

Sustainability Innovation

How To Cope With Problems Caused By Over-packaging?

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Summary

Rapid development in social economy and improvement in packaging technology led to fierce competitions among companies, resulting in an excess of over-packaged products. The situation forced the market to raise prices for otherwise affordable products while discarded boxes, plastic wraps, and containers were left unattended in the environment. Prior attempts to solve the issue was thwarted due to a combination of ingrained consumers' shopping habits and a lack of legal enforcement. This paper provides alternatives to alleviate the social pressure of over-packaging, our team have conducted researches based on information gathered and designed sustainable improvements of Over-packaging management policies, commercial proposal and environment protection actions.

Analyzing documentaries, searching internet, and distributing questionnaires, we first collected data and concluded several main problems caused by Over-packaging. We grouped the detailed problems by certain stakeholders, including merchants and consumers, the government, and environmental industries. We identified two common root causes: consumers have a preference for heavily decorated packages over the simple and the unassuming; businesses pursue high profits by using cheap but non-environmental friendly plastic packaging. Aiming to solve these problems, we designed solutions to target the respective stakeholder mentioned above. We evaluated them based on environment, economics, feasibility, sustainability, efficiency and public consensus. Built upon the result of this evaluation, we come up with a tentative detailed plan: improving governmental policies while offering consumers a binary shopping choice, the well-packaged or the self-picked. From the round of feedback, we discovered flaws and subsequently improved the plan.

We plan to conduct further research by collecting bigger data sets to cover more diverse regions and social groups, and designing more specific countermeasures to all kinds of practical issues in Over-packaging.

To summarize, our paper employed interdisciplinary methods to better design sustainable policies on environment protection and key interests held by both buyers and sellers, which hopefully, will effectively settle problems caused by Over-packaging.

Choose the Topic

Identify the Challenges

1 Consumer & Firm

Sometimes, a large number of consumers would like to buy products which is over-packaged instead of buying products with simple plastic bags. They have their own reasons and experiences, even forming a social norm — over-packaged products are better than the ordinary one. Based on statistics from China Youth Daily, 79.4% people think that it will be comfortable and confident for them to send a gift with exceeded packages, while 44.6% people think that it is a pursue of luxury.[1] Firms would like to sell products with beautiful, complicated, and impressive packages, since they can use them to attract more people' s attention, making people think that their products are superior. Consumers' perspectives as well as firms' situations are all challenges of Over-packaging.

1.1 High economic cost

In order to make over-packaged plastic bags, many companies would like to use a lot of raw materials and place advertisements on that. The cost of materials like colorants will increase since they may use more colors to advertise the products and write words on them. The factories also need to expand production lines for pasting the advertisements on the outer plastics. The advertisements may cost a lot of colorants and plastics to publicize the products. Then they will use plenty of money on designing to improve the utilization of these advertisements. If the companies do not want to spend money for packaging, they will lose on propagandizing, which will result in a loss on selling the products. This leads to more competitions between different companies which sell the same products in the issue of packaging.

What' s more, Over-packaging will cost more for consumers. Overpackaged products may rise a level since the products become more beautiful and win more consumers' admiration. Then, the firms take advantage of this and raise the price of the products. Not only is this rising price for the cost of original materials, but it also takes up a big part of the profits. So, consumers spend a comparatively large part of their money only to buy those elaborate packages, instead of something useful. This causes an increase in the price of many commodities and a lot of consumers think that they don' t worth the money.

1.2 Hygiene and safety problems

For many companies, if they care too much on packaging the products instead of improving the quality of their products, they may ignore the issues of hygiene and safety. To make products become fascinating with the outer packages, they may not spare a thought on the quality of the food, paying too much attention on packaging

itself. A great number of news reported that some companies had produced products which did not pass the standards. Moreover, factories sometimes ignore the safety problem. As a result, the beautiful packages cover up the dangers of hygiene and safety.

1.3 Honesty issue

Generally speaking, companies want to sell more products. In order to achieve this, they will boost that the products are really excellent, exaggerating their qualities. Some companies even draw fake pictures on the package or write fake words of how good the products are when being used. However, when consumers open up the packages, they feel really disappointed about the actual products, for they are not the same as the one on the advertisements. Then they also found that the money they spend on the products far outweighs their intrinsic values.

1.4 Space taking

Package bags outside usually take too much space, so people are often greeted with a big package with colorful words and pictures. To their dismay, when they open it up, they find that the products inside just take about twenty percent of the whole space. According to news reported by Peking Commercial daily, a single Tom Ford' s lipstick was packaged in a gift box which has the range of 12cm*12.5cm*7cm. However, the actual lipstick is just 2cm*8cm*2cm, and it is a waste of resources to pack it in this way. Consumers usually expect to buy products with a big beautiful package, with the thought that a large package must contain a great many of goods. Many companies take advantage of this, keep making over-packaged bags and putting in few products. This situation results in consumers' unsatisfactoriness.

2 Environment challenge

Over-packaging results in too much waste of materials when the packages are thrown away by people. Most of them are plastic bags even with metallic materials. Some people throw these bags anywhere instead of into the rubbish bins as required. This causes the problem of collecting them, while harming the earth as well. However, given that most of the rubbish is collected, it still needs a lot of energy to burn them. Over-packaging leads to more wasted plastic bags, so we need to place more effort on collecting them and dealing with them.

2.1 Pollution

Over-package bags, if thrown away anywhere else instead of the rubbish bins, will make a great deal of pollution. We have seen a lot of plastic bags in parks, streets and many other public places. If we don' t collect them, they will go into the soil and harm it. It is harmful to the growth of plants inside it. The pH value of the soil will change, which will cost the crop yield to decrease, do harm to agricultural situation, since it will influence the crops when they absorb nutrition and water

sources. What's more, these plastic bags cannot be decomposed in 200 years. In terms of marine life, it will cost white pollution in the sea. Nowadays, each 5 meters of the sea contains one plastic bags. Based on information from Xinming News, in 2014, China made 85% of everyday garbage decomposed.[2] Too many plastic bags in the sea not only make it more and more ugly in appearance, but also spoil many animals' health. Animals like turtles hold interests in things with bright colors. So, they are often close to plastic bags. Some of the plastics are twined to animals, while others are unfortunately eaten. These eaten ones cause a further problem — Micro-plastics. Micro-plastics are plastics whose diameters are smaller than 5 millimeters.[3] These plastics will stay in animals' body and are easy to move. Moreover, it can break through the blood-brain barrier of some animals polluting the water bodies of cities. It will pollute sea salt, in an era when most of the sea salt factories make products containing sea salt. In a nutshell, if we use more plastic to make products, it will cause an increasing number of bad influences to the Earth.

2.2 Decomposing of plastic waste.

Nowadays, in response to the fast development of protecting the environment, many citizens have known that it is important to put the rubbish in the right places. However, in terms of the disposal of rubbish nowadays, it is way not enough to get people aware of this. Again, based on Xinming News, in 2014, China used 14 billion express waybill, 2 billion woven bags, 5.584 billion plastic bags, 2.1 billion envelopes, 6.7 billion packages, 11.45 billion meters of coverage and 2.01 billion internal buffers in total.[2] Cities need to decompose the rubbish with burning, which has much effect on the environment as well as the energy cost. Burning plastics will make a lot of sulfur and nitrogen oxides, dioxins, and heavy metals. Sulfur and nitrogen oxides will be decomposed eventually, existing in the form of gas.

The gas will go into the sky and combine with water, forming acids like sulfuric acid and Nitrous acid. Then the rains become acid rains, harm the soil on the ground and people's health conditions, like destroying the buildings in the city. Dioxins is chemical which contains high toxic elements, which threatens people since it may stir cancer. If the factory wants to deal with Dioxins, they need to increase the temperature to 1073 kelvin in order to decompose into carbon dioxide.[1] The heavy metal will also be in the sky if the rubbish is just burned together.

Not only does this procedure of dealing with plastic trash have harmful chemical effects, but it needs to a lot of energy to run as well. The over-packaged bags contain a lot of water sources and Dioxins. Too much water makes it difficult to increase the temperature since water's specific heat. So, the factory needs more electricity to completely decompose these plastics, not to say ensuring no pollution in the air.

2.3 Waste of resource

Over-packaging needs to use more than one kind of materials to make plastics bags

and other elaborate packages. Plastics are made by petroleum, which is lack in the world currently, and cannot be made without it. What makes things worse is that some companies use metals to decorate packages, many of which will be used up in five hundred years or so. The resources for packaging products are not enough to retain a long time, but these companies haven't realized that and still provide these over-packaged products, which definitely will aggravate the dangers of resources and energy.

3 Regulation and research

There are also a lot of challenges for managers. There are strong thoughts from consumers that over-packaged goods are better, so the ministers in governments feel difficult to control this situation. What's more, the suitable material for unique packaging which is cheaper and more useful to be a good alternative of plastic has not been found by researchers yet. The policy is difficult to make effects since so many companies will not follow it and many consumers will feel unsatisfied to the government if it is too pushy. This is not only the problems on politics, but also contains the danger of negative economic impacts. Based on Shanghai people's congress, packages have to be produced outside expensive merchants like sterling silver and pure gold. City rubbish contains one third of packaging rubbish.

3.1 Disposal with pollution

Part of the pollution is not available to be disposed completely such as the white pollution. Too many plastics in the sea are not realistic to be disposed as a whole and it will cause more dangers to the whole environment. What's more, the government cannot just deal with plastics and other wasted materials by landfilling, since the speed of the diffusion of rubbish elements is too fast and there are not enough places to bury all these trashes especially in big cities, not to say their environmental impacts. Consequently, they need to burn the rubbish. As mentioned above, too much water in the rubbish and the decomposing of Dioxins need a lot of energy, so the government need to allocate more budget for electricity. It also needs to cope with the lands which are polluted by plastics used for packaging as well as the house damaged.

3.2 Policy and punishment

The governments nowadays should make rules to alleviate the situation of Over-packaging. However, making policies and punishments is difficult for all of the citizens to accept. They may hold the opinion that as a consumer they have their own rights to buy over-packaged products which are quite good actually, so if a series of policies are made, they may protest against them, which is not good for the society stability and the economics. What's more, if the policy is made to companies that they should not provide over-packaged products, companies will by no means follow them, since they will earn way less money in this way. And the study for making unique packages using little materials is hard to process, for it is

difficult for all of the companies which sell totally different sort of products to use the same concise packages. It will make all products look like the same and companies which sell really high-quality products will lose advantages in this way. Although they may focus more on the products themselves, it will make the competition between each product more complicated and the consumers cannot easily separate different levels of products under the same package. Back to the perspective of citizens, if laws were not made for them stating that they should not buy too much overpackaged products for it is hard to deal with the rubbish. People do not know the impact of the rubbish and the waste of Over packaging. But when the laws are made, people will be unsatisfied since they will have to go against their previous shopping habits. Although people have learned to classify the rubbish, many rubbish transferring cars just mix them together, which leaves the problem to factories. Moreover, many authorities do not know what to do involving rubbish separation and are unaware of their effect on the environment. As a result, the task for expanding effects to control Over-packaging is a really difficult task for the governments to do.

3.3 Economic impact

Packaging needs a lot of original resources, and while many companies do that, competitions arise. They need to improve their packaging level to make it competitive in the career. As a result, the cost of the products increases, and consumers need to spend more money on the same product. Even if Over-packaging is limited by the government, the economy will not be better off since the companies will become insolvent, leading to the problem of rising unemployment rate. What' s more, if the legislation works, people will not be able to tell the difference with comparatively superior products with those inferior ones, for their look like the same. Companies need to find new ways to make their products stand out in competition, which will cost more money. An increasing number of consumers will lose the interest of buying these products since they don' t like the situation. It takes a long period for the society to change and adapt to the impact on the economics.

Reference: [1]zqb.cyol.com

[2]wmwb.xinmin.cn

[3]<https://www.bpf.co.uk/packaging/environment.aspx>

Identify a Root Cause

1. The requirement for preservation

The majority of products can hardly get into use immediately after leaving the producers. Additionally, with the rapid development of electronic commerce and online shopping, people are increasingly eager to buy products from places far away from their homes to improve their living quality. According to the analysis of the public data, the popularity rate of online shopping has increased to 79.50%, so it has become a common practice to take a long period of time transporting products from both producers to markets and markets to consumers.[1] Although the transportation system has spread widely in rural and urban areas, food may get rotten quickly without actions to retain their freshness, while fragile products such as glass may get smashed easily during the endless jolting on the way. Therefore, materials like plastic, foam board and cardboard become necessary for product preservation; ice and solid carbon dioxide are often placed into packages. Synthetic materials, especially plastics, are preferred by producers, for they have excellent chemical stability and shock resistance. These practices are effective but they definitely plays an important role in Over-packaging problems.

2. Consumer preference

Firstly, the fixed pattern of aesthetics may play a part in the decisions made by consumers while they face identical products with different packages. It influences how people appreciate the appearance of products and their appraisals. With the modern entrenched aesthetics, an increasing number of consumers tend to aspire products with exquisite packages just for appreciation, regardless of the Over-packaging problems behind them. According to the survey and analysis made by Ningfu Yang who specialize in industrial design, people psychologically prefer products that look “beautiful” , judging subjectively on color, style and materials. Because of this, there is sometimes a misapprehension in the society that the more ornate the packages are, the better the inside products will be. This type of ill-advised evaluation and solidification of aesthetics lead to consumers’ preference on over-packaged products. Also, according to the survey made by Dongyang Zhou’ s team specializing in international economies and trade, over 63% consumers bought products that they did not need at all because of the exquisite packages.[2]

Secondly, consumers automatically trust the quality of ornately packaged products. Producers sometimes print their brand names and trademarks on all the layers of packages so consumers believe in the quality of these “major brands” . They seem to be sure that the quality of products that are well-packed are guaranteed, which

exceeds that of the plain-packaged ones. In accordance with the survey made by Zhou's team, about 27% consumers judge the quality of products by their packages and another 44% are usually influenced when making a judgement.[3] Thirdly, over-packaged products may be frequently consumed by people who are too sensitive about their reputation. Some people have a false sense of pride when buying good-looking products and consider it a shame to buy the plain-packaged ones with low costs. Also, when people exchange gifts with their relatives and friends at festivals and anniversaries, no one is willing to be misunderstood as being lack of sincerity because of a homeliness ordinary gift. According to a research made by Ting Lee specializing in environmental science, only 5% people feel not very pleased when seeing gifts that are ornately packaged.[4] Exquisitely packaged gifts seem to be appreciated more and can better strengthen the relationship between people. Finally, with more and more consumers preferring over-packaged products, there are inherent biases against products which are unpretentiously packaged in the whole society. Many people buy over-packaged products just because of the crowd effect---they imitate the behaviors of people around them without judging or really evaluating them. This spread of negative trend is an ill wind that even causes more preferences on over-packaged products.

3. Producers' desire to improve output

A lot of firms play their marketing strategies on the product packages. They often print glamorized pictures and eye-catching sentences on the enlarged packages to attract consumers, thus increasing the output. This kind of cheap advertisement serves as a wise way of propaganda. Bright colors, huge letters and sparkling materials appeal to consumers wandering in the supermarket, uncertain about what to choose and are able to gain their interest on these products. For instance, by printing the watercolor pattern of Colonsay Island on the packages, the British brand Wild Island Gin successfully doubled its sales.

In addition, famous major brands that are appreciated all over the world by numerous people always print their trademarks on the exquisite packages of their products as a way of demonstrating their dignity and high-status. They believe that only ornate-packaged appearances can match their luxurious products.

Moreover, dishonest firms may deploy the large good-looking packages to deceive consumers. They produce packages that are far larger than the product itself and spend large sums of money on package making in order to conceal the fact that their products themselves are not qualified. By pretending that they are selling goods of high quality, these firms target consumers who know little about them. Over-packaging is a strategy of camouflage which is their common practice to attract consumers and increase their revenues shamelessly.

4. Unawareness of the Over-packaging problems

Commonly, consumers do not have the obligation to deal with the pollution and waste caused by Over-packaging. With the improvement of life quality, the only

thing they have to do after receiving the parcels or arriving home from the supermarket is throwing the packages wrapping the products into rubbish bins. However, most of them never notice that the packages, made of plastics and foam boards, need very complicated processes to dissolve and may cause serious pollution. Most of them never notice the increase in the workload of litter dealers and the horrible amount of money spent on producing those packages every year. The unawareness is a silent connivance toward over-packaging and continues to make this problem worse.

Reference: [1]<https://m.chyxx.com/view/843854.html>

[2]<https://mbd.baidu.com/ma/s/PkmgZ5W9>

[3]<https://mbd.baidu.com/ma/s/5NKWeS88>

[4]<https://www.shejipi.com/356974.html>

Generate Solutions

1.Actions must be taken by Companies and Firms. Facing the trend of over-packaging, producers---firms and companies---serve as the roots of this serious problem, so obviously they must undertake social responsibilities actively and follow the government' s policies and consumers' requirements.

1.1 Use environmentally friendly materials

It is a common sense that traditional Polythene plastics and foam boards are convenient to produce, but they are hard to degrade, causing air pollution, soil pollution, and water pollution after being burnt.[3] Therefore, we plan to advise the government to provide subsidies for firms that promise to use biodegradable materials each year. The main approach we plan to take will still be writing proposals. As the technology is already obtainable, it is practical for us to encourage firms to use materials that can be recycled, such as paper, glass and cloth to produce packages instead. We will look for the firms' contact information such as the official email address on their official websites. We plan to send messages to them and show our appeals that using environmentally friendly materials would help protect the environment. Moreover, new biodegradable materials have been developed in the recent decades; we will collect related information and data from studies of these materials and send them to package-producers. By introducing the advantages and convenience of the new materials, we will try to persuade the producers to consider using them in the process of manufacture. We have planned to encourage the firms to use materials like PLA and Starch Plastic, which are created by adding starch into materials that are not biodegradable and destroying the original physical construction of them. They will easily degrade in the oxygen and high temperature and get into use again after being recycled. As people will not seriously mind the change in materials used for packaging, using environmentally friendly materials as more as possible is obviously a wise way to reduce the negative effect on the environment to a great extent. For those companies that have to use plastics, we plan to send suggestions to them and encourage them to use thermoplastic as much as possible after they apply for and get the permission of the local government. In this way, the majority of the plastic packages will be easier to get recycled.

1.2 Advocating the Use of Plain-packaged Products

Our plan is to conduct propaganda in order to strengthen the importance of making plain packages more "beautiful" and "creative" instead of more complex. By putting our posters showing our appeal to say "no" to Over-

packaging in many places like shopping malls and streets, we will try to call upon more consumers to establish a new type of aesthetic appreciation: preferring packages that are simply embellished and close to the nature. We plan to send messages to firms' official emails to encourage them to spread the proposal of buying plain-packaged products. We plan to show some other benefits of inspiring consumers through advertisements and publicity commercials, which includes that firms can make plain-package a unique feature of brand and propagandize the advantages of plain-packaged products which include but not limited to taking less space, being easier to deal with and making people closer to the inner quality of the products in order to increase their revenue. Employing this kind of special advertising will stimulate more consumers to begin preferring plain-packaged products and relieve the over-packaging problem. Also, it is a plan for companies that do not produce ornate packages to attract more consumers and enhance the revenue.

1.3 Sell ornate-packaged products and plain-packaged products separately

To satisfy the requirements of consumers who buy things only for presenting gifts, we plan to advise companies to provide both ornate-packaged products and plain-packaged products through messages. We plan to send them some related statistics from recent surveys about how many of some products sold have been sent as gifts to help them decide what the ratio should be when dividing two kinds of products. In our emails, we will write that according to surveys made in 2020 which indicates that about 39% consumers choose to buy chocolates as gifts for anniversaries and 35.9% would like to buy jewelries, clothes and flowers at festivals.[1] We plan to encourage producers, especially those who sell these things, to divide their products into two groups----ornate-packaged ones and plain-packaged ones----according to the proportions of gift-consumption to normal consumption and sell differently packaged products respectively according to the need of the consumers. We will offer the proportion numbers of various types of typical products and encourage all the companies to do some surveys on their own products in order to get more specific statistics. In addition, we plan to advise producers to make products that are sold online better packaged for preservation, for they need to be transported far away, but we will encourage those supermarkets and shopping malls to use simple packages on goods, which will get into use quickly, to reduce the usage of materials that are harmful to the environment and control the severe phenomenon of Over-packaging. In this way, not only the over-packaging problem can be effectively eased, but also the need of adorning gifts and good preservation can be met.

2. Governments

The sole efforts of buyers and sellers are not enough. To make changes among the whole society and to regulate them, a stronger power of the government should be introduced.

2.1 Establish policies

In the economic world, government's policies are the most effective way of regulating the market, which force consumers and merchants to change their previous buying and selling strategies. In this case, the government should make related policies to control the situation of Over-packaging by making sellers to reset the price of certain goods and enhance the efforts in the environment protection.

2.1.1 Limit plastic uses

Essentially, plastics are the main threaten of Over-packaging to the environment, for it is hard to get dissolved after used and contains many poisonous elements which will harm the soil and water, and the government's policies should target this issue. For instance, they can tax on the use of plastic, forcing companies to find a good alternative. We plan to make the tax level necessarily high so as to see a great effect on consumers' behaviors, otherwise they will not take a slight fluctuation on the price of certain goods into consideration. This makes sense for when a tax is introduced on plastic, the production cost of it would be higher, making the outer package of goods comparatively expensive. This will result in a higher price of the products, which makes people more and more unwilling to buy them, decreasing the demand. In this way, merchants will soon realize it and stop producing plastic products for packaging.

2.1.2 Ban the production of certain materials

While some materials composing the outer packages of products do little harm to the environment and can dissolve after a complicated procedure eventually, others are highly toxic and ways to deal with them after used do not exist. In this case, these products as well as those cannot be reused, recycled or composted should not be permitted to produce. After comprehensive research, we will handle a list of highly noxious materials to the government for they to make convincing announcement to forbid the public on the utilization of them. Basically, a ban can sharply decrease the use of these materials, serving as a main approach to preventing too much pollution caused by Over-packaging.

2.2 Dispatch administrators

Dispatching administrators to different departments plays a key role in supervising companies. They can conduct a selective examination regularly to see if they follow the regulations and give punishments if necessary. When they find firms that overproduce poisonous materials for their own interest or evade taxes, they will give them a heavy fine or pursue their criminal liabilities. In addition, they can decide on awards through discussion annually to prize those companies which stick closely to the regulations. The prize will include but not limited to subsidies. With the reward and punishment mechanism, our plan will make a great significance on overseeing different departments, similar to the way teachers monitoring kids back

school.

2.3 Introduce subsidy & tax

At the same time when governments impose taxes on plastic as mentioned above, they can also introduce subsidies on certain industries. We all know that the technology cost of related industries such as recycling and refuse disposal is always high. As a result, maybe it is lack of money that cause the insufficient actions taken to protect the environment. If the government place a great deal of money as a subsidy to these industries, they may take progressive actions to handle the environmental issue. In addition, we encourage governments to inspect certain factories in ways we mentioned above to make sure they will use that money to do the right things.

3.Environmental industries

Besides coping with problems caused by Over-packaging through the three main stakeholders---government, consumers and firms, there are also a lot more things for environmental industries to do. By taking advantage of the fast developing technology, these industries can ease this situation effectively, without altering too much of the price of products too much.

3.1 Recycling

Not all of the packages used to decorate products should end up in trash disposal factories, many of them---at least some compositions--- can be recycled for further uses. This is where recycling industries step in and do a careful classification to differentiate those parts of the packages that cannot be reused with those which have significant values. Then, they can extract elements that are verified up to standard to produce other new products---or maybe more packages of the same type, forming a recycling circle. What worth mentioning is that we need to make sure every step will be taken scrupulously, from the several times of classification to the latter procedure of extraction, so the element recycled will be totally safe. In this way, not only can they save money on the production of packages, but they can mitigate environmental problems as well.

3.2 Develop new ways on food preservation

Technically, some of the packages on food are not a waste of materials, for people have to use them most food have to use them to preserve food after long time of transportation. Food have to travel a long way between its origin places and the market, so efficient steps must be taken to prevent them from spoiling, providing fresh high-quality food for consumers. Actually, instead of dealing with this problem through thicker packages, environmental industries can introduce technological ways to preserve food. They can improve their cold storage level, placing food together in a machine like the refrigerator and keep them fresh while transporting. They can also introduce some chemical ways such as pumping up some innocuous

inert gases into the package to prevent foods from corruption or oxidization. Our plan will focus on the chemical way, for some of the inactive gases like N₂ are not hard to extract and convenient to get into use.[2]

3.3 Deal with pollution

When packaging waste is disposed, it will emit pollution which does severe damage to soil, ocean, air and even the whole ecosystem. Soil becomes barren, marine animals are dying out, air pollution index rises, threatening human's health condition. That's why related departments should pay more attention on coping with the pollution. Most harmful gases can dissolve in water, so they can make artificial rainfalls regularly or place huge air purifier in places polluted most to reduce air pollution. They can also build underwater recover systems to clean up the ocean, ridding the ocean of floating plastic waste and reforming this waste into eco-friendly reefs. In terms of soil pollution, they can involve local communities and indigenous people in the design, implementation and assessment of sustainable land and soil management, avoiding planting on polluted lands. Instead of avoiding them, we also suggest related departments to develop ways to improve them, such as regularly filling the soil with specially made water to speed up the harmful plastic waste's dissolution. After a long period of time, these lands will be qualified and get into use by local farmers again.

3.4 Lead in professional scientists

In order to develop new materials and dispose wastes efficiently, scientists are extremely important for they can provide all kinds of technical supports. They may conduct experiments estimating the value of all sorts of existing plastics and testing how the newly introduced materials work to decide which combination of materials goes to the best outcome. Considering their indispensable status in this issue, related departments should hire various professions from first-rate universities to facilitate their efforts in protecting the environment. Corporation between scientists from different areas has the power to make great achievements, for not only will they look into the problem in a more comprehensive way, but they can gather ideas to different degrees as well. For example, in terms of creating innovative recyclable material to replace plastics, chemists may spend time in the laboratory figuring out the composition of this material, while biologists examining to what degree will it does harm to the environment after decomposing. Scientists efforts can make it easier for us to proceed with our the environment protection plan, avoiding unnecessary mistakes.

Reference:[1] <https://foodprint.org/issues/the-environmental-impact-of-food-packaging/>

[2] <https://zerowasteurope.eu/2018/03/wrapping-your-head-around-overpackaging-and-taking-action/>

[3] <https://phase1prototypes.com/8-challenges-to-overcome-in-your-packaging-process/>

Identify the Criteria

1. Impact on the environment(17%)

Over-packaging causes severe environmental issues since the pollution due to Over-packaging may contaminate the environment wasting some important resources. We should ensure that the method will alienate the existed pollution, without leading to additional environmental problems at the same time. As a result, the degree to which the methods can achieve to protect the environment is a key element in judging whether the method is appropriate enough.

2. Feasibility(20%)

Whether the project is doable should also be included in consideration. High-cost performance is the best option. The cost of the project shouldn't outweigh the final results. Instead, it should be in an appropriate and acceptable range. Also, the possibility that companies can create the new technology needed for new material is also questionable. If the method is hard or impossible to implement, all the plan is merely made in vain.

3. Efficiency(13%)

We expect to use a relatively shorter time to reach a comparably greater effect. An efficient plan can reach the expectation faster, which enables the loss and problems caused by Over-packaging to be stopped as soon as possible. Sometimes, the time needed to set up can cause negative influences like the increase of money and the delay of the outcome. Even though the solution can be applied immediately, it may not have a strong effect until a couple of years has past; therefore, the efficiency of the plan really needs to be considered carefully.

4. Willingness and consensus of the public(17%)

The attitude of citizens is also of great importance in applying the strategy. If most of the people have a positive attitude towards the policy and support, it will be much easier to reach the expectation. On the contrary, if people tend to resist the project and refuse to cooperate because of the loss in their own interest, the project will less likely to go on wheels; though people can be forced to do something to some extent, it will largely affect the quality of the action.

5. Economic benefits(13%)

The project can lead to a change in sales volume and the unit price of the product, which will definitely influence the economic benefits of the systems. It's less possible for people to spend much money on a product that seems not extravagant

so that the profits of the seller will decrease to large extent. We need to develop a way to coordinate the market pattern.

6.Sustainability(20%)

Sustainability can be reflected by the time the effect of the project can last. If the project is very transparent, the phenomenon of Over-packaging will exist again over a certain period of time, which means the effort that has been made before all becomes ashes. Consequently, we should take sustainability into account in order to gain a better solution.

Evaluate the Solutions

Reclaim the criteria: impact on the environment, feasibility, efficiency, willingness and consensus of the public, economic benefits, sustainability. Each aspect will gain at most 20 points. We use the SWOT analysis model, determining the score respectively and then assigning different weights to each aspect. Finally, we rank the score by adding up their scores of each aspect.

1. Government establishes policy to limit the use of plastic or raise tax on certain goods

Environment:20

Feasibility:20

Efficiency:15

Willingness of public:13

Economic benefits:10

Sustainability:20

By enacting laws, the use of plastic can be reduced.

Also, it costs little and has a long term effect.

However, sufficient time is required to present the policy. (-5)

People might be forced to follow without realizing the true reasons. (-5)

People who find plastic convenient will be less likely to support the policy. (-3)

The value of products will not increase.(-10)

Total: $20*17\%+20*20\%+15*13\%+13*17\%+10*13\%+20*20\%=16.86$ Rank:4

2. Dispatch administrators

Environment:20

Feasibility:10

Efficiency:20

Willingness of public:20

Economic benefits:10

Sustainability:15

By dispatching administrators, pollution can be decreased to large extent.

Workers are more likely to do well under supervision.

People may support the action since they can have a better living environment.

However, this method requires a large quantity of money on administrators' salaries. (-10)

Less packaging means less profits made by sellers(-10)

The high cost make this project hard to sustain.(-5)

Total: $20 \cdot 17\% + 10 \cdot 20\% + 20 \cdot 13\% + 20 \cdot 17\% + 10 \cdot 13\% + 15 \cdot 20\% = 15.7$ rank:6

3. Introduce subsidy & tax

Environment:15

Feasibility:20

Efficiency:15

Willingness to the public:10

Economic benefits:0

Sustainability:10

There is little cost for introducing tax, but some people will still buy the products despite the high price.(-5)

The pollution will still exist.(-5)

Some people will not support because sometimes they really need Over-packaged products.(-10)

The price of the products may decrease.(-20)

This method cannot last long since people may fight against it.(-10)

Total: $15 \cdot 17\% + 20 \cdot 20\% + 15 \cdot 13\% + 10 \cdot 17\% + 0 \cdot 13\% + 10 \cdot 20\% = 12.2$ Rank:10

4. Educate the public

Environment:20

Feasibility:20

Efficiency:15

Willingness of the public:20

Economic benefits:0

Sustainability:20

Fewer will people buy over-packaged products, less harm they will do to the environment.

This approach doesn't cost much money.

Most people will agree with this proposal.

Since the cost is little and it can have huge impact, the project can have a long term effect.

However, not all people will follow the call.(-5)

The value of the products decreases.(-10)

Total: $20 \cdot 17\% + 20 \cdot 20\% + 15 \cdot 13\% + 20 \cdot 17\% + 0 \cdot 13\% + 20 \cdot 20\% = 16.75$ rank:5

5. further approaches for individuals

Environment:20

Feasibility:20

Efficiency:17

Willingness of the public:20

Economic benefits:0

Sustainability:20

More people can join in to protect the environment.

People can have a better living environment, so they will support it.

It doesn't need much money.

Since the cost is little and it can have huge impact, the project is sustainable.

Despite not all people will join in activities, it's more efficient than the previous methods.(-3)

The economic value of the products may decrease.(-10)

Total: $20*17\%+20*20\%+17*13\%+20*17\%+0*13\%+20*20\%=17.01$ rank:3

6. two shopping options provided by merchants

Environment:10

Feasibility:20

Efficiency:10

Willingness of the public:20

Economic benefits:10

Sustainability:10

It doesn't cost too much money and will not affect consumers.

However, the waste will still exist.(-10)

People will hardly buy fewer over-packaged products.(-10)

The commercial value of products will decrease.(-10)

The problem cannot be solved fundamentally. As the result, the method cannot last longer.(-10)

Total: $10*17\%+20*20\%+10*13\%+20*17\%+10*13\%+10*20\%=13.7$ rank:9

7. use innovative materials

Environment:20

Feasibility:10

Efficiency:13

Willingness of the public:20

Economic benefits:20

Sustainability:20

The new material can reduce the environmental issues caused by Over-packaging to zero at last.

The commercial value of products may increase.

This method won't affect people.

However, A large amount of money is needed to invent new materials.(-10)

It also requires a lot of time to find and utilize new materials.(-7)

Total: $20*17\%+10*20\%+13*13\%+20*17\%+20*13\%+20*20\%=17.09$ rank: 2

8. recycling

Environment:20

Feasibility:20

Efficiency:20

Willingness of the public:20

Economic benefits:10

Sustainability:20

It can both solve environmental issues and reuse some important chemical elements.

It costs little money.

People can have a better living environment by recycling.

The problem is less likely to exist again after the implementation of the method.

But the business value of products will increase.(-10)

Total: $20*17\%+20*20\%+20*13\%+20*17\%+10*13\%+20*20\%=18.7$ rank:1

9. develop new ways on food preservation

Environment:20

Feasibility:13

Efficiency:20

Willingness of the public:20

Economic benefits:0

Sustainability:10

This method can reduce waste caused by Over-packaging once it is implemented.

The public can benefit from the method.

However, the procedure is complicated and expensive.(-7)

The value of products may decrease.(-20)

The high financial cost make it hard to sustain.(-10)

Total: $20*17\%+13*20\%+20*13\%+20*17\%+0*13\%+10*20\%=14$ rank:8

10. deal with pollution

Environment:20

Feasibility:15

Efficiency:17

Willingness of the public:20

Economic benefits:10

Sustainability:10

There will be less damage to soil.

People can be much happier living in a better environment.

However it requires a large sum of money.(-5)

It' s hard to cover all the places with pollution cleaner.(-3)

The commercial value of products may not increase.(-10)

The high cost makes it difficult to sustain.(-10)

Total: $20*17\%+15*20\%+17*13\%+20*17\%+10*13\%+10*20\%=15.31$ rank:7

 [Evaluation form for 10 solutions](#)

Make an Action Plan

According to the solutions and criteria we have come up with, and also with regard to a questionnaire we handed out, we now propose an appropriate and effective action plan. This plan is mainly based on the negative environment as well as economic impact caused by Over-packaging, including Governments' regulation, consumer&firms' responses and environment protection.

1. Government regulation

1.1 Establish policies

Since the situation of Over-packaging is too severe and many companies put this as a key means to compete with others and maximize benefits, regardless of how harmful it is to the environment, it is difficult to alleviate this situation without the powerful policies made by the government. Based on this, our plan involves suggesting the government to establish policies, avoiding more and more packages' appearance outside a simple small product. We plan to write a specific proposal asking the government to start from the economic perspective since this issue is closely related to interests. We will hand the proposal to representatives of the government, waiting for them to decide whether to implement these policies or not. Our team will weigh different policies before making a list, for each of these has its advantages as well as disadvantages. This method gives the authority a more direct view of these policies, helping them to make reasonable decisions. For example, a direct ban appears stronger, but it may also cause protests from the citizens, so they may consider more aspects before establishing it. As we can see, establishing policies is one of the most effective way to cope with the situation of Over-packaging. There are several aspects for the government to consider when making policies.

1.1.1 Control the uses of plastic

Our plan insists that the government should first limit plastic uses. In the light of this statement, we will write reports on how plastic affects the environment and suggest the government to take actions correspondingly. In our view, a higher tax should be imposed on the production of plastic, at least of the same level as that of gasoline. If the administrator accepts to adjust tax rate, our team will design the whole tax system based on rigorous investigation for them to get into use. In this way, we expect companies to response to the legislation actively by decreasing plastic uses when packaging or adopting new materials. Some of our team members will have a meeting with the administers, offering our advices which involve having the authority make a formal announcement and put these latest

policies on website or posters to make the public aware of the importance of it, promoting them to make further actions. Moreover, we have a backup plan. If tax doesn't work well, we will contact the staffs in the government, suggesting that they can control plastic production by limiting the weight of plastic used annually of each company according to their operating scale. These procedures help producers become aware of the significance of reducing plastic uses, doing good to the aggravating condition of environment and also consumers who are bothered by the Over-packaging problem.

1.1.2 Carry out bans if necessary

Our team suggests that the government should carry out bans on certain materials to protect the environment. We plan to do a comprehensive research on different materials and write proposals to deputies to the People's congress suggesting them to ban the production of materials containing toxic elements like phthalates, bisphenol A and the plastics Polyvinyl chloride in order to avoid harming the environment after they are abandoned. That's especially good for the trash disposal department, which have to go through an extremely hard procedure to deal with these wastes, most of which cannot be recycled, reused or composted. We plan to invite chemical professions to conduct a careful study on different elements composing various materials, and form a specific list informing which kind of materials are forbidden when making packages which will be handed to the governor eventually. We will also give the government some tips through writing proposals regularly, such as advising them to hold random inspections and give punishments to those running against the laws to avoid cheating. In this way, severe harm to the environment caused by noxious elements will be eliminated from the source. Furthermore, appropriate bans on certain materials are essential to the sustainable development and maintenance of the packaging culture.

1.2 Make evaluation of our policies and supervise the execution of them

While listing some policies related to Over-packaging, we think administrators are essential in executing and supervising these policies. When making regulations, we need to consider both the benefits and drawbacks of them. In order to put regulations into practice and ensure the feasibility of them, we plan to seek out some defects of the policies and give feedbacks to the government as soon as possible in order to make some improvements. To be more specific, we will tell the administrators in different departments in order to supervise companies to follow our rules. According to our goal, we will conduct a selective examination regularly to see if companies follow the regulations and give punishments if necessary. In addition, we can decide on awards through discussion annually to prize those companies which stick closely to the regulations.

1.2.1 Impose tax

As the uses of plastic as well as other non-environmentally friendly materials should

be limited, we plan to report our intention of having the government to impose tax on these firms according to the amount of plastic they use through conferences monthly held by the government. For instance, if over 50% of their material is plastic, we plan to impose sales tax (35% of their profit). When we find firms that over produce poisonous materials for their own interest, we will inform the authority and suggest it to impose higher cooperation tax (45% of their profit) on their production of goods or pursue their criminal liability. Tax is an efficient way to ensure the execution of some regulations from the entrepreneurs' perspective. Moreover, our plan include further actions taken on taxes—the government can use these tax revenues to support some projects that are related to sustainability growth.

1.2.2 Provide subsidy

At the same time when the government impose tax on the production of non-recycled materials as mentioned above, our team plan to have it introduce subsidies on certain industries. In terms of this idea, we will contact administrative agents and ask them to report it to the upper institution. We all know that technology cost of related industries such as large reuse and recycling projects is very high. As a result, maybe it is lack of funding that cause the inefficient action carried out to protect the environment. We need subsidy to incentive more firms to take part in in these environment projects, so this also gives pressure to those non-recycled firms. We plan to place a great deal of money as subsidy to these industries (the money comes from the tax they receive) so that they will take progressive actions to handle the environmental issue. Also, we plan propose to the government to give funding (the goal is to let these project run in a normal profitable situation, at least don't result in deficit when the amount of money is depended on the scale of the project) to some public welfare activities which are related with sustainability of environment.

1.2.3 Conduct propaganda to the general public with advertisement from authorities

We plan to have an influence to publicity. We plan to publish some articles about the problem of Over-packaging on the newspapers and social media. In this way, more people will realize the problem and take actions such as buying less over-packaged goods or put waste materials into the right category. In addition, we plan to put some articles about people and companies who do well in reducing over-packaging as a model. In this way, more people will get to know and regard them as good examples. Citizens' awareness is important because it's not an issue only to the government, everyone has the responsibility.

2.Actions must be taken by consumers and firms. Facing the trend of over-packaging, producers---firms and companies---serve as the roots of this serious problem, so obviously they must undertake social responsibilities actively, following

the government' s policies.

2.1 Educate the public

Most of people are attracted by the products only because of their appearance. Though some products have fantastic appearances, the actual quality is not good at all. Since people buy overpackaged products without considering more, it has caused severe environmental issues. Therefore, it' s quite important to push people to be aware of the problems and make rational decisions. With the spread of the ideas through social media or other internet platforms, a wide range of people can notice and then take action because almost everyone has a cellphone and surfs the internet every day. Also, targeting school in order to teach the students to recycle is a effective way to get attention to Over-packaging issues. When they have acknowledged the seriousness of the problems, the amount of overpackaged products purchased will be decreased to large extent, which will definitely alleviate the environmental issues. Instead, if the public continue buying lots of overpackaged products, the waste will accumulate more and more, leading a worse living environment. There are some details about several possible methods:

2.1.1 Place announcement on billboards, social media and other internet platforms

We plan to first find suitable internet platforms like Tiktok, Weibo or twitter and create an official account in them since official account that is verified will always have a stronger influence. We are then going to design some posters and short videos which are both interesting and thought-provoking in order to catch people' s eyes and post them on the internet platforms. The content should include how severe the situation of Over-packaging is now and what citizens should do to overcome difficulties. To increase the authenticity and the severity of the information, we will add statistics and real pictures about Over-packaging. Moreover, we plan to ask celebrities to forward the passages so that more individuals can give attention to this problem and take it into consideration when purchasing products next time. By placing announcement on internet platforms, we look forward to seeing that people gradually notice the problems of Over-packaging and thus consuming fewer over-packaged products, which will eventually lead to a better living environment.

2.1.2 Target schools to promote recycling

Since it is parents who go out shopping, students have less opportunities to have contact with overpackaged products. However, there is something else they can do to make contribute to the issues. We plan to arrange lessons in schools to let students learn the concept of Over-packaging and appeal them to do little things to change the situation. We will first negotiate with schools for an appropriate time to go on publicizing. PowerPoints will be made in order to make the class interesting enough for children. The PowerPoints will involve the seriousness of Over-packaging and the steps required for recycling. After everything is prepared well, we can make

presentations. Furthermore, we plan to ask questions at the end of the class and give gifts like candies or cookies to the students who present right answers, which can ensure the significance of these classes. We are also going to hold some activities so that the students can take the knowledges we teach them into practice. We hope to help develop the students' habits on recycling by targeting schools to impart knowledges of Over-packaging and recycling on children from a very young age, which will be of great importance to both children and the whole world.

2.2 Further approaches for individuals

Merely educating the public is not enough. Further approaches for individuals are needed to turn the ideas into practice. Individuals can deal with the waste caused by overpackaged products by doing garbage classification. Also, if some of the people are impressed by the publicity of ideas, they can join us to contribute their efforts for these issues. Moreover, we plan to make more people take part in and feel what they can do is not far away from them. Gathering citizens together can provide an active atmosphere. Here are the details of two feasible methods:

2.2.1 Garbage classification

Through garbage classification, people separate the trash into 4 kinds-recyclable waste, non-recyclable waste, hazardous waste, and other waste. We plan to make some videos to teach people how to do garbage classification correctly. First, we plan to let people know which sort the garbage belongs to. We intend to create a website to provide detailed information about the sort of garbage in order to make sure that people can get help when they have trouble classifying. We will also ask government for help to put 4 kinds of rubbish bins. Then, people are able to separate the rubbish into different parts and throw them into correspondent rubbish bin. Furthermore, we are going to adopt point system and give the family who earns the most point in garbage classification a reward to encourage more people's participation. Garbage classification can make it easier to reuse the recyclable waste and at the same time reduce the area of garbage. If everyone can make a small contribution to garbage classification, it can have a remarkable result. We hope more and more people can no longer think garbage classification a difficult thing and take action to do this with our videos and website.

2.2.2 Join in existing campaigns

Some people may be moved and impressed by the publicity of the Over-packaging issues and decide to appeal for more people's attention. We plan to send out messages and make posters to let people know that they have opportunities to join. We will mention phone number and email addresses in the poster so that they can contact us. After we tell them the main topic and procedure of the project, we will let them fill out the application form with some personal information. Then, we intend to provide training by some professional members before they start working. We will also ask them what they are best at so that the most suitable assignments

can be assigned to the members, improving the efficiency and quality of the project. To make sure most of the areas are covered with the education, a large amount of teachers should be required. So, individuals can help by preparing for the class or introducing the information to the students. With more people joining in the campaigns, more people can realize the problems. When we achieve more publicity, we can be more efficient, finishing tasks and achieving results more quickly. We are looking forward to letting more people join us and help us solve the Over-packaging problems successfully!

2.3 Use environmentally friendly materials

It is a common sense that traditional polythene plastics and foam boards are convenient to produce, but they are hard to degrade, causing air pollution, soil pollution, and water pollution after being burnt. For we plan to have the government provide subsidies to firms that promise to use biodegradable materials each year and the technology is already obtainable, it is practical for firms to use materials that can be recycled, such as paper, glass and cloth to produce packages instead. Moreover, new biodegradable materials have been developed in the recent decades. We plan to encourage the firms to use materials like PLA and Starch Plastic, which are created by adding starch into materials that are not biodegradable and destroying the original physical construction of them. They will easily degrade in the oxygen and high temperature environment and get into use again after being recycled. As people will not seriously mind the change in materials used for packaging, using environmentally friendly materials as more as possible is obviously a wise way to reduce the negative effect on the environment to a great extent. For those companies that have to use plastics, we plan to ask them to use thermoplastic as much as possible after they apply for and get the permission of the local government. In this way, the majority of the plastic packages will be easier to get recycled.

2.4 Advocating the Use of Plain-packaged Products

Our plan is to conduct propaganda in order to strengthen the importance of making plain packages more "beautiful" and "creative" instead of merely complex. Also, companies and firms will encourage more consumers to establish a new type of aesthetic appreciation: preferring packages that are simply embellished and more close to nature. We plan to impel firms to spread the proposal of buying plain-packaged products while the firms take action to inspire consumers through advertisements and publicity commercials. Our plan suggests that firms will make plain-package a unique feature of the brand and propagandize the advantages of plain-packaged products which include but not limited to taking less space, being easier to deal with and making people closer to the inner quality of the products. Employing this kind of special advertising will stimulate more consumers to prefer plain-packaged products and relieve the Over-packaging problem. Also, it is a chance for companies that do not produce ornate packages to attract more

consumers and increase the revenue.

2.5 Sell ornate-packaged products and plain-packaged products separately

To satisfy the requirements of consumers who buy things only for presenting gifts, we plan to demand all the companies to provide both ornate-packaged products and plain-packaged products. According to surveys made in 2020, about 39% consumers choose to buy chocolates as gifts for anniversaries and 35.9% would like to buy jewelries, clothes and flowers at festivals. We plan to ask producers ,especially those who sell these goods, to divide their products into two groups----ornate-packaged ones and plain-packaged ones----according to the proportions of gift-consumption to normal consumption and sell differently packaged products respectively according to the consumers' need. We will offer the proportion numbers of various types of typical products and encourage all the companies to do some surveys themselves in order to get more specific statistics. In addition, we plan to impel producers to make products that are to be sold online better packaged for preservation, for they need to be transported far away, while encouraging those supermarkets and shopping malls to use simple packages on goods which will get into use quickly to reduce the usage of materials that are harmful to the environment and control the severe phenomenon of Over-packaging. In this way, not only the over-packaging problem can be effectively eased, but the need of adorning gifts and good preservation can be met as well.

3. Environment

3.1 Recycling

With the purpose of reusing packages and protecting the environment, our team will suggest the government to separate the rubbish and then use special ways to deal with each of them. We plan to first collaborate with scientists to do researches in all kinds of rubbish: recyclable rubbish, hazardous rubbish, kitchen rubbish and other rubbish. After the research, we will provide several suggestions to the government through internet platforms. For instance, we will suggest that one of the most important parts of the packaging waste, PET bottles, can be recycled and decomposed into PET fiber which can make quilts. Then the price of the quilts will decrease since the material will be cheaper than before. Moreover, we would like to point out that dry rubbish which cannot be recycled as materials can be used for energy in power station. In the same way, if the advice will be adopted, we can save a lot of original materials and effectively save the energy.

Though many people have known that the government ask people to separate rubbish, they may not know it is specially used for recycling. As a result, we will make videos or posters to tell people what the true purpose of recycling separable rubbish is. It will not be just telling people how to separate them, but also why to separate them.

3.2 Develop a new way on food preservation

On many occasions, the over-packaged bags are not only used to attract consumers' eyes and make them buy their products. Companies need sufficient time to transport them, while preserving them in the market also requires lots of packages, different companies make various packages in order to keep the products under good conditions. We plan to hire experts and explain the situations to them respectively, letting them find available solutions for each kinds of food' s packages. After that, we will provide solutions to the government and let them make policies to restrain companies' behaviors in order to solve the problem of preserving. Companies should obey the rules, or they will be punished by the government.

3.3 Deal with pollution

If the Over-packaging problem cannot be solved, the environment will worse off. The factories for burning trash should plan to take the first step to response to the situation, which means not just putting all of the rubbish into a big burning house. In the part above, we have solved the problem of rubbish coming from rubbish bins. However, we still need to solve the problem of rubbish which is on the ground and in water systems. For the rubbish on the ground, we plan to write proposals to the authority suggesting the government to put more rubbish bins in places like parks, seashores, or commercial streets. What' s more, we will design a systematic law for people who throw rubbish everywhere. In terms of marine pollution, a lot of plastics were thrown in the sea and decomposed as micro-plastics. Micro-plastics will do harm to animals and people, so it is important to ban the use of micro-plastics. We plan to suggest companies who produce the sea salt and toothpaste not to use micro-plastics through phone-calls or regular emails. In this way, the pollution caused by rubbish will to the nature will be alleviated.

Prototype and Test

| Prototype Design

Our educational poster aims to let more people realize the problem caused by Over- packaging and motivate them to try their own best taking actions to improve this situation. According to the poster, the background consists of some packages of presents which usually involve Over-packaging. Also, there are some useless plastic bags and boxes. These are all common packages of goods purchased that have been wasted by people with their size uselessly large.[1] As shown in the poster, the boy is holding a model of a recycle rubbish can. The red and green light on the bin can remind us of two situations: green represents the environment-friendly and red represents the pollution to the nature. The rubbish bin shows the functions of different types of cans. For example, some are harmful wastes while some need extra separations. Together, this poster alerts people to conduct in a proper way to deal with the waste packages. In addition, the skeleton can remind us not to judge the value of a good only by its beautiful appearance superficially, it may deceive you.

We plan to put the posters mainly in schools and office buildings with the main purpose of educating the public. The posters will be noticed by people every time they walks through gates and corridors, so they can leave a deep impression in people' s minds. Moreover, we think introducing our poster on the internet can attract the attention of various people, for we can communicate with them through social media. We can send it to our friends for them to forward to their acquaintances, ensure its publicity. Since our goal is to educate the public to reduce excessive packaging, we decided to set up a WeChat official account and put our poster in the front page. [2] The purpose of this account is to offer a reward mechanism related packages recycling and some small punishment to those who are not using or producing recyclable packages. The reward can be some nice clothes made of environmental-friendly materials. Moreover, we plan to add some quizzes about simple tips to form a green life in this WeChat official account. These parts are interesting and innovative to the public.

Reference:

[1] [https://zhidao.baidu.com/search?](https://zhidao.baidu.com/search?lm=0&rn=10&pn=0&fr=search&ie=gbk&dyTabStr=null&word=%BB%B7%B1%A3%CA%C2%D2%B5)

[lm=0&rn=10&pn=0&fr=search&ie=gbk&dyTabStr=null&word=%BB%B7%B1%A3%CA%C2%D2%B5](https://zhidao.baidu.com/search?lm=0&rn=10&pn=0&fr=search&ie=gbk&dyTabStr=null&word=%BB%B7%B1%A3%CA%C2%D2%B5)

[2]

| Feedbacks learnt from users

1. Questionnaire feedback

1.1. Data analysis

After making questionnaires, we got feedback from 302 people. Firstly, among them, we can see that 63.6% are female and 36.4 % are male. Secondly, most of our candidates are adults(age>18) which has a proportion of 85.1%, while only14.9 % of them are students aged blow 18. As most of our respondents are adults who have a regular income and comparatively fixed living patterns the data is objective and balanced. According to our statistics, with all of the possible factors that may have influences on our research, our sample size is large enough to guarantee the reliability of our data and reflect most people' s perspectives.

1.2. Quantitative feedback

1.2.1. According to the statistics of the question whether the external packaging form of goods will affect purchasing quantity, 85.8% people think that packaging is an important element to the sales quantity.

1.2.2. According to the statistics of whether you have worried about the phenomenon of Over-packaging, people who have considered about this has a proportion of 83.8% which is much higher than that of the people who haven' t thought about this before.

1.2.3. According to the statistics of which product have a serious Over-packaging problem that leads to a certain waste of material, the top two are the make ups and nutrition which account for 70.2% and 68.5% respectively.

1.2.4. There are 80.5% of people thinking that these packaging materials are not environmentally friendly (such as paper).

1.2.5. With the same level of goods, only 23.2% of people will prefer the gorgeously packaged goods to the simply packaged goods.

1.2.6. Further question to the previous one, only 10.3% of people chooses the gorgeous ones when they are much more expensive than simple ones.

1.2.7. There are 94.4% of people who have come across the situation that the packaging is nice but the good itself is not.

1.2.8. According to the statistics, 15.0% of people think that simple packaging of things may not has a good quality.

1.2.9 As for the cause of Over-packaging, we have found out that most people consider the consumers' psychological needs as the main cause (82.1%), and the

businesses' desire to earn profit has a proportion of 74.1%.

1.3. Qualitative feedback

We can draw some conclusions according to our statistics which can guide the route of the action:

1.3.1. According to the first and second quantitative feedback, most of the people have realized the phenomenon of Over-packaging and some firms have been motivated to create different packaging styles as it will directly increase the output. Firms would like to sell products with beautiful and impressive packages, since they can use them to attract more people's attention, making people think that their products are superior. This is consistent with our challenges.

1.3.2. According to the third and fourth quantitative feedback, we can see that this problem mainly occurs in certain goods such as make-ups. Makeups are delicate things used to beautify people's face, which link to people's psychological needs. With the entrenched aesthetics, People psychologically prefer products that look "beautiful". This type of ill-advised evaluation leads to consumers' preference on exceedingly packaged products. Therefore, we consider the approach of educating the public, making them to look at the side-effect of this perception.

It is also worth mentioning that people think most of the materials used to pack those goods can't be recycled or reused. Moreover, these materials are consist of a substantial proportion of natural resources such as wood from forests and the over-usage of them will lead to a more serious problem in the environment cycle. This results in too much waste of materials when the packages are thrown away by people. Through these statistics we think firms can adopt new technological materials when packaging. Environmentally friendly materials that is both light and easy to dissolve need to be adopted.

1.3.4 According to the fifth and sixth quantitative feedback, we are surprised to know that people choose the simply packaged ones among their competitors though beauty is a common sense in humanity. So it's reasonable to know that at a time when the price of gorgeously packaged ones is much more expensive, more consumers will choose the one with simple packages. From this feedback, we can infer that money and quality is the prime consideration. Therefore, there is information asymmetry between customers and businesses. We think people should do some researches and strengthen government policy guidance towards the reliable information.

1.3.5. The seventh and eighth quantitative feedback best explain the phenomenon of the previous problem. We can see that one reason people usually choose the simply- packaged ones is that they think the other type may not have a good quality and don't want to take the risk of buying an inferior good. However, we have inferred that, from the psychological perspective, people thought nice packages represent good quality of goods while the truth is just the opposite. Since they are not poor and have a strong desire of getting qualified goods, money is not the prime consideration. Therefore, according to the feedback, this idea in

people's mind is sometimes proved wrong. Nearly 90% of people found that the appearance of goods do not means ensures the quality of the inside products based on their past experiences. Consumers face serious honesty issues due to Over-packaging. As companies want to sell more products, they will boost that the products are really excellent, exaggerating their qualities. Some companies even draw fake pictures on the package or write fake words of how good the products are when being used.

1.3.6. Most people think that merchants sell over-packaged things because of consumers' psychological needs which strengthen the conclusion we made above. The businesses' desire to earn profit is the second advocated reason, proving the phenomenon in the first data. Actually, gorgeous packaging leads to high economic cost. If the companies do not want to spend money for packaging, they will lose on propagandizing, which will result in a loss on selling the products. This means that there are more competitions between different companies which sell the same products in the issue of packaging. So the market forms a circular negative effect.

2. Interview feedback

We interviewed one of our professor Mr. Zhang on his opinion towards Over-packaging. First, we asked him whether he had bought over-packaged goods without realizing it. He replied that he generally bought presents that were excessively packaged, such as tea, liquor, and perfume. However, he admitted that he sometimes buys products from places far away from their homes because of online shopping. Since it takes a long period of time to transport products, new food preservation methods are needed. He thought these packages were symbols of our respect and sincere to others when we presented to them. To be more specific, he believed this kind of tradition is indispensable. According to this, we think that over-packaged products may be frequently consumed by people who are too sensitive about their reputation. Some people have a false sense of pride when buying good-looking products and feel ashamed to buy the simple-packaged ones. Also, when people exchange gifts with their relatives and friends at festivals, no one is willing to be misunderstood as being lack of sincerity because of a homeliness ordinary gift. However, he personally wouldn't buy any over-packaged things as a daily necessity. Mr. Zhang thought simply packaged things don't take up too much space, and he didn't want to spend so much time dealing with the rubbish. When packaging waste is disposed, it will emit pollution which will damage the ecosystem. According to this, we asked about his opinion on what people could do to alleviate the Over-packaging problem. He recommended that we can educate the public, especially young people. Also, he thought government's regulations could offer great help, such as controlling the uses of plastic and impose tax on certain companies. Finally, he hopes the quality of goods can be improved by firms in order to decrease some honesty issues.

 [Questionnaire](#)

 [Results of the questionnaire](#)

| Improvement for next iteration

The connection between people's income, residence and their attitudes towards Over-packaging may reveal some clues about the source of biases against the Over-packaging. We have only gained a rough distribution of people' s age, gender and residence (China) so far.[1] To solve this issue, we could conduct several interviews with people coming from different social status as well as residence and then compare their answers.

All of the questions in the questionnaire start off from the perspective of consumers. In addition, more than half of them are women and they purchase daily things more frequently than men do, so some uneven distribution of the category still exist. In the next iteration, to get more contact with different sorts of people, we should come up with ways, like online interviews, to directly communicate with factories and shopkeepers about their attitudes towards Over-packaging.

In the next iteration, we will take more actions on this topic. We can design apps and put different kinds of packaging styles using recycling materials on them. We plan to make these designs popular among these users and it will become a upsurge and this creation will be spread to various people. In this way, more people such as artists and fashion designers will pay attention to this sustainability innovation project.

Reference: [1] <https://www.theguardian.com/environment/2017/mar/13/waste-plastic-food-packaging-recycling-throwaway-culture-dave-hall>

Team Credits

周子涵 Zihan Zhou, the leader of the team, is responsible for the overall management of the whole project. She held conferences, led discussions, and organized team members' ideas. Also, she designed the outline and scheduled the timeline. In the writing process, she finished the sections of summary, team credits, solution and the first section of the action plan.

夏羽彤 Yutong Xia contributes to the design and analysis of questionnaires, the creation of our poster and some of the action plan. She analyzed the deficiency and gave improvement about the action plan in the prototype section. She also finished an interview.

吴宸桢 Chenan Wu, an active member of our team, is responsible for working out the outline with the leader, identifying the root cause and helping with the members in the action plan section to finish their work.

杨子涵 Zihan Yang is responsible for identifying the challenges and working out the last section of the action plan. He set a good model for other members using his expertise.

张冰悦 Bingyue Zhang is responsible for setting criteria, evaluating the solutions and describing the action plan. She also handed out a comprehensive evaluation form.

Onsite Conference File

Judge Comments

" Congrats and good job working through a complex problem such as overpackaging. I really enjoyed the team' s detailed evaluation criteria, including the explanation of each of the options as part of the evaluation. The detail you provide in your work is very helpful to understand the structured thinking you have applied to this complex and pervasive issue.

It would be helpful to separate overpackaging from the quality of the internal product – the issues are not mixed. i.e. a good quality product could just as easily be overpackaged, so could a product from a 'honest' seller. A few additional points to note – petroleum is not scarce in the world, it is just a non-renewable resource and one that causes other environmental harm.

The team develops some real insights into the problem - identifying the implications of online shopping on packaging. The team also does a good job in identifying many of the social perceptions that drive overconsumption of packaging materials.

I would advise the teams to spend more time refining the suggestions that come out of your analysis – there are often overlaps in the ideas and how they are presented. For example, in the criteria, sustainability and impact on the environment can be meaningfully combined into one criterion. The action plan could also directly flow from the root cause analysis better. The ideas are great and covers most of the possible approaches to tackle overpackaging, but a systematic presentation and analysis of the findings would improve the analysis.

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