Ecological Economics 131 (2017) 119–128

Contents lists available at ScienceDirect

Ecological Economics

journal homepage: www.elsevier.com/locate/ecolecon

Trimming the excess: environmental impacts of discretionary food consumption in Australia

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ARTICLE INFO

Article history:
Received 16 March 2016
Received in revised form 16 June 2016
Accepted 4 August 2016
Available online 31 August 2016

Keywords:
Sustainable diet
Food system
Environmentally extended input-output analysis
Environmental sustainability
Planetary health
Life cycle assessment

ABSTRACT

Tackling the overconsumption of discretionary foods (foods and drinks not necessary to provide the nutrients the body needs) is central to aligning human and planetary health. Whilst the adverse health impacts of discretionary foods are well documented, the environmental and broader sustainability impacts of these products deserve more attention, especially since their consumption has been increasing in recent decades, particularly amongst low income groups. This paper presents a quantitative case study analysis of discretionary food consumption and the associated environmental impacts for households from different income groups in Australia. Environmentally extended input-output analysis is used to estimate the full life cycle environmental impacts of discretionary food consumption on the basis of household expenditures. On average, discretionary foods account for a significant 35%, 39%, 33% and 35% of the overall diet-related life cycle water use, energy use, carbon dioxide equivalent and land use respectively. These significant percentages provide further support for the need to incentivise diets that are both healthier and more sustainable, including 'divestment' from discretionary food products. The study highlights the challenges ahead, including the need for further research on food substitutions to minimise environmental and social impacts whilst maximising nutritional quality – especially amongst poorer socioeconomic groups.

1. Introduction

Western diets, typically high in energy but low in nutrients, have been linked to increased incidence of obesity and chronic disease (Friel et al., 2014; Garnett, 2014b; Tilman and Clark, 2014). At the same time, food production is responsible for up to 30% of anthropogenic greenhouse gas (GHG) emissions (Tubiello et al., 2013) and an estimated 70% of global water withdrawals (Pradhan et al., 2013). If current dietary trends continue unabated, public health costs are expected to increase significantly (Keats and Wiggins, 2014; Wang et al., 2011), while the impact of agriculture on the environment is set to intensify (Gerbens-Leenes and Nonhebel, 2002; Hedenus et al., 2014; Keyzer et al., 2005; Odegard and van der Voet, 2014).

National dietary health guidelines are increasingly making explicit reference to the importance of eating sustainably as well as healthily (Health Council of the Netherlands, 2011; Monteiro et al., 2015; Swedish National Food Agency, 2015), and the medical and public health fields are embracing the importance of environmentally sustainable diets (Demaio and Rockström, 2015; Lawrence et al., 2015a). The consensus is that, given the crucial role of food in providing nutrients, nutritional quality should be seen as a core component of food system sustainability (Lukas et al., 2015; Nemecek et al., 2016; Röös et al., 2015).

A necessary dietary modification which has unquestionably received the most attention in academic, policy and media circles is the need to limit consumption of animal products, especially red meat (Hedenus et al., 2014; Keyzer et al., 2005; Macdiarmid, 2013; Röös et al., 2015; Springmann et al., 2016). Animal-derived foods generally have a higher total environmental footprint than plant foods, owing to the significant amounts of land, water and feed required by livestock (Gerbens-Leenes and Nonhebel, 2002; Goodland, 1997; Westhoek et al., 2014; White, 2000). Additionally, enteric methane from ruminants accounts for a substantial 14.5% of total global GHG emissions from all sources (Gerber et al., 2013). Livestock production has also been linked to soil and water quality impairment, atmospheric pollution, and loss of biodiversity, all of which carry significant economic and social costs (Pretty et al., 2001). High levels of red meat consumption, especially in its processed forms, have been correlated with cardiovascular disease and certain cancers (Bouvard et al., 2015; Pan et al., 2012). Reducing red meat consumption thus presents a double dividend to both human and environmental health. Since all types of animal protein tend to have a comparatively high environmental footprint, smaller meat portion sizes, taxes on meat and promoting vegetarian alternatives have all been proposed as solutions (de Boer et al., 2014; Hedenus et al., 2014).

While the higher environmental footprint of meat consumption vis-à-vis other foods is undeniable, I argue that focusing only on reducing meat consumption obscures a more fundamental distinction in the

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http://dx.doi.org/10.1016/j.ecolecon.2016.08.006
0921-8009/

environmental impacts of our dietary choices: between what is discretionary and non-discretionary. Previous studies have considered the environmental implications of discretionary consumption of goods and services (Druckman and Jackson, 2010; Sanne, 2002) and the use of discretionary time (Chai et al., 2015; Druckman et al., 2012) but the dietary aspect of discretionary consumption is still understudied.

Discretionary foods are described in the Australian Dietary Guidelines (ADGs) as: "foods and drinks not necessary to provide the nutrients the body needs, but that may add variety. Many of these are high in saturated fats, sugars, salt and/or alcohol... They can be included sometimes in small amounts by those who are physically active, but are not a necessary part of the diet" (NHMRC, 2013, p.144). Food types that fall into this category include cakes and biscuits; confectionary and chocolate; pastries and pies; ice confections, butter, cream, and spreads which contain predominantly saturated fats; processed meats and fattier/salty sausages; potato chips, crisps and other fatty or salty snack foods; sugar-sweetened soft drinks and cordials, sports and energy drinks and alcoholic drinks (ABS, 2014b; NHMRC, 2013). By contrast, non-discretionary (or core) foods are those recognised as belonging to the core food groups: fruit, vegetables, cereals, legumes, nuts and seeds, dairy and fresh meat.

The medical and public health literature has shown that higher consumption of discretionary foods is conclusively linked to higher incidences of overweight/obesity and non-communicable diseases (NCDs) (Cohen et al., 2010; Friel et al., 2014; Johnson et al., 2011; Monteiro et al., 2011; Moodie et al., 2013). Indeed, the negative impact of meat consumption on human health is more strongly correlated with the discretionary consumption of processed meat than with unprocessed meat (Micha et al., 2012). However, as Carlsson-Kanyama et al. (2003); Pearson et al. (2014) and Friel et al. (2014) argue, the environmental impacts of discretionary food consumption have been largely ignored. These impacts are potentially significant, and potentially avoidable: discretionary food is largely considered superfluous to nutritional requirements (if dietary intake is above adequate), and could in many cases be eliminated from diets without substitution of other products – thus avoiding negative rebound[1] effects in terms of environmental or nutrition impact, as seen in some studies when meat consumption is reduced (Heller and Keoleian, 2015; Tukker et al., 2011; Vieux et al., 2012). A complicating factor which needs to be considered is the socioeconomic context of discretionary food consumption and its relation to environmental impact, especially given that poorer socioeconomic groups tend to obtain a higher proportion of their dietary energy from these foods (Darmon and Drewnowski, 2008; Serra-Majem et al., 2004; Thorpe et al., 2016).

While the policy focus to date has been on curbing current meat consumption trends, a reduction in the production and consumption of discretionary foods should be seen as a key complementary sustainability priority - one that potentially allows for a more nuanced understanding of dietary choices. Amidst the complexity of composite health and sustainability indicators (Drewnowski et al., 2015; Lukas et al., 2015; Röös et al., 2015) and public reluctance to reduce meat consumption (Lea and Worsley, 2008; Macdiarmid et al., 2016), the discretionary versus non-discretionary argument can provide a simplifying health-driven conceptual framework that challenges the current food production and consumption system by re-emphasising non-discretionary food provision.

The aim of this paper is to quantify the share of food-related environmental impacts associated with discretionary foods across several key environmental indicators and for different socioeconomic groups, and to discuss the implications of these results in the context of promoting healthier and more sustainable diets for all. Section 2 provides a review of available literature on the drivers of discretionary food consumption along with estimates of their environmental impacts. In Section 3, data from Australia are used to estimate the share of dietary energy intake, expenditure and environmental impact associated with discretionary foods. The paper concludes (Sections 4 and 5) by reiterating the urgency of treating the issue of unsustainable food consumption in a manner that addresses the underlying causes, one of which is the proliferation of discretionary food.

2. Discretionary Food Consumption Drivers and Impacts

2.1. Use of the Term 'Discretionary Food'

In this study I have adopted the term 'discretionary foods' because it aligns with the economic concept of discretionary consumption, thus emphasising that the consumption of these foods should, in principle, be seen as both nutritionally and environmentally superfluous. 'Discretionary' food is a concept that is increasingly used in the public health literature (An, 2015; Barosh et al., 2014; Cohen et al., 2010; Friel et al., 2014; Watson et al., 2016), although 'non-core' food is also used (Hendrie et al., 2014; Johnson et al., 2011; McGowan et al., 2012), as is the more colloquial term 'junk food' (Pearson et al., 2014; Popkin et al., 2012; Pretty et al., 2015), although there are some subtle differences as some discretionary products like butter or cream are not commonly considered junk foods. There is also a significant overlap between discretionary foods and 'ultra-processed' foods, defined as hyper-palatable, cheap, ready-to-consume food products made from processed substances extracted or refined from whole foods (Monteiro et al., 2011; Monteiro et al., 2013; Moodie et al., 2013).

2.2. Drivers of Discretionary Food Consumption

There are several reasons why discretionary foods, despite their obvious health impacts, are widely consumed around the world. The first is their intense palatability, owing to a high fat, sugar, and/or salt content, which impairs endogenous satiety mechanisms (Monteiro et al., 2013; Moodie et al., 2013; Popkin et al., 2012). When consumed in moderation, certain discretionary foods can often be associated with pleasure and comfort and can even have cultural importance (Garnett, 2014b). However, the proportion of daily calories derived from discretionary foods in many developed and rapidly developing economies suggests that their consumption is excessive and difficult to curtail.

Most discretionary foods are also aggressively promoted to consumers (Hawkes, 2006; Kearney, 2010; Monteiro et al., 2011). This is mainly due to their high degree of profitability which, according to both Albritton (2009) and Carolan (2011), tends to be positively correlated to the amount of processing. It is therefore unsurprising that food manufacturers, fast food chains and supermarkets are actively promoting highly-processed discretionary food items through advertising campaigns and special deals, often targeting lower socioeconomic areas and, increasingly, consumers in the developing world (Darmon and Drewnowski, 2008; Stanton, 2015).

Discretionary foods also provide a seemingly affordable and convenient option for consumers. In many cases discretionary foods may even displace core foods, leading to nutrient deficiencies, overweight and other health problems (Friel et al., 2014). This is becoming increasingly common with evidence suggesting that the cost of wholesome food has been increasing at a faster rate than that of processed food in high income countries like the US and the UK as well as in transitioning economies such as Brazil, Mexico and China (Keats and Wiggins, 2014; Monsivais et al., 2010). Discretionary foods are thus more readily consumed by poorer socioeconomic groups (Barosh et al., 2014; Dixon and Isaacs, 2013). The problem of cost is often compounded by a lack of available time to prepare nutritious meals (Jabs and Devine, 2006; Welch et al., 2009).

[1] Rebound refers to cases where the environmental gains arising due to altered consumption behaviour (for example, eating less discretionary food) could be offset by increased consumption of other items or activities (not necessarily food-related) with a potentially higher environmental impact (Hertwich, 2005).