The environmental impact of plastic used for food packaging: Study on people’s perceptions, attitudes and choices when buying food products and recycling packaging materials

By Adriana Mejia Velez
The environmental impact of plastic used for food packaging: Study on people’s perceptions, attitudes and choices when buying food products and recycling packaging materials

Adriana Mejia Velez

12904909

April 2015

Thesis submitted to the Department of Geography, Environment and development Studies at Birkbeck University of London

A partial fulfilment of the requirements for the degree of Bachelor Science (BCs) Environmental Management
Plagiarism and word limit declarations:

I declare that the work presented in this report is my own and all other published work has been acknowledged

**Signature:** Adriana Mejía

**Date:** 29th April 2015

I declare that the whole report (excluding the appendices, excluding the bibliography) does not exceed 8000 words.

**Signature:** Adriana Mejía

**Date:** 29th April 2015
The environmental impact of plastic used for food packaging: Study on people’s perceptions, attitudes and choices when buying food products and recycling packaging materials

Acknowledgements

This dissertation is dedicated to my father who has always been the inspiration and encouragement in my life. Nothing would have been possible without his unconditional love and support.

I would like to thank all my family and friends who have been there for me along this academic path and particularly I would like to express how grateful I am with my London family Daniel and Luna who kept me going while doing this research.
The environmental impact of plastic used for food packaging: Study on people’s perceptions, attitudes and choices when buying food products and recycling packaging materials

Abstract

The increasing demand for plastics used for food packaging has led to global environmental concerns where governments, companies and consumers have been encouraged to be more sustainable by using less packaging materials and recycling them more.

This paper presents a brief definition of food packaging and the different types of materials used in the food industry; it will mainly focus on plastics. The dissertation will review some of the literature that is concerned with food packaging, its environmental issues, and how the society and the environment can also benefit from it. This work also takes into consideration some of the regulations for packaging production and waste that applies to the UK and the European Union.

The main part of this dissertation consists of a survey that deals with people’s opinions, attitudes and choices when buying food products and recycling packaging materials. There were 72 respondents who live in London and in suburban areas, and the information provided by the participants will be presented in the discussion section. Here, the research will explore people’s concerns over packaging, demands for food products, and the way they are currently dealing with waste. The above mentioned is important when considering environmental issues related to packaging as people are dealing with it on an everyday basis. Moreover, this will lead to a conclusion that includes suggestions on how in every part of the society there are different responsibilities when it comes to managing and reducing waste. This includes that governments, local authorities, companies, and consumers all participate to improve environmental issues connected to packaging.
## Contents

1. Introduction ........................................... 1

2. Literature review ........................................ 2

   2.1 Food packaging and definitions ................. 2
       - Food packaging .................................. 2
       - Primary, secondary and tertiary packaging ... 2
       - Food packaging materials ..................... 2
       - Plastics ......................................... 3

   2.2 Food packaging and the environment ........... 4
       - Environmental benefits of food packaging .... 4
       - Life cycle of food packaging .................. 6
       - Production – environmental impact .......... 6
       - Waste - environmental impact ................ 7

   2.3 people and food packaging ....................... 8

3. Methodology .............................................. 9

   3.1 Introduction ....................................... 9
   3.2 Research aims and objectives .................. 9
   3.3 Research methods and data collection ........ 9
   3.4 Questionnaire survey design ................... 9
   3.5 Strength and weaknesses ....................... 10

4. Discussion and findings .............................. 11

   4.1 Main concerns regarding food packaging ...... 11
   4.2 People’s perceptions and demands on food packaging 13
   4.3 Recycling habits and its benefits for the environment 15
   4.1 Challenges to recycling ......................... 17

5. Conclusion .............................................. 19

Annexes ..................................................... 21

References ............................................... 25
Introduction

The increasing demand for packaging materials to meet the needs of the food industry and its consumers are leading us to an unsustainable way of living. The extraction of scarce natural resources and pollution from waste in our land and sea are the main environmental concerns over packaging. There has been an increasing preference for plastic materials used for packaging due to its lightweight properties and cheaper costs in comparison to other materials. The issue with the high dependence on plastics is that they are mainly created from non-renewable resources such as oil and gas (Lewis, et al, 2001) and that most are non-biodegradable, so inappropriate management of their disposal is causing serious health and environmental problems. On the other hand, it is important to highlight that the utilization of plastic and other materials for food packaging do not only imply environmental costs; food packaging itself is an important tool for preserving food and in fact it contributes to the reduction of food waste (Alter, 1988); it also provides convenience to consumers and serves as a tool for communication between the producer and customer.

People have become more aware about environmental issues and the need for more sustainable production and consumption; this has encouraged companies to consider environmental issues when developing products and local councils to provide more facilities for recycling. As a result of public awareness and accessibility of information on environmental issues, the European Union has set different targets for countries to work towards a more sustainable world; these includes that the UK needs to recycle 50 % of its waste by 2020, so far between the years 2000 and 2010 the average rate of household waste recycled has increased by 38% in the UK (DEFRA, 2012).

Nowadays, companies and institutions have the knowledge and sources to choose environmental-friendly packaging which meets economic budget planning. For instance, companies used to argue that materials protecting the environment are a reasonable choice but they are in many ways too costly. With the information flow and research over decades, companies and consumers have the knowledge to say that environmental-friendly production and cost efficiency can go hand in hand. In times where protecting the environment becomes increasingly important due to rising populations it is inevitable to choose food packaging material that is cost efficient, waste reducing and highly protective to the environment. The purpose of my study is to analyse the environmental impact of the different types of plastic used for food packaging to underline the above mentioned arguments. Moreover, it is necessary to evaluate people’s views on food packaging, their current knowledge and ideas to improve production and waste management.

This work aims to explore consumer’s knowledge and actions around packaging and waste. The data has been collected from a survey designed for consumers living in London and its suburban areas. The research questions intended to be answered are as follows:

- What are the main concerns in relation to food packaging?
- What are people’s perceptions and demands on food packaging?
- What are peoples recycling habits and how can it benefit the environment?
- Do people find it challenging to recycle in their borough? What are some of the challenges?

This research paper will put theoretical debates into consideration including common findings on food packaging and environmental challenges faced by the food industry and its consumers, global and local institutions. Connected to that information, the work includes a description of methods used for data collection followed by an evaluation of the research findings based on the survey and the questions listed above. The information gained will lead to final conclusion.
2. Literature review

This literature review will examine different definitions and theories of the published work linked to the environmental issues connected to food packaging. It will also review some of the UK and European regulations which have an influence in the industries of packaging and waste.

2.1 Food Packaging and definitions

Food packaging

Food packaging has 4 main functions: containment, protection, convenience and communication; all of them are correlated to each other and need to be considered during the packaging development process (Robertson, G.L. 2012). Consequently, food packaging is an important tool for the food industry. It prevents food from being contaminated, preserves products for a longer amount of time so they can be distributed from the place of production to the consumer, and allows communication between the retailer and consumer so information about nutrition and shelf life can be provided.

Primary, secondary and tertiary packaging:

Packaging can be distinguished among different levels as follows:

Primary packaging has direct contact with the product (Imhoff, D. 2005). It provides the most important protection as it is the barrier between the product and any external type of contamination. Normally, consumers handle this type of packaging as it is what contains the product. Examples of primary packaging are aluminium cans, plastic containers and paper bags.

Secondary packaging carries a number of primary packages. It makes it easier for retailers and consumers to handle the products. The most common example of secondary packaging is cardboard boxes.

Tertiary packaging is used in the distribution process. Its main purpose is to protect the product during transportation between the manufacture and retailer and in some cases the consumer. Examples of tertiary packaging are pallets or trolleys.

Food packaging materials

The most common materials used for food packaging are aluminium, glass, paper, steel, and plastic. Figure 1 summarises the main environmental strengths and weaknesses for each of these materials, however from an environmental point of view, there is no ideal material as they all have advantages and disadvantages. Therefore, when manufacturers are choosing a type of material they need to ensure that food is delivered safe for consumption and to minimise the environmental impact of the product and its packaging.
Plastics are the main focus of this paper. Below are some the definitions and functionalities:

**Plastics**

Plastic is a very common type of material used for packaging and its usage has significantly increased in the last years because of its lightweight properties, durability and low-cost. In the UK 38% of the plastic produced is used for packaging (BPF). Plastics require the extraction of raw materials such as crude oil and natural gas. These are limited resources so recycling has been highly encouraged in recent years. However, the recycling of plastic materials is complex as some of them are made from mixed materials so it makes it difficult and expensive to separate them (Hopewell, J et all., 2009). Moreover, the knowledge about different plastics and its manufacturing and recycling is not that wide spread within the society (Strong, A.B., 2005). Therefore, the environmental and economic benefits from recycling plastics need to be considered before governments and local councils implement the infrastructure for it. In the UK, only two types of plastics PET and HDPE are currently being recycled throughout the country and there are only some recycling points for PVC. **Figure 2** specifies the most common types of plastics and the symbols used to identify them so it is easier to recycle them. It is recommended that manufacturers include these symbols on the products, however it is not mandatory (BPF), so not all products provide these symbols which makes it sometimes difficult for consumers as they might not be able to identify them when recycling them. It also indicates that the technology of recycling plastics can still be improved (Hulse, S., 2000).
2.2 Food Packaging and the environment

Environmental benefits of food packaging

The functionalities of food packaging mentioned above can benefit not only the food industry and its consumers, but also the environment and its sustainability (Andrady, A. L., 2015). A very important aspect to consider is that food packaging has been a key instrument for reducing food waste (see figure 3). Losing food is undesirable and it is one of the biggest environmental concerns. The production of food requires natural resources such as energy, water and land. In fact, agricultural processes account for 70% of the global freshwater consumption, 38% of the land use, and 14% of the world’s greenhouse gas emissions (International Resource Panel, 2010). It is therefore essential that food is not lost at any stage of the food chain.
Moreover, when comparing between the energy used to produce packaging and the energy used for the production and preparation of food, packaging accounts for only 11% of the total energy used in the whole food system (INPCEN, 1996). This is explained in figure 4 which compares the amount of energy used at each stage of the food chain. Here, it is clear that energy used for primary and secondary packaging is small compared to the energy used through the whole food system. It is therefore argued that sometimes it is worth and necessary to increase the environmental impact of producing packaging that protects food during the distribution process as there will be environmental gains from reducing food losses (Williams and Wikström, 2011).

A very good example where packaging has been beneficial for reducing food waste is the recent developments in technologies used to pack meat products. The production of meat is one of the main contributors to greenhouse gases emissions and therefore it is very important to improve ways that help reducing the amount of meat wasted. Traditionally, butchers provided most of the meat supply in the UK, and a significant proportion of the meat that was not sold in the day would be thrown away. In fact, 25% of the meat produced in the UK used to go to waste before modern packaging existed (INPCEN). Nowadays, it is more common to purchase pre-packed meat products in supermarkets rather than from the butchers. The meat products offered in supermarkets normally use a technique called Modified Atmosphere Packaging (MAP). This practice is used to
prolong the shelf life of food, which has significantly contributed to the reduction in food losses during distribution processes. Although, the type of material used for MAP contains different layers of polymers which makes it non-recyclable; the environmental gains from reducing food waste are worth it. (INPCEN).

**Life cycle of food packaging**

To understand the impact of food packaging on the environment it is necessary to know what happens at each stage of the product’s life. Figure 5 presents a model which helps us evaluate the different factors that account for environmental damage during the lifecycle of packaging materials. Pollution and packaging materials flow during production and disposal of products. This includes extraction of raw materials, manufacturing, distribution and recovery, reuse and recycling of waste.

![Figure 5 - A model of resource and pollution flows, to and from the environment, for the complete lifecycle of a packaged product. Source: Levy, 1993](image)

This model recognises how each process is responsible for environmental impact and can be used as an instrument by manufacturers and governments when choosing the type of materials used in the industry of packaging.

**Production – Environmental Impact**

The most important aspect to minimise the environmental impact of packaging is simply to produce less. This means that there will be an environmental gain at each stage of the product’s life as we will demand fewer resources and reduce the volume of waste. It is therefore essential that producers avoid using unnecessary packaging and that authorities establish policies to encourage businesses reducing the amount of materials used for packaging. There are several regulations for packaging that apply to companies in the UK at European and national levels. These include the Directive 94/62/EC on Packaging and Packaging Waste established by the European Commission where members are required to take measures for reducing the volume of packaging within the markets and to design plans that improve waste recovery and the expansion of infrastructure to support recycling (Goodship, V., 2007). This directive has been implemented in the UK; producers have the obligation to register as a packaging producer every year and comply with regulations to help the reduction of packaging, how much of its waste goes to landfill and increase recycling and recovery of materials (Environmental Agency, 2014).

The policies mentioned above have a significant impact on how products are designed. Some of the strategies that companies should take in consideration when designing a product are listed below (Lewis, et al., 2001):
Avoid unnecessary components – There are many ways in which companies can reduce the amount of packaging. This includes minimizing not only primary packaging; there are also opportunities for reducing the amount of secondary and tertiary packaging. For example replacing single use cardboard boxes used during transportation for durable plastic boxes represents a significant reduction in the amount of tertiary packaging and therefore implies not only environmental benefits but also economic.

Choose materials that can be re used or recycle or that are biodegradable – Recycling and reusing materials means that we will demand less natural resources to make new materials. Moreover, from the disposal perspective, this minimises the levels of pollution.

Provide information to consumers – The product should provide sufficient information about how consumers should store the product to encourage food waste reduction. Also, it is very important that consumers are informed on how they should deal with the waste of the product package.

Light weighting – This can be achieved by reducing the amount of material contained in a package or by selecting low weight materials such as plastics. The main environmental and economic advantage from using lightweight materials is that they contribute to significant savings in transportation.

Waste – Environmental Impact

There has been an increasing necessity for developing alternative methods in managing waste. Historically, landfill has been the most common option for waste disposal which has caused serious levels of pollution in land and water. Ideally, the disposal of plastics should not go to landfill as they are durable materials and take many years to degrade. The European Union is very keen to work towards a “circular economy” where waste can be turned into a resource rather than going to landfill. Some of the targets for the UK include: to recycle 50% of the total waste by 2020, recycling 60 % of plastics by 2025 and to reduce 30% of waste generation by 2025. These figures work towards a so-called “waste prevention behaviour” which should reach the above mentioned targets in the next years (Bortoleto, A. P., 2014)

Packaging is a very visible element of the waste stream and it mainly comes from households. In the UK, over two thirds of the packaging waste used for food and drink comes from households (DEFRA, 2013). This data is also supported by WRAP (see figure 6), 70 % of packaging plastics waste comes from households, and the remaining 30% is from commercial and industrial commerce. This is a very significant proportion and therefore local authorities have been working to provide the necessary infrastructure and information to encourage residents to recycle more. This matter will be analysed further in the discussion which deals with how people are dealing with waste and how they feel about the available information on packaging and recycling.

Figure 6 – Plastic Packaging waste: household vs commerce and industrial companies. Source: WRAP
2.3 People and Food Packaging

Consumers have the power to influence the environmental consequences derived from food packaging; by making choices when buying food products and by the way they are dealing with the waste of packaging materials. These decisions are influenced by their perceptions and knowledge about environmental problems and most importantly by the provision of an adequate system that helps them making the right choices that benefit the environment. The term “consumer’s education” has been used by experts to underline the importance of consumers getting informed and having the knowledge (Mattsson, B., & Sonesson, U., 2003).

Packaging serves as an essential tool for people to satisfy their needs for food as it provides convenience, and makes it possible for us to consume a safe product that might have to travel a long distance before it reaches the consumer; the utilization of packaging has therefore become almost unavoidable for our society and for this reason it is important that people recognise the benefits from it, but also that they use it in a responsible way. As mentioned earlier, in the UK household waste contains a significant proportion of packaging materials, so it is necessary that people manage their domestic waste in a more sustainable way; this includes that they recycle more. The data to support the improvements on recycling in the UK can be viewed in figure 7. This graph represents the increases in household recycling waste per person in the UK. This shows that there have been improvements in recycling between the years 1998 and 2010. It is now important to see how this can keep improving and what difficulties people have encountered. It is very significant topic because nearly 60% of all packaging is made for food and beverages (Imhoff, D. 2005). In addition, new and active packaging technologies should help moving towards a more sustainable and environmentally-friendly approach (Robertson, G.L. 2012). The issue will be analysed in more detail on the discussion chapter which deals with how people are currently dealing with waste and how they feel about the information and facilities provided on packaging and recycling.

![Figure 7 – Household waste recycled per person (kgs): UK, 1991-92 to 2009-10. Source: Defra, 2013 (also Environmental agency, Scottish Environment Protection Agency, Welsh assembly)](image)
3. Methodology

3.1 Introduction

After reviewing some of the literature and legislation on food packaging and plastics; this chapter presents the methodology used for researching and developing this project. It includes the research aims and objectives, methods and data collection, and a description of how the survey questionnaire has been designed. The methodology will also discuss some of the weaknesses and strengths.

3.2 Research aims and objectives

The overall objective of this paper is to evaluate how consumers influence the environmental impact derived from food packaging by exploring people’s perceptions and attitudes when buying food products and recycling packaging materials. The questions I intend to answer are listed below:

- What are the main concerns in relation to food packaging?
- What are people’s perceptions and demands on food packaging?
- What are peoples recycling habits and how can it benefit the environment?
- Do people find it challenging to recycle in their borough? What are some of the challenges?

3.3 Research methods and data collection

Primary data has been collected from an online survey filled by 72 respondents living in London and its suburban areas. This research is concerned with the different opinions on food packaging and public participation on recycling practices at home. This report also aims to investigate what are some of the barriers encountered by people when it comes to recycling particularly in relation to the facilities and information provided by the local authorities on the matter.

There were no age, gender or income exclusions in this survey and the education level ranged from GSCE/O to PhD. The reason for no exclusions is that packaged food is something that applies to all groups of society. The survey had been completed by residents who only live and/or work in London and its suburban areas because of the size of the city and its importance within the UK and the European Union.

I chose to use an online survey because it is a state of the art method to gain data from a wide range of people in a short period of time. The data was collected in the time frame January to February 2015.

3.4 Questionnaire survey design

The questionnaire survey has been included in Annex 1. The questions have been divided into 4 sections:

1) General demographic information.
2) General perceptions on packaging.
3) People’s choices for food products.
4) Recycling habits and facilitates offered by councils.

Questions stated in section 2 have been adapted from a survey conducted in New Zealand (Wanaka Wastebusters, 2010) and questions in section 3 have been adapted from survey report by Wrap (WRAP, 2012). The rest of the questions are my own creation.

The purpose of dividing the survey into sections is that each part provides different useful information and it is a better guidance for the respondents. Moreover, it gives a more structured overview for data analysis and evaluation.
3.5 Strengths and weaknesses

Different methods used to gain information and opinions from the public have various strengths and weaknesses. Online surveys usually have the advantage that they reach a wide target group in a very short period of time. Also, a random selection of respondents makes it very representative within a community or society. Compared to interviews where the interviewer has to respond immediately and sometimes under pressure, an online survey gives the people the opportunity to answer the questions anonymous and in a convenient time frame because the questions do not have to be answered instantly.

The questions used in this survey include not only yes or no answers but different types of selections which provide more detailed information. For example, various options to choose from, such as ratings, different phrases and comments. The strength here is that different types of questions lead to a better discussion because more information and deeper opinions are revealed.

It is also important that a survey that applies to everyone in a community represents all social groups. As mentioned, this online survey does not exclude any people from age, nationality, gender or income. However, a research method cannot guarantee that all social groups are selected because random groups can be excluded by accident. In this particular survey, for example, any lower education level than GSCE/O are not represented.

It can be seen as a weakness that a random selection of respondents always exclude some groups within a community. On top of that, some target groups are represented more highly within a survey than others. For instance, a group with a higher income might be asked with a higher frequency than people with a lower income. This also applies to age or gender so younger people could randomly be chosen more often than elderly or men more highly represented in the survey than female. Usually though, a survey tries to balance this out to keep it representative.

Regardless of the content, the respondents found the online survey to be easy, fast and convenient. This improves the probability that the survey has been answered honestly and that the respondents feel comfortable to put thought into their answers. It is vital that the quality of answers always stands above the quantity which is only given if the respondents feel positive towards the survey. In comparison, interviews sometimes put people under pressure and can make them feel uncomfortable. This is why an online survey seems a popular source of information for both the respondents and researchers.

The type of questions used in a survey should also have two beneficial factors. On the one hand, the respondent should be able to answer various questions within a short period of time. For example, giving a number of possible answers in one question helps the respondent to find the suitable answers (see question 13, 15, 16, 21). On the other hand, this allows the researcher to gain detailed information without overloading the respondent with too many questions. The survey I used aims to do this accordingly. It gives plenty of aspects to evaluate and discuss but at the same time it is simple and easily understandable for the respondents.
4. Discussion and findings

One of the priorities of this survey is to find out about the knowledge of respondents regarding environmental issues that go along with food packaging and plastics in particular. Additionally, the survey deals with different responsibilities according to the consumers which includes the role of food packaging industries and local authorities. This information is necessary because it leads to conclusions where people see necessary improvements and changes. Moreover, part of the discussion includes recycling habits of consumers and their current view on the recycling facilities provided in their borough. This includes how satisfied the respondents are with the product information regarding recycling and the way local authorities take care of waste management in their respective areas.

4.1. Main concerns regarding food packaging

The first part of the discussion deals with concerns related to food packaging. The survey revealed that in fact more than 70% of the people participating in this survey are concerned with the amount of packaging they have to deal with. It confirms that they find packaging as an issue; which can be connected to different reasons. One of them could be personal concerns such as an overload of materials in every household or it could be related to general environmental problems, for example, people being worried about the volume of waste damaging the environment.

![Figure 8: Respondents concerns about the amount of packaging.](image)

The graphs below now deal with specific concerns regarding food packaging according to the participants of this survey. Regarding overpackaging only 16.6% are not worried about this issue. On the other hand, 83.4% are either concerned or very concerned regarding over packaging. Out of the 83% 29.2% are in fact very concerned. It is an indicator that the food industry is providing consumers with too much packaging. This leads to the argument that there is still room for improvement when it comes to companies avoiding unnecessary packaging. Ways to improve this are, for instance, applying fewer layers than currently being used or not to use individually wrapped items too often especially when the product does not need any special protection.

![Figure 9: Respondents concerns about over-packaging.](image)
When it comes to recycling, it is very important that the product provides enough information regarding its recyclability, so consumers are informed about the disposal of packaging materials. On the other hand it is also important that consumers understand that there are different types of packaging and that they actually look for this information. According to the findings, the respondents’ opinion regarding labelling seems very moderate. Roughly 37% are concerned with the product information (See figure 10a response scale 4 and 5 combined) displayed but also 30% do not see this as an issue. 33% seem fairly worried (figure 10a). It raises the question of how much attention they pay towards labelling as it seems not to be the biggest issue. In fact, as shown in figure 3b, 58.3% of the respondents never check beforehand if the purchased product is recyclable or not. Also, a very small percentage (5.6%) always looks for the package to be recyclable. It shows that labelling is not a priority for the consumers when it comes to recycling.

![Figure 10a: Respondents concerns about poor labelling.](image1)

![Figure 10b: Respondents checking if packaging is recyclable before buying a product](image2)

Certain products do always have packaging which is neither recyclable nor can be reused. There are mixed responses according to the survey regarding this matter. When participants were asked whether or not they were concerned about being able to choose packaging that is reusable or recyclable; 15.3% say that they were not concerned. But also 18.1% claim that it is a bigger issue. 34.7% of the respondents are somewhat concerned. The mixed response can be explained in different ways. One argument could be that a bigger number of the respondents either need more information on products that can be reused or that this topic is secondarily important. This is underlined by the question if people prefer to choose packaging that can be recyclable or reused (see figure 11b). 47.2% say that only occasionally they want to choose and 23.6% each either never want to choose or always want to choose packaging that can be reused. It again reveals that consumers either do not think about this issue or do not see this as a priority.

![Figure 11a: Respondents concerns option to choose packaging that can be reused or recycled](image3)

![Figure 11b: Respondents who want to choose packaging they can reuse or recycle](image4)
Regarding products that are claiming to be environmental friendly but effectively they are not; respondents are fairly worried but not highly. Still, 22.2% are either concerned or very concerned about green-wash packaging. There seems to be a slight tendency that consumers do not trust food companies in terms of products being environmental friendly. The reason for this can be connected to marketing campaigns aiming to increase profit. For example, products that are healthy or environmental friendly claim to be very popular among consumers. In truth though, people are questioning if those green-wash products are not as beneficial to the environment as they claim to be.

| Green-wash claims about packaging (packaging that claims to be environmentally friendly when it is not). 1: not concerned. 5: very concerned |
|---|---|
| 1 | 14 | 19.4% |
| 2 | 4 | 5.6% |
| 3 | 22 | 30.6% |
| 4 | 16 | 22.2% |
| 5 | 16 | 22.2% |

**Figure 12:** Respondents concerns about green wash claims

### 4.2. People’s perceptions and demands on food packaging

One of the major findings of this survey is the level of information gathered by the respondents regarding packaging. 83.3% stated that they do not have enough information about the different forms of packaging. This means that there needs to be improvements in the food industry, which should provide sufficient information in terms of packaging for consumers so they can use materials appropriately. This leads to many issues. For example, local authorities and councils have several regulations to improve waste management including recycling. At the end of the day the consumers are the ones to execute the different regulations so if recycling is not done properly it has a negative impact on the environment. It includes that the consumers might not know what types of packaging to recycle and in what way.

**Figure 13:** Respondents opinion regarding information provided about packaging
Connected to recycling another important part of reducing waste is the shopping habits of consumers. The usage of plastic bags provided in stores has an impact on the amount of waste generated. This could be significantly reduced if people bring their own bags to the shops. It is positive that as shown in figure 14a, 34.7% of the participants always use their own bags or a cardboard box. However, 43.1% only do this irregularly, and 22% never do. These figures could be improved, for which it is necessary to increase the awareness of people on the matter and also to encourage them by economic incentives such as charging for bags. Moreover, consumers can also reduce packaging waste by purchasing food items that do not necessarily require primary packaging, for example pre-packed fruits and vegetables. The survey reveals that 76.4% only buy pre-packed fruits or vegetables occasionally and only 13.9% always buy those products whereas 9.7% never purchase pre-packed fruits and vegetables (see figure 14b). Due to the fact that such a high number of respondents only sometimes purchase pre-packed goods, it is in indicator that the production of pre-packed fruits can be reduced to cut down waste.

A very important aspect considered in this survey is to find out people’s preferences for food when it comes to choosing between products produced locally and abroad. High demands for foreign products implies more environmental costs as they require more packaging for distribution and its transportation accounts for greenhouse gases emissions. As shown in the figure below, 19.4% of the respondents always prefer to buy local products, the reasons behind this could be either that they have environmental concerns, they prefer to eat fresher products, or that they want to support local farmers. Whatever the reason is, the environment can benefit from it so it is always better to have more local products than the ones coming from abroad. In the UK, it is very difficult for consumers to not purchase foreign products, as almost half of the food consumed comes from abroad (DEFRA, 2013). For this instance, it could be explained that 66.7% of the respondents prefer to buy food products from the UK only sometimes. It is therefore crucial that governments support more local farmers.

In this survey 43 out of the 72 participants agree that too much material is being used for food packaging and that this has a negative impact on the environment. At the same time 46 respondents think that packaging keeps the product safe and hygienic. For the food industry these findings raise a very ambivalent question. On the one
hand people seem to be worried that using too much materials for packaging harms the environment but on the other hand they recognize that packaging is beneficial for keeping the product safe and hygienic. In this case it might be difficult to cut down the use of material and it is very important to decide where to reduce packaging. For example, some foods are unnecessarily wrapped individually and there is no relevant purpose for it. Some goods just have additional packaging for marketing reasons. It basically just causes more waste. Other products, however, need further packaging to be protected from damage or being contaminated.

Regarding the phrase if packaging extends the shelve life of products only 23 people saw this as applicable. In my opinion there are two assumptions that could explain this relatively low number. One reason could be that the respondents disagree that packaging has a life extension for goods which would require further investigation. Another possible explanation could be that people do not have the knowledge that packaging has the ability to prolong the life of food products.

![Figure 16: respondents’ opinion of packaging](image)

**From the following list, please choose three phrases which you think are most applicable to food packaging:**

- Uses too much material
- Is bad for the environment
- Keeps product safe and hygienic
- Protects the product
- Extends the life of the product
- Makes the product easier to store

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Number of People</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses too much material</td>
<td>43</td>
<td>59.7%</td>
</tr>
<tr>
<td>Is bad for the environment</td>
<td>43</td>
<td>59.7%</td>
</tr>
<tr>
<td>Keeps product safe and hygienic</td>
<td>46</td>
<td>63.5%</td>
</tr>
<tr>
<td>Protects the product</td>
<td>34</td>
<td>47.2%</td>
</tr>
<tr>
<td>Extends the life of the product</td>
<td>23</td>
<td>31.5%</td>
</tr>
<tr>
<td>Makes the product easier to store</td>
<td>27</td>
<td>37.5%</td>
</tr>
</tbody>
</table>

**4.3. Recycling habits and its benefits for the environment**

According to the survey 62.5% feel that they do more recycling nowadays and 66.7% always recycle at home (figures 17 a & b). Even though these stats can be seen as positive, there is still a percentage of 29.2 who only occasionally recycle at home. In my opinion there is still room for improvement because every household should be involved in recycling. When it comes to recycling plastics 61 out of 72 people do recycle plastic food containers. It shows that a very high number recycle plastics but the main issue is if they recycle correctly or if they have the knowledge to recycle plastics the right way.

![Figure 17a: respondents recycling at home](image)

![Figure 17b: respondents recycling at home compared to 2 years ago](image)
Knowledge is a very important part of this survey because it reveals what the consumers know about recycling and plastics in particular. In fact, only 11.1% always look on the package label to see if it is recyclable and only 27.8% do this sometimes. The big issue here is that 50% never check if a plastic package is recyclable or not which indicates that a fairly high number of consumers recycle packages the wrong way. Moreover, nearly half of the respondents (44.4%) do not know that not all plastics are recyclable. These numbers raise a few questions. To my mind, consumers should get more informed how to recycle plastics correctly and they should get an overview which plastics are recyclable or not. The reasons could be that local authorities do not give out enough information to the public regarding correct recycling or that the consumers do not emphasise enough on doing recycling the right way.
4.4. Challenges to recycling

There are some indications that the recycling progress in London and its surrounding areas has improved in recent years. This statement is supported by the fact that 62.5% of the respondents feel that they have increased their recycling habits over the last two years and that 87.5% find it easy or very easy to recycle in their respective borough. 34.7% out of the 87.5% responded to find it very easy which is a number that can still be improved but the highest percentage of this part of the survey went for “very easy”. This positive development regarding recycling shows in my opinion that councils have helped to increase recycling and also that communities and its people care about recycling different materials. There is a small number of 5.6% (not easy at all) and 6.9% (not very easy) who see recycling in their borough as difficult. This could have a number of reasons and could lead to the assumption that some boroughs still have to improve on making recycling easy for the community and that there is still information to be given for the people to make them understand and agree on the importance of recycling.

![Figure 21: How do participants find it to recycle in their boroughs?](image)

Although the majority of people find recycling fairly easy there can be many barriers which prevent communities from managing their waste. It still seems to be an issue that many materials have to be separated. As mentioned earlier, even plastics have to be separated or some are non-recyclable which can make things confusing also because a number of respondents do not have the appropriate expertise. Therefore, 30.6% agree that separating too many materials is a barrier. In my opinion some councils might have difficult policies when it comes to recycling, such as too many collection times or too few a week. Also, some boroughs require residents to separate each or too many types of material.

![Figure 22: Different barriers encountered by respondents relating to recycling.](image)
Further concerns regarding packaging and recycling have been included by some of the respondents as stated on the comments below:

“Unnecessarily packaging food e.g. bananas, oranges”

“The over use of plastic bags in general and their overuse for unpackaged fruit and vegetables”

“Everything should be biodegradable”

“How much ends up in the sea and is not bio disposable!”

“The recycling industry is not very clear, including the recycling companies have different policies, so what you learn in one borough doesn’t apply in another, also if the penalties to the people who doesn’t like to recycle don’t go up, is going to very very difficult improve around this issue”

“The way we recycle in this country is very unclear a bit muddled. We all need to be made more aware by councils and supermarkets what the impact of recycling is. I don’t think the councils are always that concerned about making recycling a priority as it is expensive. My experience is that compared to other European countries like Switzerland and Germany, we are not very good at having a responsible attitude, and to being aware of the impact of the over use of plastic on the environment”
5. Conclusion

After evaluating the survey which is one main findings of this dissertation combined with the information from the literature review there are two main issues regarding food packaging that I would like to address. These are knowledge and responsibility. Consumers need to be informed about the different aspects on how to reduce their environmental impact when dealing with packaging materials; this includes that they should be aware that every choice they make when purchasing food products has an environmental impact, and that they have to have sufficient knowledge and understanding on how to manage their waste. As mentioned on the literature review, companies should provide consumers with information about the different types of packaging and authorities need to give people the necessary information and facilities to deal with their waste. At European level, the UK has been given specific targets for recycling and reduction of waste, where manufacturers are required to produce packaging in a more sustainable way and also the local authorities and residents need to work together to increase household recycling rates. This gives responsibility to everyone to be part of a society that produces less and consumes in a sensible way.

According to the survey results, some of the responses have shown that there needs to be a lot of improvement when it comes to recycling in each household. To my mind, the recycling habits are in some ways very inconsistent. For example, the level of concern regarding issues like packages than can be recycled or reused is not very high which is proven that 47.2% would only occasionally choose between a product that is recyclable or not (figure 11a & b). Other findings support that there is fairly low degree of contribution such as the fact that 43.1% sometimes bring their own bags when they go shopping (figure 14a). These numbers could improve for the people to think more about environmental friendly behaviour if they had more awareness. The opinion that the respondents could have more knowledge is underlined by the fact that 83.3% agree that they need more information on the different forms of packaging (figure 13). It is now to evaluate why there is a lack of knowledge and information and this issue is highly related to the different responsibilities.

Packaging has a long life cycle and it generates waste at each part of the product’s life. This includes any processes involved from the moment a material is produced to its consumption. Therefore, the different agents who have an influence at each point need to ensure that a minimum amount of waste is produced which makes everyone responsible for it: food industry, local and national authorities and consumers. Food companies are more likely to have the expertise as they have to comply with the legislations by the European Union and other authorities they work towards cutting down waste. However, from the consumer’s point of view, this becomes more complex. Considering the survey I think people in communities need to know more about recycling in general, what materials to use and how to separate them when recycling. In my opinion it would be too easy to say that councils and local authorities in the London area have failed to give out enough information to the public. In some boroughs it might be true and the UK in general might still have a lot to improve when it comes down to waste reduction compared to other European countries, however, I am firmly convinced that the people should emphasise more on cutting down waste in their households and they need to get more informed on correct recycling. Some might say it is difficult or too complicated to do but in my opinion it is just a question of how much they care about reducing waste in their home. It seems to me that the concern on harming the environment due to food packaging is still relatively low and that explains the inconsistency in the recycling habits of the respondents. If the people were highly concerned I would assume that a higher number would know more about separating materials when recycling so they would get more informed and moreover, I think a higher number would do things such as bringing their own shopping bag, avoiding to buy individually packed fruits & vegetables or care more about green-wash claimed products. To my mind, the people agree that recycling is important but the level of concern and awareness is not high enough for efficient recycling of packaging in each household. It means that not only the food industry and authorities are responsible to lead the way; ultimately the people and communities have the responsibility as well to raise the importance of shopping habits and recycling to reduce waste in each borough.
Additionally, legislations have to set targets to cut down waste. In that way communities and its people are encouraged to do more and to get more involved. That is why the European Union aims a “circular economy” and introduced the “EU-Directive” as mentioned in the literature review. By setting certain targets for the next 10-15 years all the responsible parts in society such as the communities, manufacturers and the food industry entirely have the duty to meet those requirements. I pointed out that the people play an important role but also the food industry has to adapt to the legislations. They have to reduce the volume of packaging, especially packaging that has no useful purpose, and they have to improve the labelling to inform the consumers about recycling of each product.

Lastly, local councils have to make sure that legislations set by authorities in the UK and the European Union will have an immediate effect. If the councils do not cooperate and encourage their communities to help meeting the criteria, any type of laws and recycling targets will be meaningless.

It has become clear to me that knowledge and responsibilities are key factors to improve our environmental impact when it comes to packaging especially in regards to plastics. Not only the fact that the people have to be more informed is vital, I also think that communities need to change their way of thinking to be more encouraged. Additionally, it is inevitable that authorities and the food companies know their responsibilities. They have to set the frame work to enhance waste management which includes recycling and when the communities follow those regulations it leads to an efficient reduction of waste caused by food packaging.
Thank you for taking this survey. I am interested in people's opinions about food packaging (PLASTIC in particular) and their habits and ability to recycle packaging materials. It should take about 7 minutes and all responses are anonymous.

**Section 1 - General demographic information.**

1. What is your age? Mark only one oval.
   - 18<25
   - 25<30
   - 30<35
   - 35<40
   - 40+

2. What is your gender? Mark only one oval.
   - Female
   - Male

3. Please select the highest level of education you have achieved or are currently studying. Mark only one oval.
   - GSCE/O Level secondary school
   - A-Levels
   - Bachelors degree
   - Masters degree
   - PhD

4. Please specify your postcode where you live: ____________

**Section 2 – General perceptions on packaging.**

**Questions about your general perceptions on packaging**

5. Are you concerned with the amount of packaging you have to deal with? Mark only one oval.
   - Yes
   - No

6. When you buy a food product, do you want to choose packaging you can reuse or recycle? Mark only one oval.
Always
Sometimes
Never

7. Do you feel you have enough information about the different forms of packaging to be able to choose wisely?
Mark only one oval.

Yes
No

How concerned are you about:

8. Please choose from not concerned = 1 to very concerned = 5
Mark only one oval per row.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over-packaging (e.g. individually wrapped items, more layers than necessary)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor labelling (e.g. no recycling triangle or number)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green-wash claims about packaging (packaging that claims to be environmentally friendly when it is not)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No option to choose packaging that can be reused or recycled for the product you want to buy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Further to the question above, please specify if you have any other concerns about food packaging that have not been addressed in this question

Section 3 - People’s choices for food products

Questions about your choices for food products

10. For each question, please indicate which of the following most closely matches your actions:
Mark only one oval per row.
<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>I buy fruit/vegs pre-packed in plastic:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I go shopping I bring my own bag(s) or use a cardboard box</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I refill my water bottle, rather than buy a new one</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I prefer to buy local food products rather than imported from other countries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I check if packaging can be recycled before I buy a product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I check label information about recycling before I throw away a package</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I recycle at home</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Understanding about the functionalities of packaging**

11. From the following list, please choose three phrases which you think are most applicable to food packaging:
   Please select 3 items and check all that apply.
   
   - Uses too much material
   - Is bad for the environment
   - Keeps product safe and hygienic
   - Protects the product
   - Extends the life of the product
   - Makes the product easier to store

**Section 4 - Recycling habits and facilitates offered by councils.**

**Questions about your recycling habits and the recycling facilities offered by your council**

12. Compared to 2 years ago, do you feel that...
   Mark only one oval.
   
   - You recycle more than 2 years ago
   - About the same
   - Recycle less than you did 2 years ago

13. Thinking of only food containers and packaging, what do you recycle at home, please select all that apply
   Check all that apply.
   
   - Plastic
   - Glass
14. How easy do you find it to recycle in your borough?
Scale very difficult = 1 to very easy = 5
Mark only one oval.

<table>
<thead>
<tr>
<th>Very Difficult</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Very easy</th>
</tr>
</thead>
</table>

15. Which of the following barriers to recycling apply to you (please select up to 3)
Check all that apply.

- I’m not interested in recycling
- I don’t like to have lots of different bins
- I have to separate too many things/materials
- I live in a flat
- I don’t know what I can and cannot recycle/its too confusing
- Not enough space for bins
- I have no barriers and recycle as much as I can
- I don’t think recycling really helps the environment
- I don’t have time to think about it
- Bins are not being emptied often enough
- Other:

16. Did you know that not all PLASTIC materials are suitable for recycling at home?
Mark only one oval.

- yes
- No

17. When you recycle PLASTIC food packaging and containers at home do you:
Mark only one oval.

- Always look on the package label to see if it is recyclable
- Sometimes, if unsure if it is recyclable
- Never, I just recycle without reading the labels
- I don’t recycle plastic
References

- Department for Environment, Food and Rural Affairs (DEFRA), 2006. "Food Industry Sustainability Strategy (FISS)".
- Department for Environment, Food and Rural Affairs (DEFRA), 2012. "Environmental Statistics: Key Facts".
- Department for Environment, Food and Rural Affairs (DEFRA), 2014. Energy from waste: A guide to the debate


The Industry Council for Packaging and the Environment (INCPEN). “Why products are packed the way they are”


• Wrap, 2012. “Final report on consumer attitudes to food waste and food packaging”.
