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Foodwaste within Swiss households: A segmentation of the population and suggestions for preventive measures



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ABSTRACT

The aim of this study was to better understand the attitudes, perceptions and behaviours of the Swiss towards the food waste generated within their households and to provide suggestions of targeted measures to tackle the problem effectively. Data were collected through a postal survey sent out to a randomly selected sample of 3834 German- and French-speaking Swiss residents, yielding a final sample size of $N = 681$. A cluster analysis resulted in the identification of six distinct consumer groups: the conservative (23.9%), the self-indulgent (7.5%), the short-termist (20.9%), the indifferent (27.4%), the consumerist (14.1%) and the eco-responsible (6.2%). If an appropriate combination of measures is implemented, the household food waste issue could be addressed among all population segments and a slow but evolving behaviour change would be expected. A comprehensive action plan was developed, which comprises several generic and segment-specific measures and requires close collaboration between the authorities and further stakeholders, which are the retailer, the industry, the civil society, non-governmental organisations (NGOs) and the cultural partners. The success of the program lies in this collaboration, which offers a broad range of intervention possibilities and communication means, while enhancing the visibility of the campaign. The specificities of the Swiss context—a population known for its tenacious wasteful habits and a particularly low share of the budget allocated to food—emphasise the need for coordinated and strong action.

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1. Introduction

Overall, one third of the worldwide food production is lost or wasted somewhere on the way from field to fork (FAO, 2011). In the EU, the wastage represents about 20% of the community (Stenmarck et al., 2016). On the other hand, the food supply chain has been identified as the number one contributor to environmental depletion and accounts for 20–30% of the overall environmental impact caused by economic activities in Europe (Tukker and Jansen, 2006) and for 31% in Switzerland (Jungbluth et al., 2011). These figures illustrate the magnitude of the problem from an environmental point of view, the social and economic aspects being equally concerning. The shares of responsibility attributed to the agriculture and to the later supply chain stages vary across the literature, but the end consumer is consistently pointed out as a major contributor to the problem (FAO, 2011; HLPE, 2014; Priefer et al., 2016;

Stenmarck et al., 2016). This is especially true in the most industrialised countries, where end consumers waste up to ten times more food per capita than in developing countries (FAO, 2011). A recent study states that, in the EU, 53% of the food waste occurs at the consumer stage (Stenmarck et al., 2016); however, reliable data sources are generally scarce (Bräutigam et al., 2014), and studies' figures vary widely. The lack of a common definition of food waste combined with the complexity of the data gathering are the main reasons for this shortfall. Clearly, more research is needed to understand who wastes which amount and why.

1.1. Food waste within households

Before the launch of a large national campaign against food waste, UK consumers threw away one third of all food they bought, of which 61% was avoidable, 20% possible avoidable and only 19% unavoidable food waste (WRAP, 2008a); in the EU, 60% of the food wasted at the consumer stage is considered edible (Stenmarck et al., 2016). In 2012, UK consumers wasted the equivalent of 470 £ (1 £ = 1.23 € in December 2012 (X-Rates, 2017)) of edible food within their household, which represented approximately 14% of their

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food and drink shopping budget (WRAP, 2013a). Recent studies conducted in Denmark and Norway (Edjabou et al., 2016; Hanssen et al., 2016), the two European countries with the highest purchasing power in Europe after Switzerland (Eurostat, 2016), reported an average of 103 kg (DK) and 113 kg (NO) of edible food waste per year per household, respectively. Our own calculations allowed us to estimate that this wastage represents approximately 527 € or 11% of the household food and non-alcoholic beverages budget in Denmark and 638 € or 9% of the budget in Norway in 2015 (Eurostat, 2016, 2015a; Statistics Norway, 2016; Stenmarck et al., 2016). For comparison, it should be noted that households are slightly larger in the UK, with an average of 2.3 inhabitants compared to Norway with 2.2 and Denmark with 2.0.

1.2. Main causes of food waste in households

Food waste drivers can be divided into two main categories according to Secondi et al.'s (2015) proposed classification: contextual and individual variables. The first category encompasses political, socio-economic and cultural factors as well as the technological and industrial context. The concurrence of a constantly decreasing share of the food budget allocated to food combined with its apparent abundance affects the value consumers attribute to food, renders food waste affordable (Aschemann-Witzel et al., 2015; Canali et al., 2014; Eurostat, 2015b; FAO, 2011; Williams et al., 2012) and thus represents probably the most prominent contextual factors leading to household food waste in industrialised countries. Ubiquitous oversized packaging and bulk discounts (Koivupuro et al., 2012; Mallinson et al., 2016; Porpino et al., 2015; Williams et al., 2012), numerous data labelling systems (Abeliotis et al., 2014; Monier et al., 2010; Williams et al., 2012) and dietary guidance promoting fruit and vegetable consumption (Canali et al., 2014; Evans, 2011; WRAP, 2007a) are further significant external factors.

Demographic features, values, attitudes and concerns account for the individual variables. The diminishing time allocated to food supply, preparation and storage results in a lack of knowledge (Canali et al., 2014; Farr-Wharton et al., 2014; Koivupuro et al., 2012; Monier et al., 2010; WRAP, 2013b) and neglecting practices (Aschemann-Witzel et al., 2015; Fonseca, 2014; Watson and Meah, 2012); which together with busy and unpredictable lifestyles (Aschemann-Witzel et al., 2015; Fonseca, 2014; Ganglbauer et al., 2013; Kranert et al., 2012; Mallinson et al., 2016; Watson and Meah, 2012) are the major individual linked drivers. The tendency of excessive purchasing, cooking and serving, sometimes called the “good provider identity”, combined with fussy eating is another context favouring food waste generation (Aschemann-Witzel et al., 2015; Evans, 2012, 2011; Graham-Rowe et al., 2014; Koivupuro et al., 2012; Wansink et al., 2000; WRAP, 2014a). Finally, the lack of awareness about the financial, ecological and social consequences (Graham-Rowe et al., 2014; Kranert et al., 2012; Monier et al., 2010; Quested et al., 2013; Stefan et al., 2013) and the ignorance about the responsibility assumed by individual households also account for the low priority consumers assign to food waste reduction (Aschemann-Witzel et al., 2015; Graham-Rowe et al., 2014).

1.3. Addressing changes in consumers' behaviour

Raising awareness about the problem is crucial, but not sufficient to induce pro-environmental intentions and behaviour. The desirable behaviour should first meet the moral and social norms of the consumers, who also need to be convinced that they carry an important responsibility and that their personal behaviour has a direct impact (Bamberg and Möser, 2007; Guagnano et al., 1995; Liobikiene and Juknys, 2016). For the latter purpose, embodied experiences of the negative consequences of individual behaviour

have shown to be one of the most effective means to modify sustainably the behaviour of a large proportion of the population (Ahn et al., 2014). Realistic simulations e.g. through video games can be used to this end. The adoption of a desirable behaviour can be promoted by a targeted formulation of the message to influence the normative system of the consumer. The message should emphasise that adopting the desirable behaviour will allow the consumer to behave as the majority does and thus meet the social norm (de Groot et al., 2013).

Since an awareness-raising campaign is used as a pivotal element to reshape food waste-related behaviour, both the content and the communication means have to be carefully designed. Considering first the content, two best practices emerge from the literature: first, the development of an umbrella brand or slogan to maintain a certain consistency in the communication, and second, a strong focus on a few selected, concrete and effective measures that can be easily adopted by the target audience (DEFRA, 2008; Liobikiene and Juknys, 2016). Since the absence of pro-environmental sensitivity is a greater predictor of action than the presence of this sensitivity, too much emphasis on the environmental benefits resulting from the adoption of new behaviours should be avoided (Gust, 2004).

The variety of communication media is a further determinant of a campaign's success. The multiplication of the supports contributes to reaching a broader range of the population and exposes it repeatedly to the message. Leaflets, newspapers and personalised letters have been cited as preferred communication sources, while newsletters show the greatest impact on behaviour change (Mee et al., 2004). Personal recommendation and face-to-face contact are also recognised as very effective means of motivation (Bloodhart et al., 2013; DEFRA, 2008).

Besides the information supply, the adoption of new behaviours should be promoted via participatory instruments (Gust, 2004). The combination of several interventions, such as an awareness-raising campaign involving a broad range of actors, incentives and participatory instruments has proven to be more effective than the sum of the individual interventions (Stern, 2000) and will contribute to increase the visibility and the credibility of the message (DEFRA, 2008; Gust, 2004).

1.4. The use of segment-specific measures to promote pro-environmental behaviours

Interventions aiming to promote pro-environmental behaviours should enable and engage people belonging to the segments that show a high willingness to act, remove barriers such as the lack of information, organise community events or involve opinion leaders in communication. On the other hand, the definition and communication about new social norms, which might be reinforced by the example given by authorities and supported with financial incentives, are more likely to influence the behaviour of segments demonstrating less willingness to change. Targeted supply adaptation and regulation are the two means that are the most likely to have an impact on the less willing and less able segments (DEFRA, 2008). The effective adoption of new pro-environmental behaviours by the most motivated segments and by the authorities is a crucial step towards a broader adoption, as it will concretize the establishment of a new social norm and improve the credibility and the image of authorities (DEFRA, 2008; Gust, 2004). Spreading the information that the desirable behaviour will enhance the status, the well-being or finance of the person who adopts it is a further strategy worth exploring to influence self-centred segments (Liobikiene and Juknys, 2016); for this purpose, individual feedback on the personal contribution to the problem might be used (Sanquist et al., 2012). However, argumentation solely based on hedonic goals or gain goals might be shortcoming, espe-

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