

# **FOOD WASTE**

**An analysis of the retail sector**

## Glossary

BMW - biodegradable municipal waste  
BOGOF - Buy one get one free  
BOGOL - Buy one get one later  
EEA - European Environmental Agency  
EU - European Union  
EU27 - all 27 members of the European Union  
EUROSTAT - The European Statistical System  
FAO - Food and Agriculture Organization  
GHG - Green House Gases  
MS - Member States  
NGO - Non-governmental Organization  
RBR - Retail Business Review  
TQM - Total Quality Management  
UK - United Kingdom  
USA - United States of America  
USDA - United States Department of Agriculture  
WRAP - Waste and Resources Action Program

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# Introduction

Today's global food system is vastly flawed. It fails to meet the demand of those seeking food, providing over abundance to places where there is more than enough and failing in places that truly need it. This uneven distribution has changed the scales of the way people eat, leading to a global food epidemic where obesity and heart disease rise in developed countries, while hunger and malnourishment continue to plague many in the developing world. As you can see, the current food system is as ridiculous as it is immoral. In fact, nobody truly benefits from the enormous amounts of waste it generates.

Focusing on Spain, we will see that the present system is leading to unnecessary water and land loss, which in times of crisis is especially ignorant. Curbing the almost 3 million tones of yearly food waste generated in Spain will produce both monetary benefits and strengthen the country's natural resource management. In fact, a study done by ALBAL showed that 45% of all food waste in Spain is avoidable. This would save up to €5.2 billion a year.

This problem with food waste has been accumulating for many years, and the issue has finally become big enough and ripe enough to solve. Yet, it is impossible to solve the problem with the same behaviors that were used to create it. Instead, a more fresh and innovative approach must be taken. Getting influential players, such as supermarkets, to jointly address this issue will ensure an effective and practical change. In fact, if the issue of food waste is addressed properly it will help facilitate the resolution of other related issues. The positive changes that will be introduced to many individuals means there is little opposition towards creating a more sound food system, the only obstacle is the difficulty of encouraging changes on such a big scale. Such unique cases in which one deals with a powerful problem can be difficult, especially with the involvement of so many stakeholders. Hence, the collaboration of supermarkets that have much experience and influence in this sector is of great importance. Simultaneously, if a solution were found to correct the system, it would be a catalyst for solving other global problems.

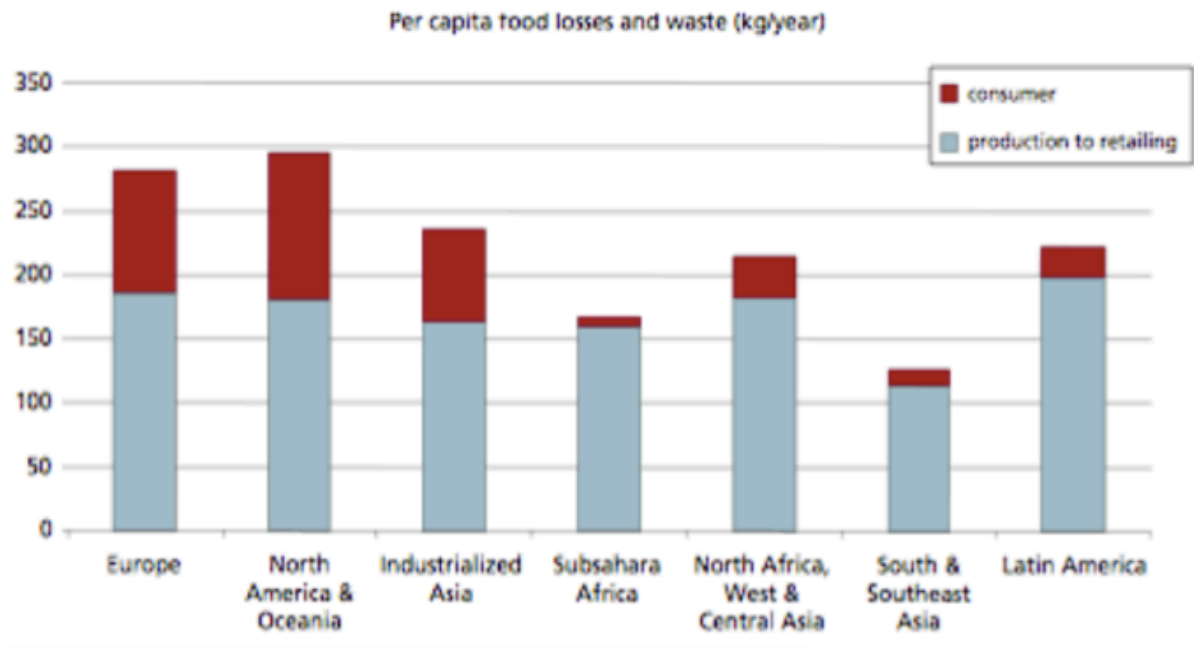
Although it is very easy to consider each problem separate from one another the reality is more complex. Since it is impossible to solve a problem with the same mindset that created it, new minds must address this problem through social innovation. Opening the platform to fresh and innovative ideas will help resolve an issue that neither politicians nor money are able to address. As part of a bigger project, this paper aims to set the groundwork towards finding a solution for changing the food system. Specifically, it focuses on the retail level, which is the link between the manufacturing and consumption levels. Raising awareness at this level will help bring both systematic and behavioral changes.



## Part I

### Global Food Waste

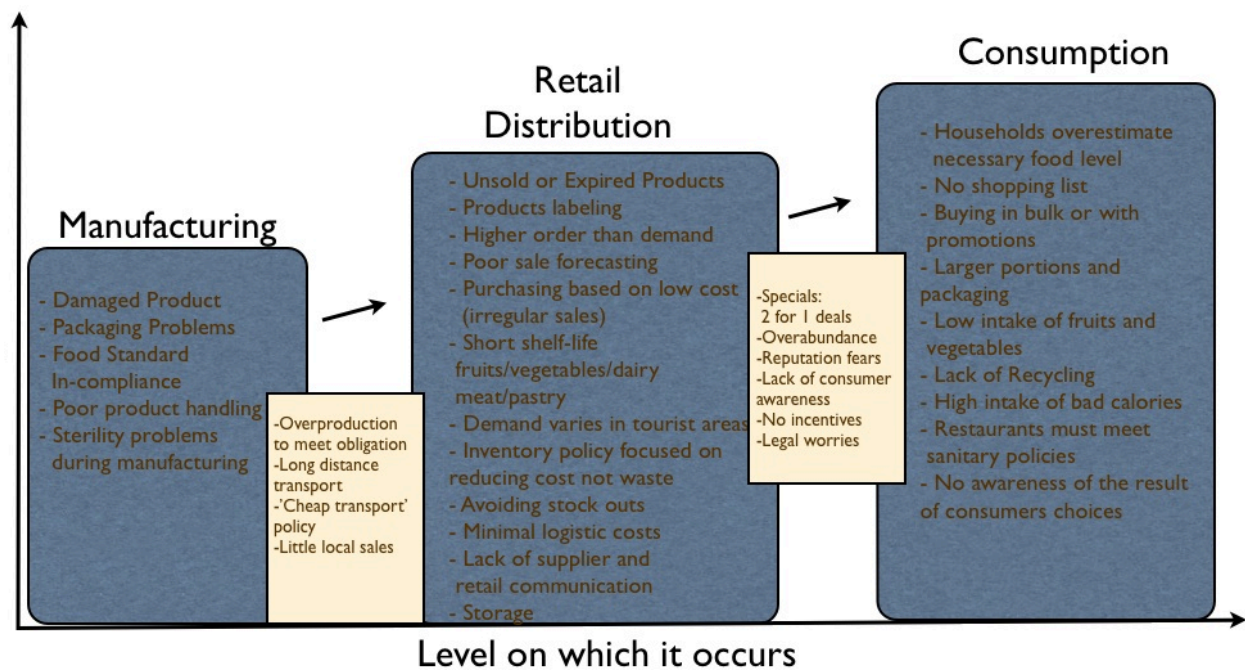
To understand the relevance and importance of this topic, we must first begin by identifying the definition of what is food waste. Tristram Stuart describes it as “a potential source of food that is knowingly discarded or destroyed.” One third of the global food production is wasted, i.e. 1.3 billion tones of food a year not providing nutrition and nourishment, but being emptied away into landfills. This amount is enough to feed all hungry people four times.



Source: “Global Food Losses and Food Waste”, FAO study 2011,

The cause for much of this waste varies by country and sector. There are general patterns that exist on all levels. In the production sector, waste is caused by specific produce standards and regulations, unfair trade agreement and oligopoly in the production system. For instance, numbers show that 40-60% of fish is wasted due to international norms.

To better understand the food waste problem, it is important to see the big picture and highlight causes on each level. The graph below outlines the reasons for waste on the manufacturing, retail and distribution levels.



It is estimated that “by 2013 global food sales will reach US \$4.6 trillion, and the World Bank predicts that food demand will increase by 50% between 2009 and 2030.” It means that, if nothing is done, food waste will grow as well in the same proportions.

In the consumer sector waste is harder to regulate. It is due to consumers’ preferences, as well as their lack of awareness about the problem since most see supermarkets abundant with food. This results with 20-40% of produce being wasted simply based on their esthetics and not quality.

## Benefits of curbing Food Waste

To utilize the food that would otherwise be wasted, is not only intelligent, but is also a path to create social benefit. However, food waste is a phenomenon that has negative impacts on the environment, economy and the society, and unless completely eliminated will continue to be harmful no matter how small the quantity. It means that each time anyone is trying to reduce food waste, they are also reducing the negative impact that this phenomenon has. Both environmental and economic impacts are very related to each other, thus a lot of economic impacts are going to be derived from the environmental ones. As far as the society is concerned the impacts that it is facing are less direct, nonetheless, it is a field where a lot can be done in relation to food waste.

## Environmental impact

When thinking about the main environmental challenge of the XXI century climate change seems to play a big role. Food waste might not be the major contributor, but it has its share in the total GHG emissions. The methodology used to calculate the emissions involved two ‘emitters’:

emissions resulted in transportation of waste into landfills (use of gas) and the emission of methane by the organic waste in landfills. Methane is 25 times more potent than CO<sub>2</sub> and thus much more harmful to the climate. According to the *Preparatory study on Food Waste in EU27* carried out by the European Commission in October 2010 food waste emits 1.9 t CO<sub>2</sub> equivalent per year. It means that in the EU27 it amounts to approximately 170 Mt CO<sub>2</sub> equivalent, i.e. around 3% of total GHG emissions in the EU. As far as Spain is concerned, we can assume that with its 2.5 million tones of food waste, it emits 4.3 Mt CO<sub>2</sub> equivalent per year. The figure of food waste mentioned above of 89 million tones is from the 2006 EU data. It is estimated that this number will rise up to 126 million tones (a 42% increase) by 2020 as a result of population and affluence growth. This increase will lead to more GHG emissions - 240 Mt of CO<sub>2</sub> equivalent by 2020.

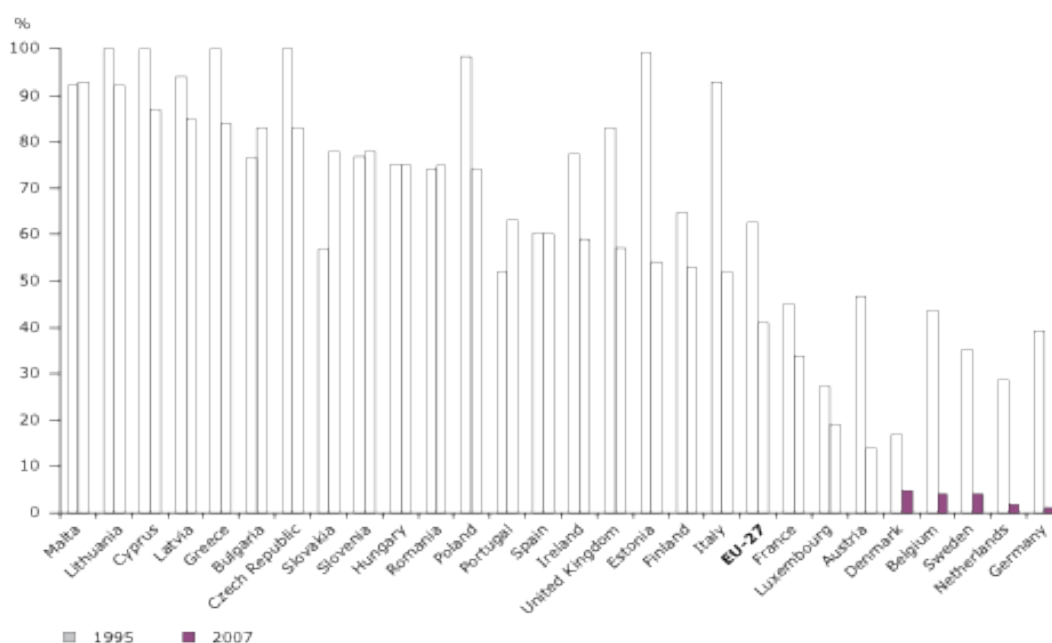
The 3% of total GHG emissions created by all food waste sectors are not significant comparing to major GHG emitters, such as transportation or heating, but it is important to make people aware of this. There are very little individuals that are aware of the GHG emissions they contribute to by throwing away their edible food. Keeping in mind the graveness of the problem, the EU began to address this issue by reducing the amount of waste entering the landfills. In 1999 all Member States (MS) accepted the Landfill Directive, which aims to reduce the amount of biodegradable municipal waste (BMW) thrown away. They use the 1995 levels of landfills waste as a baseline figure and try to decrease it in comparison to that:

- 75% by 2006 (2010)
- 50% by 2009 (2013)
- 35% by 2016 (2020)

The years in brackets show the deadline for countries that were transporting more than 80% of their BMW to landfills. The EU27 average in 1995 was 65% of BMW going to landfill. This number has decreased to 42% by 2007. The only problem is that the percentage varies a lot between MS. In the case of Spain, no real progress was made until 2007, which is shown in the figure below.

Another issue is the land and water misuse. In Spain 38% of land is arable and 14% of land is used for grazing, which means that in total 52% of land is used for food production. As far as water is concerned, 60% of all water in Spain is devoted to agriculture. The ALBAL organization carried out a *Save Food* study, which revealed that almost 50% of food is thrown away. Putting these numbers together we can conclude that more than 25% of land and 30% of water in Spain is used to produce food that ends up in landfills. In a country where water scarcity is an issue, utilizing it in a proper manner will be a great start to improve resource efficiency.

**Figure 2.2 Percentage of municipal waste that is landfilled in the EU-27, 1995 and 2007**



Source: “Diverting waste from landfill. Effectiveness of waste-management policies in the European Union.” European Environmental Agency, Copenhagen 2009.

The next issue related to this is the fact that a lot of the food wasted in rich countries has a low *resource to calorie* ratio, an idea proposed by Tristram Stuart, a food waste expert. Producing products such as tomatoes, dairy and meat requires big amounts of resources, such as land, water and fuel. 41% of land in the USA is used for grazing, while forests cover only 22%. In Spain these numbers are different because of the country’s high focus on vegetable and fruit production. As was mentioned before, only 14% of land in Spain is used for grazing due to the fact that meat consumption has remained relatively unchanged. As Stuart mentioned, “it takes an average of around 31 million kcal of primary energy input to grow a tone of tomatoes with a calorific content of just 170,000 kcal. By contrast, it takes just 600,000 kcal of primary energy to grow a tone of bread-wheat, which contains 3-3.5 million kcal, an energy input/output ratio 918 times higher”. (Stuart, T., 2009) This example emphasizes the idea that each country should plan their food supply in advance and take into account all resources necessary for this. Another crucial change focuses on the modification of people’s dietary habits, behaviors and general awareness about this topic. Consumers have to be aware about the food they buy, they way its made and its impacts on the entire food system, as well as the environment.

In addition to the above mentioned, it is important to consider the waste of resources that arise through the manufacturing, the distribution and the consumption of food. The first and most important resource used to produce food is fresh water. In the USA food waste requires 25% of all fresh water consumption of the country. In every food chain level there are significant amounts of petroleum

used for its manufacturing, processing and transportation. According to the *Next Generation Food* study, the food waste in the USA is responsible for the consumption of 300 million barrels of oil. Food waste also results in loss of energy that is used to produce the food, including pesticides and physical labor of workers. The biggest problem is that most people that produce food are not overly preoccupied with its waste, for the more they produce the more they can earn. This is similar on the retail sector where selling more to consumers' results with more profits for the store. The consumers buy more than they need, but they do not care or are not aware that their actions cause food waste. A change of behavior is needed at all food chain levels.

The distribution and retail sectors impacts on the environment are due to land filling of their waste. The WRAP study shows that most of the waste from the six biggest supermarkets goes to landfills (exact data is not available). It is also known that on average 65% of all waste is food and that 70% of landfill waste is also made up of food. It means that supermarkets are major contributors to the methane emissions of food waste in landfills.

## **Economic impacts**

All the economic impacts are related to the environmental impacts that were mentioned above. In fact, it is easier to talk about absolute waste of products and calculate other costs involved by examining the resources required for food production.

As it was mentioned before each Spanish wastes 63 kg of food per year, which costs them approximately €250. Assuming that there are 46 million people living in Spain, the country's yearly budget lost on food waste equals to €11.5 billion. According to the *Save Food* study carried out by ALBAL 45% of food waste in Spain can be avoided, i.e. €5.2 of the €11.5 billion can be saved. This doesn't mean that all money is wasted, simply that consumers are throwing away products for which they have paid. These economic loses are present in every stage of the food chain, however, if this money would have been saved it would have led to more profits.

In the agricultural sector, farmers produce too much food in order to fulfill the requirements set by their contractors. Most end up throwing away their surplus, which is less costly than not delivering the agreed amount and losing money or future clientele.

On the retail level, supermarkets consider food waste as a necessity to survive in the competitive world of distribution. The demanding customers who wish to have many options and product availability out of season explain the majority of the reasons for waste in this sector. This means that to satisfy the changing needs of the customers, supermarkets must buy in abundance rather than face unsatisfied consumers.

Tristram Stuart presents a good description of this issue in his book called *Waste - Uncovering the global food scandal*. For example, supermarkets buy sandwiches for half the price they sell and are able to make a profit with only half of these products sold. Although still making a profit, the supermarkets are not meeting their full profit potential. As mentioned before, with well-informed demand outlooks, supermarkets can avoid



Tristram Stuart at workplace. Source:  
<http://www.guardian.co.uk/lifeandstyle/2011/oct/16/ofm-awards-2011->

food waste and make more profits. The only problems this change could lead to are un-stocked shelves. To address this, supermarkets must raise consumer awareness and encourage their behavioral change, such as eating seasonal food.

Soon supermarkets will be mandated to enforce these changes so as to comply with EU policies, such as the Landfill Directive from 1999, which calls for reduction of food waste going to landfills. Using the 2006 landfill figures, EU member states must reduce their waste by 25% in 2010, 60% in 2013 and 90% in 2020. If supermarkets continue to generate high amounts of food waste they will need to search for other options of where to discard their trash. Some possibilities they have is composting or using the waste in biomass generation. Nonetheless, it is unlikely that these alternatives will be sufficient in disposing of most of the supermarket food waste.

Since disclosure of food waste is potentially damaging for the reputation, supermarkets keep this information private. Nonetheless, the high amounts of food waste they generate can be costly. A study done by Mena revealed that in Spain each ton of waste entering the landfill costs €24.12. For the purpose of comparison, we can take a look at the supermarket waste in England, which with a higher population produces approximately 367,000 tonnes of food waste a year (Stuart, 2009). Calculating the costs of sending food waste to landfills with these two parameters we get a number of €8.85 million. While supermarkets in Spain might not face difficulties as extreme as in England, the necessity to abide by the directive policies can result in high costs in the future and high amounts of GHG release.

## Social impacts

Food is a human right, wasting it directly infringes on the well being of each society. Without channeling the food waste to food banks and soup kitchens, individuals suffering from hunger will continue to have their basic rights stripped away from them. As the prices on food increases, more individuals will face this crime. The effect of rising prices on commodities impacts all countries by increasing their food insecurity issues.

Spain generates 2.89 million tones of food, majority of which goes unused and straight into landfills. This number is great, and for some quite hard to imagine. To provide an analogy we can examine the food waste in the UK, which reaches 8.3 million tones a year. If an average car weights 1 to 1.5 tones, then Spain wastes from 1.926 to 2.89 million cars a year, and the UK from 5.53 to 8.3 million of cars. These sheer numbers can paint a better picture of the problem.

Food waste also leads to indirect impacts on the environment and society. One of these impacts is the production and the release of methane gas from landfills. Methane is 25 times more potent than CO<sub>2</sub>. This means that food waste is partially responsible for climate change effects, as it produces 3% of global GHG emissions. The population most affected by this is the world's poor, many of whom live in areas affected by frequent natural disasters, such as Indonesia, Mexico or Brazil.

Wasting food also leads to the waste of natural resources. It does not waste all natural resources similarly; land used for lettuce cultivation will produce similar amounts the year after. On the other hand, a resource such as oil, which is non-renewable, results in higher costs the more its depleted as it must satisfy the similar demands on minimal availability. Since oil is used in food production it increases the price of food as well.

Even renewable resources such as water are decreasing with increased food production, since it is returned to earth contaminated with pesticides and other chemicals, making it unsuitable for consumption or reuse in the field. Considering the vitality of this resource, increased depletion will result in serious global problems, especially in areas where drinking water is hard to attain or simply isn't available. This is also true of animals such as fish, which are unable to repopulate at a rate fast enough to meet the consumer demands. One study showed that current rates of consumption would leave the oceans empty by 2050. On route to this disastrous year fish will become harder to catch and its consumption will become a luxury meal for those who can afford it. Individuals that live close to the coast and whose diets heavily rely on seafood will be the hardest hit.

Another issue is that food waste is not equal in all countries. Developed countries waste about 40-50% of food, while developed half of that, 15-20%. The demand for food though is rising in both, and



developed countries are starting to witness a certain percentage of their own population facing hunger or malnourishment.



Surplus tomatoes dumped on farmland in Tenerife. Source: Tristram Stuart *Waste - Uncovering the global food scandal*.

25 million people in a wealthy country such as the USA do not consume the daily number of calories recommended. In Spain this number of individuals has quadrupled in the last years, while the loss of all produced food reached 50%. Considering the food system of the world, much of the wasted food in developed countries comes from developing

parts of the world, where individuals are starving. Certain EU laws that limit the amount of food that can be imported from these developing nations are addressing this injustice. High custom prices implemented by the EU lead to high product costs at home and low product costs abroad, making such trade unprofitable.

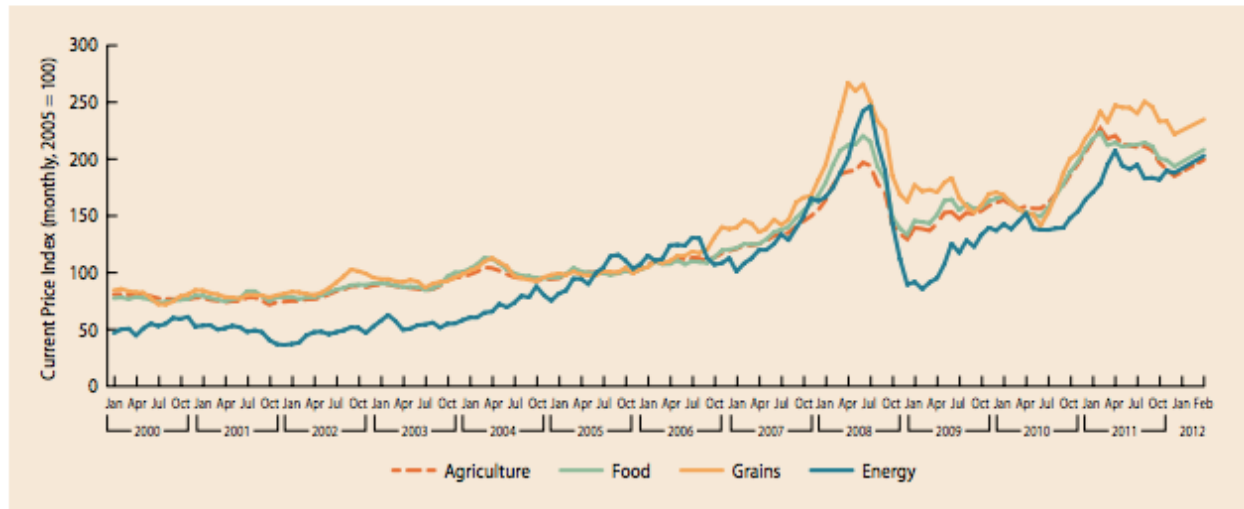
If all food heading to the landfill was donated it could provide those in need with four times more food than necessary. Rising unemployment and population is likely to create more conflict over food. If this problem was addressed, it could lead to many more benefits, such as creation of jobs, more profits for retailers, more food for consumers and the availability of vital resources in years to come. At the current pace, changes to this system seem unlikely.

Finally, the problem of food waste leads to increased prices on the global market. With the rising population the demand for food is growing at different paces (slower in developed countries and faster in developing ones). Interestingly, food waste trends are opposite to the above mentioned with developed countries such as the United States of America, United Kingdom, France or Spain artificially increasing their demand. It can be named artificial because 50% of purchased food in these countries is wasted. Economically it is a demand, but in practice people do not really demand this food. They simply don't use it. The growth of demand makes the global prices grow, as it is shown on the graph below. For instance, Spain buys cereals to produce bread and then sends half of the cereals to landfills. The demand for cereals grows, which makes the global prices of cereal grow too. This leads individuals



in developing countries unable to pay for the growing price of cereal. According to the *Global Monitoring Report 2012: Food Prices, Nutrition, and the Millennium Development Goals* published by the World Bank, the spike of prices prevented 48.6 million people to escape from ‘poverty’ in the short-run. This emphasizes the ideas that food waste is an indirect cause of hunger in the most vulnerable regions of our planet.

**FIGURE 2 Food prices spiked again for the second time in three years**



Source: World Bank.

Note: The World Bank Food Price Index includes wheat, maize, rice, barley, sugar, coconut oil, soybean oil, groundnut oil, palm oil, copra, soybeans, soybean meal, orange, banana, beef, and chicken. Unlike the well-known Food and Agriculture Organization food price index, it does not include other meat and dairy.

## Part II

### Retail sector with an emphasis on supermarkets

This research will focus on the role of supermarkets in food waste and the measures that could be taken to tackle it. Although the retail sector is not the biggest contributor to the generation of food waste, it does have the most influential power. It's waste shares make up 10-15% depending on the country. Yet supermarkets are the major representatives of the retail sector and are the intermediary between the manufacturers and the individual customers. Therefore, they are the cause of increasing high consumption in today's society. They also influence consumer behavior by increasing portions or by tempting them with different promotions. Supermarkets are very much responsible for how people look at food nowadays, i.e. abundance of food in stores make individuals less appreciative of it. Of course there are other channels through which food can be bought. Nonetheless, depending on the country, around 85% of all food purchases are made in supermarkets. This gives them the power and control of the market that other types of companies don't have.

One of the main reasons supermarkets create much food waste are the sell-by (display until), use-by or best before dates. The display until and sell by dates are used by supermarkets and mark the day by which an item can be sold or displayed on shelves. The use by and best by dates are for the consumers and mark the date by which a product is safe to eat. The problem of the sell by date is that supermarkets (which are unable to sell the products) throw away food that is still edible. The reason why supermarkets must throw away edible food is to satisfy food safety commissions, which can give the store big fines for keeping food that has surpassed the sell by date. This year, the UK government aims to create a new law allowing products to have only one date, the use by or best by date. Recently, Spain witnessed some advances in the promotion of this type of law when a group of artists, Excedentes-Excess, partnered up with experts and lawyers of the Carlos III University to draft this legislation. Currently they are hosting public meetings to identify the key issues that the law should address. These meetings also aim to highlight the main actions, which will help spread food efficiency among citizens.



The differentiation of the dates. Source:  
[http://i.telegraph.co.uk/multimedia/archive/01420/date\\_1420148c.jpg](http://i.telegraph.co.uk/multimedia/archive/01420/date_1420148c.jpg)

Some countries, such as Spain, have a high demand in fresh fruits and vegetables. It is not only due to the Spanish but also the tourists who want to try local fresh food. These products, among others

such as dairy, bakery and fish, have a short shelf life and usually are thrown away after one day. Some fruits, however, do stay longer, such as bananas. There is a common belief that even a small black stain on the banana skin means that it is starting to rot, when in fact it signifies the ripeness and sweetness of a banana. The reason for such notions is in part the fault of supermarkets, which created



Wasted fruits. Source:  
<http://ucanr.org/blogs/food/blogfiles/8136.jpg>

such a belief by always displaying perfectly yellow bananas on their shelves, training the consumer to demand only these.

Another big problem is the storage issue. Most of the products that come to supermarkets are put directly onto shelves, which are not the best conditions for products such as fruits and vegetables. To stay fresh for a longer time they need lower temperatures and water. In addition, they are exposed to various bacteria that come through consumer interaction and must always be

on display to give the image of fully stocked shelves. According to these strategies and the desire to satisfy customer demand, supermarkets like to create a feeling of unlimited abundance. When customers enter the store they want to see full shelves, prompting supermarkets to order in over abundance. They do so in order to create loyal customers, believing that if customers don't find their favorite product in the store, next time they will turn to the competitor. This is why supermarkets value not being out of stock more than the issue of food waste.

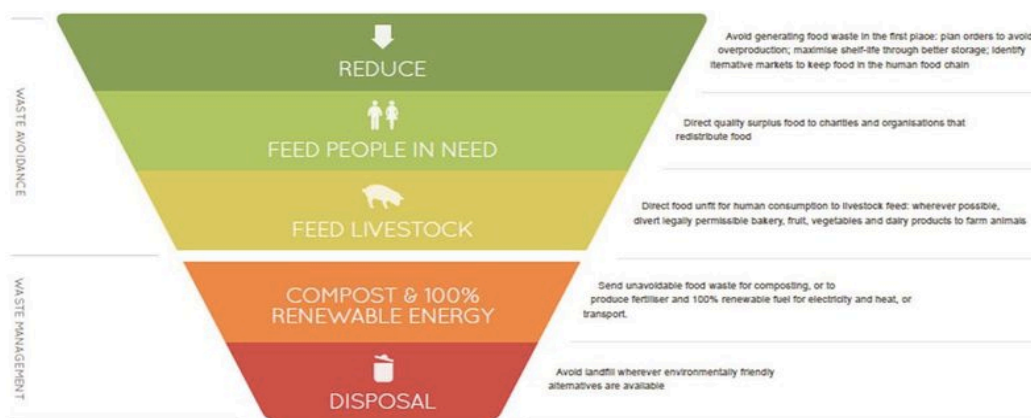
All this leads to bad forecasting. Normal companies predict their sales according to previous sales. Supermarkets, because of their high sale margins, sometimes order twice the amount of a product than was ordered a month before. It means that their order is normally higher than the real demand. Another reason supermarkets don't mind being overstocked is the lack of monetary loss. The main advantage is that supermarkets sell basic goods that people are always in need of, both in good and bad times. What is even more important is that supermarkets can afford to set a low price thanks to their negotiation power with the suppliers when buying in big quantities. This is an advantage small grocery stores cannot afford. Another important issue is that when a financial analyst is looking at a supermarket balance sheet, the first importance is placed on the shortage of liquidity. Luckily, this issue is off set by their high cash flow. This need to sell products as fast as possible, gives supermarkets the impression that waste is part of this business and thus not so vital to address.

Lastly, one of the biggest reasons for high amounts of food waste in this industry is caused by lack of communication between the suppliers and supermarkets. Contracts are signed for a specific

amount of products, regardless of the demand during certain months. In such times the items remain on shelves until they are thrown away. If supermarkets have more flexible contracts, suppliers could deliver the right amount, producing less with a long enough notice or diverting their delivery to other outlets. This, however, is not always possible since supermarkets are rarely flexible on the number of their deliveries. Each transport requires more costs, so trucks tend to be packed to the limit, which does not aid with food waste reduction.

There is little information available about the quantity of food wasted by supermarkets. However, according to WRAP's study about food waste in the UK, the retail sector generates 1.6 million tonnes of food waste. It is not known what is the exact share of waste generated by supermarkets, but the six biggest chains (Tesco, Asda, Morrisons, Sainsbury's, Co-op and Waitrose) represent 83% of the total UK grocery market shares in 2008. This type of information is still very hard to find in all countries, because supermarkets do not keep an exact number of what kind of waste they generate, nor do they want to share it.

Researchers, involved with the food waste issue, have created a simple guideline. The table below, presented in a form of a pyramid, demonstrates the priority of actions necessary to reduce food waste. The steps can be utilized by any entity wishing to reduce their impacts.



Source: <http://www.feeding5k.org/businesses.php/>

## The Spanish retail sector

As a Mediterranean country, Spain produces and exports many food items, such as: fruits, vegetables, bread, eggs, milk, fish and meat. These are mostly produced in "Southeast Spain, where 60% of the production is exported and accounts for 35% of total Spanish agricultural exports".

(Rodriguez, p. 34) More than 50% of the food produced in the country is thrown away, with 30% thrown without being opened. (ALBAL)

“In December of 2011, [however], Spain reported a trade deficit equivalent to €4,549 million.” (Trading Economics, 2012) With this economic and trade deficit, Spain is facing many problems, including the supply of jobs and food for the poor. Recent statistics show that the “average annual income of Spanish households reached €24,890 in 2010, which was a 4.4% decrease compared with the previous year” and that “26.1% of households have difficulty or a great deal of difficulty making ends meet.” (Instituto Nacional de Estadística, 2011). Despite these statistics, Spain continues to waste approximately 2.9 million tones of food at the consumers’ level, which accounts for 63kg per person. This means that consumers throw away 18% of all the food they buy. With these numbers, Spanish households throw away a total of €11.2 billion every year. Of all this waste, 45% is actually avoidable. But consumers are not aware of the extent of their actions, assuming that they waste only 4%, when the number is actually 18%. The consumers do realize though that things must change, and 92% said that changes in their behavior could lead to less food waste. (ALBAL)

Considering that Spain has the fifth highest population in the EU, with 46 million inhabitants, a country that is facing such a crisis needs to do its outmost to ensure that it is using all its resources as efficiently as possible. Much is dependent on the culture of the country. For instance the Spanish diet includes a high “consumption of fruits and vegetables, fish and pulses”, as was outlined by a 2003 study in the Journal of Epidemiology and Community Health, which compared the nutritional diets of Canada, Finland, Poland and Spain. Since Spanish like eating fresh foods, about 50% of the food that is thrown is composed of fruits and vegetables, things that do not have a long shelf life. This also applies to daily staple items such as bread, which has a maximum shelf life of one day.

As a result of high demand for produce with short shelf lives, supermarkets create high volumes of waste. This is exacerbated by their lack of efficient prognoses for food. While some supermarkets donate the food to charity, more than 50% of it ends up rotting in landfills. Since 45% of

Figure 1: Edible and inedible food waste

Edible food waste	
Avoidable food waste	Food that is thrown away that was, at some point prior to disposal, edible (e.g. slices of bread, apples, meat)
Possibly avoidable food waste	Food that some people eat and others do not (e.g. bread crusts, potato skins)
Inedible food waste	
Unavoidable food waste	Waste arising from food preparation that is not, and has not, been edible under normal circumstances (e.g. bones, egg shells, pineapple skins)

Source: based on WRAP (2009) *Household Food and Drink Waste in the UK*

this is avoidable, the graph above helps explain the exact difference between avoidable and unavoidable waste. Considering that there is a high demand of food aid in Spain that organization like Carreras are unable to meet, the government must be more active in addressing this issue.

There are three levels on which the food waste system problem occurs: the manufacturing, retail and consumption sectors (which includes households and food services). Seeing as how changes are much harder to implement on the consumption and manufacturing level, the government must address the food waste problem on the retail level where changes are easier to implement and track.

## Waste Process in Spain

With increasing population and food demand, Spain could use this opportunity to improve its economic outlook. As one of the top 10 food trading countries, where 15% of the population is employed in the food industry, a more efficient use of food, its distribution, and processing in the last stage, can help Spain improve its economy, meet its rising food demand, and lower negative impacts on the environment and budget.

Sending the waste to landfills can be costly, studies “revealed that tax stands at €24.12 per tone”. However, in Europe not all products can be disposed of in landfills, such as “raw meat, poultry and fish, which has to be disposed of at approved premises by methods prescribed in European regulations, e.g. rendering, incineration, biogas or composting.” (Mena, 2010 p. 653).

The Mena study analyzed the *Cause of food waste in the supplier-retailer interface in UK and Spain*, and outlined that while there are many common causes as to why products get wasted these are not just a result of poor management practices and human decisions. Other reasons include short shelf life of products and weather fluctuations in the production zone. Considering the impacts of climate change, weather fluctuations will likely have a negative impact on food production and exportation in Spain.

## Supermarkets in Spain

While the retail and distribution sector is wide, it is important to focus on the role of



Source: ilacadworldretail.com



supermarkets that have much influence at the 'micro level', due to many resources and incentives to contribute to fighting hunger. In addition, with the new waste directives and more awareness about food waste, supermarkets will have an obligatory and a moral responsibility to address this issue. It is eminent that they will face this problem, so it is rather a question of when and not why supermarkets should start actively addressing food waste.

The Spanish supermarket market is dominated by a number of big companies, including Aldi; Auchan Group: Sabeco; Bonpreu Group: Bonpreu, Esclat, Orangutan; Carrefour, Carrefour Express, Dia, MaxiDia; DinoSol Group: Supersol, Netto, Hiperdino; El Árbol supermarkets: El Árbol, Galerías Primero; El Corte Inglés: El Corte Inglés; Opencor, Supercor; E.Leclerc; Eroski Group: Caprabo; Eroski Center, Eroski City; Gadisa: Gadis; Ifa Group: Ahorramás, Condis; Intermarché; Leader Price; Lidl; Mercadona; Sanchez Romero Supermarket and Spar. (Wikipedia)

Of this long list of supermarkets the top five are: OpenCor, Mercadona, Carrefour, Eroski and Dinosol. However, these top markets have lost their shares as the most shopped at places, which they held for many years, going from 64% in 2008 to 63.4% in 2009. The reason for this is that individuals are searching for best deals when shopping, causing an increase in the number of visits individuals do each week. They select favorite places for specific product prices, raising their weekly visits from 7.5 in 2007 to 8.2 in 2009. Nowadays, consumers prefer shopping at discount stores such as Lidl or Dia, which offer better prices and discounts. In addition, consumers started focusing on stores based on proximity rather than sticking to brand names or most popular shops. (Peru-Retail).

More than 80% of all grocery purchases in 2008 were made in supermarkets and hypermarkets. About 55% of all grocery purchases were made in the five biggest supermarket chains: Carrefour (23.7%), Mercadona (16%), Eroski (7.4%), Alcampo (6.1%) and Corte Ingles (2.3%). (Supermercados, No Gracias, 2007)

Price, margins, costs and brand names are the most important aspects for supermarkets nowadays. Instead of focusing on maintaining their balance sheets, supermarkets are focused on sales. This has led to a philosophy of discounts, rather than thought-out strategies. The new 'war of prices' has led to new supermarket policies, which has grave effects on the entire value chain of food production. As president and founder of Mercadona, Juan Roig mentioned that the latest weak trends in economical demands has led to the closure of their 1,200 supermarkets, as well as the elimination of 8,000-10,000 leading manufacturing brands. (Peru-Retail)

The bottom line is that the economic crisis has brought major changes to buying habits and loyalty of the consumers. In fact, 55% of consumers have changed their buying habits in 2009, with 65%

of them looking for cheaper brands and 44% looking for cheaper prices. This means that 78% of consumers option to buy cheaper store brands than well-known manufacturing products. With such statistics, the control of large hypermarkets dropped from 18% in 2005, to 15% in 2009, while supermarkets have increased their control by 5% throughout the same period.

An important piece of information to mention, however, is the case of Mercadona. In 2008, this supermarket became the leader in the Spain industry thanks to their Total Quality Management (TQM) policy. This policy was focused on the idea of value creation for suppliers, employers and customers. With long-term contracts for suppliers, Mercadona ensured that there is price stability and quality produce that come to their shelves. Training programs for the employers, salary insurance in times of emergencies and hiring of well-educated staff ensured that Mercadona created a good atmosphere for their workers. With satisfied employers, who were happy to come to work, the supermarket was able to lower the number of absentees and secure low turnover amongst their staff, something that is very uncommon in this industry. Finally, all the quality and the care that was put towards the suppliers and workers led to customers who acknowledged the hard work of the management and helped make the supermarket a leader in their field. This loyalty is something any supermarket strives for, but rarely achieves.

Since the main focus of all retail companies is the number of produce they sell, as opposed to their balance sheets, Mercadona has shown that even during crisis it is still possible to be a leader amongst supermarkets thanks to good consumer relations. The number of kilos and liters sold rose from 8,000 in 2009 to 9,101 in 2011. (Mercadona Report) This is opposite of supermarkets like Carrefour, which has witnessed a slump in its produce. (Reuters)

OpenCor has also enjoyed success despite the crisis due to its proximity to many households and working hours, which keep it open 365 days a year. This is quite advantageous, seeing as how many stores close on Sundays, during holidays or very early, such as Dia, which closes at 9 pm. The success of El Corte Ingles in the past years has led to an expansion of OpenCor, in fact the management is currently looking into opening a new store location in Bilbao. (Correo, 2012)

While OpenCor has been enjoying its success, Eroski had to change its policy in 2010 to reflect the new consumer trends. In their 2010 report Eroski mentions that their new policies were “determined by the factors outside the trading activity itself owing to lack of consumer confidence in emerging out of the crisis, the increase in unemployment, the rise in VAT and the necessary savings made by families to tackle their futures with greater certainty.” (Eroski 2010)



DinoSol also experienced a downsizing of its employees, witnessed a reduction in sales and went through mergers as a result of decrease in consumption. (Businessweek) To rebound from these losses, DinoSol has begun to implement new techniques and technology such as the Oracle Retail Advanced Inventory Planning, in specific the Oracle Retail application. The new tool helps “optimize inventory management within the supply chain and improve profitability across its four formats in Spain and the Canary Islands.” (RBR)

### Current trends in Spanish supermarkets regarding food waste

The word combination ‘food waste’ is a taboo issue for the supermarket industry. When reading the annual reports of supermarkets, it is impossible to find them together. What is often featured in these reports is information regarding waste management. The following few paragraphs are a short analysis of what the five major supermarket chains (OpenCor, Carrefour, Mercadona, Eroski and Dinosol) in Spain are doing regarding food waste or waste management.



Source: <http://mercadona.es/>

*Mercadona's Annual Report for 2011* lacked quality information about food waste and even waste management. Mercadona is recognized as the most socially responsible company in Spain. Their social projects are known all over the country and the efforts the company has put in this is remarkable. Nonetheless,

as a company dealing closely with food, the lack of any public announcement about its waste is quite disappointing. Some of the waste management issues are mentioned in the *2010 Environmental Policy Report*, but there is still no mention about organic waste. It is shown that 265 tones of residues had been recycled or recovered. As far as waste management is concerned Mercadona has numerous initiatives regarding packaging, such as charging for plastic bags at the checkout, no packaging of fruits or vegetables and a paper saving policy. Another big supermarket chain that has no information available about waste online is Dinosol.

*Eroski's 2011 Annual Report* is less complex than Mercadonas, but it gives more concrete solutions to the food waste problems. They write: “Inorganic waste is properly treated through the corresponding Integral Management Systems. However, aware of this commitment, we



Source: <http://www.eroski.es/>

do not commit ourselves to mere legal compliance alone, we adopt more ambitious commitments, as in the case of the Etorgai IDECO Project on the development of a system to guarantee the traceability of waste from electrical and electronic equipment.” As far as organic waste is concerned Eroski is involved in disposing it correctly, e.g. the LIFE Clean Feed program for upgrading plant waste for animal food.

The most complete information about waste was found in *Carrefour's 2011 Annual Report*. It informs the reader about the exact quantity of residues (144,500 tonnes). From this waste 7,200 tonnes are organic and are used for biomass production. In 2010 Carrefour produced 670,000 kWh of energy, which can meet the demand of 115 persons a year in Spain. Other information regarding paper and water waste is also available in the report. Carrefour España committed itself to a *Residuos Cero* project, which has led to the recovery and recycling of 65% of all its residues. Another remarkable



Source: <http://www.carrefour.com/>

project is the tracking system used for their fish products. Carrefour tries to ensure that its fish suppliers are fishing in a manner that does not jeopardize fishing stocks. (Compromisos Medioambientales, Carrefour website 2012) Finally Carrefour has its own foundation, within which it collaborates with Federacion Española de Bancos de Alimentos. For the past three years the collaboration had helped 800,000 beneficiaries, but it only donated food in 2010 giving away 84,000 tonnes.

Some supermarkets are informally donating food every evening, usually through the initiatives of the employers. People in search of food gather in line next to the trashcans and wait for the workers to carefully place produce in the bin. One of those supermarkets is Dia on c/ Juan Montalvo in Madrid, where this process happens in the evening around 8:30 - 9:00PM, just before the store closes. This is an example of an unofficial way supermarket representatives try to address food waste.

All of the above-mentioned reports have one thing in common: their actions related to waste is focused solely on energy production, biomass creation or recycling. None of the supermarkets share information about the amount of food waste they produce or how they try to reduce their waste, focusing only on their disposal procedures. The reason for this behavior is the fact that reporting such information can be very damaging for a company's reputation, both for its clients and shareholders. Internally, shareholders might be concerned about the loss of potential profit that is thrown out with food. Externally, the clients could see the company as irresponsible, creating negative connotations with its services and produce. This is the main reason food waste figures remain hidden, but with more aware consumers this trend is starting to change, giving supermarkets an incentive to update their patterns.

## Part III

### Analysis of food waste problem in supermarkets in Spain

The third part of this report focuses on how to introduce changes to the current food system. It lists the possible measures and causes for the present problems. Next, it discusses the steps for reaching the ‘tipping point’ of any new idea, a theory introduced by Malcolm Gladwell. To introduce such a fundamental change, the report follows with the role awareness plays in this and how it can be attained. The section concludes with issues that are important and relevant for supermarkets, emphasizing the steps that can be used when trying to approach them about this problem.

We start with the figure below, which introduces the most relevant reasons for food waste generation in the food sector. This section describes each of these issues and their possible solutions.

Problem Category	Legal	Packaging	Social
Specific Issue	Sell by Date Issue	Fresh products are in exposure to bacteria or high temperature	BOGOF
	Donations constraints (e.g. <i>Good Samaritan Food Donation Act</i> )	Poor delivery (products arrive to the supermarkets in bad conditions)	Abundance
	Health issues (e.g. edible fruits with natural defects are thrown away)	Damaged boxes are not sold	Lack of awareness
			Consumers desire for products from far away

The above figure mentions the most relevant reasons for food waste generation in the food sector. This section describes each of these issues and their possible solutions.

## **Legal**

Firstly, the EU Landfill Directive is pressuring more supermarkets to address their food waste and limit the amount being sent to landfills. Due to limited alternatives to the problem, finding successful solutions is becoming very important. Secondly, supermarkets must now deal with more aware consumers. With new local grocery store openings, and campaigns that raise concern about food demand and its waste create distrust towards big supermarkets. In order not to lose this clientele, companies are engaging in CSR hoping to regain the support and trust of the public.

## **Sell by dates**

An important step is to modify the current labeling system. The EU is already taking some steps towards addressing these changes. The current system tends to be confusing for consumers who don't always know the difference between the 'best by' and 'use by' dates. The EU wants to make sure that people are aware about the different aspects of these labels (El Mundo, "El Parlamento Europeo exige reducir el desperdicio de alimentos en la UE", 2011). The EU deputies also suggested putting items that will reach their sell by date on sale. This would attract clients to buy these items and help supermarkets increase their profits, creating a win-win situation for all.

## **Donations**

It is also important to have government support towards this initiative. At the present time, the government of Spain has only one law that gives an incentive for organizations to donate. The law is known as *Ley del Mecenazgo* and was passed in 2002. The law was passed in order to "steer private efforts in activities of general interest". This legislation incentivizes these activities by offering businesses that participate a 35% income tax deduction. The deduction received by the company depends on the value of the donated products. (Banco de Alimentos) Nonetheless, it doesn't address the most important factor that prevents businesses from donating, which is the liability issue. Many organizations are afraid to create bad press around their reputation and lose valuable customers. In times of crisis, many companies want to play it safe and taking big risks, such as embarking on new projects without a safety net in case of a scandal, makes food donation unappealing.

## **Health issues**

It is also important to mention that sometimes supermarkets reject products because of their rigorous standards and quality concerns. Driven by consumer demands, supermarkets are concerned about the freshness of their produce and displaying only fresh items. The European Council Regulation No 178/2002, Article 14 lists out food safety requirements, which ensures that food on the market is safe to consume. It requires the vendor to remove items from the market that are: injurious to health, unfit for human consumption or if they don't fit the normal conditions of use of food by the consumer at each stage of production. (Food Safety) The European Parliament implemented a regulation (No

1221/2008) that lists various classes, standards and physical characteristics that fruits and vegetables should maintain. Many of the produce that don't fit these standards are thrown away at the manufacturing stage. Those that do get through, but do not meet the same standards later at the grocery store must also be thrown away.

Over the years, supermarkets have been focusing on fresh and perfectly shaped produce. The customers have now become trained and accustomed to seeing such products, bringing many stores to the conclusion that the items that don't fit the normal conditions of use of food by the consumer must be thrown away. Seeing as how supermarkets conditioned customers to a certain standard, it is believed that they can also condition them to other standards. With more exposure and education about how vegetables can look and still be tasty and healthy. This can change the current unrealistic beliefs consumers have towards perishable produce.

### **Packaging**

The packaging of produce is another section that needs to be addressed. It includes several aspects, such as packing products in a way that extends their quality. This may be more costly (packing products into vacuum boxes), but the packaging items can then be sold or reused. From a monetary sense, the ability to sell more products can compensate for the increased cost of packaging. Secondly, packing products into more varied sizes will allow customers to buy the right amount of food. This ensures that they will not buy more than needed.

Fresh products are exposed to bacteria when being handled and touched by customers. As Spain has a high level of consumption of these products this problem may be quite important. By touching fruits and vegetables to check the freshness, consumers inversely transmit bacteria that might affect the product. Even if no diseases are transmitted, it still affects the quality of the product.

In addition, sometimes products arrive to supermarkets in poor condition. It is due to the bad or excessive packaging processes. Trucks are often overloaded, which affects the quality, especially of fresh products, such as fruits or vegetables, which need to be stored, or in this case transported in a specific way. This problem goes further than the quality of products, because at times the damage of the packaging prevents the sale of the item, even if the product itself is good. One example of this would be box cartons of cereals that are dented or slightly cut. Problems such as these arise as a result of employee or consumer mishandling, as well as the accidental falls of the product. Some people are not willing to purchase a product with a damaged package, because they associate it with the bad quality of a product.

## **Social**

The social causes of food waste are the most difficult to prevent. It involves changing people's behavior, which has been developed through many years with the influence of supermarkets. Regardless of the difficulty, time and effort that need to be put to change social behavior, it is a crucial part of food waste reduction. As it was already mentioned, supermarkets are the intermediaries between the customers and the manufacturers. In Spain, they are responsible for more than 80% of all grocery purchases. It means that it is a sector that is responsible for much of the food waste problem in both stages: manufacturing and household consumption.

## **Awareness**

Since most consumers are not aware of the negative impacts their food waste creates, it is up to the supermarkets to emphasize and highlight this issue. Supermarkets have an important role in this matter. If more supermarkets properly address this issue, they can become more profitable and aid the reduction of the global food security crisis. When we talk about awareness we think of two aspects. On the one hand, the goal is to reach a certain level of awareness that will change people's behavior towards their purchasing habits, i.e. a person that knows that a certain supermarket generates waste will stop buying groceries there. On the other hand, awareness must be created within the supermarkets to help address their inefficiencies. Nowadays there is no information published about the food waste they generate. Often the only information available is a notice about organic waste. Nonetheless, it is not enough. In order to address the problem with accurate solutions, data must be gathered. The lack of such an initiative is a key issue that prevents the creation of awareness.

## **Abundance**

Since the opening of the first Spanish supermarket in 1957, people's perception towards food has been skewed. Nowadays, there is a common feeling that food is always available in big quantities. The issue is worsened by the fact that people are taking food availability for granted. They know that in the city there are many shops that they can visit and stock up on more products.

While not many people throw food away on purpose, more awareness is needed in this area. At 60%, the current rate of food waste on the household level is not sustainable and must be lowered. Moreover, the continued need of supermarkets to seem abundant in produce leads to excessive, at times unnecessary, demand from the suppliers. This means that suppliers have to comply with rising demand of their contractors, leading to higher production and more waste generation at the manufacturing level.





This is what we call the “Abundance principle”. Source: [http://www.gallus-group.com/en/Portaldata/1/Resources/newsletterbilder/git\\_21/091214\\_SuperMarketShelf\\_300x199.jpg](http://www.gallus-group.com/en/Portaldata/1/Resources/newsletterbilder/git_21/091214_SuperMarketShelf_300x199.jpg)

## BOGOF

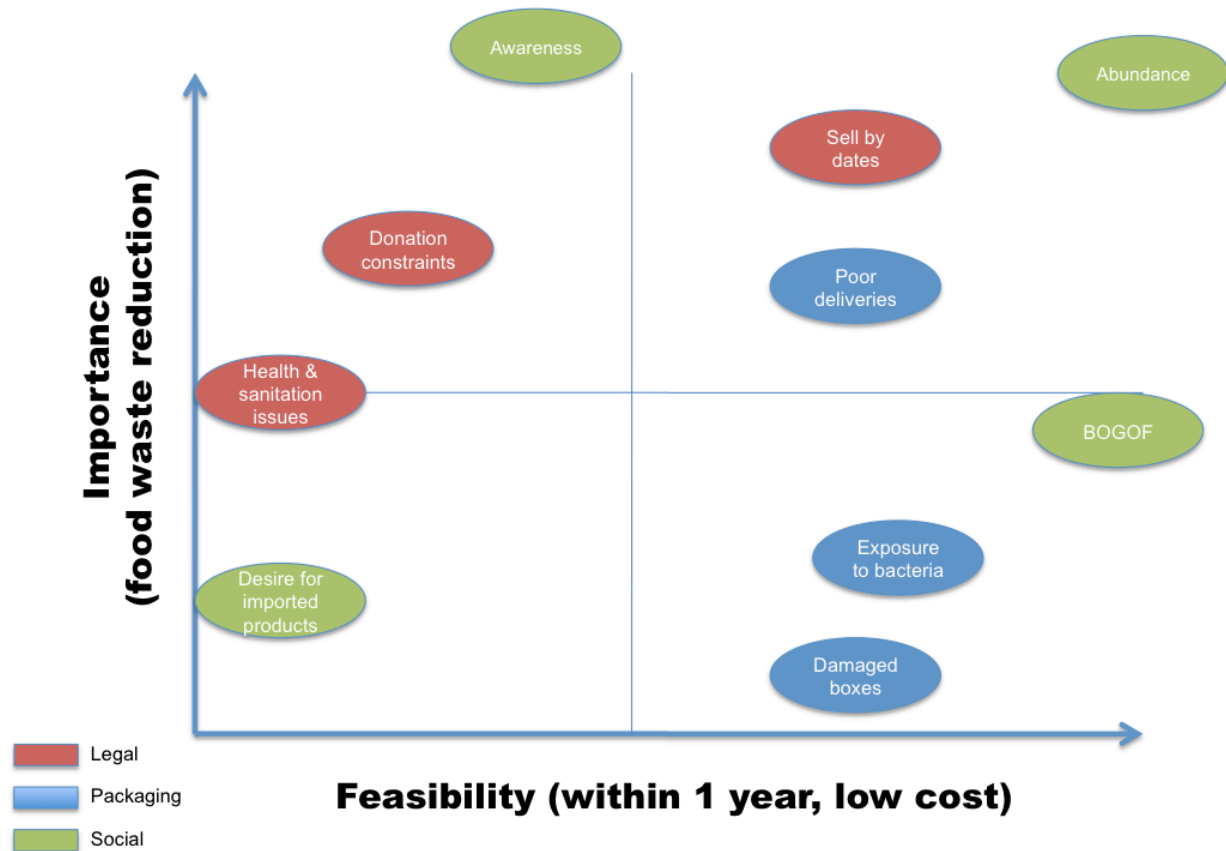
Another social cause of food waste is the BOGOF (Buy One Get One Free) deal. Subconsciously it makes customers think that by buying one and getting another one free, they are getting a good deal. The reality is that most of the times they buy more than needed and simply waste the second deal. For supermarkets, such a deal also causes financial problems, for they must sell more of the same product to make up for the lost profit of the item given away for free.

## Desire for imported products

While this reason might not cause a significant generation of food waste, it definitely contributes to the problems of the current food system. People from developed countries have a strong desire for products that are grown or manufactured in faraway places. Rather than using local produce, manufacturers from far away are contracted instead. This larger network of suppliers results in higher amounts of food waste. In the study carried out by “Supermercados, No gracias” called *Los mitos de los Supermercados*, one can find figures about the origin of some products in supermarkets in Barcelona. In fact, 36% of consumed apples and 34% of consumed grapes come from Chile. It would be understandable if these products wouldn’t be available locally, but they are. There are some other

absurdities; for instance Spain imports daily 330 tones of chicken and at the same time exports 205 tones of the same meat. As it was explained before, transporting food affects its quality, which means that a significant share of these products will be thrown away before they get to the store shelves.

## Proposal of solutions for Spanish Supermarkets



The above matrix shows a weighted diagram of the issues mentioned in the previous section. The problems are divided into three groups: legal, packaging and social issues. The axes are:

- Importance → of reducing food waste caused by supermarkets
- Feasibility → of resolving the issue within a year and/or with a relatively low cost

The matrix was created in a way to show what measures can be executed right away and which need more time for implementation.



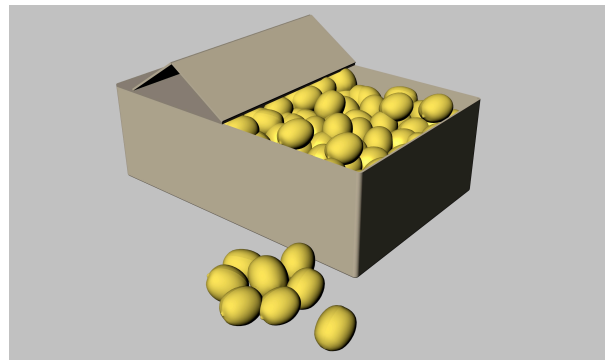
## Very important issues

### 1. Very feasible

#### Abundance

First of the important issues is to stop the abundance phenomenon present in supermarkets. It is a key issue because a lot of products are being thrown away and only serve to feed the customers' believes of food abundance rather than their nourishment. Putting an end to this issue would decrease the amount of food contracted from suppliers, which would respectively decrease food waste generation at the manufacturing level. Moreover, it would make customers more aware about the reality of food and their false belief that supply should always be constant. This way, if a food item runs out from the shelves it will be perceived as more normal than is currently accepted. Of course, some supermarkets will not want to change this strategy due to fears of a financial decline. Here are some proposed solutions they could implement:

- One of the solutions to this problem was seen in one of Mercadona's stores. The idea is to put fruits and vegetables in boxes (as it is done normally), but above them to put mirrors. It is a common practice to increase the size of rooms. In this case it makes the consumer see twice as many products than actually are.
- To avoid the feeling of ending products, boxes for fruits and vegetables can be partly covered, as shown on the drawing on the right. People will see the brand name or supermarket logo rather than the half empty box.



Made by Stanislaw Czarnocki

#### Sell by dates

This issue was already mentioned, but its importance must be highlighted. It was also ranked as very feasible to do, because this practice can be eliminated with a single legislation. Of course, the hardest part of addressing the issue comes from finding dedicated people and lobby groups to argue a strong case for it in the government. Luckily, this issue has already been raised both on the Spanish and the EU level, and talks are currently being held to determine the feasibility of such a law. If such a regulation passes, supermarkets will stop throwing away edible food. In addition, to encourage customers to buy products that are closer to their use by date, supermarkets could put these items on sale.

## **Poor deliveries**

As supermarkets have a stronger negotiation position than their suppliers, they can demand certain quality of transporting procedures. For instance, supermarkets could require a limit of transported fruits per truck, special type of resistible packaging or smaller but more frequent deliveries. The drawback of these solutions is that it would increase costs for both the suppliers and the supermarkets. In such a situation the willingness of a suppliers would depend on their relationship with the store, and the belief that both can benefit in the long-term.

A very good example of this is Mercadona, which works with a small number of suppliers and has life long partnership with them. These suppliers are required to always deliver good quality products at the same price, which is one of the most important parts of the stores strategy: sell cheap and good quality products, at the same price, all throughout the year. This way, the success of Mercadona reflects on the success of the suppliers, and the customers who are called 'bosses'. It is rare to find big players that help and work closely with their suppliers, and yet it is bringing the store much success. Mercadona's profit rose between 2009 and 2010 by 47%. When the times are bad building trust between business partners is crucial. It was also one of the reasons for which Mercadona was ranked as the 5<sup>th</sup> best retailer in Spain for 2012 and the only supermarket on the list. (Interbrand)a

Supermarkets, just like Mercadona, can address this problem by signing contracts with their suppliers, ensuring that a certain percentage of the goods arrive in perfect condition, which lowers the number of items they are unable to sell. In the current economic crises, suppliers want to maintain their contracts and will most likely abide by these requirements. Chains such as Mercadona, who have suppliers for life and demand constant innovation from them, can make such contractual changes quite easily. The idea is that if Mercadona is able to grow, they will continue sharing valuable consumer information with their suppliers, who will also grow with the chain. All supermarkets can implement such a win-win situation. (Economist)

## **2. Less feasible**

### **Awareness**

The lack of awareness is the most important issue on the food waste agenda. However, it is very hard to create awareness on a big scale, making this problem neither easy nor cheap to address. Since supermarkets are very important in developing people's behaviors, it is important for companies to understand their processes, and how their actions lead to current outcomes. It is proven that companies that acknowledge their own disadvantages and propose solutions are well perceived by society and become even more profitable in the long run.

Here are proposed solutions for supermarkets:

- Gathering detailed data about food waste. At the moment, some supermarkets release only general information about their waste, but if detailed data was provided, stores could measure their inefficiencies and come up with some solutions. For instance, if the exact number of product wastage is determined, supermarket managers could adapt their demand in a way that would maximize profits. Moreover, publicly publishing this data would make a company more transparent, which would build trust among its customers.
- Governments can also legally bind supermarkets to report their waste on websites such as EUROSTAT. This service can improve the company's methodology and encourage them to generate less food waste.
- Supermarkets are the first to know about the habits of their customers. They can use this data to create awareness campaigns. It would also be useful to create a mapping of the problem. Customers, once they have a better understanding of their contribution to the issue, can begin to change their ways.
- Supermarkets can encourage customers to buy food responsibly, by releasing leaflets, sending announcements or putting information in supermarket aisles. Some of the possible information could be: creating a shopping list, planning family meals in advance, and creating special discounts for people that participate in these campaigns. For instance, people that come to the store with a shopping list and stick to it can receive additional discounts. A supervisor could sign these shopping lists before customers begin shopping.
- Labeling certain products with labels or stickers that state the figures of how much this item is wasted. For example, a box of orange juice could state something as: "Thank you for buying me. Daily X amounts of juices are thrown directly into trash." Such interesting facts that pop up in places where individuals least expect them will be a very effective and an interesting way of raising individual's awareness right at the source of household food waste.



Boxes with food in one of food banks. Source:  
[http://www.forgottenharvest.org/images/donate\\_food.jpg](http://www.forgottenharvest.org/images/donate_food.jpg)

## Donations constraints

Since donating food not only reduces food waste but also helps those in need, Spain can take example of the USA and encourage companies to start donating food to charities. The 1996 *Good Samaritan Food Donation Act* encourages the

donation of food and grocery products to non-profit organizations for its distribution to those in need. (USDA) The Act also removes the culpability of the stores in case of poisoning or health issues that might arise from these good intentions. Currently Spain lacks such incentives. In fact, within Europe, UK is the only member that aims to pass a similar legislation. In addition to donating food, grocery stores can also look into increasing the channeling of the food for compost or biomass creation. Regardless, channeling the large volumes of food for these alternatives might not be enough to reduce food waste to zero. Even though, this law is present in the USA and takes off supermarket responsibility, supermarkets are still reluctant to donate. However, cultural differences might be in favor for such change in Spain. A good example is the belief that Americans like to sue everyone, while in Spain this is rare and might make companies more willing to contribute.

## **Health and sanitation issues**

It is the least feasible issue from those that were mentioned, because this mostly depends on the regulations that stores must abide by. In addition, the preferences of customers are very subjective and thus one solution that fits all doesn't exist. Nonetheless, over the past few years the EU has been relaxing its regulation on fruit and vegetable standards, which outline various standards about what qualifies as class I, II or III produce. Interestingly enough, countries such as Greece, France, the Czech Republic, Italy, Poland and Spain tried to block these changes. (Castle)

With less restrictive regulations, supermarkets must now work hard to transform the belief of a good product in the eyes of their consumers. To do so, they can allow consumers to taste the various types of apples being sold at the store. As is done in many supermarkets, cutting various apples and giving them out to shoppers to taste will help display the flavor changes between perfect apples and the ones that are more ripe. For instance, a shopper that tastes an apple that is perfect and the one that is ripe will have direct evidence to demonstrate them which item is more flavorful, despite not having a perfect appearance.

Supermarkets could also use their less fresh products or those that are close to their sell by date to cook dishes for customers. It could be done in a special cafeteria or as part of workshops to teach customers how to cook, as well as how to cook using products that reach their use by date. It would attract more customers, as they would be interested in this kind of events.

## **Less important issues**

### **3. Very feasible**

#### **BOGOF**

The 'Buy One Get One Free' is a common way to encourage customers to buy a certain product. Some stores began to address this issue and introduced a new deal called BOGOL (Buy One Get One Later). This concept was introduced by Tesco supermarkets in the UK in 2009, and gives customers the opportunity to pick up their free product during their next shopping trip. (Gray, 2009) Not only does this help prevent food waste on the consumer level, it also gives customers the incentive to visit the store another time and buy more things. In Spain, offers such as 2x1 or 3x2 are demonstrating a downward trend, as customers are no longer buying things in bulk. Rather they prefer to do small shopping that helps them control their spending. They are also looking for deals that directly cut the price of the produce. By implementing new deals such as BOGOL in their stores, Spanish supermarkets can continue attracting customers and addressing their current needs in times of crisis. (Marketing News)

#### **Exposure to bacteria**

The Spanish diet involves a lot of fresh products, i.e. fruits and vegetables. Supermarkets expose significant quantities of these products to bacteria that come with customers from outside. It is not responsible for big amounts of food waste but some measures can be done in this field.

- A very good example is Tesco UK, which in 2012 launched a new way of packaging. "The packaging contains a strip that absorbs ethylene, the hormone that causes fruit to ripen and then turn moldy. The strip was developed in the UK by It's Fresh Ltd, which says it is 100 times more effective than any similar existing materials" (Guardian, Smithers, 2012). Tesco is the first retailer that will test the packaging on tomatoes and avocados. "Tesco estimates the new packaging could lead to a potential saving of 1.6 million packs of tomatoes and 350,000 packs of avocados every year." If successful, it would be a huge step towards reducing food waste.
- Supermarket should also encourage customers not to touch vegetables and fruits with their own hands. Customers could be provided with plastic gloves or preferably other material gloves to check if a certain product is mature or not.

#### **Damaged boxes**

Damaged boxes are another issue that wouldn't have much impact on the food waste reduction, if addressed. It might be quite costly, especially for the suppliers but there are some solutions that could also reduce costs. However, it is an issue with lesser importance when comparing to those mentioned above.

- Supermarkets can require suppliers to provide products in more durable boxes. Paper or poor quality plastic packaging is not recommended.
- Some products are being packed into plastic bags and then to a carton box, e.g. cereals. When a customer sees a damaged box they don't want to buy the product even if its good quality inside. Supermarkets should avoid selling products with double packaging.

#### 4. Less feasible

##### Desire for imported products

The desire for imported products is partially related to the food waste problem. The cause of wasting food arises from transportation procedures and the long distances products have to travel. Choosing local products over cheaper products from far away would be a more ethical and more sustainable way of managing ones company. In addition, supermarket can help stimulate the local economy by contracting local suppliers. A very good example is Mercadona that sells mostly local products (85% of Mercadona's products are produced in Spain).

##### How to create change in the Spanish food system?

To bring forth any type of change, a few factors must be present. Malcolm Gladwell proposed some of these factors and ingredients in his book *The Tipping Point*. Gladwell analyzed the various steps, players and timing an issue must have to grow from an idea into a large-scale movement. The three factors proposed by Gladwell were: the Law of the Few, the Stickiness Factor, and the Power of Context.



Malcolm Gladwell. Source: <http://whatdoclientsreallywant.com/>

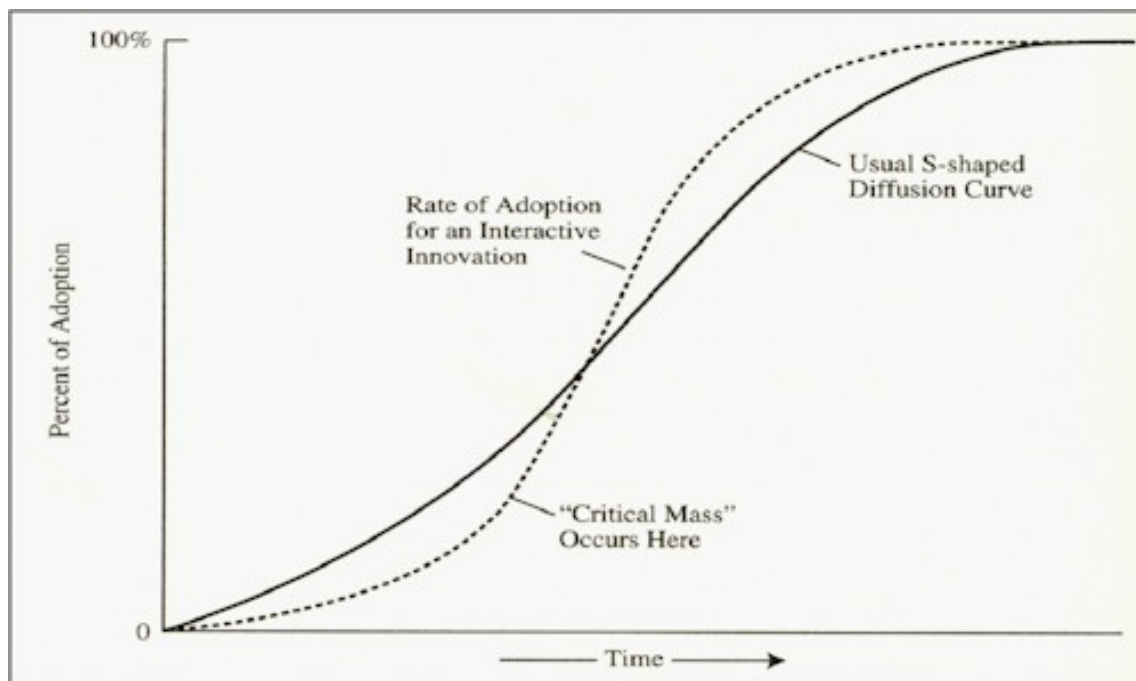
##### Law of the Few

The idea of this law is mainly focused on the fact that any type of change usually stems from specific individuals. These are people who have a fresh idea, which is not mainstream. To bring these

ideas to light and to spread them to others, the individuals rely on their 'connectivity' skills. This entails the idea that connectors have ties to many parties, have good communication skills and help build bridges across different sectors, industries and entities.

These individuals rely on the help of Mavens who have strong beliefs and want to help other consumers make informed decisions. These are people who have a personal belief that they have a responsibility to spread their own knowledge to others. These are people who want to share their wealth of information with others and make the pie bigger for all involved parties. They have a moral responsibility to their neighbors, friends and family to keep everyone informed and up-to-date.

Lastly, but most importantly, once these ideas reach a Salesman, who also believes in the idea, we can see a rapid spread of the belief. Salesmen are passionate individuals who are convinced in the validity of the belief, idea or even product, and want to help pitch it to others with their sense of persuasion. These individuals can ignite a spark in others, making them care about topics or issues they have not paid much attention to, but suddenly realize its importance and its connectivity to their own lives. With the influence of these people, behavioral changes, such as buying certain products or supporting certain causes, increase exponentially and small activities begin to emerge.



The Malcolm Gladwell's tipping point theory shown on graph. Source: <http://docjourney.wordpress.com/>

## The Stickiness Factor

In order for this small movement to increase, it has to spread to other levels and stick there, developing further and becoming stronger on each level. In order for this to happen some factors must

be present. The campaigns and movements that have the best stickiness factor help address an issue that has existed for a long time, but which was impossible to address due to lack of valid or accurate information. Through in-depth research to figure out the true needs of the people, campaigns that help address concerns that have been building up for years will be the most likely to stick and to spread to others. The ideas are also usually contrary to conventional wisdom, since it acknowledges that the status quo is wrong and must be changed or updated.

## **The Power of Context**

Lastly, but most importantly, raising awareness and making people care is not enough. The idea must also be ripe and the actions to address this problem must be available. There must also be a will power and resources from all sides to finally address the concern and embark on the right path. Often if the idea being pushed comes at the wrong time, where it is ripe but there are other concerns that might seem more important, the issue no matter how good will be pushed aside.

Considering the above mentioned steps we will now apply the ideas proposed by Gladwell to the Supermarket Industry and analyze whether the topic of ‘food waste’ has reached its tipping point in Spain by comparing it to that of Great Britain. Specifically, we will focus on the key players that help make an issue mature and the steps necessary to find solutions once everyone is onboard.

## **The process**

What we learned from the previous paragraph is that when the awareness of a certain issue is rising and the ‘tipping point’ is achieved, the change is starting to happen from the legislative point of view, which is followed by the social and corporative behavioral changes. In this section you will see what is the chronological order of implementation of the issues mentioned above.

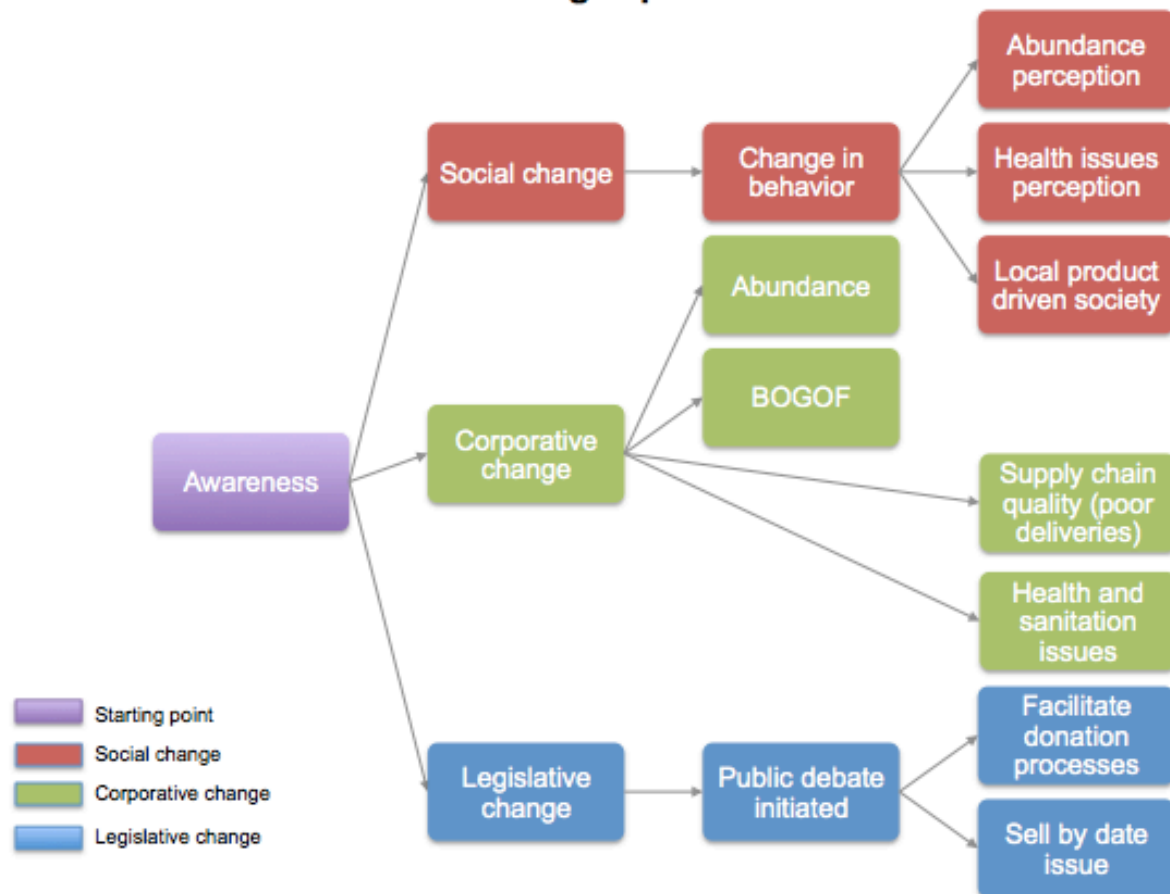
The graph on the next page shows the order of the most important issues supermarkets have to address. They are divided into 3 kinds of change: corporative, social and legislative.

Anyone who starts researching the food waste issue, after a certain point will come up with the same conclusion. Gathering data about food waste and rising awareness among involved parties, i.e. supermarkets, society or government, is key for successfully reducing waste. This is why the change starts with rising awareness through as many channels as possible (social media, NGO, public campaigns). This influences supermarkets to adapt more quickly to the new situations and demands.

Starting from awareness it is very hard to predict what follows next in the exact order. Yet, there are some patterns that can be easily drawn up. The rising awareness among the society will decrease the desire for products imported from distant places. The first issues most food waste



## “Change” process model



campaigns address are promoting local resources and buying local produce. This helps increase society's focus on the origin of the produce they buy.

Supermarkets will start to know much more about the kind of food waste they generate. This data may also influence the government into changing the law concerning fruit quality standards. In this case supermarkets will start to sell e.g. bananas with black stains (not because people will start finding it more esthetic, just because it is still edible). Later this will help change people's perception on food encouraging them to utilize a banana with black stains rather than throwing it away.

Another positive argument for raising the awareness of supermarkets is their support and partnership in helping to implement legislative laws in government. With the involvement of supermarkets it will be easier to lobby and reach a broad group of people who are interested in developing regulations regarding food donations and sell by dates.

Finally, supermarkets that analyze their value and supply chains will be able to identify the materiality of each problem and find a suitable solution for each. Issues that supermarkets should

analyze are: BOGOF offers, bacterial exposure, damaged boxes, poor quality of deliveries. Finally, these changes will not only improve the behavior of the supermarkets, but also that of the society, and help bring the end of the presently widespread 'abundance principal'.

## Awareness in details

The following is a breakdown of how awareness is created and promoted around food waste.

### I. Making the problem Obvious

In order to create any type of change first there must be awareness that a problem exists. In this case, many individuals are aware that there is some food being wasted on all levels, but they don't understand the extent of the issue and why it must be urgently stopped. In many cases, the first individuals to get involved in a certain issue are the ones who are directly impacted by it or have strong feelings towards resolving it. This involves the work of volunteers and NGO's, their job not only involves the spreading of the message to others, but also gaining more support. This indirectly makes them the leaders of that issue. Their words, messaging and positioning of the issue plays a crucial role in whether or not the campaign grows stronger, attracts more followers or simply fizzles out.

### II. Start of the Change

A voluntary initiative is usually the first step of any action or change. As was mentioned previously, it starts off as the work of Connectors, people that are passionate, have ideas that are not in the main stream and have a desire to spread their ideas to others. A very good example of a connector in the field of food waste is Tristram Stuart who published the book entitled *Waste - Uncovering the Global Food Scandal*. With its graphical images, statistical figures and easy to understand narration the book opened up the eyes of many individuals into this unsustainable world of food waste.

Tristram's initial voluntary group grew bigger thanks to individuals known as Mavens, who read the book, heard about the voluntary movement and felt passionate enough about the topic to get other involved. With enough Mavens on board they created new campaigns such as: *Love Food, Hate Waste*; *Food Cycle* and *Feeding 5000*. All three organizations are focused on cutting and reducing food waste. *Love Food, Hate Waste* helps educate individuals about how they can prevent food waste by extending the life of their ingredients in the fridge and using applications that remind you about the use by dates of your products. *Feeding 5000* uses thrown away produce to create open air cooking events in London, which help feed 5,000 people, and *Food Cycle* creates similar products from wasted food but on a smaller scale.

The increased presence and popularity of such campaigns and organizations, leads to the involvement of Salesmen who try to sell the idea to other parties that have a role in the prevention of food waste. Without these individuals the problem cannot be resolved sustainably. This includes the involvement of one supermarket that is willing to lead the way in this topic by calculating their food waste figures, becoming transparent and



Tristram Stuart organizing his "Feeding 5k" event at Trafalgar Square. Source: <http://victoriaohmanvis425.wordpress.com/2012/02/26/feeding-the-5k/>

cooperating with food waste leaders and organizations. It is possible to call these supermarkets 'heroes' because they are setting new standards and introducing measures that have not been implemented by others. These heroes are willing to open themselves up for criticism, but in return become efficient, gain support from individuals that care about food waste and create a positive image around themselves.

Other individuals might start a completely new movement, such as a chef who created the first People's Social Supermarket in the UK. The supermarket is created on a smaller scale than big supermarket chains, which sells quality produce at a cheaper price and supplies local farmers for the ingredients. By giving local farmers more customers, the social supermarket helps reduce the food waste that would otherwise be present on the manufacturing level. This supermarket is focused more on the needs of the local individuals, on promoting the local economy and providing an alternative to big chain stores that put profit above everything else. These social innovators may play the key role in bringing about lasting change through innovative ideas that help big players see the positive and profitable side of food waste reduction.

### III. The Response

Thanks to Salesmen representatives of big supermarkets, such as Tesco, began to create soft changes to their policy that take the first steps towards addressing the issue. For instance, the Buy One Get One Free Later policy was introduced by Tesco to help prevent customers from carrying home an extra item that will be simply thrown away. Instead the new BOGOL deal allows customers to get their product at a later time, attracting them back to the supermarket on a later day to pick up the free

item and do some more shopping. This doesn't waste the free product and increases the customer's trips to the store.

Other supermarket chains such as Mark & Spencer partner up with the *Love Food, Hate Waste* campaign to raise customer awareness about food waste. Through actions such as 'cook once, eat twice' or making a shopping list before going to the store, Mark & Spencer make their customers more aware about their own role in the food waste issue. This information is found through the Mark & Spencer website *Plan A Strategy*, that has easy to read information, games and helps increase customer recycling action.

Once such actions become better known, it is easier to increase the number of supporters through the involvement of well-known people, celebrities or other social activists. The involvement of such individuals, who have many followers that love and trust them, helps strengthen the initiative and bring it further into the mainstream spot light.

#### **IV. Public Debate**

The mixture of the voluntary action, supermarket chain involvement and widespread public awareness leads to a public debate. This public debate provides a platform where the issue can be discussed and its solutions can be proposed. Soon enough, with increased civil involvement, politicians and legal players enter the debate raising the issue's importance at the local government and congressional levels. Legislators who are able to timely pick up and address the concerns of the people are the ones who secure their votes and power in congress. Therefore, the concerned public has a lot of influential power in helping to create lasting changes by telling the government what legislations should get passed.

This step demonstrates the maturity of this change making process. In order for it to succeed, the individuals leading the discussion must have good argumentations to present to others. They have to address many questions, such as: Who will benefit? What are the implications of the change? Why is it important for the society? Why is it important for the corporations that have supermarkets? Their answers must be structured in an easy to follow manner that is easy to understand, that makes sense and is presented in a way that builds trust between the public and the advocate of the issue.

The main purpose and final stage of this phase is to make the majority of the society aware of the existing problem. A certain analogy comes to ones mind, which is the change making process of recycling. At the beginning the individuals that started to recycle were believed to be extreme environmentalist. They were thought of as individuals who only care for the planet and don't address other needs. At the initial stage, these individuals were not taken seriously and at times their ideas

were rejected or ignored by the society. After some time, when more people joined the movement and supported the beliefs of the organization, recycling became a well accepted and even a necessary part of daily activities. Something that started as a belief of a few became a globally well-known movement. It has come to the point where recycling is seen as integral part of our lives, and those who do not recycle at times are shunned or looked upon unfavorably. With such major support, the government has helped make this action mainstream by providing educational campaigns, providing recycling bins to all households and helping regulate its smooth process. The issue of food waste is still in its initial stage. The issue is well known among certain individuals of society and is becoming better known. Yet, there is still a lack of strong awareness on the household level, of supermarket actions and legislative laws that would make food donation easier in Europe.

## V. Legislative Action



William Emerson. Source:  
<http://upload.wikimedia.org/wikipedia/commons/0/00/BillEmerson.jpg>

This public concern and awareness is what led to the passage of the Bill Emerson Good Samaritan Donation Act that removed the liability from entities that donate food, from being sued for injury or health illnesses that might result from their charitable actions. Bill Emerson was a politician who was an avid believer that the hungry students deserve to have access to food that is plentiful in his homeland of USA. The importance of this topic to the public and to Emerson led Bill Clinton to pass this act into law when he became the president. Such actions helped Bill Clinton coin his good reputation and become one of the most loved presidents.

In the UK, similar food waste campaigns and increased consumer awareness is leading to a political action that aims to remove the Sell by Dates supermarkets have to abide by. Removal of these sell by dates will ensure that more produce stay on shelves rather than get thrown despite its good quality for unnecessary reasons. In Spain, such a debate also exists and was mentioned earlier in this paper. Nonetheless, due to lack of media coverage it is not possible to identify the key players involved in this campaign.

Other important topics that should be addressed are health and sanitation issues. Nowadays, a lot of food is thrown away because it doesn't comply with governmental quality standards, even if it is nutritional and edible. Some of these laws are already being taken away from the European agenda, such as the famous 'bend banana law', which was setting the right curvature of bananas. Nonetheless, these actions are slow and dispersed, and a more centralized legislative change is needed.

## How to talk to supermarkets?

In this part we would like to present a guide on how to present the food waste issue to supermarkets. Throughout the whole paper we were discussing various figures, numbers and reasons for the existence of food waste at the retail level. Supermarkets are one of the biggest companies in the world, in fact, as far as turnover is concerned Walmart is the leader among supermarkets. This gives supermarkets a lot of negotiation power when dealing with both suppliers and consumers. The consumers are usually the party supermarkets focus on the most, since this is the party that determines the biggest scope of their success. Of course, while most supermarkets have the customer's intention in mind, especially when it comes to quality of food sold, this single-minded approach where food is either good or bad leads to many problems. The food waste created not only significantly impacts the customer's environment, but also takes away certain customer's human right to food. To help expand the currently narrow outlook of supermarkets on the issue of food, below is an outline of topics, which might interest retailers to start reviewing the issue. The topics are broken down into three main areas: legal, economic and reputation.

### Legal

The distinction between waste and food waste is yet to be defined in legal terms. It must also be mentioned that many of the legal frameworks vary from one country to another, making it difficult to have one standard on food waste. However, seeing as how access to nutrition is a human right, as is for instance access to water, it may be possible to introduce a new humanitarian law that focuses on food waste. In fact, this distinction must be made clear and new legislation ought to address the reduction of food waste on all levels of the food chain. As environmental concerns are rising, governments are paying more attention to greenhouse gas releases, water and sanitation, land use and so on. Since issues related to food waste encompass the many topics presently concerning governments, distinguishing food waste from general waste will be the stepping-stone toward future changes.

As was mentioned earlier, many corporations, including supermarkets, are considered to be individuals and thus have similar rights. One of them is the right to privacy, which they currently enjoy through their choice of not publicly disclosing their waste figures. Big corporations are only obliged to reveal these figures to government organizations. In the UK the supermarkets reveal their numbers to the WRAP organization, but simultaneously 'specify' how they would like these numbers to be used.

Since individuals all over the world understand that waste once put into a plastic bag and placed into the curb can no longer be considered 'private property' and is open to public use, big corporations must also realize that this individual law applies to their waste. As the issue of food waste

is gaining more strength, concerned citizens are becoming aware of the injustice of throwing away so much food when many individuals are going hungry and experience the violation of their basic human right. This awareness leads to various grassroots and small-scale actions, such as dumpster diving groups (which 'rescue' food waste bound for the landfill) or voluntarily collect the food and distribute to local food banks. There are also many news articles that start to question the secrecy behind supermarket food waste and the desire to keep the figures away from public knowledge. Movies such as *Dive! Living off America's Waste* by Jeremy Seifert bring the concerns of the few to the living rooms of the many, making these issues a public concern and mainstream.

Such movies have a big impact on the opinion of customers and sometimes they can be skewed towards one side. For instance, the movie *Dive!* Set off a storm of concern for the supermarket Trader Joe's. Despite donating as much of their food to public shelters, viewers of the movie began to blog and leave comments on websites saying that they are appalled by what they saw and will never again shop at this supermarket. Many Trader Joe's employees had to defend their workplace and convince the viewers that there are two sides to any story. (Change Petition)



The poster of *Dive!* Source:  
<http://nohomeworkmag.com//>

Those supermarkets who try their outmost to donate as much of their food waste as possible, or channel it to different locations other than the landfill, still face many obstacles. These obstacles include sanitation and health laws that pose a big problem for food donation. For instance, EU food regulations on the right type fruits or vegetables that can be sold reduce on a big scale the number of vegetables and fruits that make it to grocery stores. Elimination of many of these produce from the market make it difficult for supermarkets to sell them, or further more donate them to food banks or soup kitchens that can consume them. Creating legislation that eases such strict health and quality standards will result in a lower volume of wasted food. In addition, passing legislation that aids organizations that want to donate food, through the removal of liability for their charitable actions, will encourage more supermarket companies in Europe and Spain to donate their goods. Since the biggest concern for companies is acquiring a bad reputation, which they are afraid to get by seeming like they donate unhealthy produce, such legislation would make donations more clear for both supermarkets and consumers. Having both sides that are aware about restrictive legislation and nutritional value of the food will create consumers who are more willing to receive 'unwanted food' and supermarkets that are less worried about tarnishing their brand name. Rather it could lead to

supermarkets who participate in these initiatives and who donate their no longer vendible food seen as heroes, increasing their customer loyalty and overall success.

Like many individuals, supermarkets also want to keep their privacy. If a stranger starts rummaging through trash that was left on the curbside of the house, the owner will feel exposed thinking their rights are being violated. In this situation, however, we must understand that:

“Anything left outside for the public good can no longer  
be considered someone’s private property.” (Liboiron, 2012)

Big supermarkets must also begin to understand this, and see that despite their desire to keep their food waste numbers a secret, the growing environmental and hunger concerns will sooner or later get the public talking. The problem is that the public is already talking, and thanks to social media news spreads fast. If supermarkets continue their streak of inaction, their reputation and success will not be determined by them, but by the individuals that spread the messages. Right now is the best time for supermarkets to take the lead in being more transparent and regaining the trust of their customers, who after all are the deciding factor of their success. To avoid scandals that cause major threats on their reputation, supermarkets must stop hibernating in hopes of seeing the problem go away, and take a more active role in addressing issues that affect not only themselves, but also their most important stakeholders- the customers.

## **Economic**

When a person digs deep enough into the functioning of the supermarket system, one might find a lot of paradoxes. One of them is the fact that supermarkets tend to ‘privatize’ their own waste. As it was mentioned above waste is public, however a lot of stores are keeping their food waste locked or behind a fence. It is a big mystery. As matter of a fact it is against the definition of trash/waste that can be easily found on the Internet. “Worthless or discarded material or objects; refuse or rubbish. Something broken off or removed to be discarded”. (The Free Online Dictionary) The main idea of throwing away things is that people don’t need it anymore, so if someone else can make a better use out of it the better. In fact, the supermarket way of seeing food waste could be compared to a backyard sale, in which many supermarket managers would participate. When people don’t need some objects they can showcase them in their backyards and try to sell it, hoping to make a small profit out of something that would have otherwise been thrown away for free. Of course, at the moment supermarkets wouldn’t be legally allowed to sell food that was presumed to be inedible or the one destined for landfills. Nonetheless, if major players such as supermarkets would lobby to change the common practice it could be very profitable for them.



Another issue is the optimization of the quantity of food ordered. It is quite hard to convince supermarkets to do so as it would mean the end of the 'abundance principle'. Supermarkets tend to hide numbers of their food waste from both public opinion and board of directors for two reasons. For finance directors' waste equals costs, so they wouldn't be very pleased to hear about the big quantities of food waste that decreases their potential profits. With the changing society and an increased awareness in this field supermarkets will eventually have to change their behavior. If companies find a way to sell rather than throw away about 50% of their products, the potential profits the supermarkets could make would greatly increase.

Moreover, it is simply common sense to reduce waste. In the case of supermarkets food waste means alternative costs of selling it at the right time. Many supermarkets set as a goal the reduction in operating costs through decreased garbage collection and disposal costs, and the identification of potential reuse markets for what would otherwise be wasted. Disposing waste at landfills costs money and it is growing. As it was mentioned before in this paper, the EU has carried a directive reducing the amount of waste going to landfills and in 2020 it aims to reduce it by 90% compared to the 2006 levels. For example, one of the solutions for reducing food waste could be creating a small canteen for customers inside the supermarket, where meals would be produced from products that are still edible.

As far as donations are concerned, a lot of supermarkets fear the high costs of transportation of food to soup kitchens or other organizations. Normally, as NGOs don't have a lot of money supermarkets would have to cover the costs. Some could add these costs to their CSR strategy, but there are a lot of different options that can be proposed. One of them is to create a partnership with a delivery company or suppliers. It depends on the contract, because sometimes supermarkets deliver their own products to the store. The partnership could consist of an arrangement in which empty trucks that leave the supermarket would take the food that was supposed to be thrown away to a nearby NGO.

As example of this is the voluntary WRAP initiative, Courtauld Commitment, which attracted a lot of retailers and aims to reach three targets by the end of 2012:

1. Reduce carbon impact of packaging by 10%
2. Reduce household food and drink wastes by 4%
3. Reduce traditional grocery product waste in the grocery supply chain by 5%



An example of a Courtauld Commitment initiative. Source: <http://www.recap.co.uk/images/upload/coke%20bottles%20courtauld.bmp>

This has resulted in various product innovations that helped supermarkets reduce their impact on the environment. For example Marks & Spencer introduced 'skin packaging' of meat, this reduced the weight by 69% going from 10 g to 3.1 g and helped extend the produce life span by 5 extra days. Moreover, wine bottle weights were also reduced, which helps lower GHG emissions during production, as well as transportation costs. A growing number of retailers are starting to understand that investments in new technologies can be beneficial for them and aid them with reaching new environmental regulations and directives.

## Reputation

A recent survey from PRWeek/One Poll revealed some interesting findings. While most shopped at Tesco (34%), other supermarkets were performing much better on many levels. Asda was voted as the one who provides the most reasonable price (43%), Waitrose was said to offer the highest quality goods (38%) and Sainsbury's had the best customer service (21%).

Many customers said that customer service and quality produce was important, yet when asked about what determines the place where they shop they stated price and convenience as the big drivers, especially for individuals in the age group of 18-24 (50%). Yet the real figures from supermarket sales paints a different story.

It seems that consumers do not understand their own shopping habits, but thanks to sale figures it seems that supermarkets do. The retail data revealed that, "Tesco was down, while Sainsbury's and Waitrose were flourishing, which offered value in price [and] in product and service too." (PR Week) In fact, 75% of individuals still prefer to shop in stores, where they not only get to visually see and feel the quality of the produce they buy, but experience a good quality of service in the store. This resulted with Waitrose and Sainsbury's leading significantly on best reputation, and the reason why Tesco has seen a drop in their profits for the first time in 20 years. (PR Week)

Things have been so bad that the current manager of Tesco's UK, Richard Brasher, had to resign from his position. It seems that Tesco's famous campaign of *Price Drop*, has not attracted as many customers as they had hoped. Their expenditure of €500 million on price cuts did not revive their sales in the past 12 months. (Reputation 247) As was mentioned earlier, when Channel 4 News approached the four biggest supermarkets in the UK, Tesco, Asda, Morrison's and Sainsbury's, the only supermarket that published its food waste figures was Sainsbury's. We can conclude that this transparency and good customer service has enabled Sainsbury's to flourish in the past few years and even earned the customer's recognition for their initiatives. (Channel 4 News)

The world of supermarkets is rough. There is high competition and it is hard to maintain loyal customers. Yet, it seems that reputation and quality are very important to customers, even if they might not realize it themselves. In fact, we can go as far as to say that many supermarkets can be broken down into two types, those that sell cheap food, and those that focus on maintaining low cost without sacrificing quality of produce. Stores like Asda and Tesco, which focus mainly on low prices belong to the first group and are unable to maintain customer loyalty. Companies like Waitrose and Sainsbury, on the other hand, are better known for their reputation and good consumer opinion than cheap prices, and seem to be flourishing. The question is, is it possible to have both?

The answer seems to be yes. Marks & Spencer has enjoyed a very reputable position on the BrandIndex star for a long time. (Shakespeare, 2009) Not only do customers have a high regard for the supermarket, but also there is a perception that it provides good quality items for their price. This seems to prove the fact that

Rank	Brand	2011
1	Marks & Spencer	30.07
2	Sainsbury's	22.92
3	Waitrose	21.02
4	Morrisons	19.85
5	Asda	15.79

UK's supermarket Buzz Ranking shows the best companies from a consumer's point of view. Source: <http://www.brandindex.com/ranking/uk/supermarkets-2011-uk-buzz-rankings>

while many supermarkets are afraid to be transparent and focus more on customer satisfaction than price, in the end it really pays off. As was mentioned earlier in the paper, while many retailers are partnering up with WRAP's initiatives, some supermarkets are more invested than others. When contacting WRAP representatives we were unable to receive specific figures about the involvement of each supermarket, nonetheless, the sales of the supermarkets show us the ones that seem to be most involved and thus the most successful.

As awareness about food waste increases, thanks to media networks, documentaries and grassroots activities, the topic of food waste can no longer be kept a secret. Supermarkets that realize this early on, such as Marks & Spencer, and become leaders in transparency, as well as addressing environmental issues that are intertwined in food waste, will be the leaders of the future. After all, while public opinion might say one thing, the sale data of the supermarkets analyzed doesn't seem to lie. Reputation and customer service are indeed highly correlated with the success of supermarkets and its time grocery stores address this issue.

Good reputation is a crucial aspect for success and survival of any supermarket. Currently many managers believe that by hiding the issue of food waste they are able to maintain a good reputation

amongst their customers. While this might have been true in the past, times are quickly changing and the supermarkets that do not address this material issues on time might do more harm to their reputation than help it.

The idea of publishing detailed information about food waste is a foreign idea to many. There is still a big misconception that publishing such information might repel concerned customers from the store or influence their purchasing habits. Nonetheless, some retail leaders like Sainsbury are challenging this idea and revealing their food waste figures. As the above-mentioned survey revealed, in times of crisis people want to shop and do business with entities they trust. This feeling is very important, especially since the recent crisis arose due to secrecy and deceit on the part of certain leading companies. In Spain, Mercadona has also a very good reputation as far as transparency is concerned. Of course while the store is not transparent on all levels, (for example they don't mention food waste in their annual reports), but compared to others they are more open about their in-store strategies and keeping reinforcing their customers idea that they are the 'bosses'. Knowing the depth of the financial crisis Spain is facing, it is remarkable that Mercadona has managed to grow during these difficult times.

There is no doubt that we live in changing times. The consumers are becoming more aware and companies need to adapt to this new situation. Supermarkets need to react fast, because this is a fast paced market and anyone who doesn't adapt on time will be out of it. It is possible to go as far as to mention that publishing food waste data will be the turning point for this market. Having good stakeholder engagement, where the consumers feel involved and appreciated, will boost the supermarkets reputation. With more readily available data, the consumers will have a better idea of the supermarket reality and if needed could suggest possible ways to solve their problems. It is a common phenomenon that when people have access to free data and feel that they can help make a difference then they start coming up with helpful solutions. This would generate great ideas on how supermarkets can lower their food waste without having to spend much money on experts, or even trying to defend their actions with customers. Involving stakeholders on such material issues not only helps build trust amongst the involved members, but also helps create efficiency and enriches the solution creating process.

As for supermarkets, there is no more time to wait and changes towards their food waste strategy must be implemented immediately. The public will perceive companies that are the first to start the 'new movement' in a positive light. The society would be pleased to hear that the company is showing their cards by revealing that it wastes food and it's taking steps to deal with it, in an open and inclusive manner.

## Incentives for change

Below you will find a list of solutions that can be shown to supermarket managers, when trying to convince them to change their behavior. All aim to improve and strengthen supermarkets CSR strategies and reputation.

### Economical Ventures

There are a lot of possible solutions to create businesses in order to reduce food waste. The main driver for these solutions to work is the connection between the food that supermarkets cannot



The idea of a “social supermarket” already exist in UK, but it is an independent initiative and doesn’t sell thrown away food. Source: <http://edinburgholdtowncryer.blogspot.com.es/>

sell, because of legal issues, and the people that would make a better use of it or who just simply need it. One of the ideas was presented above, i.e. a small kitchen inside the supermarket, where meals are prepared from food that would be wasted. Another idea could be an implementation of a ‘social supermarket’. It is a more complex process, because a change in legislation would be needed, particularly introducing a *Food Donation Act*, which takes away liability from donors. In such a supermarket customers would be able to purchase food that is still

legally edible, but is not legally vendible. Logistical issues are also quite difficult to solve, but it is not impossible.

On the other hand some supermarkets are venturing into new businesses such as sandwich shops or small cafés. This requires ordering more produce and taking risk, since they do not have the expertise in these kinds of businesses. By opening a ‘social supermarket’ large retailers can not only put their experience into practice, but also channel their food loss into a potential profit and improve its good practices for the benefit of the society.

### Waste cost reduction

Many supermarkets see waste as an integral part of the business, so the costs related to it are seen in the same way. It is a huge mistake, because there are many solutions to reduce waste and related costs. These include recycling initiatives and implementation of new technologies in the product life cycle, such as ‘skin packaging’. Some supermarkets are either not aware of the solutions or

find them too difficult to implement. Thus changing supermarket behavior relies heavily on the initiatives of NGOs and other organizations, such as WRAP's *Love Food, Hate Waste* initiative that partners with British retail chains and aids them with the changing process. As was mentioned previously, food waste is also hidden issue within supermarkets, because such revelation would force many businesses to change their current operation systems. Rather than being afraid of change, supermarkets can cut losses and become more efficient by gather such data.

## **Customer Relations**

Some companies believe that in crisis people look first for a low price and then for other aspects. This data comes from surveys in which clients themselves are not aware of their buying drives. The sales data, however, is a reliable guide to determining which stores succeed and which ones don't. As was mentioned earlier, companies that are successful in times of crisis are those that put more effort in good customer service and quality produce. Providing high standards and quality of products leads to trust among customers.

Recently Tesco UK experienced the first downfall in profits in two decades because they were more concerned with expanding their number of stores and maintaining low prices, rather than focusing on their customer relations. The price reduction campaign which cost about 500 million euro, was not as successful as hoped, if this money was spent on bettering their services the company might not have experienced their current profit loss.

Stakeholder engagement has become a very important and essential part of the modern way of doing business. Companies see the long-term benefit of investing time and money in figuring out the needs of the involved parties.

## **Transparency**

Transparency is very much related to the relations supermarkets have with customers. In today's world a lot of people feel powerless with the magnitude of big corporations and their inability to voice their opinion. Any signs that show people how the business is run and what happens backstage, lead to an increase in trust. Transparency not only means publishing data about any kind of issue, but also means being available to answer any customer concerns. Many times, when individuals have questions or doubts they cannot find easy access to the right personnel in charge who can address their concerns.

As far as gathering data about food waste is concerned, a very detailed research is needed. In order to successfully reduce food waste supermarkets need to know what kind of food they waste,

whether it is more fruits, vegetables or meat. Such specific data will give them a clear idea of their current supply chain inefficiencies and will help with the implementation of the right solutions.

Transparency also requires being open to organizations that are wishing to help supermarkets with their food waste. Many times food banks or soup kitchens are more than willing to pick up excess food. Yet, supermarkets back out of such help or initiatives due to reputational fears. In some cases underground initiatives, such as 'dumpster divers', i.e. individuals looking for food in supermarket garbage, are discouraged or prevented, when supermarkets lock their trash.



The target of 'dumpster divers'. Source: <http://newshugs.files.wordpress.com/>

While many supermarkets might be afraid to embark on such a fundamental change, the truth of the matter is that it can be much easier than perceived. As local communities begin to focus in on themselves, many grassroots initiatives pop up. One of such initiatives is known as the Time Bank, where locals can join and volunteer their time. For every hour volunteered they can receive an equal hour back, these hours can go towards personal projects or other community initiatives. Supermarkets can reach out to such organizations when needing volunteers to transport or donate their food to local food stores. In return, these supermarkets not only get loyal consumers, but can become the suppliers of food for such organizations and communities. For example, when a Time Bank decides to have a reunion, a supermarket can aid them by donating left over food, and in return has a database of volunteers who will transport the excess food to local shelters. This creates a sustainable and beneficial system for both parties, where supermarkets can rise in popularity within the locals, and the organization can increase its positive influence within the community they operate.

### **More efficient company**

In times of crisis companies need to think how to cut unnecessary costs. It is related to energy efficiency, building design and an efficient supply chain. Companies that become more sustainable, lower their costs and can get more profits for every shareholder euro that they spend. Such companies generate more interest among investors. This was proven in a report carried out by Forética called

*Sustainability for financial geeks.* Companies that are ranked in various rankings as the most sustainable are the least risky for long-term investments.

Such efficiency is also necessary in forecasting food demand. Currently supermarkets feel the need to overstock their shelves in order to instill a sense of abundance. This behavior is costly and wasteful. Optimization of orders should play a very important role in a supermarket strategy as it leads to a direct increase in profits.

### **Support of legislative change**

Supermarkets need to understand that legislative change related to the retail sector is in their own interest. While such legislative initiatives are not occurring in Spain, in countries such as the UK or USA, where such issues are more mature, organizations are putting forth legal frameworks to address the problem. For instance, in the UK NGOs and the government have proposed a law that would eliminate the use of sell by dates. Supermarkets should get on board of these initiatives, as they would greatly benefit from such a change.

In addition to that, supermarkets should also be focused on easing sanitation and health standards, which at the moment are a big obstacle in food donations. Moreover, they could increase their sales if they would not be forced to throw away products, which are perfectly edible, but have reached their sell by date and have to be taken off the shelves. Introducing a *Food Donation Act* would also be a great help for the supermarkets. At the moment they don't have many incentives to donate food, which maintains their high volume of organic waste. Such an act would help supermarkets to comply with the new EU landfill directive.

### **Adapting to the new way of information diffusion**

Supermarkets need to adapt to the new ways of how information is being spread throughout the world. Many studies have shown that consumers no longer trust direct messaging practices from companies. Rather they value the reviews and recommendations made by third parties. Partnering with key NGOs and important local activists that focus on issues, which are material for supermarkets should be of great interest to them as it raises their good name and reputation amongst stakeholders.

### **Avoid black mailing**

Companies that fail to partner with third party organizations or address material questions for their stakeholders become a target of negative campaigns. This is evident with the example of Trader Joe's who became a target of a public petition to get them to donate more of their food waste. The makers of the documentary *Dive!* created this petition, which demonstrated the world of 'dumpster



diving' in the USA. It has been signed by 82,614 individuals, many of whom said they were appalled by the news and would never shop at Trader Joe's again. Although the company does part-take in some food donation activities, the lack of the store's response or active participation in discussing this issue with the organizations led to bad press. Other supermarkets should aim to avoid such negative black mailing by being more transparent and more communicative with third parties.

### **Risk becomes opportunity**

While many retailers perceive such changes as risky, others, who are more long-term thinking, see it as an opportunity. A recent article in the Guardian, *People power is revolutionizing the way we buy food*, emphasized the growth of local food businesses, which people see as more secure for financial investment. As it was mentioned before, *The People's Supermarket* has now partnered with a grocery store Spar. After investing a £100,000 the company became their largest wholesale supplier, helping to diverge this supermarket's channels of investments. (Babbs, 2012) This happens as a result of the supermarket's ability to sell more of its goods to smaller businesses that are more secure and are geared for future success. In addition, it strengthens the supermarkets reputation, as they become known for supporting local initiatives within a community.

Moreover, supermarkets need to understand that revealing data that may be perceived by some as risky can become an opportunity. A lot of industries have become targets for various scandals, in which secret information was revealed to the public and caused damage of certain companies' reputation. If a company reveals information and acknowledges its flaws beforehand they won't need to spend money and further efforts to regain their consumer's trust.

### **Being a pioneer**

The future of any industry is innovation, transparency and stakeholder engagement. In such a globalized and connected world nothing can remain a secret for long. Companies that think outside the box and learn to make opportunities out of risk will be ahead of the game, and secure their long-term positioning within the market they operate. As it was mentioned before, companies have no time to waste and need to change their behavior, because the food waste issue is becoming more material. The most successful companies in history were always innovators and were always trying to keep ahead of the competition.

# Conclusion

No change happens without changing the mindset. As it was highlighted a couple of times through out the paper, supermarkets are the intermediary that is responsible for the demand and supply creation within the food chain. Change is seen as risky and costly. It is due to the system the whole society lives in. All the parties: the society, corporation and governments think in short term gains. Jorgen Randers said: “it is a sickness that can be cured, but it is extremely hard”. People need to change their perspective and start looking at the long-term benefits, even if it means making sacrifices first.

The next step to any change is an analysis and deep understanding of the problem. For supermarkets, there is a lack of internal awareness about the figures of how much is spent on food, transportation, man labor involved in putting and taking off unused items off the shelves, and finally throwing and towing away the waste to landfills. A better understanding of this chain will paint a better picture of where the problem exists and at which steps it can be stopped.

Once supermarkets understand their own problems, they can then explain the issue to their consumers, who too must become more aware about their role in food waste creation. Consumers understand perfectly well the concept of food waste, but undermine greatly their own contribution and many times lack knowledge about organizations that aim to fight it. Companies that are willing to be transparent and open about this topic might be surprised to see the many solutions that will be proposed by the consumers on how to address the problem. Hiding this problem is no longer a viable option, both because thanks to technology news spreads faster than ever, and also because concerns about the environment will sooner or later bring the attention to the role of food waste. Opening the floor to fresh minds and to involved parties will yield to greater commitment and more quality solutions.

The only way a sensitive issue regarding food can spin out of control is if people lose touch and proximity to it. This is very visible in developed countries, where the abundance of food and lack of problems in its access led to the existence of food waste. To bring this issue back to the daily lives of individuals, the campaigns urging for the stop of food waste must become part of people’s reality. To answer this question we start with the basic concept of where people come into contact or are exposed to food. The answers are: supermarkets, the house, eating out or being invited to certain events. Since there is no way to control what happens to the food in third party cases (such as other events or restaurants), we can say that individuals have the most control in decision making regarding food when buying it at supermarkets or cooking it at home. Thus, supermarkets are vital in spreading the message to individuals and raising their awareness about the existence of the problem.

Gathering data can be completed through various channels. Primarily it can start with digitally or manually counting the volume of incoming goods (making sure to note the percentage of produce that arrive safely and in good shape for sale). Examining the ratio of the number of goods ordered and the number that arrives in perfect condition can help determine who are the better or the worse suppliers. Suppliers who are not sending items in a good manner can either be let go, or could sign a contract with the retailer to deliver a certain amount in perfect shape, or otherwise be forced to update their shipping standards, or worse, face contractual extermination. After the items are safely placed on the shelves of the supermarket, the retail can determine the rate at which certain items get sold. While it is obvious that no clear pattern would exist, it is also very likely that an overall general trend can be deduced. This trend can serve as the 'guideline' of what can happen throughout the year. Knowing such a pattern on a daily basis can also help determine the trends for a certain week. Seeing a demand in one item over the other can help the supermarket make better predictions about the future orders. Lastly, when it is time to throw away the items, the supermarket will have a very clear idea of the items that leave the store and the ones that stay. Those that are not so popular at a certain moment can be decreased in volume for the future order. It can also help determine which items can be even removed from produce list, minimized in volume, kept the same or increased.

In addition to gathering and analyzing data about suppliers and supermarket trends, retailers can try to establish a contact and bridge into the lifestyle of the consumers. Better understanding your clientele will enable you to serve their needs more effectively. Understanding the constantly changing tastes of consumers will help retailers get ahead of the competition and stock up on produce that the clients are going to need a few days or week in advance. Also conducting such a survey, which explores the average portions that consumers usually can or like to consume, can help the retailer contract suppliers that are flexible in providing smaller portions. This helps decrease the plastic used, increased the produce by weight that get shipped (since each product will weigh less), and provide the products the consumers actually want. Supermarkets can even send the results of the survey to interested consumers, who will with time become more aware about the issue of food waste and would like to see what the supermarket is doing about it. Such collaboration can help raise the interest of the consumers. It can also help the company become more efficient and have a better reason for introducing fundamental changes they would have to implement regardless in order to become more sustainable.

As part of a bigger project involving the author of the El Pais blog *3500 Millones*, Gonzalo Fanjul, a food sector expert, Manuel Bruscas, and social psychologist, Angela Fanjul, the goal of this report is to initiate awareness of food waste on all levels. It aims to connect the problem of food waste and the rising number of households experiencing food insecurity through a social initiative. Giving

access to social innovators to this important issue will help produce practical and urgently needed solutions. In the end, a more intelligent and efficient food system will help address both social and environmental problems our world currently faces. Having spent many years strengthening a broken system, we must now rely on the innovative and quick solutions from the society to create a more amicable and just world for future generations.

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# **Food Waste**

## **An analysis of the retail sector**

### **An Executive Summary**

By  
Hokuma Karimova  
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# Introduction

Today's global food system is vastly flawed. It fails to meet the demand of those seeking food, providing over abundance to places where there is more than enough and failing in places that truly need it. This uneven distribution has changed the scales of the way people eat, leading to a global food epidemic where obesity and heart disease rise in developed countries, while hunger and malnourishment continue to plague many in the developing world. As you can see the current food system is as ridiculous as it is immoral. In fact, nobody truly benefits from the enormous amounts of waste it generates.

Focusing on Spain, we will see that the present system is leading to unnecessary water and land loss, which in times of crisis is especially ignorant. Curbing the almost 3 million tons of yearly food waste generated in Spain, will produce both monetary benefits and strengthen the country's natural resource management. In fact, a study done by ALBAL showed that 45% of all food waste in Spain is avoidable. This would save up to €5.2 billion a year.

Since it is impossible to solve a problem with the same mindset that created it, new minds must address this problem through social innovation. Opening the platform to fresh and innovative ideas will help resolve an issue that neither politicians nor money are able to address. As part of a bigger project, this paper aims to set the groundwork towards finding a solution for changing the food system. Specifically, it focuses on the retail level, which is the link between the manufacturing and consumption levels. Raising awareness at this level will help bring both systematic and behavioral changes.

## Global Food Waste

To understand the relevance and importance of this topic, we must first begin by identifying the definition of what is food waste. Tristram Stuart describes it as "a potential source of food that is knowingly discarded or destroyed." One third of the global food production is wasted, i.e. 1.3 billion tons of food a year that doesn't provide nutrition nor nourishment, but instead is emptied into landfills. This amount of food if saved is enough to feed all hungry people of the world four times over. Below is a graph that shows the percentage of food waste on each level and its causes.

The cause for such of this waste varies by country and sector. There are general patterns that exist on all levels. In the production sector, waste is caused by specific produce standards and regulations, unfair trade agreements, and oligopoly in the production system. For instance, numbers show that 40-60% of fish is wasted due to international norms. Regulations and the behavior of corporations results in high amounts

of food waste at the distribution and retail level. Finally, the level with the highest percentage of food waste is the consumption level, reaching a staggering 60%.

It is estimated that “by 2013 global food sales will reach US \$4.6 trillion, and the World Bank predicts that food demand will increase by 50% between 2009 and 2030.” This means that, if nothing is done, food waste will grow in equal proportions.

In the consumer sector waste is harder to regulate. It is due to consumers' preferences, as well as their lack of awareness about the problem since most see supermarkets abundant with food. This results with 20-40% of produce being wasted simply based on their esthetics and not quality.

## **Benefits of curbing Food Waste**

To utilize the food that would otherwise be wasted, is not only intelligent, but is also a path to create social benefit. However, food waste is a phenomenon that has negative impacts on the environment, economy and the society, and unless completely eliminated will continue to be harmful no matter how small the quantity. It means that each time anyone is trying to reduce food waste, they are also reducing the negative impact that this phenomenon has. Both environmental and economic impacts are very related to each other, so a lot of economic impacts are going to be derived from the environmental ones. As far as the society is concerned the impacts that it is facing are less direct, nonetheless, it is a field where a lot can be done in relation to food waste.

## **Environmental impact**

Food waste, as the majority of it ends up in landfills, is a contributor to GHG emissions. In fact it emits 170 Mt of CO<sub>2</sub> equivalent, which stands for 3% of all GHG emitted in the EU27. In absolute numbers it would be less, but the gas that is generated is methane, which is 25 times more potent than CO<sub>2</sub> and thus much more harmful to the environment and the climate. It is predicted that by 2020 the emissions will increase up to 240 Mt of CO<sub>2</sub> equivalent.

Another issue is the land and water misuse. In Spain 38% of land is arable and 14% of land is used for grazing, which means that in total 52% of land is used for food production. As far as water is concerned, 60% of all water in Spain is devoted to agriculture. The ALBAL organization carried out a *Save Food* study, which revealed that almost 50% of food is thrown away. Putting these numbers together we can conclude that more than 25% of land and 30% of water in Spain is used to produce food that ends up in landfills. In a country where water scarcity is an issue, utilizing it in a proper manner will be a great start to improve resource efficiency.

In addition to the above mentioned, it is important to consider the waste of resources that arise through the manufacturing, the distribution and the consumption of food. The first and most important resource used to produce food is fresh water. In the USA food waste requires 25% of all fresh water consumption of the country. In every food chain level there are significant amounts of petroleum used for its manufacturing, processing and transportation. The biggest problem is that most people that produce food are not overly preoccupied with its waste, for the more they produce the more they can earn. This is similar on the retail sector where selling more to consumers' results with more profits for the store. The consumers buy more than they need, but they do not care or are not aware that their actions cause food waste.

## **Economic impact**

All the economic impacts are related to the environmental impacts that were mentioned above. Each Spanish wastes 63 kg of food per year, which costs them approximately €250. Assuming that there are 46 million people living in Spain, the country's yearly budget lost on food waste equals to €11.5 billion. According to the "Save Food" study 45% of food waste in Spain can be avoided, i.e. €5.2 of the €11.5 billion can be saved. This doesn't mean that all money is wasted, simply that consumers are throwing away products for which they have paid. These economic losses are present in every stage of the food chain, however, if this money is saved it would lead to more profits for all parties.

Another issue consists of poor order forecasting at the distribution level. Supermarkets buy sandwiches for half the price they sell and are able to make a profit with only half of these products sold. Although still making a profit, the supermarkets are not meeting their full profit potential. To address this problem, supermarkets must come to terms with having not fully stocked shelves. This change will also require raising consumer awareness and encouraging their behavioral changes.

## **Social impact**

Food is a human right, wasting it directly infringes on the well being of each society. Without channeling the food waste to food banks and soup kitchens, individuals suffering from hunger will continue to have their basic rights stripped away from them. As the prices on food increases, more individuals will face this crime. The effect of rising prices on commodities impacts all countries by increasing their food insecurity issue.

Food waste also affects the environment and society on a daily basis. One of these impacts is the production and release of methane gas from landfills, which contributes to global climate change. The population most affected by this is the world's poor, many of whom live in areas affected by frequent natural disasters, such as Indonesia, Mexico or

Brazil. In addition to this, people that live in the vicinity of landfills experience a direct impact with the constant growth of mountains of trash, with its toxicity and GHG releases.

Wasting food also leads to the waste of natural resources. It does not waste all natural resources similarly; land used for lettuce cultivation will produce similar amounts the year after. On the other hand, resources such as oil, which is non-renewable, results in higher costs the more its depleted as it must satisfy the similar demands on minimal availability. Since oil is used in food production it increase the price of food as well. Renewable resources such as water are also decreasing with increased food production, since it is returned to earth contaminated with pesticides and other chemicals, making it unsuitable for consumption or reuse in the field. Considering the vitality of this resource, increased depletion will result in serious global problems, especially in areas where drinking water is hard to attain or simply isn't available.

With the rising population the demand for food is growing at different pace (slower in developed countries and faster in developing ones). Interestingly, food waste trends are opposite to the above mentioned with developed countries such as United States of America, United Kingdom, France or Spain artificially increasing their demand, i.e. having higher demand economically than actually exists (50% of all food is wasted).

## **Retail sector with an emphasis on supermarkets**

This research will focus on the role of supermarkets in food waste and the measures that could be taken to tackle it. Although the retail sector is not the biggest contributor to the generation of food waste, it does have the most influential power. It's waste shares make up 10-15% depending on the country. Yet supermarkets are the major representatives of the retail sector and are the intermediary between the manufacturers and the individual customers. Therefore, they are the cause of the increase in high consumption in today's society. They also influence consumer behavior by increasing portions or by tempting them with different promotions. Supermarkets are very much responsible for how people look at food nowadays, i.e. abundance of food in stores make individuals less appreciative of it. Of course there are other channels through which food can be bought. Nonetheless, depending on the country, around 85% of all food purchases are made in supermarkets. This gives them the power and control of the market that other types of companies don't have.

## **The Spanish retail sector**

Considering that Spain has the fourth highest population in the EU, with 46 million inhabitants, a country that is facing such a crisis needs to do its out most to ensure that it is using all its resources as efficiently as possible. Much is dependent on the culture of the country. For instance the Spanish diet includes a high consumption of fruits and vegetables, fish and pulses. About 50% of the food that is thrown is made of fruits and vegetables,

things that do not have a long shelf life. This also applies to daily staple items such as bread, which has a maximum shelf life of one day.

While the retail and distribution sector is wide, it is important to focus on the role of supermarkets that have much influence at the 'micro level', due to many resources and incentives to contribute to fighting hunger. In addition, with the new waste directives and increasing awareness about food waste, supermarkets will have an obligatory and a moral responsibility to address this issue. It is eminent that they will face this problem, so it is rather a question of when and not why supermarkets should start actively addressing food waste.

Of the long list of supermarkets in Spain, the top five are: OpenCor, Mercadona, Carrefour, Eroski and Dinosol. More than 80 % of all Spanish groceries purchases in 2008 were made in supermarkets and hypermarkets and about 55% of all groceries purchases were made in the five biggest supermarket chains.

Despite its role in this issue, the word combination "food waste" is still a taboo issue for the supermarket industry. When reading the annual reports of supermarkets, it is impossible to tie the words together. What is often available is information regarding waste management. After an analysis of three annual reports (Mercadona, Eroski and Carrefour) only one commonality was found- all mentioned information focused solely on energy production, biomass creation or recycling. None revealed information about the amount of food waste they produce or how they try to reduce it, focusing instead on their disposal procedures. The reason for this behavior is the fact that reporting such information can be very damaging for a company's reputation, both for its clients and shareholders.

## **Analysis of food waste problem in supermarkets in Spain**

The second part of this report focuses on how to introduce changes to the current food system. It lists the possible measures and causes for the present problems. Next, it discusses the steps for reaching the 'tipping point' of any new idea, a theory introduced by Malcolm Gladwell. To introduce such a fundamental change, the report follows with the role awareness plays in this and how it can be attained. The section concludes with issues that are important and relevant for supermarkets, emphasizing the steps that can be used when trying to approach supermarkets.

We start with the figure below, which introduces the most relevant reasons for food waste generation in the food sector. The figures below list the issues, and rank them on their feasibility and importance.

Problem Category	Legal	Packaging	Social
Specific Issue	Sell by Date Issue	Fresh products are in exposure to bacteria or high temperature	BOGOF (Buy One Get One Free)
	Donations constraints (e.g. <i>Good Samaritan Food Donation Act</i> )	Poor delivery (products arrive to the supermarkets in bad conditions)	Abundance
	Health issues (e.g. edible fruits with natural defects are thrown away)	Damaged boxes are not sold	Lack of awareness
			Consumers desire for products from far away

The following is a brief explanation of each variable:

Sell by dates → Supermarkets have two different types of dates to manage. The ‘sell by dates’ are established before the expiration date, which is why supermarkets throw away produce that are still edible.

Donations constraints → The retail sector as a whole does not have enough economic incentives to donate food. Even if some economic incentives are present, supermarkets are too afraid of the consequences and impacts donations might have on their reputation.

Health issues → The quality standards of food are set on the exterior image rather than on the fact of whether a certain produce is edible or not. This causes a lot of waste within the fresh products that have short shelf life.

Packaging → Fresh products are exposed to bacteria coming from the customers. They are kept in poor conditions that result in a faster decrease in quality. Moreover, sometimes products arrive to supermarkets in poor conditions, i.e. a product itself can be damaged or the packaging can be harmed, making them unsuitable for sale. This is mainly caused by overstocking the deliveries.

BOGOF → Buy One Get One Free promotions result in customers to feel that they are making a good deal. For some it may be true, but most of people do not need a double



portion, so they end up throwing it away without having any economic loss. It helps supermarkets to delegate their food waste.

Abundance → It is a major cause of food waste at the retail level. Supermarkets want their customers to feel that they are at a place where food is unlimited and always accessible. They do it even if it causes a significant part of their products to be wasted. Supermarkets strongly believe it attracts more customers.

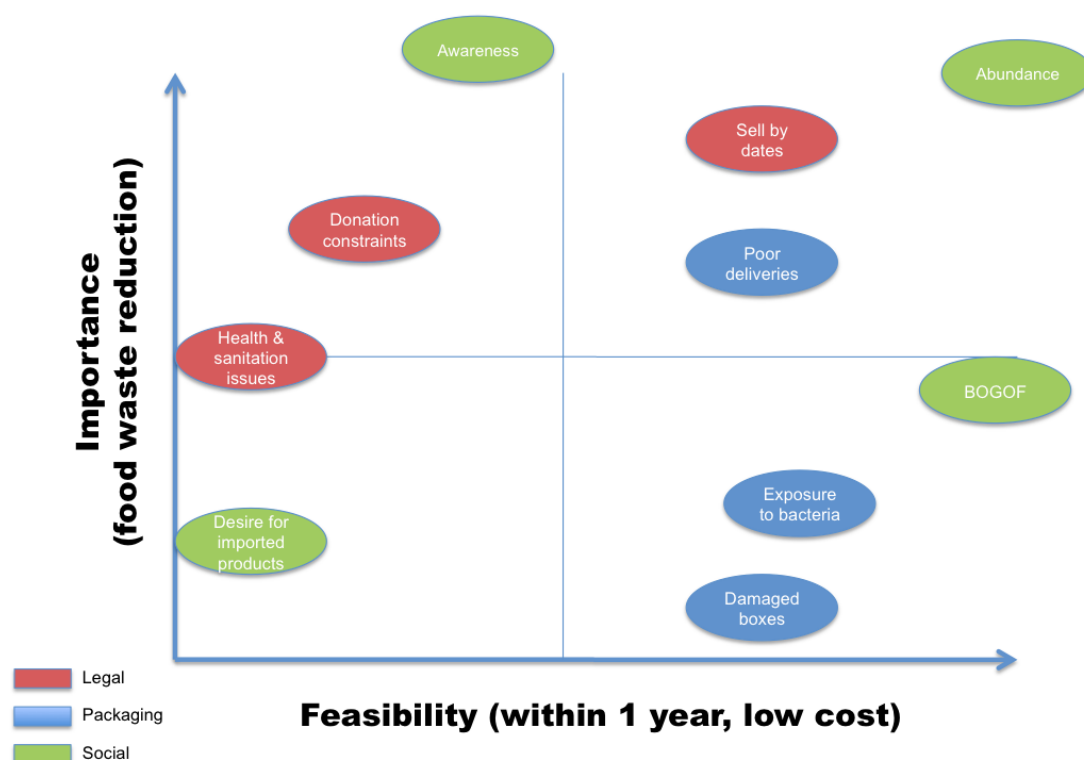
Awareness → Both supermarkets and customers are aware that food waste exists. However, food waste has become a natural part of the whole business. A significant part of waste could be avoided, if the society would be aware of its impacts and the fact that everybody can contribute to its elimination.

Desire for products from abroad → The expansive pallet of consumers has led to more produce to be imported from abroad. The long distance involved in the delivery damages the produce and makes them sensitive to any delays that might arise.

## Feasibility of the variables

The matrix below shows a weighted diagram of the issues mentioned in the previous section. The problems are divided into three groups: legal, packaging and social issues. The axes are:

- Importance: of reducing food waste caused by supermarkets
- Feasibility: of resolving the issue within a year and/or relatively low cost

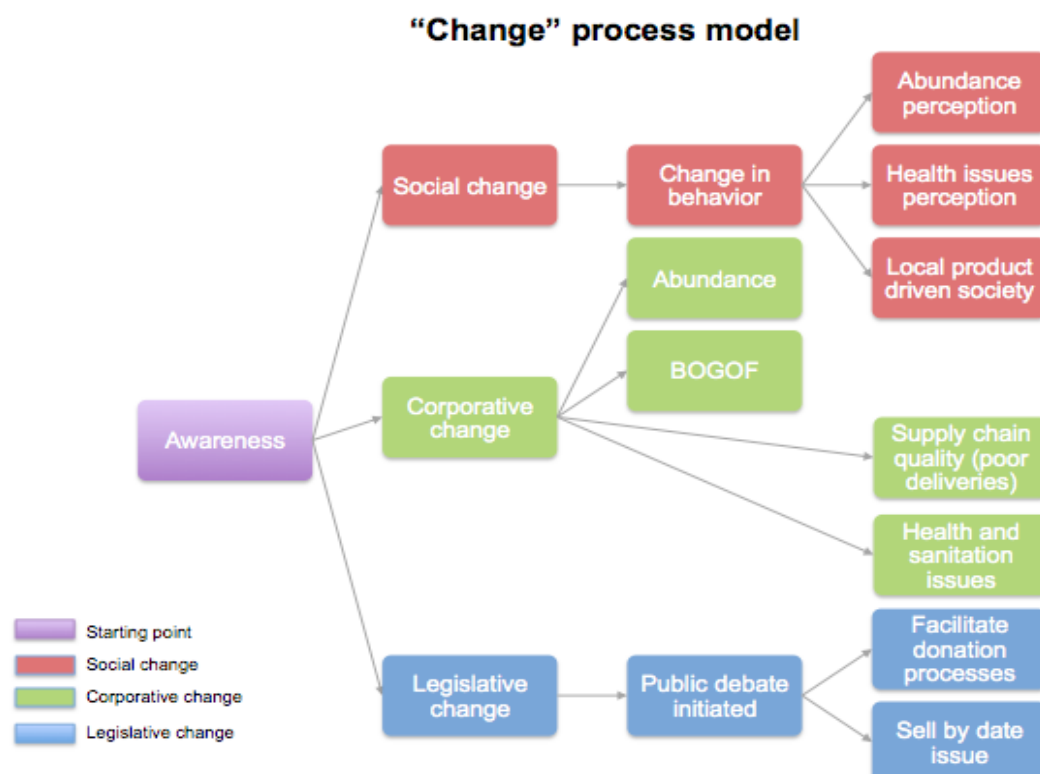


It aims to depict which measures can be executed right away and which need more time for implementation. This is followed with practical steps needed for their implementation.

## How to create change in the Spanish food system

To bring forth any type of change a few factors must be present. Malcolm Gladwell proposed some of these factors and ingredients in his book called the “Tipping Point”. Gladwell analyzed the various steps, players and timing an issue must have to grow from an idea into a large-scale movement. The three factors proposed by Gladwell were: the Law of the Few (any type of change is usually led by a few individuals), the Stickiness Factor (the ability of the issue to be retained amongst individuals) and the Power of Context (in order for an issue to expand it has to be deemed important).

Considering the theory and the steps mentioned above we will now apply the ideas proposed by Gladwell to the Supermarket Industry and analyze whether the topic of ‘food waste’ has reached its tipping point in Spain by comparing it to that of Great Britain. Specifically, we will focus on the key players that help make an issue mature and the steps necessary to find solutions once everyone is on board.



As the above analysis shows, any kind of change starts with awareness not only as far food waste is concerned. Anyone, who starts researching the food waste issue, after a certain point will come up with the same conclusion. Gathering data about food waste and

rising awareness among involved parties, i.e. supermarkets, society or government, is essential for reducing waste. This is why the change starts with raising awareness through as many channels as possible (social media, NGO, public campaigns). This will influence supermarkets to adapt to the new situation.

The awareness creation process happens in 5 steps:

1. Making the problem obvious

People have to know that the problem exist and more importantly have to understand it and why is it important for it to be addressed. Creating this awareness involves the work of volunteers and NGOs.

2. Start of the change

It needs a couple of passionate and hardworking people to start the change. In the future they will become leaders in fighting this certain issue. As far as the food waste issue is concerned a very good example of such a leader is Tristram Stuart, who wrote a book about how ridiculous the whole food system is.

3. The response

After the first two steps some entities start to create soft changes to their policies in order to address the issue. They realize that there is no more time to lose and want to be a new leader in the industry.

4. Public debate

The whole mixture of the voluntary actions, companies' involvement and leaders endorsement leads to a public debate. The issue has become mature enough to be talked over on a provided platform. In order for the whole change making process to succeed the individuals leading the discussion must have good argumentation to present to others. The main purpose of this step is to make the majority of the society aware of the existing problem.

5. Legislative action

The final stage leads to a legislative change that helps to solve the problem. The majority of the society is aware of the existing problem and the government is pressured to get involved in the change making process.

## **Incentives for change**

### **How to talk to supermarkets?**

If the latter is true, how can the argument be presented to supermarket chain in a compelling way? This section presents a guide on how to approach supermarkets about the food waste issue. Throughout the whole paper we were discussing various figures, numbers and reasons for the existence of food waste at the retail level. Supermarkets are one of the biggest companies in the world; in fact, as far as revenue is concerned Walmart is the

leading company. This gives supermarkets a lot of negotiation power when dealing with both the suppliers and the consumers. There are three main areas in which supermarkets are the most concerned:

### 1. Legal

There are a couple of issues that have to be mentioned here. First of all supermarkets need to understand that a legislative change is in their own interest, because with the changing society the food waste issue will have to be addressed. This change would be of a great help to them. There are many problems related to the existing legislation. Some examples include: differentiating food waste from general waste (food waste should be available to the public), supermarkets viewing donations as unattractive for economic and legal reasons, etc.

### 2. Economic

Waste is seen as an integral part of the supermarket industry and is hidden on an inside and outside level. In all businesses waste is considered as a cost, which in this case is also an integral part. Optimizing orders from the suppliers would greatly increase the profits. Moreover, with the changing legislation supermarkets will have to change their behavior, as by 2020 they need to reduce their waste going to landfill by 90%. It also reduces costs as each tone of waste sent to landfill costs money.

### 3. Reputation

Supermarkets tend to consider talking about food waste as a huge risk and prefer to hide it by all means. But in reality, what they consider risk can turn into a great opportunity to succeed in this industry. It is proven that supermarkets that put more effort on good relations with customers and try to be as transparent as possible are doing financially better than others (success of Sainsbury's vs downfall of Tesco). As awareness about food waste increases, thanks to media networks, documentaries and grassroots activities, the topic of food waste can no longer be kept a secret.

When approaching supermarkets it is important to propose solutions which would be beneficial for them, thus worth implementation. These approaches include: economic ventures, waste cost reduction, customer relations, transparency, efficient company, supporting legislative change, adapting to the new way of information diffusion, avoiding black mailing, creating opportunity out of risk, and being a pioneer.

## Conclusion

No change happens without changing the mindset. As it was highlighted couple of times through out the paper that supermarkets are the intermediary that is responsible for the demand and supply creation within the food chain. Change is seen as risky and costly. It is due to the system the whole society lives in. All the parties: the society, corporation and governments think in short term gains. Jorgen Randers said: “it is a sickness that can be cured, but it is extremely hard”. People need to change their perspective and start looking at the long-term benefits, even if it means making sacrifices first. This includes the tracking and sharing information about their own food waste. Publishing the findings in their annual reports will help supermarkets raise the awareness of all stakeholders about this topic. The future is approaching fast and companies that are able to resolve this issue in a timely fashion will be at the forefront of the changing food industry.

As part of a bigger project involving the author of the El Pais blog *3500 Millones*, Gonzalo Fanjul, a food sector expert, Manuel Bruscas, and social psychologist, Angela Fanjul, the goal of this report is to initiate awareness of food waste on all levels. It aims to connect the problem of food waste and the rising number of households experiencing food insecurity through a social initiative. Giving access to social innovators to this important issue will help produce practical and urgently needed solutions. In the end, a more intelligent and efficient food system will help address both social and environmental problems our world currently faces. Having spent many years strengthening a broken system, we must now rely on the innovative and quick solutions from the society to create a more amicable and just world for future generations.