

The challenges of food wastage to European Society

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Abstract

All over the world food which is suitable for human consumption is wasted at each stage of the food supply chain. In some countries this problem has been identified and several studies have been conducted to find proper prevention measures to overcome the careless handling of food. Although some promising prevention measures for different stakeholders have been identified, the implementation of those measures is often hindered by apparently insuperable barriers.

The paper analyses some barriers for different prevention measures concerning food waste, which arise for different stakeholders along the food supply chain. Among others, barriers may concern legal restrictions, economic development, individual attitudes and marketing policies. The knowledge about specific barriers could be useful with respect to planning issues regarding prevention measures. The paper shows how to overcome some of those barriers by citing examples from different case studies.

Keywords: food waste, prevention measures, economic barriers, behaviour, incentives, attitudes

1 Introduction

All over the world food which is suitable for human consumption is wasted at each stage of the food supply chain. In countries such as the UK, Japan or Austria this problem was identified several years ago and studies have been conducted to gain specified information on the current state (cf. Lebersorger et al., 2005; Schneider & Obersteiner, 2007; Watanabe, 2009) as well as mechanisms behind that attitude and behaviour (cf. Wenlock et al., 1980; Wassermann & Schneider, 2005; WRAP, 2008; Glanz & Schneider, 2009; Selzer et al., 2009). On the basis of the studies' results proper prevention measures have been developed to overcome the careless handling of food (cf. Schneider & Wassermann, 2005; Schneider & Lebersorger, 2009a). Although some promising prevention measures for different stakeholders have been identified (cf. Falcon et al., 2008; Schneider, 2008, Salhofer et al., 2008; Parfitt et al., 2010), the implementation of these measures is often hindered by apparently insuperable barriers. Furthermore, different methodological approaches hamper the comparison of results from different studies (cf. Lebersorger & Schneider, 2011).

The paper analyses some barriers for different prevention measures concerning food waste, which arise for different stakeholders along the food supply chain. Among others, barriers may concern legal restrictions, economic development, individual attitudes and marketing policies. The knowledge about specific barriers could be useful with respect to planning issues regarding prevention measures or awareness campaigns as often outer conditions are not considered properly. The paper shows how to overcome some of these barriers by citing examples from different case studies.

2 Legal barriers and incentives

Since July 1st 2009 certain marketing standards of the European Union for 26 fruits and vegetables which regulated a very detailed classification and labelling of the products are expired. According to those specific marketing standards the products had to be classified into different marketing classes which for example regulated shape and size of the product. This supported the rating of a product according to the price level. One well-published consequence of these marketing standards was e.g. the regulation of the curve of a cucumber. Products which did not fit into the highest classes often were thrown away by agriculture as only high class products could be marketed profitably. Thus, huge amounts of edible food were dumped at the first stage of the food supply chain due to legal barriers and marketing rules.

The EU commission recognised that it did not make sense to throw away acceptable products because of their shape. As a consequence, most fruits and vegetables are currently subject to a general marketing standard which only regulates the sound condition for consumption of the product. Thus, the measure to cancel the specific marketing standards seems to be effective to prevent edible food from being thrown away. But in practice, there are some restrictions which retard the theoretically positive impact of that measure. As an alternative to the general marketing standard the food producer may also use the international standards of the United Nations Economic Commission for Europe (UNECE) which is more or less equal to the former marketing standards. This means that there is no obligation for the stakeholders to use the general marketing standard. Thus, as a cucumber with a slight curve still fits better into a case than a wide curved one, the large European food retailing chains have not changed their specifications so far. In addition, another 10 certain marketing standards regarding 75 % of the inner European trade volume of fruits and vegetables (such as apples, pears, strawberries, sweet pepper, kiwi fruit, tomato, peaches and nectarines, lettuce, grapes as well as citrus fruits) are still in force.

Nevertheless, the partly deregulation provides new marketing options for producers who are ready to enter the market with innovative ideas in order to find those consumers who are searching for real taste and quality instead of visual standards. Future will show to which extent changes will happen.

Food products and their handling is a very important and challenging issue and therefore regulated by several legal restrictions all over the world. Strict legislation is in force in order to protect human health and also rigorous penalties have been implemented in case of violations of these laws in some countries, especially in the USA. These circumstances led to a cautious behaviour of companies who could potentially act as donor of surplus food products which are usually disposed of. Thus, some countries

implemented additional legal measures as an incentive to support the donation of edible food stuff to social organisations such as food banks, food rescue programs, shelters and others. The following paragraph highlights some international examples. In the USA, the Bill Emerson Good Samaritan Food Donation Act was signed by former USA president Clinton in 1996 to encourage the donation of food and grocery products to social organisations for further distribution to people in need. Most of the products would otherwise have been thrown away due to a non-profitable market price, a stock surplus, a near best-before date or a damage of packaging. The act protects donors from liability when donating to a non-profit organisation as well as from civil and criminal liability if a product, donated in good faith, later causes harm to one of the needy beneficiary. Liability is limited to intentional misconduct or gross negligence which is defined as “voluntary and conscious conduct (including a failure to act) by a person who, at the time of the conduct, knew that the conduct was likely to be harmful to the health or well-being of another person”. Further, to disburden the involved stakeholders regarding administrative and legal research, the act standardises donor liability exposure for all US states. In Italy, a similar legal act called “La Legge del Buon Samaritano” (Law of Good Samaritan”) was passed in 2003. In other countries, specific legislation for donations has been regarded controversially. E.g. in Austria opponents claim that the same legal requirements should be used for everyone who markets food stuff, no matter who will be the beneficiary. It has to be mentioned that the legal conditions in Europe and the USA are not comparable with respect to liability. Thus, these differences may lead to adapted legal measures but the main issue is to find an appropriate balance between health requirements and food waste prevention. In Austria, the Federal Ministry of agriculture, forestry, environment and water management published a guideline on important legal documents which should be considered in case of donation and redistribution of food stuff to people in need in order to facilitate these activities (Schneider, 2011).

3 Economic barriers and incentives

3.1 Economic barriers on economy’s and company’s level

In the European Union, the agro-economic instrument of intervention support was implemented to secure a minimum price level for specific products in post-war period. If the market price falls below a defined minimum price, the EU will buy a certain amount of those products from European producers. This measure decreases the available amount of the product on the EU market and leads to a stabilisation of the price at a level above the defined minimum price. Thus, it was a benefit for the economic conditions with respect to the producer. Unfortunately, this measure supported overproduction of some food products such as milk, butter and beef as an incentive. The retained amounts were either reintroduced to the European or global market at a later date when the price level was increasing again, or had to be disposed of. This policy also led to disputes with other stakeholders on the global market – mainly the USA and Canada, but also developing countries. In some cases this strategy was accused to destroy local markets especially in developing and emerging countries. Since the 1990ies the EU Common Agricultural Policy was changed and also the system of European Union agricultural subsidies and programmes was restructured and some improvements can be observed. The direct interrelation of subsidies with the income of farmers, the aim of job preservation in agriculture and improving living conditions in rural areas as well as implementation of environmental measures in agriculture demands an alternative measure to be implemented. Thus, the system of product-based subsidies and intervention prices has been slowly changed into a system of direct subsidies to farmers. Positive effects can be observed as the plentiful surplus of butter and milk no longer exists.

A stiff competition between the different food retailers could also be a barrier for the implementation of food waste prevention measures. For example in Austria, three food retailing companies (REWE, Spar, Hofer) control a market share of 79.2 % (WKO, 2010) which represents a high concentration compared to European average. This leads to a lowest price policy and the implementation of several multi-pack offers (e.g. “Buy one, get one free”, so called BOGOF). Consumers buy these special offers according to the intention to save money and at the end a lot of surplus food is wasted by the households. A change of this policy is doubtful because the retailing companies claim that these measures are necessary to increase economic growth and job preservation in retail. In consideration of the fact that the consumer faces a huge flow of advertisements aiming to accelerate the purchase of food products, an awareness campaign against food waste seems without much prospect. But an example from the UK shows that it is possible to rethink those strategies under certain conditions. According to WRAP (2010)

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the food retailing company The Co-operative Group changed their policy from BOGOF for perishable goods to a half-price strategy (half price for one product) within the Love Food Hate Waste campaign. In future, such changes in price policy have to be supported by a shift in European societal values regarding food in general.

3.2 Economic incentives for companies

High standards are set by both consumers as well as retailers regarding the freshness of food products. This is particularly true for fresh bread and other bakery products which are intended to be sold on the day of production (see also chapter 4). According to the results of a project which analysed data from 43 Austrian bakeries in 2009, on average 9.5 mass-% of the bread offered for sale by bakeries could not be sold. Particularly, if supermarkets send the bread which could not be sold, back to the delivering bakery, a loss of economic value is noticeable for the bakery. The approach to sell bakery products at supermarkets on commission is standard in Austria with the exception of food discounters. Some of the bakeries realised the large potential of optimisation and implemented efficient measures to prevent the losses within the company. The most common prevention measures are to optimise ordering activities within the headquarters and the branches as well as external costumers, to sell remaining bread under bargain conditions to consumers, to cancel unprofitable business relationships and to donate surplus to social organisations (Scherhauser & Schneider, 2011). Thus, an Austrian bakery saved more than 400,000 Euro within one year due to the implementation of several prevention measures (Bernhard, 2009). The recognition of economic benefits and competitive advantages due to a reduction of food waste would serve as incentive for companies to implement prevention measures.

Another example from Austria shows the potential of economic savings in health care facilities, by means of analysing and changing traditional behaviour as well as organisational structures. Seven departments of the Viennese hospital Hietzing conducted an internal project aiming to locate optimisation potentials regarding food wastage in 2003. Thus, financial resources could be rededicated to increase the share of organic food for the staff as well as for patients. After measuring the amount of wasted food and categorising the types of wasted food, specific measures were implemented in different hospital wards considering the needs of the patients and staff members. The focus of the prevention measures was laid on optimising the ordering activities as well as the portion size. Overall, about 7,500 Euro could be saved per year in the seven participating wards. The extrapolation of the results from the pilot test promised a saving of approximately 32,000 Euro for the whole hospital (KHL, s.a.).

Production, trade and need of food stuff depend on several conditions, some of which may be influenced such as logistic systems and some of which could not be controlled or predicted exactly, such as weather conditions or the shopping behaviour of consumers. Thus, there will always be some edible food stuff which cannot be sold. An alternative to wastage of these products is to donate them to organisations which give them to the poor. This is a really win-win-win situation for the company, the environment and the people in need as it saves disposal costs for the company, saves resources and prevents the release of greenhouse gas emissions due to improper disposal otherwise, and provides nutrients for people. All over the world similar activities take place and some countries aim to introduce a tax reduction for donating companies to provide an additional incentive to donate edible products instead of wasting them.

3.3 Economic barriers on household level

In 2006, the average household within the EU27 spent 12.7 % of its household consumption expenditures for the purchase of food and non-alcoholic beverages. The household budget survey shows great differences between the member states. The highest proportion of household consumption expenditures spent on food and non-alcoholic beverages was found in member states with the lowest household income, which is Romania. There, food and non-alcoholic beverages accounted for 44.2 % of the mean consumption expenditures of households whereas in Luxembourg households spend 9.3 % on average (Eurostat, 2010). In 1999, the average EU household consumption expenditures for the purchase of food and non-alcoholic beverages equalled to 13.8 %, with the highest proportion found in Lithuania with 45.7 % and the lowest found in Luxembourg with 10.1 %. The comparison of the data achieved in 1999 and 2006 show the decreasing share of household expenditures on food and beverages

during the last decades. This fact, namely that food has become relatively cheaper, is assumed to contribute to the generation of food waste by EU households, besides other social conditions and trends.

In Upper Austria, a waste composition analysis calculated a yearly loss of food and leftovers equal to 300 Euro on average per household and year which is disposed of into residual waste by households (Schneider & Lebersorger, 2009b). The basis for the calculation of the price was an average price level for food categories received directly from the shelf of the four market-leading Austrian supermarket chains. The household consumption expenditures regarding food and non-alcoholic beverages account for 4,357 Euro per household and year in that region (Statistik Austria, 2005). Thus, the food which is disposed of into residual waste accounts for only 6.4 % of the total expenditures for food (Schneider & Lebersorger, 2009b). However, the mentioned figures do not include food waste which is disposed of into the sewer, the bio bin, the home composter or is fed to animals. Data indicate that just as much food is wasted into these additional disposal paths as into residual waste (Kranert et al., 2012). For the UK, WRAP (2008) calculated that the average household disposed food worth approximately 430 Euro per year into the waste collected by local authorities (this means residual waste and separately collected food waste). As in the UK the share of household consumption expenditures for the purchase of food and non-alcoholic beverages is below the EU average, the incentive to save money by avoiding food waste seems to be also very small.

Besides the fact that the cost of food waste is only a small part of the total consumption expenditures of households and therefore the incentive to save money is weak, a lack of awareness regarding the amount of wasted food respectively money can be observed. Lebersorger & Schneider (2010) found that $\frac{3}{4}$ of interviewed people stated that they threw away less food than others.

3.4 Economic incentives for households

Different prevention measures implemented by companies may lead to a reduction of costs for production, handling and disposal of unsold products (see chapter 3.1). In some cases, it is also useful to involve the consumers in the prevention measures. Thus, the prevention measure saves not only expenditures of the company but may also have a positive impact on the wallet of the consumer. For example, an Austrian bakery company offers a 5 % discount on pre-booked orders, in order to minimise waste bread and to ensure a maximum of freshness of the product. Before the consumer picks them up, the ordered products are freshly crisped up in the store. Other prevention measures reward a purchase of more than 5 Euro within one hour before closing time by offering an additional piece of pastry for free or include an overall discount of up to 50 % for all fresh products (Scherhauser & Schneider, 2011). On the one hand such measures decrease the amount of waste bread at the bakery and increase the satisfaction of the consumers as well as the sales volume per consumer on the other hand (Bernhard, 2009). In recent years, also supermarkets give a discount on products near the best-before date, e.g. dairy products or convenience products, to prevent the wastage of those products within the shops as well as to minimise financial losses.

4 Individual attitudes

In the past, stale bread was used for different dishes to save the resource for nutrition. It was dried and crushed or cut into pieces and then used for dumplings, croutons in soups, as coat for other food or as essential ingredient for specific dishes (such as French Toast or bruschetta) and casseroles. Nowadays, bread has to meet high requirements regarding freshness, whereas stale bread is used to be thrown away by the households. A survey among 1,000 Austrians older than 15 years showed that $\frac{2}{3}$ of the interviewees bought bread every second day and 78 % rated absolutely freshness as the most important attribute of bread (Starmayr, 2008). Although stale bread is wasted on the one hand, on the other hand expensive ready to eat croutons and bread crumbs are bought at the supermarket or convenience food is used instead of cooking with leftovers.

According to Pudiel and Westenhöfer (1998) four tendencies could be differentiated linking food supply and public awareness from a psychological point of view. The first one is the loss of the value of food, which implies that people who did not face any food shortages have less emotional behaviour regarding food than the generation born before 1950. This is especially true for European countries which were

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affected directly by Second World War. Secondly, due to the large product range available in supermarkets where food is wrapped in colourful packaging, food lost its identity. Food seems to be just another product among others, there is no seasonality and no context to the producer anymore. This is also reflected by a third trend, the loss of origin. The food offered at the supermarket is mostly wrapped and pre-processed and thus only the pictures on the packaging may give an association to the origin (which in addition mostly do not reflect the real situation). The fourth tendency is the loss of social and emotional linkage. This means that traditional recipes from the grandmother as well as the social event of having a meal together within a family disappear increasingly. The realisation that those developments changed our society over the last decades clarifies that long-lasting measures are necessary to overcome this behaviour.

To clarify the difficulties which have to be overcome, the following example from another food issue should be used. Diet is part of an individual lifestyle and affected by mostly unconscious cultural and social factors. Preferences regarding nutrition are enrooted in former centuries and have been changed and formed due to cultural developments as well as socialisation. They are an instrument for distinction between groups of individuals (e.g. classes) within a society. Due to industrialisation of agriculture, modern conservation techniques and sophisticated transport options within the last century, industrialised societies have undergone a development forward to an affluent society with an oversupply of food stuff. The evolutionary code of human beings is geared to ensure sufficient nutrition, thus humans tend to eat as much as possible. This mechanism was vital for the survival in former days but nowadays the population faces the problem of overweight (Klotter, 2007). Although the social ideal of beauty suggests a slim and sporty body and there are a lot of strategies available to keep a healthy weight, the disease pattern of obesity can be observed in almost all industrialised countries and increasingly also in emerging countries. It can be assumed that the mechanism to buy too much, symbolised in the wastage of food, is similar to the mechanism of eating too much.

5 Conclusions

Wastage of edible food is a widespread phenomenon throughout the food supply chain and caused by various factors. Information on the barriers for changing the common behaviour should support the implementation of prevention measures, to ensure that the measures will have the desired effect. Particularly in the case of stakeholders who have no clear structures, and unknown interactions such as households or society, the overcoming of such barriers presents a great challenge, and no recommendation for a specific measure can be given at the moment. Literature shows that especially on the level of companies a lot of different measures have been implemented or could be developed, which on the one hand decreases the amount of wasted food and on the other hand has other advantages e.g. with respect to economy. Sometimes the deregulation of barriers will not have a positive effect immediately but could be the impulse for further innovations. Thus, increasing awareness regarding the wastage of food as well as information gained from case studies as well as consideration of the whole framework conditions could support further implementation of prevention measures on this level.

The prevention of wasted food includes a lot of different measures which have direct or indirect positive or negative effects for different stakeholders. On the one hand, the discounted sale of products near to best-before date decreases directly the amount which has to be disposed of at the supermarket. On the other hand, it could also increase the wasted amount at household level due to a surplus of food stuff which was bought because it was that cheap. Thus, a single measure implemented on a single level of the food supply chain, may not have the expected effect. The strategy should include a bundle of different prevention measures for multiple target groups at various levels of the value added chain, which is implemented long-term. 2014 is designated as European Year against Food Waste and all European stakeholders will have to contribute in that year and in future in order to initiate changes.

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