

The great big circular economy win

Keeping unprocessed plastic waste in the UK

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The UK's plastic waste processing sector has made a growing economic and environmental contribution in the past 15 years. It has the potential to do more. With the right policies, but not a penny of public money, it could process all the UK's recyclable plastic packaging waste, supporting over 9,000 jobs and generating over £900 million of economic activity each year.

Plastic provides enormous benefits to society. But it is also a problem. Virgin plastic generally requires fossil fuels to produce. Poorly disposed plastic generates pollution. Various policies have been introduced in the UK to address this, such as single use plastic bans and the Plastic Packaging Tax. Alongside the UK's push to decarbonise, these have incentivised higher recycling rates and the growth of a plastic recycling industry in the UK that processes almost 600,000 tonnes of waste plastic packaging a year.

Despite that, only half of all the UK's plastic packaging waste is currently recycled; of that, only half is processed in the UK. The remainder is exported for recycling abroad where there is a risk some will not be recycled at all.

By exporting the unprocessed plastic waste it produces, the UK evades its responsibility to deal with its own waste. A growing number of countries refuse to import unprocessed waste, raising the risk that the UK could be left retaining much of its own plastic waste but without the capacity to recycle it.

But it also denies the UK an economic opportunity. Increasing the UK's domestic recycling capacity would generate substantial private investment, boost GDP, and create thousands of secure, well-paid jobs. All while making the UK a world leader in the circular economy. This report finds that if the UK was, by 2030, to recycle onshore all the plastic packaging waste that is currently exported, it would:

- **Generate private sector investment of over £800 million in world class waste plastic recycling facilities.**
- **Support the creation of over 5,400 new jobs in communities up and down the UK, of which 2,700 would be new green jobs.**
- **Boost the UK economy by £540 million each and every year.**
- **Provide at least £100 million of new tax revenues a year to the Treasury, helping to plug the hole in the UK's public finances.**
- **Make the UK's supply chain of virgin plastic products more resilient.**
- **Support over 9,000 jobs across the UK economy when combined with existing recycling sector capacity and help generate almost £900 million of economic output a year.**

Delivering this boost to the economy does not require a single penny from the government. But it needs the government to provide the right incentives to attract private investment and ensure that the plastic waste currently sent abroad is recycled in the UK.

Background

In this report Hybrid Economics estimates the potential impact to the UK economy if plastic packaging waste was no longer exported for recycling by 2030, and instead was recycled domestically.

This could be achieved via a portfolio of policy measures such as:

- an escalator in the Plastic Packaging Tax to 50%;
- a requirement for third party certification on imported recycled plastic;
- certification of food contact materials; and
- a phasing out of exports of unprocessed plastic packaging waste.

We estimate that if all UK plastic waste destined for recycling was to be recycled onshore by 2030, there would need to be enough additional plastic recycling capacity to process an extra 900,000 tonnes of plastic waste every year.

That would be roughly equivalent to 15 new facilities similar to Biffa's recycling facility in Redcar. That would require well over **three quarters of a billion pounds worth of new investment by the waste and recycling industry.**

Once they were up and running, we estimate that these facilities would **directly employ over 2,700 full-time employees.** Using standard macroeconomic multipliers for this sector, we estimate that there would **be a further 2,700 full-time jobs created in other businesses** in local supply chains and communities: in transport, logistics and retail, for example. **In total that would mean well over 5,400 full-time jobs would be created as a result of this investment.**

The boost to the economy (Gross Domestic Product, or GDP) would be £540 million every year. Of that, around £300 million would be the economic activity generated by the recycling facilities themselves: estimated from the sum of all staff costs, other operational costs, and profits. The remaining £240 million comprises the additional economic activity generated in those local communities, estimated using standard macroeconomic multipliers.

Combined with the existing recycling capacity, we estimate that this should mean **the plastic recycling sector as a whole would support over 9,000 jobs across the UK economy and help generate almost £900 million of economic output a year.**

Although the government would not need to contribute a penny to the investment and operation of these new facilities – it would all come from private investment – the additional economic activity created would likely generate at least £100 million in tax revenues for the Chancellor: an outcome that combines plugging the government’s fiscal hole with better economic growth.

It is likely that these estimates are conservative (see our methodology below), as they only take account of the ongoing economic contribution from the new plastic recycling facilities. There are several channels through which the economic upside could be greater:

- The initial investment itself would have wider economic benefits through the boost to construction activity and employment while the plants are designed and built.
- The investment would deliver a substantial up-scaling of the UK’s recycling capacity and expertise. In the long-run there are likely to be significant positive spillovers to the broader economy as the UK develops process knowledge and assumes leadership in the circular economy.
- Incomes in the regions and communities where plastic recycling facilities are likely to be built are generally lower than the national average. Consequently, the multipliers from direct employment and economic activity to indirect employment and economic activity are likely to be greater than we have used, as these facilities help these regions level up.
- The mix of government policies likely to lead to the end of exporting waste plastic may also lead to a larger increase in the UK plastic recycling rate than we are projecting. That would mean greater investment, more jobs and a larger boost to economic growth than we estimate.

Methodology

Hybrid Economics estimated the economic impact of ending exports of plastic waste for recycling using the following methodology, data and assumptions.

1. Estimating the quantity of plastic waste to be recycled in the UK in 2030, and the scale of extra processing facilities to achieve that

The total quantity of plastic waste before recycling. We assume that the total quantity of plastic waste (2,265KT in 2024 – DEFRA) will increase in line with real GDP, using forecasts for real GDP growth published by the Office for Budget Responsibility (average 1.7%pa 2025-30). So we project there will be 2,500KT of total plastic waste in 2030.

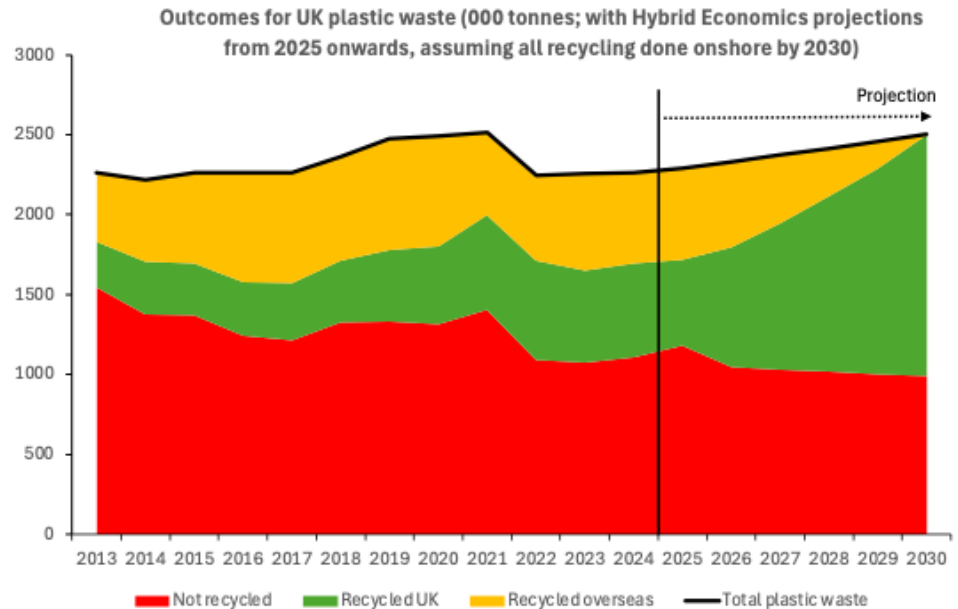
Recycling rate. We assume that the upwards trend in the plastic recycling rate (51% in 2024, from 32% in 2013 – DEFRA) is sustained through the remainder of this decade. This seems plausible given the prospective introduction of the Deposit Return and the Simpler Recycling Schemes in 2027. We project that in 2030 the plastic recycle rate will be 60%, and consequently there will be 1,512KT of plastic waste available to be recycled.

All plastic waste is recycled in the UK. A conditioning assumption of our analysis is that no plastic waste will be exported for recycling. Therefore all recycled plastic will be processed in UK facilities. That will require 1,512KT of plastic waste to be recycled in the UK in 2030.

UK plastic waste recycling capacity. 585KT of plastic waste was processed domestically in the UK in 2024 (Environment Agency). Although this appears to have fallen in 2025, we assume that is the current operational waste plastic recycling capacity of the UK. Therefore, the UK would require additional plastic waste recycling facilities capable of processing a further 927KT of waste plastic.

A simple projection using these assumptions is shown in Figure 1.

Figure 1: The share of UK plastic waste recycled domestically has risen significantly in the past decade, but there is still substantial room for gain



Source: DEFRA, EA, ONS, OBR, Hybrid Economics

2. Estimating the economic characteristics of additional plastic recycling capacity

Using information in the public domain, and detailed analysis of the operations of Biffa's plastic waste recycling facilities, we estimate that a stylised economically viable plastic waste recycling facility capable of recycling 100KT of waste plastic would:

- Employ 300 full time workers.
- Require £87.5m investment spending to build and become operational.
- Generate a profit of around £5 million.

These numbers are then scaled up in line with the required capacity estimated in (1).

3. Estimating the direct gross value added from additional plastic recycling capacity

Gross value added (GVA) is a metric equivalent to widely reported Gross Domestic Product (GDP). We calculate the direct annual gross value added generated from the increased capacity estimated in (2) by summing up staff costs, depreciation, financial costs and profits before tax (gross operating surplus).

$$GVA = \alpha + \beta + \gamma + \delta$$

$$\begin{aligned}\alpha &= \text{Staff costs} \\ \beta &= \text{Gross surplus} \\ \gamma &= \text{Depreciation} \\ \delta &= \text{Interest and Finance Costs}\end{aligned}$$

We used operating information from Biffa to estimate average labour costs for a stylised facility capable of processing 100K of waste plastic.

We also assumed that:

- the initial investment is depreciated over a 10 year period; and
- financing costs are 7.5%pa.

That leads us to estimate that a stylised facility capable of processing 100K of waste plastic would directly generate GVA of £32 million, so the required increase in plastic waste recycling capacity would directly lead to annual GVA of £300 million.

4. Estimating the broader impacts on economic activity and employment

As well as the direct GVA and employment generated by these facilities, they will indirectly contribute to greater economic activity and employment in their supply chains (e.g. logistics, cleaning companies and consultants) and their local areas (e.g. local shops and services).

These effects are captured in so-called “Type 2 economic multipliers”. These multipliers are produced by the Scottish government. We apply the specific multipliers associated with the Waste Management and Remediation sector to the GVA estimate in (3) in order to calculate the full impact of increased plastic waste recycling capacity on Gross Domestic Product and employment.

$$GVA(T) = M(G)_i^2 * GVA$$

$$\begin{aligned}GVA(T) &= \text{Total direct and indirect GVA generated by a recycling facility} \\ M(G)_i^2 &= \text{Type 2 GVA Multiplier for Industry}(i)\end{aligned}$$

$$EM(T) = M(E)_i^2 * EM_d$$

$$\begin{aligned}EM(T) &= \text{Total direct and indirect employment generated by a recycling facility} \\ M(EM)_i^2 &= \text{Type 2 employment Multiplier for Industry}(i) \\ EM_d &= \text{Direct employment generated by a recycling facility} \\ i &= \text{Waste Management and Remediation}\end{aligned}$$

Sources

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About Hybrid Economics

Hybrid Economics was established by Grant Lewis and Neville Hill to provide firms with advice on the macroeconomic, climate and geopolitical risks facing their businesses. Between them they have almost 60 years of experience operating at C-Suite level helping the world's largest investors and businesses navigate issues such as the global financial crisis, Brexit, trade wars, the pandemic and climate change.

In particular, they have the tools to provide robust and credible estimates of the impact of climate change on a range of corporate and social metrics and so allow businesses and governments to better assess and prepare for the risks of climate change over coming decades.

As Hybrid they have advised a major soft drinks company on investment in Africa; a US brewing firm on locations in North America; fertilizer firms on the potential impact of higher US tariffs; and an asset manager on the impact of clean energy technology production in China. They partner with one of the world's biggest consultancy firms.