

Plastics Recycling – Enabling the circular economy

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Leading in UK Waste Management

A Century of Experience



**>230
Locations**



**~10,000
Employees**



**c. 3,100
Collection
Vehicles**



**7.5m Tonnes
of Waste
Handled**



**£1.4bn Net
Revenue**

Now owned by US-based
investment company ECP

* All financials are FY22 actuals

Think Biffa – think waste!



But you probably think
about waste collection?

Think Biffa – think waste management and treatment!



And of course, that's our heritage and a very important part of our business.

But we also *process* waste – and Biffa Polymers is the UK's largest recycler of rigid plastics



Plastics Recycling in the UK



Source : British Plastics Federation : Packing Plastics

61% of all plastics recycled were exported – 890kt.

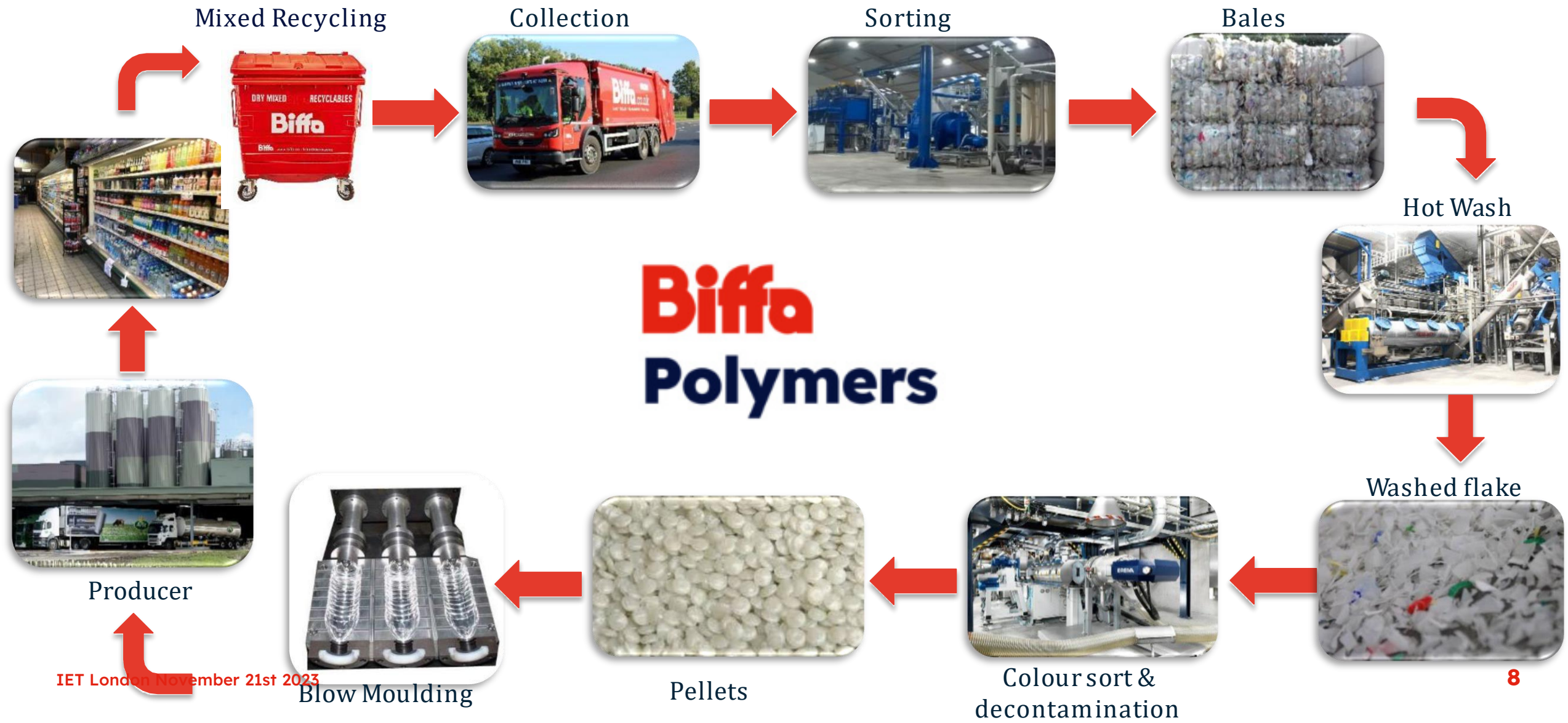
Displacing exports is a significant growth opportunity and regulatory need.

Plastics Recycling in the UK

- Plastic is collected from householders' "dry mixed recycling" bins.
- It is then sorted (away from glass, card, cans) and segregated into different polymer types.
- In the UK we focus on:
 - HDPE (Milk bottles)
 - PET (carbonated soft drinks and mineral water)
 - Polypropylene (pots, tubs and trays)



The Circular Economy of Plastics



Factors holding back UK plastic packaging recycling



1. Collection rates (have stalled)
2. Lack of deposit return schemes (planned, delayed)
3. Exports (perverse incentives, fraud)
4. Design for recycling
5. Regulatory / financial framework

Biffa Polymers has 4 sites processing 190kt of mixed plastic inputs with key focus on PET and HDPE



- 4 sites
- 310 colleagues
- Turnover : £170M
- Input : 190,000te - c. 67% from Biffa
- Output Capacities
 - HDPE food grade : 30,000te
 - PET food grade : 50,000te pellet plus 3,000te flake
 - Extrusion (non-food) : 14,600te
 - Two wash plants : 30,000te



What We Do



Redcar (HDPE – Food Grade pellet, HDPE/PP Non-Food flake and pellet)

- Capacity of 83,000tpa/1.8bn bottles
- Original site operating since 2008, 3rd HDPE food grade line opened in 2023

Washington (PP & HDPE flake)

- Capacity of 25,000tpa
- Opened in 2021, £7m investment

Seaham (Food Grade PET bottle to flake & pellet)

- Capacity of 57,000tpa/1.3bn bottles
- Opened in 2020, £27m investment

Sherburn (Food Grade PET flake to pellet)

- Capacity of 25,000tpa
- Acquired in 2023



Our Products

- High quality, comparable to virgin polymer
- Regulatory approval for use in food contact applications
- Their use is more sustainable than using 100% virgin polymer
- Inclusion of our material can reduce liability for the plastic packaging tax



Our Customers



The recycled polymers we produce serve a variety of industries:

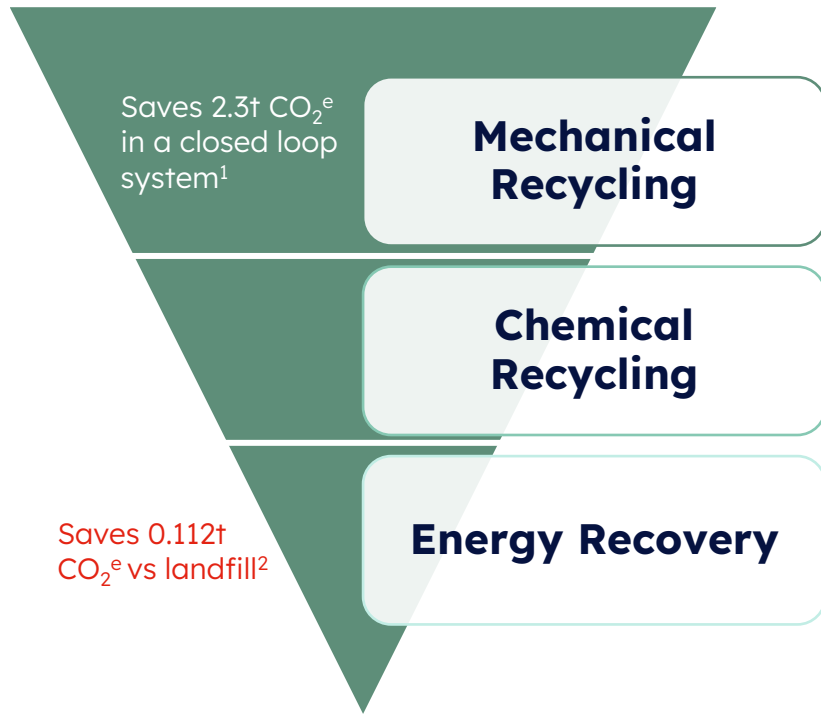
- Packaging manufacturers (food contact and non-food)
- Cosmetics industry
- Pipe manufacturers
- Durable consumer and industrial products



How Plastic is Recycled



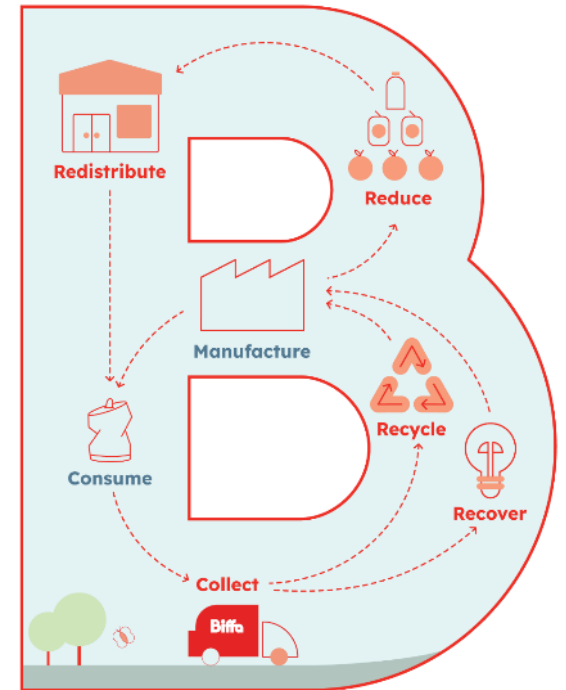
The Carbon Efficiency of Plastic Reprocessing



High grades of mono-layer polymer

Grades that aren't suitable for mechanical recycling should be chemically recycled

Residual material should then be sent for energy recovery



Mechanical Recycling is the most carbon efficient solution and should be the first option for recycling

*Source: ¹ Wrap Market Situation Report 2021, ² Zero Waste Scotland Carbon Metric for landfill tCO₂^e and Tolvik UK EfW Statistics 2021 for EfW tCO₂^e

Critical Success Factors for Plastic Recycling

Fundamentals:

1. Keep it simple! Use PET, HDPE, PP for all consumer packaging.
2. Educate the householder! We don't want PVC or Polycarbonate in the stream.
3. Avoid contamination in the packaging design.
4. Design for recycle (labels, caps, avoid colour for food grade)



How Plastic is Recycled



Technology Principles : Mechanical Recycling:

1. Polymer separation - density
2. Polymer separation - high speed optical sorting
3. Colour separation - high speed optical sorting
4. (For food grade) Removal of non-food provenance inputs - human pickers
5. (For food grade) Decontamination technology



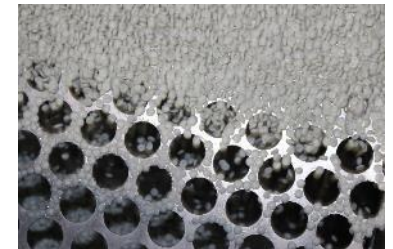
Basic Process Flow



Recycle on other lines



Recycle on other lines



Recycle on other lines

Our PET specification: Input bales c. 70% food grade PET.
Output pellet : <50ppm benzene, acetaldehyde, <5ppm BPA

Technical Challenges and Solutions



Technical Challenges & Solutions



Challenge	Solution
Contamination of feedstock	Householder education, Deposit Return Schemes
Economics – recycled is more expensive than virgin	Improved yield, efficiencies. Economic incentives (taxes)
Coloured food grade packaging is “lost” to food grade	Packaging redesign
Food grade PP is not recycled	Packaging redesign, New technology including AI
Reliance on human pickers to remove non-food grade	AI / Robotics
Greying of polymer	Better sorting, packaging redesign
Films and flexibles	? Chemical recycling

Customer Partnerships: Partnering with Brands to Improve Circularity - PET

Biffa

SUNTORY

Suntory wanted a new design for their 500ml Ribena bottle to make it easier to recycle and more sustainable.



Solution

- Recycling-led approach taken by the brand
- Label size and colour was changed on the bottle to make it easier to remove
- New design was trialled by Biffa to ensure improved recyclability

Benefits

- 100% recyclable in new format
- Contains 100% PCR
- Does not incur plastic tax



Customer Partnerships: Helping Supply Chains Improve Circularity - HDPE

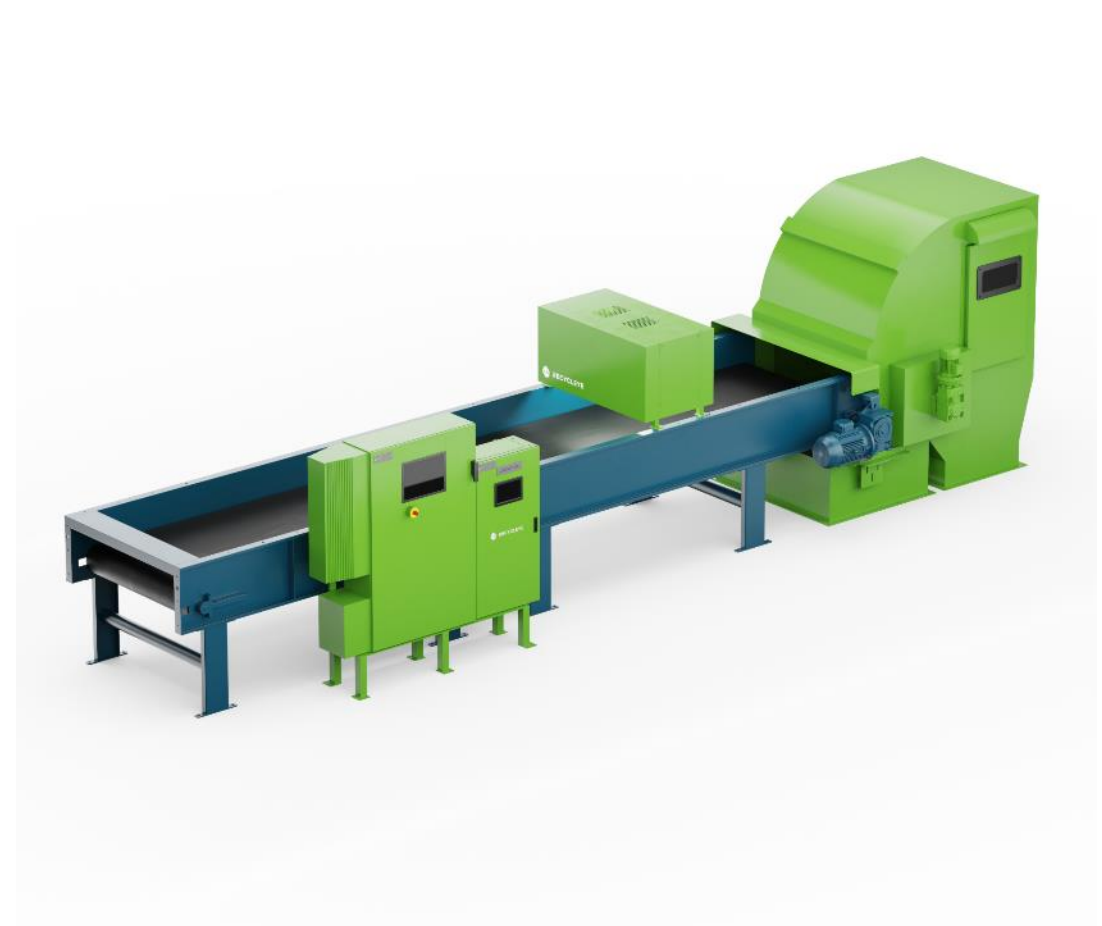
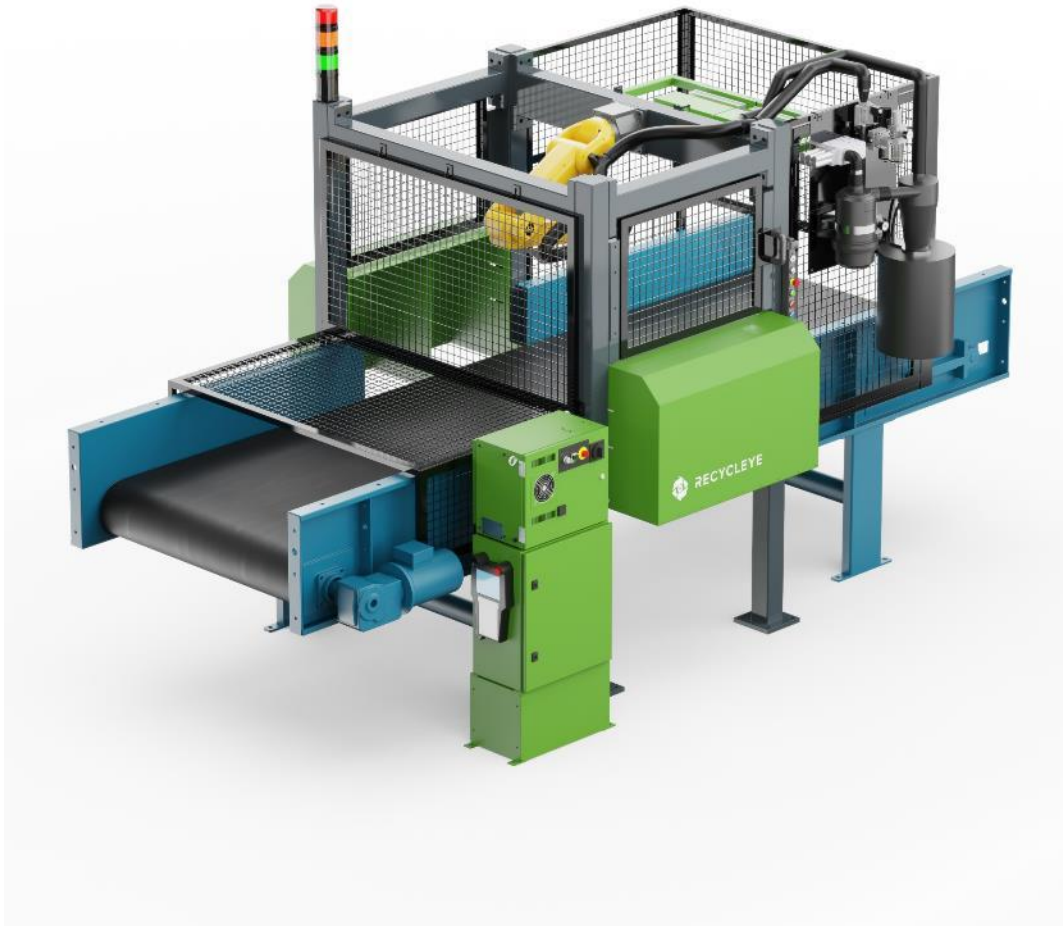
Drivers

- Make the supply chain more circular
- Easy to recycle
- Enable food grade rHDPE to be widely incorporated into new bottles

Results

- Same packaging across brands
- 78% collection rate
- 85% of milk bottles contain at least 30% of Biffa PCR material





Thank you