

The need for sustainable alternatives to single-use plastic bags

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The damage caused by plastic pollution

Plastic is notoriously known to be a pollutant causing detrimental damage to the planet. A majority of the plastic today is made from non-renewable petrochemicals derived from fossil oil, natural gas, and coal. Worldwide, only 18% of plastics waste are recycled, 24% incinerated, and 58% either landfilled or enter the natural environment. Plastic bags take around 1000 years to degrade in a landfill, where they do not even break down, but instead photo-degrade becoming microplastics (Chamas et al.,2020).

Furthermore, plastic (bags) that infiltrate the natural environment can disrupt animal's habits thereby affecting some species' ability to breed naturally. Plastic is toxic and can kill wildlife or make them more susceptible to disease (Plastics', n.d.). Plastic pollution causes a threat to marine life and it can lead to animals getting stuck in plastic, mistaking it for food and eating it, and finally entering the food chain that negatively affects humans as well.

A great deal of plastic enters the ocean every minute and UK supermarkets produce 800,000 tonnes every year (Plastic, n. d.). The UK especially, produces more plastic waste than almost any other country. It is considered to be the second-biggest producer of plastic waste per capita, and fifth-largest producer of single-use plastic waste. It is estimated that the UK households throw away 100 billion pieces of plastic packaging every week, and on average 66 items per household per week (Tiseo, 2023).

If current trends continue globally, the amount of plastic waste polluting the oceans will grow to 29 million tonnes a year by 2040. The efforts made and announced by countries to reduce plastic waste will reduce that projected volume only by about 7% by 2040 (Harvey, 2020). Therefore, the mass environmental damage that is caused by the UK's plastic industry is necessary to address. The UK government introduced a 5p charge on single-use plastic carrier bags in 2015 and increased to 10p in 2021 (Double, 2022). However, has the single-use carrier plastic bag tax in 2015 and 2021 by the UK been effective in truly reducing plastic consumption?

Research overview

The analysis presented in this brief was conducted using UK governmental data sets on the single-use carrier plastic bag usage. This consists of data of England's single-use plastic carrier bag charging, including the number and proceeds of single-use plastic carrier bags issued or charged by retailers. It includes mandatory data submitted by retailers. Furthermore, information from various news articles and other research papers was used to aid the analysis of the policy and allow for practical recommendations.

The effectiveness of the tax on single-use plastic carrier bags in the UK

In 2015, the UK government made it mandatory to charge 5 pence for all single-use plastic carrier bags, and in May 2021 the charge for single-use plastic carrier bags was raised to 10 pence (Single-use, 2022). This was done in an attempt to reduce the litter caused by single-use carrier bags and the damage they create in the environment (Carrier, 2022). With the introduction of the plastic bag tax in 2015 the country saw a 95% reduction in the number of single-use plastic bags sold in supermarkets. This means on a per-person basis the bag purchases fell from 140 to 4 since 2014. Additionally, according to new figures released on 29 July, a further reduction of 20% in single-use plastic bags was seen across the UK bringing down the per-person usage to just 3 single-use plastic bags a year as compared to 140 in 2014 (Double, 2022).

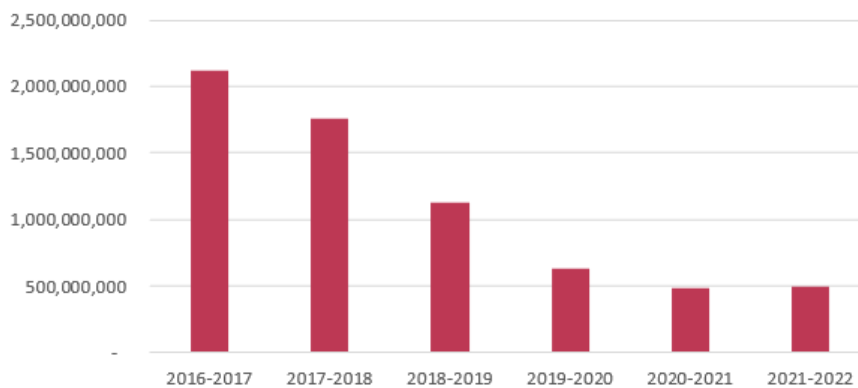


Figure 1. Total Number of Single-use plastic carrier bags sold in the UK. Retrieved from data.gov.uk

It is important to note that the reduction was seen only in single-use carrier plastic bags. The plastic bag tax was not applied to returnable bags and bags for life such as woven plastic bags and multiple reuse bags. A returnable multiple reuse bag must be sold for 10 pence more, be suitable for reuse, and replaced free of charge if returned when it has been worn out (carrier bags, 2015).

Nevertheless, some green groups argued that the “bags for life” were not being used in the intended way and customers were buying it every time they forgot to bring it with them to the retail stores. Since the bags-for-life are thicker and more durable, their impacts on the environment are greater than that of thinner single-use plastic carrier bags. On average every UK household has over 57 of thick plastic bags stashed somewhere. This shows that the tax on single-use plastic carrier bags is not as effective as seen. Instead retailers are likely to be distributing more plastic by weight now (Mace, 2022).

What the UK government should do

There is not one answer to solving plastic pollution. Although a tax on single use plastic bags that reduce its consumption is a nice step, more policies need to be implemented to create an effective impact.

As the consumption of plastic bags has shifted from single-use plastic carrier bags to bags-for-life, the aim should be to decrease their consumption. A report from the environmental investigation agency and Greenpeace showed that in 2019, supermarkets surveyed sold 41,579 tonnes more bags-for-life than they did single-use bags. The reason behind this is due to a lack of incentive to reuse rather than to re-purchase a bags-for-life (Williams, 2019).

The report suggests that a price increase to at least 70p may lead to solving this problem. In the Republic of Ireland a 90% reduction in bags for life sale was achieved where a price of six times higher than a consumer was willing to pay was set (Williams, 2019).

However, a ban on bags-for-life and single-use plastic carrier bags would be ideal. Over 80 countries have a full or partial ban on single-use plastic bags (Planet Patrol). In addition to this, the government should make it mandatory for retailers to only sell the most sustainable carrier bags.

According to multiple experts, non-woven polypropylene (NWPP) bags are recommended to be the most sustainable carrier bag. It is durable, affordable, machine washable and 100% recyclable (NWPP, 2018). A report prepared for the Australian Department of the Environment and Heritage in 2002 uses a life cycle analysis for multiple types of carryout bags, and NWPP have the least environmental impact. NWPP bags have very low resource use, low cost, and high reuse rates (The Most, n. d.).

Table 1. Environmental Impact of different carrier bags. Retrieved from County of Los Angeles

Type of Carryout Bag	Bags Used per Year	Material Consumed (kg)	Greenhouse Gas Equivalent (CO2) For One Year	Primary Energy Use For One Year (MJ)
Reusable (PP fiber bag)	4.15	0.48	1.96	46.3
Biodegradable (starch based)	520	6.5	6.61	61.3
Single HDPE	520	3.12	6.08	210
Kraft Paper Bag (with handles)	520	22.15	11.8	721
Boutique LDPE	650	11.77	29.8	957

Nevertheless, reusable bags still have a major environmental impact and the issue of re-buying a bag whenever convenient still poses a major threat to the issue. Therefore, the price for the NWPP bags should be at least 70p to prevent consumers from repurchasing the NWPP bags.

Although there are many other concerns the government has to address in regards to the pollution caused by plastic bags, switching to sustainable alternatives can greatly help diminish the harmful impacts of commonly used plastic bags.

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