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# A PLASTIC FUTURE

PLASTICS  
CONSUMPTION  
AND WASTE  
MANAGEMENT  
IN THE UK





# Plastics Consumption and Waste Management

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Final Report

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## Report for WWF

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# 1.0 Main Plastic Consuming Sectors

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## 1.1 Introduction

This brief report summarises available data on plastic consumption and waste management in the UK, both historic trends and future projections.<sup>1</sup> Future projections for plastic consumption, waste growth and management routes are based on forward projections of key measures (such as GDP) which show a demonstrable correlation with changes in consumption, and also take into account the potential impact of current and upcoming European legislative measures. The data presented here were taken from a range of data sources, including Eurostat, Plastics Europe, and other industry associations and national statistical bodies. Full details of data sources are available in the annex to the Plastics Strategy report prepared by Eunomia on behalf of the European Commission.<sup>2</sup>

## 1.2 Plastic Consumption in Europe

Data on the total production of plastics and demand by consumers is available only for the 28 EU member states ('EU28') collectively. The total demand for plastic waste increased from 47.5 million tonnes in 2005 to 52.5 million tonnes in 2007.<sup>3</sup> Over the next two years, the impacts of the financial crisis led to a reduction in demand down to 45 million tonnes in 2009. Since this time, demand levels have fluctuated but are on a general uptrend, and the most recent data (2015) reports demand of 49 million tonnes. Total plastics production was 58 million tonnes in 2015, suggesting that 16% (9 million tonnes) of plastics produced in the EU28 is exported outside the EU. Around half of all the plastics consumed in the EU in 2014, the latest year for which waste data is available, became waste or went into stocks (for example into vehicles or buildings).

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<sup>1</sup> All sources of plastic waste are included in this analysis, split across the following sectors: non packaging household (e.g. housewares, toys, leisure equipment etc); packaging; construction and demolition; waste from electrical and electronic equipment (WEEE); automotive; agriculture; fishing / aquaculture; and other.

<sup>2</sup> ICF & Eunomia Research and Consulting Ltd (2018) *Plastics: Reuse, Recycling and Marine Litter*, Report for DG Environment

<sup>3</sup> These figures do not include plastics in imported products or packaging, and nor do they take account of the use of secondary plastics. Hence they are (i) an underestimate, and (ii) the proportions may differ once imports are taken into account.

### 1.3 UK Plastic Waste Generation

Of the total plastic waste generated in the EU in 2014, 4.9 million tonnes was generated in the UK. Based on forward projections, **current (2018) waste arisings are estimated at 5.2 million tonnes**, and are forecast to increase to around **6.3 million tonnes by 2030 – a 20% increase** over this 12 year period. This is a significant increase in the quantity of plastic waste. The sources of this waste by sector are shown in Figure 1. Packaging accounts for the majority (67%) of the UK plastics waste stream. Higher than the proportion across the EU, which is most likely due to a much stronger market for convenience food in the UK compared to many other European countries, either from takeaway restaurants or pre-packaged, often single serve, food in supermarkets. In addition, it is important to point out that the generation of packaging waste indicated here is considered higher than reported in official statistics, due to likely under-reporting of waste through EPR schemes. This issue is set out in a recent report by Eunomia.<sup>4</sup>

**Figure 1: Sources of Plastic Waste in the United Kingdom, by Sector**

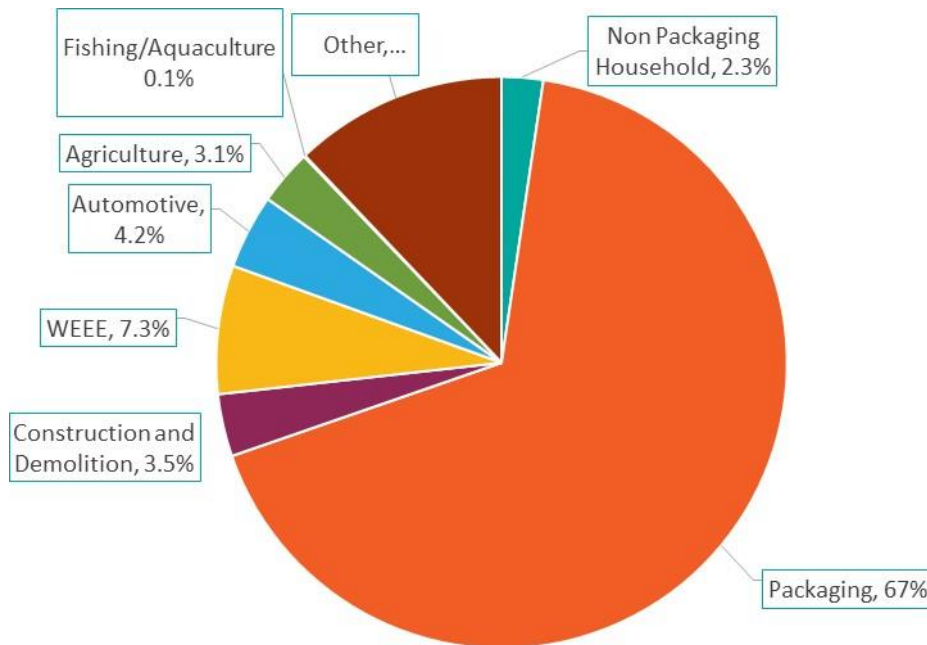


Figure 2 presents the total forecast waste arisings in 2018 and 2030, and the overall % change in waste growth over this 12 year period.

Some further points on these forecasts for key waste streams are as follows:

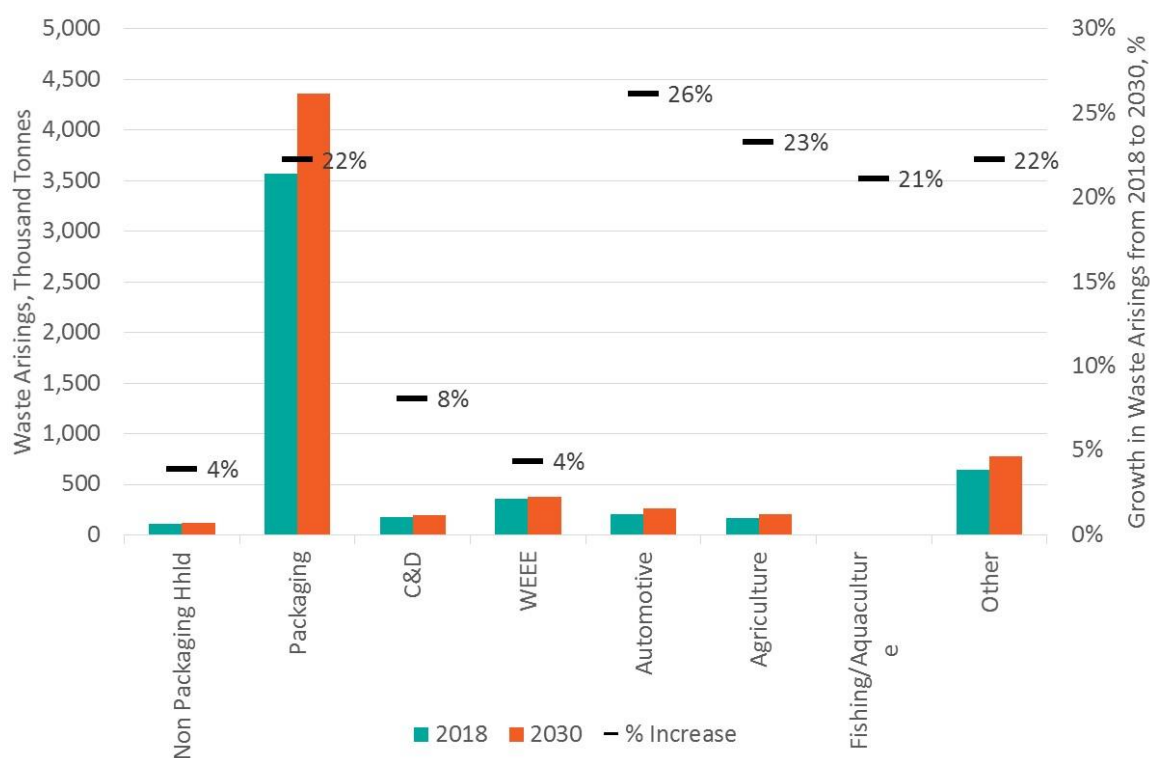
- Packaging – Consumption levels are expected to continue to grow in line with positive economic forecasts. Considerable light-weighting of bottles has already been achieved, so unit weights may not fall much beyond current levels.

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<sup>4</sup> <http://www.eunomia.co.uk/reports-tools/plastic-packaging-shedding-light-on-the-uk-data/>

- Construction & demolition – C&D waste growth is coupled with GDP growth, however, as one recent study has shown, for more wealthy countries such as the UK, which have adopted more resource efficient behaviour, waste arisings will increase at a slower pace than overall economic growth. However, the proportion of plastic in C&D is changing over time, with increases due to more plastic components being used in new buildings and from more modern buildings (with more plastic used in their construction) being demolished.
- Automotive – historic waste arisings of end-of-life vehicles (ELVs) were shown to correlate with the number of vehicles registered 11 years previously – equivalent to the average age of the EU car fleet. Vehicle numbers are expected to continue to rise, as well as historical and expected changes in the plastic composition of vehicles. This has increased from 13% in 1990 to 16% in 2010, and by 2020 this is predicted, by one source, to increase to 18%.

**Figure 2: Projected Waste Arisings in 2018 and 2030**



## 1.4 Recycling Rates and other Waste Management Routes

According to the latest available data (2014), 26% of UK plastic waste was recycled. A small fraction (< 1% was littered) and the remaining waste was sent to residual disposal. 55% of generated waste was disposed of at landfill sites, and a further 18% sent to energy recovery (incineration). Higher recycling rates, of 38% and 40% respectively are achieved for packaging and construction waste – 85% of all plastic recycling is packaging material. However, as the recent Eunomia report indicates (see above) the UK’s packaging recycling rate is very likely to be overstated. Recycling rates for automotive



and agricultural plastic waste are in the range of 11-14%, whilst all other sectors have recycling rates lower than 6%.

It is estimated that **31% of plastic waste is currently (2018) recycled**, and this is projected to increase to **42% by 2030** as a result of future policies taking effect. The proposed revisions to the Packaging and Packaging Waste Directive, which specify a 55% plastic packaging target by 2025, have the greatest impact on the overall recycling rate. Energy recovery is predicted to become the second largest plastic waste destination, driven primarily by the Waste Framework Directive revisions, which include a maximum level of landfilling of 10% by 2030. Rates are forecast to increase from a current (2018) estimated rate of 23% to 39% in 2030 – a **16% increase in energy recovery**.

However, increased incineration is not necessarily good for the environment, and there is an increasingly strong case against this management option.<sup>5</sup> Burning plastic creates harmful dioxins and if incinerators are inefficient, these leak into the environment, although modern incinerators are said to have largely solved this problem. Climate change is another consideration – after coal, incinerators are the most CO<sub>2</sub>-intensive form of generation. Environment groups also fear that if the UK builds new incinerators to cope with the stockpile created by China's rejection of waste plastic, this will lock in demand for burning waste plastic that ideally should get recycled.

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<sup>5</sup> <http://www.bbc.co.uk/news/science-environment-43120041>

## 2.0 Key Single Use Plastic Products

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### 2.1 Introduction

This brief report summarises available data on single use plastic consumption and waste management in the UK, both historic trends and future projections, and considers the UK's performance relative to other European countries. The data presented here was primarily taken from market reports for each product type under license. European and national statistical databases, reports written by trade bodies and consultancies, and academic studies were also used as data sources. Full details of data sources are available in the annex to the Plastics Strategy report prepared by Eunomia on behalf of the European Commission.<sup>6</sup> The latest year of available data for most of the information presented here is 2016, with a few data points from 2015 and 2017. From this point onwards, future projections are applied. Consumption forecasts are sourced from market reports and projections for recycling rates and other management routes are set based on the potential impact of current and upcoming European legislative measures.

### 2.2 Plastic Consumption

Data on the number of items consumed each year in 2018, for the range of single use plastic item types included in this analysis, are shown in Table 1.<sup>7</sup> The consumption per capita was calculated and then used to rank the UK against the other EU28 Member States (a ranking of 1 would indicate that the UK has the highest consumption per capita of any Member State). Overall, **the UK ranks 5<sup>th</sup> highest in the EU for consumption of single use plastic products**, although this rank is somewhat skewed by cigarette filters, for which the UK has lower consumption than all but three countries. Citizens in the UK consume more cotton buds and sanitary towels than in any other Member State, and have the 2<sup>nd</sup> highest consumption for 7 other items.

**Table 1: UK Plastic Consumption and Ranking within EU28**

Product	Consumption (2018), billion items	Ranking within EU28 based on consumption per capita
Cotton buds	13.2	1
Sanitary towels	4.1	1
Crisp packets	8.3	2

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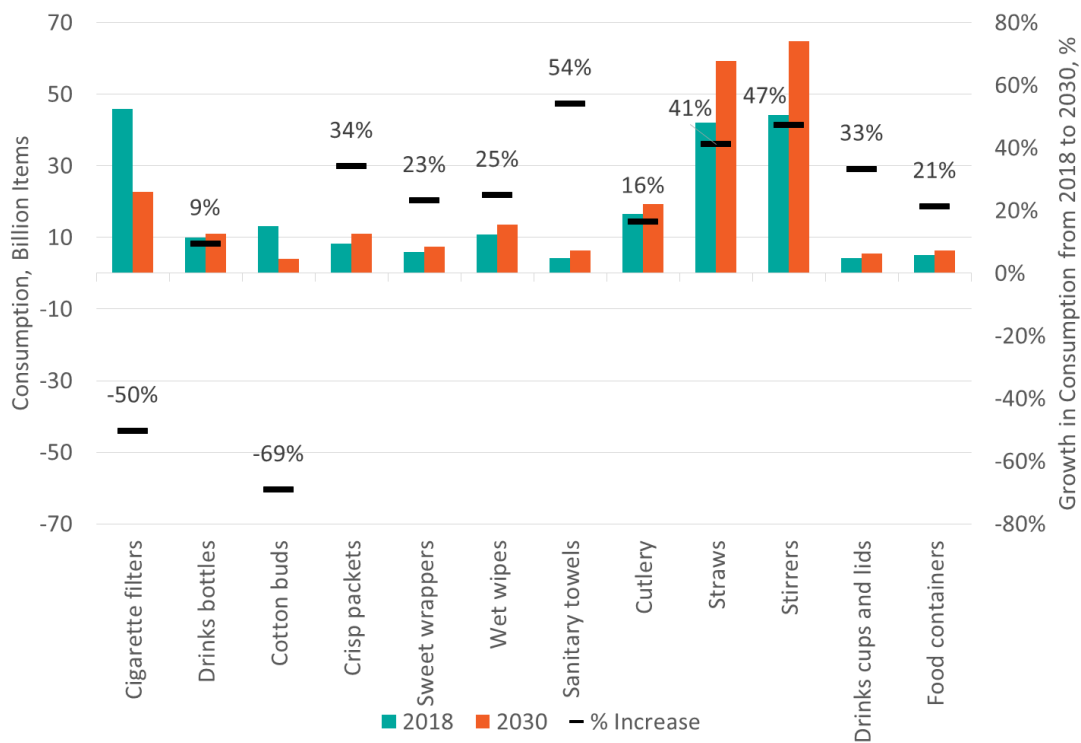
<sup>6</sup> ICF & Eunomia Research and Consulting Ltd (2018) *Plastics: Reuse, Recycling and Marine Litter*, Report for DG Environment

<sup>7</sup> Note that as the items are single use and so are quickly disposed of, these consumption statistics are equivalent to waste generated.

Product	Consumption (2018), billion items	Ranking within EU28 based on consumption per capita
Wet wipes	10.8	2
Cutlery	16.5	2
Straws	42.0	2
Stirrers	44.1	2
Drinks cups and lids	4.1	2
Food containers	5.2	2
Sweet wrappers	6.0	8
Drinks bottles	10.1	9
Cigarette filters	45.8	25
<b>Total</b>	<b>210.2</b>	<b>5</b>

Figure 3 shows how consumption is forecast to change from 2018 to 2030, and the overall % growth over this 12 year period. A significant growth in consumption is forecast for most product types, with 8 out of the 12 products estimated to demonstrate growth of over 20% during this period. Negative growth rates are projected for cigarette filters and cotton buds. For cigarette filters it is predicted that recent negative trends in smoking burnable tobacco will continue, while plastic cotton buds are increasingly being replaced by non-plastic alternatives.

**Figure 3: Projected Consumption in 2018 and 2030**



### 2.3 Recycling Rates and other Waste Management Routes

Most types of single use plastic products are not easily recyclable. **The overall UK recycling rate for single use plastic products for 2018** (based on projections from the latest year of data – 2016) **is estimated at 29%**, the majority of this recycling is from drinks bottles, however, which have a 56% recycling rate. Stirrers and food containers have recycling rates of less than 10%, while all other product types are rarely recycled, with recycling rates of less than 1%.<sup>8</sup>

Recycling rates are unlikely to increase by much in the future. **The projected rate for 2030 is 37%**, an increase of only 8% in 12 years. The main driver of this change is the proposed revisions to the Packaging and Packaging Waste Directive, which set a 55% plastic packaging recycling target by 2025. This policy is expected to mainly impact the recycling of larger SUP items, such as bottles and food containers. The projections used here assume that the UK will achieve a 70% recycling rate in 2030 for plastic bottles, similar to the maximum recycling rate found in countries without a deposit return scheme. For food containers, it was assumed that the recycling rate increases to 25% by

<sup>8</sup> ICF & Eunomia Research and Consulting Ltd (2018) *Plastics: Reuse, Recycling and Marine Litter*, Report for DG Environment

2030. Small increases, up to a maximum of 5% recycling by 2030, are projected for cutlery, straws, stirrers and drinks cups.

The remaining waste is sent to residual disposal, mainly landfill (48%), with the remainder (22%) sent to energy recovery (incineration) facilities. Energy recovery is predicted to become the second largest plastic waste destination in the future, driven primarily by the Waste Framework Directive revisions, which include a maximum level of landfilling of 10% by 2030. Rates are forecast to increase to 34% in 2030 – a **12% increase in energy recovery**.

## 2.4 Litter

Current litter and flushing rates were estimated from a review of available data on the quantity of litter dropped, litter compositions and rates of items flushed down toilets.<sup>9</sup>

**The rate of littering / flushing of plastic items is estimated at 7%** (of total plastic consumption) for the UK in 2018, a total of 24 billion items. A breakdown of the quantity of litter and litter rates by product type is provided in Table 2.

**Table 2: UK Litter Quantities and Litter Rates (2018)**

Product	Litter quantity, billion items	Litter Rate, %
Cigarette filters	14.6	31.9%
Drinks bottles	0.7	6.9%
Cotton buds*	1.8	13.5%
Crisp packets	0.3	3.7%
Sweet wrappers	0.2	3.1%
Wet wipes*	3.4	31.3%
Sanitary towels*	0.9	21.3%
Cutlery	0.1	0.5%
Straws	1.3	3.1%
Stirrers	0.1	0.2%
Drinks cups and lids	0.5	13.1%
Food containers	0.3	5.1%

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<sup>9</sup> Ibid.

<b>Product</b>	<b>Litter quantity, billion items</b>	<b>Litter Rate, %</b>
<b>All products</b>	<b>24.1</b>	<b>7.0%</b>

*\*flushed items*



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