is required to achieve a low-carbon society, with patterns of consumption that are consistent with low levels of greenhouse gas (GHG) emissions, and that extremely valuable results can be achieved through changes in the Western diet (see Carlsson-Kanyama & González, 2011; Hedenus, Wirsenius, & Johansson, 2014; Hoolohan, Berners-Lee, McKinstry-West, & Hewitt, 2013; Popp, Lotze-Campen, & Bodirsky, 2011; Stehfest et al., 2009; Westhoek et al., 2014). For instance, Stehfest et al. (2009) estimate that a global transition toward low-meat diets may reduce the costs of climate change mitigation by as much as 50% in 2050. This may be challenging news for countries whose per capita meat consumption was almost twice (the

Netherlands, 73 kg) or three times (the United States, 118 kg) the global average (42 kg) in the year 2011 (FAO, 2015)—if a diet change has such a large mitigation effect, there is a world to be won. However, research has shown that consumers often underestimate the impacts of meat consumption on the environment, in general (Lea & Worsley, 2008; Tobler, Visschers, & Siegrist, 2011), and on climate change, in particular (Bostrom et al., 2012; Skamp, Boyes, & Stanisstreet, 2013; Truelove & Parks, 2012; Vanhonacker, Van Loo, Gellynck, & Verbeke, 2013). Hence, an important question is whether the transition to a low-carbon society requires a special focus on food-related options for consumers, such as eating less meat and more seasonal food, as compared to energy-related options, such as using energy saving light bulbs. The present paper aims to address this question by presenting an empirical study of how consumers evaluate different food-related and energy-related mitigation options, their willingness to adopt the most effective options, and the relationship between willingness and strategically relevant factors. The study is based on nation-wide consumer surveys in the Netherlands (NL) and the United States (US), two countries similar in some ways—they were the world's top

* Corresponding author. Institute for Environmental Studies, VU Amsterdam, De Boelelaan 1087, 1081 HV, Amsterdam The Netherlands.

E-mail address: joop.de.boer@vu.nl (J. de Boer).

exporters of food in 2011 (FAO, 2014, p. 10)—yet different enough to provide further insights into the generalizability of the results.

The comparison of food-related and energy-related mitigation options has several important strategic aspects. The first is that climate mitigation (or energy saving) is not the focal goal of consumers who are buying or consuming food. The notion that it is meaningful to distinguish between focal and background goals is a key theme of goal systems theory (Kruglanski et al., 2002; Kopetz, Kruglanski, Arens, Etkin, & Johnson, 2012). Consumers do not only have one or more activated focal goals (e.g. eating tasty), but also various background goals, often linked to broader themes, such as cost and time minimization, which affect their choices and actions (e.g. eating quick). In the same way, consumers may be sensitive to the background goal of reducing the impacts of their food choices on the natural environment, as revealed by preferences for organic products (Hughner, McDonagh, Prothero, Shultz, & Stanton, 2007; Mondelaers, Verbeke, & Van Huylenbroeck, 2009). A typical feature of goals related to the environment is that they are often associated with holistic representations and processes, based on a sense of connection with nature and all life forms (Davis, Green, & Reed, 2009; Hedlund-de Witt, de Boer, & Boersema, 2014). Importantly, the broad environmental theme may include various kinds of beliefs that appear to affect people's judgment of climate mitigation effectiveness, such as general beliefs on environmental harm and carbon emissions-specific beliefs (Bostrom et al., 2012). These motivational and cognitive background factors may work out differently for different mitigation options.

Consumer evaluations of strategically chosen mitigation options can provide further insights into the role of effectiveness perceptions for a diet change. In determining the options, it is important to take into account that the size and composition of household carbon footprints differ substantially by location, income, and household size. Calculations for the US show that the composition of household carbon footprints varies considerably between different household types, with “food” comprising 10–30%, “housing” 15–30%; and “transportation” 20–40% of the household's total emissions (Jones & Kammen, 2011). For this study, we focused on evaluations of broad-based, food-related options with very different mitigation potentials. The options chosen were (1) reduce meat consumption (hereafter called *the less meat option*), (2) avoid food transported by air-freight or hot-housed food and shift to seasonal fruits and vegetables in stead (*the local food option*), and (3) increase the content of organic products in a diet (*the organic food option*). The different mitigation potentials of these options have recently been demonstrated in the United Kingdom; it was calculated that eliminating meat from the diet reduces food-related GHG emissions by 35% and that avoiding hot-housed food or food air-freighted to the UK reduces emissions by 5% (Hoolohan et al., 2013). Judged purely in terms of mitigating climate change, the organic food option is not recommended (Heerwagen, Andersen, Christensen, & Sandøe, 2014). As noted by Saxe (2014), the organic food option can have climate-related advantages and disadvantages, depending on the products involved (e.g. organic bread has an advantage, organic chicken has a disadvantage). A strategically important point to note is that the option may be attractive to “green” consumers.

Another point to take into account is that consumer evaluations of food-related and energy-related mitigation options may be based on different kinds of beliefs. As a result of the many energy-related campaigns in the past decades (Delmas, Fischlein, & Asensio, 2013), consumers will be more familiar with energy-related options and may find it easier to relate them to climate change. Although “carbon” is not a salient consideration in their everyday decision-making (see e.g. Whitmarsh, Seyfang, and O'Neill (2011) on the UK), consumers may tend to evaluate the

effectiveness of energy-related options on the basis of carbon emissions-specific beliefs. To help track the impacts of these beliefs, for this study we chose three familiar energy-related options, called *drive less*, *save energy at home* (e.g., turning thermostat down, using energy saving light bulbs, air-drying laundry), and *install solar panels on one's house*. The evaluation of the food-related options may be affected more by non-specific “green” beliefs, although this may differ between the local food option and the organic food option. It may be relatively easy for consumers to recognize the energy-related dimensions of the local food option, due to the visible aspect of less transportation (Roininen, Arvola, & Lähteenmäki, 2006). This does not apply to the organic food option. Although organically produced food does not necessarily result in lower GHGs (a climate-specific goal), consumers may still perceive this option as effective as it is associated with less or even no use of pesticides, thus protecting the quality of the soil and groundwater (non-specific “green” goals).

The perceived mitigation effectiveness of the options may be affected by two consumer-related variables that should be controlled for. The first is the perception of climate change itself. It should be mentioned that beliefs about the seriousness of climate change have deteriorated during the last five to ten years both in the Netherlands and the United States (de Boer, Schösler, & Boersema, 2013; Scruggs & Benegal, 2012). Climate skeptics respond very negatively to anything they see as pressure by the supporters of climate change prevention (de Boer et al., 2013; Hart & Nisbet, 2012; Lewandowsky, Gignac, & Oberauer, 2013; Mäkinen & Vainio, 2014) and in particular to overly dire messages about climate change impacts (Feinberg & Willer, 2011). Although there are various kinds of skepticism, it is at least necessary to control for differences in the attribution of climate change to human factors and the personal importance of climate change (Leiserowitz, 2005; Whitmarsh & O'Neill, 2010). The second variable is the frequency of meat eating. The less meat option may have more impact on the structure of daily meals than the other options, because in Western countries meat is often the dominant part of the meal (Schösler, de Boer, & Boersema, 2012; Swatland, 2010). This option may thus more directly affect what is lying on consumers' dinner plates, thus hitting very close to home. As a result, regular meat eaters may be slower to recognize the effectiveness of the less meat option than other individuals.

A final aspect to consider is the relationship between perceived mitigation effectiveness and willingness to make a lifestyle change. Consumers will not choose an option that is not effective for a particular purpose, except when they see it as an obligation or a moral duty to do so (Higgins, 2012). However, a high level of perceived effectiveness is merely one of the inputs that affect consumer decision making; their willingness to make changes can be weakened or strengthened by previously activated goals and behavior-specific external constraints (Kruglanski et al., 2002; Kopetz et al., 2012). In this context, it is important to consider whether and when interventions to promote the adoption of food-related options may benefit from positive spillover effects created by energy-related interventions in the last few decades. The literature shows that a behavioral intervention can have a positive spillover effect on other pro-environmental behaviors not initially targeted by the intervention, which may be accounted for by common motivational or cognitive causes of the behaviors, such as useful knowledge (Lanzini & Thøgersen, 2014; Thøgersen & Ölander, 2006; Truelove, Carrico, Weber, Raimi, & Vandenberg, 2014). A key motivational aspect is whether those who are willing to change or have already changed their lifestyle have a commitment to an overarching environmental goal, such as the goal of “using fewer resources” or “doing things in a different way” and with a positive environmental impact (Clayton & Myers, 2009,

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