

Project 4-Five points plan

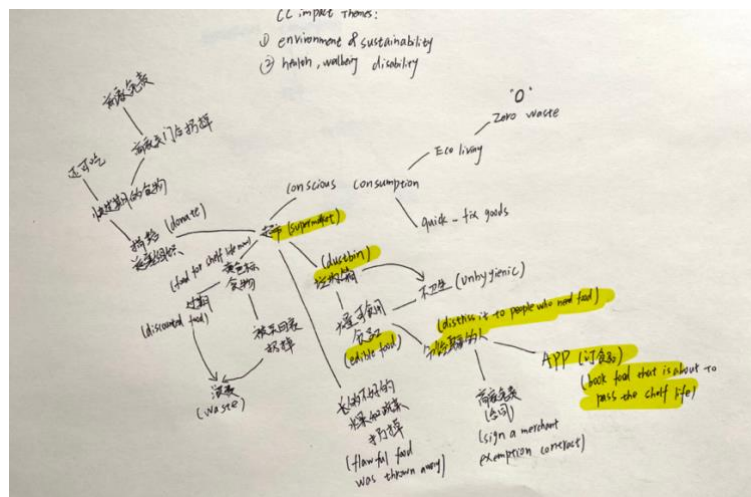


Just like this picture, a lot of good looking vegetables and fruits are thrown away by the supermarket, which is very wasteful.

Inspiration :

A month ago, I saw a blogger filming a documentary about the large amount of waste in French supermarkets. The video shows that every night, the supermarket throws away a large amount of food. These foods are completely edible. It may be because the packaging is damaged or cannot be sold the next day according to regulations. There are also many people waiting next to the trash can in the supermarket every night to take away the food discarded by the supermarket. This video gave me inspiration. Before, I had never paid attention to the food waste in supermarkets. Therefore, I decided to design a project to understand and solve this problem.

Mind map:



Key themes and elements

Themes

The theme of the project focuses on the problem of food waste in supermarkets. Trying to solve the problems of food waste and waste recycling through the recycling of glass and plastic bottles in exchange for food.

Elements

Food waste, recycling, and environmental protection are the main elements that make up this project.

(1) Food waste mainly refers to food waste from supermarkets.

(2) Recycling mainly refers to the recycling of glass and plastic bottles.

(3) Environmental protection is the core element of this project. Solving food waste and waste recycling are all for a more environmentally friendly lifestyle and better protection of the global environment.

The rationale of project

Through the research of this project, I want to make an APP to connect supermarkets and food demanders, which can not only solve the problem of food waste in some supermarkets, but also help people who lack food get a certain amount of food. At the same time, the recycling of waste products will be carried out. Generally speaking, it is a very environmentally friendly activity. That is why I want to do this project.

Primary research:

(1) Food waste in supermarkets

Here is a detailed description of food waste:



The screenshot shows the Wikipedia article for "Food waste". The article text is as follows:

Food waste or **food loss** is food that is not eaten. The causes of food waste or loss are numerous and occur throughout the food system, during production, processing, distribution, retail and consumption. Global food loss and waste^[2] amount to between one-third^[3] and one-half^[4] of all food produced. In low-income countries, most loss occurs during production, while in developed countries much food — about 100 kilograms (220 lb) per person per year — is wasted at the consumption stage.^[5]

Food waste is a major part of the impact of agriculture on climate change, and other environmental issues. The Food and Agricultural Organization estimated in 2014 that food waste lost causes a global economic, environmental and social cost of \$2.6 trillion a year and is responsible for 8 percent of global greenhouse gas emissions.^[6] Moreover, food waste that is not handled or reclaimed properly, i.e. through composting, can have many negative environmental consequences. For example, landfill gas from anaerobic digestion of organic matter is a major source of the greenhouse gas methane, and un-reclaimed phosphorus in food waste, leads to further phosphate mining. Moreover reducing food waste in all parts of the food system is an important part of reducing the environmental impact of agriculture, by reducing the total amount of water, land and other resources needed to feed the global community.

The international community has identified reduction of food waste as an important part of developing a sustainable economy with Sustainable Development Goal 12 seeking to "Have global per capita food waste"^[7] Moreover, climate change mitigation strategies prominently feature reducing food waste; for example Project Drawdown describes reducing food waste as one of the more effective ways to reduce carbon intensity of the food system.^[6]



Source | www.fao.org/save-food/resources/infographic/en/

A better supply chain serves us all. Let's eat.

Global food losses and waste

In the evening, fruits and vegetables in many supermarkets are sold at a discount, and a large amount

of fruits and vegetables cannot be sold before the supermarket closes and are directly discarded. There are many reasons for these foods to be discarded, some are because the best eating time has passed, and some are because the food packaging bags are partially damaged. Supermarkets are unwilling to bear the legal risks caused by selling expired and damaged food, so they choose to throw away these foods directly. This is a serious waste of food.

Status of food waste :

Here is a video that describes more about the Food waste and why should you care:

<https://www.youtube.com/watch?v=zkyIDfglf2Y&t=7s>

This video introduces how much food is wasted in supermarkets :

<https://www.youtube.com/watch?v=QLqkV8cP4xs>

This video is the one I am most interested in. In our daily life, we often forget a lot of food that is wasted in the supermarket. The food on the shelves is strictly screened by the supermarket, and there will be a lot of waste in the process. And before the supermarket closes every day, a lot of food will be thrown away by the supermarket to ensure the freshness of the food.

(2) Glass bottles recycled problems

Domestic waste glass (known as cullet) is easy to recycle. The UK currently recycles around 71% of container glass, like bottles and jars. The glass sector is working towards a 90% collection rate for glass by 2030.

Glass can be collected in bottle banks or as part of your collection. However, there is still more we can all do, such as remembering to recycle our clear glass jars which are often forgotten.

The UK business sector still has a lot of work to do to recycle glass – bars, restaurants and pubs currently throw away over 129,000 tonnes of glass every year into landfill.

I think that's a shame because almost all of this could be made into new glass products – and re-melting back to glass (closed-loop recycling) is usually the best environmental option.

Glass can be melted down to make new glass products over and over again – it is 100% and endlessly recyclable. In fact, it's the perfect circular economy material. And making new glass from recycled glass reduces CO2 emissions and energy use.

Glass Container Recycling Loop

Glass bottles and jars are 100% and infinitely recyclable



*A material recovery facility is a specialized plant that receives, separates and prepares recyclable materials for manufacturers.

(3) Plastics recycled problems

At present just 43% of the 13bn plastic bottles sold each year in the UK are recycled, and 700,000 become litter each day. Pressure is growing on the government, retailers and consumers to increase rates of plastic bottle recycling and so reduce marine pollution.

The recycling journey

How your plastic bottle is reborn

1 Collection

Your empty plastic bottle is collected and taken to a recycling facility for sorting. If you have already separated the plastic bottles from the rest of your recycling they can be sent straight to a recycling plant.

2 Separating

The recycling is hand-checked to remove any non-recyclable material. It is then loaded into a 'trommel', a large perforated spinning drum. Plastic bottles and cans are separated through the perforations, and then steel and aluminium cans are removed using magnets and electromagnetic technology.

3 Sorting

The bottles are then cleaned and sorted by type and colour using infrared beams. The infrared light is reflected off the plastics in different ways, allowing a sensor to detect which is which. Precision jets of air then separate the different types.

4 Shredding and melting

Next the bottles are shredded by a machine and the shreds washed again to remove any impurities, including remnants of paper labels or the bottle's original contents. They may also be decontaminated further using a chemical solution. The shreds of plastic are then dried and melted down.

5 Flaking

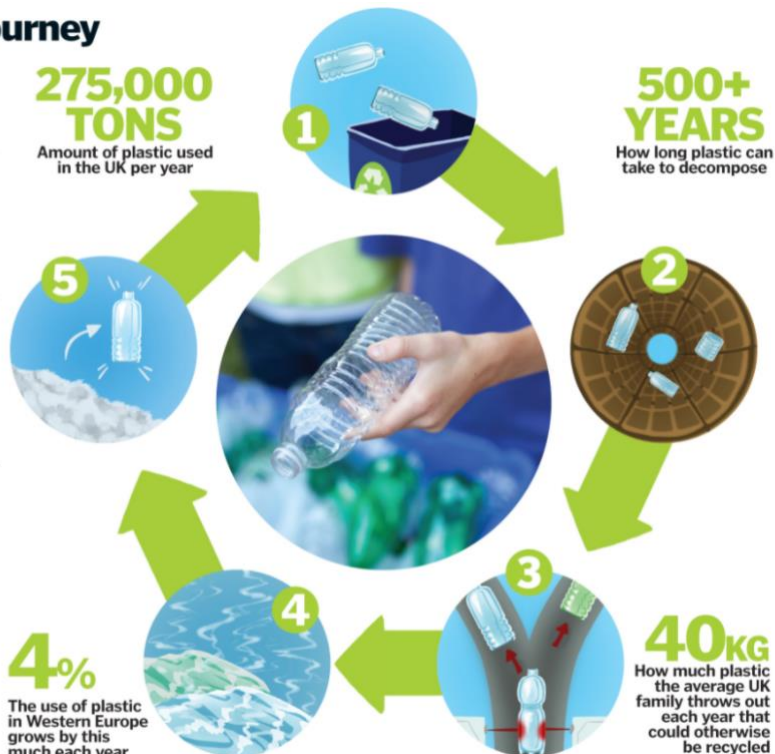
The melted plastic is reformed into flakes or pellets as it cools. These can then be melted down again and used to make new products. For example, the melted plastic can be reshaped into new plastic bottles, ready to be filled with a product.

275,000 TONS
Amount of plastic used in the UK per year

500+ YEARS
How long plastic can take to decompose

4%
The use of plastic in Western Europe grows by this much each year

40KG
How much plastic the average UK family throws out each year that could otherwise be recycled



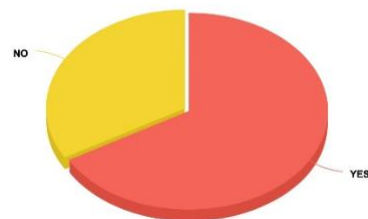
Research method

Questionnaire survey

Name	Age	Do you often waste food?	Do you often go to the supermarket to buy food	If the food is about to expire, would you still eat it?	Do you think the supermarket wastes a lot of food?
Li j	28	yes	yes	yes	no
Zhu s	42	no	no	yes	no
Shi d	19	no	yes	no	no
An w	20	no	yes	yes	no
Zhou w	44	yes	no	no	yes
Fan f	22	no	yes	yes	yes
Wu s	18	yes	yes	no	no
Wan w	31	no	yes	yes	no
Yuan y	37	no	no	yes	no
Fang q	23	yes	yes	yes	no
He y	58	no	no	yes	no
Shan t	37	yes	yes	yes	yes
Tian b	29	yes	no	no	no
Wang s	25	no	yes	no	no
Zhang w	55	no	yes	yes	yes

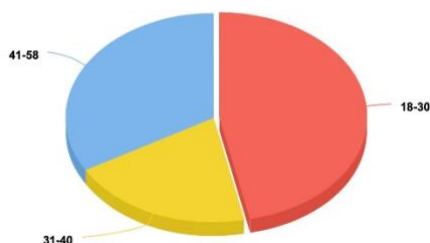
Do you often waste food?

If the food is about to expire, would you still eat it?



Age

Do you often go to the supermarket to buy food?



Interview

Interview questions were designed to cover three major subject areas: general knowledge on the magnitude of food waste generation in the UK; current and future approaches to food waste management in a specific supermarket; and the role of corporate policies, suppliers, staff and consumers.

The summary of the interview is as follows:

Grocery retail outlet	Size	Code
Tesco	Small (Express)	T1
Tesco	Large (Hypermarket)	T2
Coop	Medium	C1
Coop	Medium	C2
ASDA	Large (Hypermarket)	A1
ASDA	Large (Hypermarket)	A2

T1: 'For us, it's huge. As a single store, the value of food waste is hundreds pounds a week. For Tesco as a company it is a multi-million pounds loss'

T2: 'We have got separate things for different areas, so, for example, wasted raw meat, this has to be separated from other food waste due to its nature and it is all recycled in pet food. All our waste meat is actually recycled; we have nothing going to landfill from waste meat. They can be either destroyed or used for energy recovery, but that doesn't depend on us. We also have bakery that we recycle and it is converted to animal feed. Cooking oil and fat is treated and blended and used as biodiesel for our lorries'

According to the description of the supermarket manager, there is indeed a lot of food waste in the supermarket. Among the food wasted in supermarkets, part of the food is directly recycled and reused by the supermarket, such as meat, but there are also categories such as vegetables and fruits that the supermarket cannot directly recycle and can only be directly discarded.

C1: 'For us, is not a big problem. But it can be at times... you know, as long as you follow the processes of the store, usually food waste is not a big problem. Because we have automatic ordering, we can change the orders when we need to, and we also have a budget for waste disposal. Basically, there is the amount that we can throw away that we can afford'

C2: 'We do donate food sometimes but not on regular basis. It really depends on where the store is and what is near. It's not regular, we don't have any corporate policies about that, not that I am aware of. It's just on a voluntary basis'

A1: 'We do have food waste policies, I mean set structures of reduction for certain food products, at certain hours and certain times of the day. People come at night and might find something for just 10p and buy it!'

A2: 'Customers shopping definitely [is a barrier]. When customers do not buy a product if it's not that satisfactory quality or lookwise. Yes, lack of awareness is certainly one of the main problems I think. For example, if bananas are not perfectly ripe and yellow, if they have some brown spots customers, don't buy them even if they're safe to eat'

At a managerial discretion, surplus food can also be given to staff; however, some supermarkets' corporate policies prescribe managers against this approach to food waste mitigation. Giving food to staff can discourage them from selling food in the hope it could be taken home. This is also due to staff health and safety considerations.

Based on the descriptions of supermarket employees, we can understand that according to their observations, food that does not look good is not liked by customers and tends to be unsalable.

PACT

People:

1. Low-income group
2. Don't mind eating food that is about to expire (not good-looking, damaged)

Activities:

1. Collect recyclable packaging boxes, wine bottles, beverage bottles, etc., in exchange for food that is about to expire
2. Points system: exquisite packaging boxes or wine bottles can be exchanged for more points, and ordinary wine bottles and plastic bottles can be exchanged for lower points. You can exchange points for food that is about to expire in the supermarket, reducing waste in the supermarket, and conducive to the recycling of recyclable garbage in the supermarket

Context:

1. From the perspective of people who need help, they can exchange the recyclable bottles and

packaging boxes they usually collect for food that the supermarket does not need, which can solve their food and clothing problems.

2. From the perspective of the supermarket, reduce food waste in the supermarket and make a low-cost publicity for the supermarket. The recycling of recyclable garbage will help reduce the operating cost of the supermarket and contribute to public welfare.


3. From the perspective of ordinary consumers: they will not feel unfair and will still buy goods at the original price in the supermarket

Technologies:

QR code scanning. Map gps. Intelligent recyclable garbage machine.

Persona


David





He is under financial pressure


Age: 26
Family: Unattached
Location: London, UK
Gender: Male

Motivation

Incentive 

Dispirited 


Social 


Alone 


Goals


- 1 He hopes to exchange recyclable bottles for money or food.
2. Every time I see the supermarket throw away a lot of food, it is very wasteful, I hope to receive the food that is not needed on the day

personality

Introvert  Extrovert

Thinking  Feeling

Sensing  Intuition

Judging  Perceiving

Bio

He is a young man who has just arrived in a big city. He earns very little money every month. He also rents a house. The remaining money is not enough to buy the original price goods in the supermarket. One night he saw a large amount of food being thrown away in the supermarket. The food was not broken, and it was completely practical. He wanted to go to the trash can to get some supermarket food, but was rejected by the supermarket manager

Frustrations

He wants to recycle plastic bottles and wine bottles in my home. There is no place to recycle bottles near my home. It's a pity to just throw it away, but it takes a lot of space if you don't throw it away.

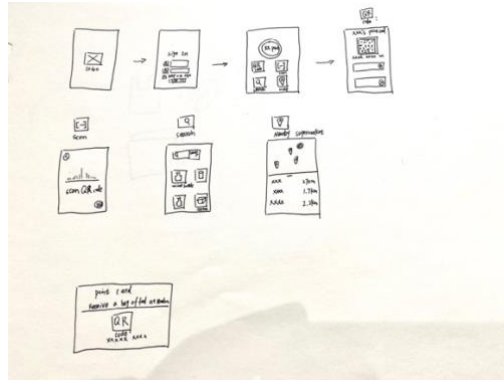
Outcomes

Logo design



This is the LOGO I designed for this project. This logo contains two design elements: leaves and bags. The green leaves symbolize environmental protection, low-carbon life and freshness. The bag represents the five-point plan of this project, and five points are exchanged for a bag of food. The logo design represents the core of the project. It is hoped that people can minimize food waste, care for the environment, reduce waste, and lead a more environmentally friendly and green life.

APP design



Method 1: APP

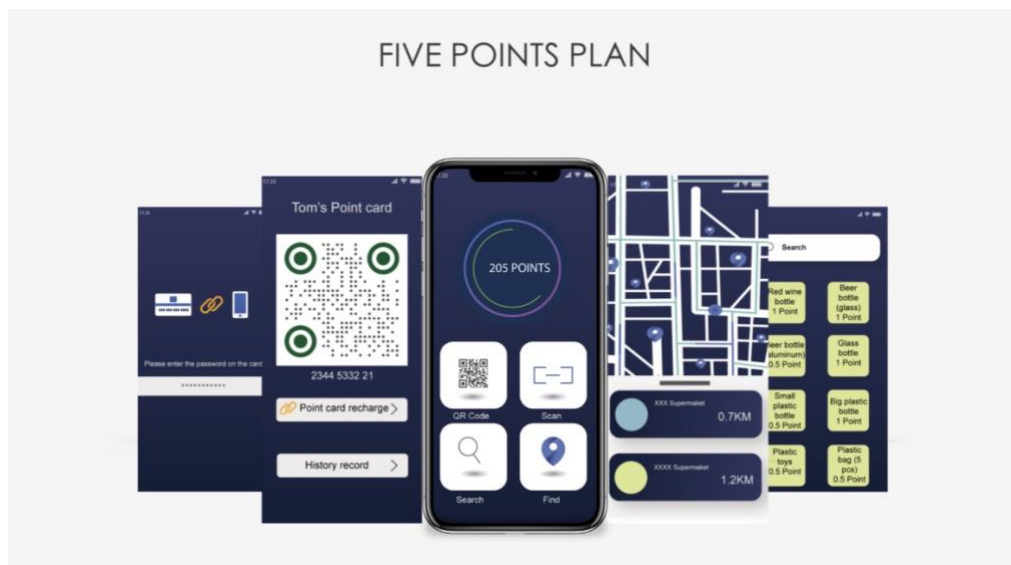


Method 2: Point card (physical)



Based on the above research, I made an APP. On the APP, the supermarket publishes information about the food that is about to be discarded 3 hours before closing at night. After receiving the information, people in need can exchange plastic and glass bottles for the food discarded by the supermarket (edible). Through the APP channel, people who need these foods can quickly obtain information, and a channel for information transmission is established between the supermarket and the food demand side. This channel is online and timely. People don't need to go to the supermarket to inquire, saving the cost of obtaining information. Supermarkets directly publish online information, which makes the transmission of information more direct and rapid, and also saves labor costs, which meets the requirements of reducing human-to-human contact in the epidemic era. This is not only a charity cause, but also a way for supermarkets to promote their own brands.

Prototype Test (Final Test)





Video link: <https://www.youtube.com/watch?v=54plyzytkLs>