Separating fact from fiction:
What is the reality for the future of global plastic waste recycling?

Helen McGeough, Senior Analyst
Mark Victory, Senior Editor
Fabrizio Galié, Global Lead of Polymers Insight
Webinar logistics

- This event is fully streamed. You will hear audio via your media player only
- This live webinar is being recorded
- If you have technical problems please use the Q&A function to speak to the online technical support
- If you would like to ask a question at any point during the presentation, please submit it via the “Q&A” function at the bottom of your screen
- We will answer as many questions as possible at the end of the webinar
- Finally, the recording and the slides will be available after the live event
Recycled PET

Recycled PE

The impact of recycled product demand on virgin material producers
Current market situation - drivers

- Economics
- Regulation
- Sustainability
Current market situation - drivers
Supply demand dynamics

**Demand**
- Demand for recycled feedstocks continues to grow
- Driven by legislation in some markets, but primarily by industry/brands looking to meet agendas of greater sustainability in resources used, carbon foot impact and initiatives to (or be seen to) tackle plastic pollution

**Supply**
- Currently mechanically sourced recycled material is constrained by issues in collection/sorting infrastructures and lack of sufficient reclamation capacity in the near term
- Chemical recycling is an area of focus for the industry but will be a long term solution for supply

**Virgin markets**
- Demand for recycled feedstocks will take an increasing share of the market (depending on polymer)
- The growth in demand for the recyclable polymers will grow at the expense of the non recyclable polymers and so those markets will potentially see a decline in growth as this shift takes place
Summary of Europe PET recycling industry 2017

- Consumption and collection volume increased by 3% in 2017, no growth in collection beyond market growth
- Deposit return schemes (DRS) facilitate greater collection
  - Of the 9 countries with +80% collection rate, 7 operate a DRS
- Limited increase in rPET output in 2017, reflecting increasing contamination of bale feedstocks
- Reclamation capacity underutilised by 300kt in 2017 but expect annual study to show full utilisation in 2018
  - Limited growth in recycling capacity in the short term
- PET tray market continues to grow, more countries in Europe are expected to expand existing collection to include these as limited activity in 2017
Impact of regulations

- **Waste Framework Directive**
  - Municipal waste reuse target 50% by 2020, 55% by 2025, 65% by 2035
  - Packaging and Packaging Waste directive, 55% plastic packaging recycled by 2030
  - 100% plastic packaging must be recyclable by 2030

- **European Circular Economy Strategy for Plastics adopted January 2018**

- **China waste import ban** – effective 1 January 2018

- **Single Use Plastic Directive (SUP)**
  - Plastic beverage bottles with caps 90% collected for recycling by 2027 (77% by 2025)
  - Mandatory recycled content in bottles of 25% by 2025, 30% by 2030
Brand pledges

- Brand pledges from major beverage companies aiming for 50% recycled content
- New players enter the food grade RPET market; brands and retailers
- Recyclable pledges – potential substitution
- Supply constrained
  - High quality colourless bales
  - Food grade RPET capacity
- Intense competition for RPET supply
Packaging dominates RPET end use in West Europe

- Sheet: 40%
- Blow-moulding: 29%
- Fibre: 16%
- Strapping: 10%
- Other: 5%

2017
The rise of RPET prices

RPET and VPET prices 2017-2019

- PET Bottle Grade FD Europe Assessment Domestic Current Month Full Market Range (Mid) : EUR/tonne
- PET Bottles, Colourless, Post-Consumer FD NWE Assessment Domestic and Export Spot 14 Days Full Market Range (Mid) : EUR/tonne
- PET Bottles, Mixed Coloured, Post-Consumer FD NWE Assessment Domestic and Export Spot 14 Days Full Market Range (Mid) : EUR/tonne
- RPET Flake, Hot-Washed, Colourless FD NWE Assessment Domestic and Export Spot 14 Days Full Market Range (Mid) : EUR/tonne
- RPET Flake, Hot-Washed, Mixed Coloured FD NWE Assessment Domestic and Export Spot 14 Days Full Market Range (Mid) : EUR/tonne
- RPET Pellets, Food Grade FD NWE Assessment Domestic and Export Spot 14 Days Full Market Range (Mid) : EUR/tonne
Delta between RPET flake and virgin PET narrowing

Price relationship - VPET and colourless RPET flake

PET Bottle Grade FD Europe Assessment Domestic Current Month Full Market Range (Mid) : EUR/tonne
RPET Flake, Hot-Washed, Colourless FD NWE Assessment Domestic and Export Spot 14 Days Full Market Range (Mid) : EUR/tonne
Price relationship - VPET and RPET Flake Colourless
Attitudes to prices for food grade RPET have shifted

Price relationship - VPET and FG RPET

PET Bottle Grade FD Europe Assessment Domestic Current Month Full Market Range (Mid) : EUR/tonne
RPET Pellets, Food Grade FD NWE Assessment Domestic and Export Spot 14 Days Full Market Range (Mid) : EUR/tonne
Price relationship - VPET and RPET Food Grade Pellet
Europe PET collection volume: future projection

Growth in PET recovery is behind the growth in demand for RPET product supply

Average +2.9%
Growth rates to achieve targets…

Targets for collection and recycled content

- **Collection**
- **Recycled content - 25%**
- **Recycled content - 30%**
- **Recycled content - 50%**

- **2017**
- **2018**
- **2019**
- **2020**
- **2021**
- **2022**
- **2023**
- **2024**
- **2025**
- **2026**
- **2027**
- **2028**
- **2029**
- **2030**

- 0%
- 6%
- 6.5%
- 7%
- 17%
- 17.5%
- 25%
- 30%
- 50%
Recycled Polyethylene (R-PE)

Mark Victory, Senior Editor, Recycling
Structure of the R-PE Market – Production methods

- Multiple sources of input material:
  - Post-consumer
  - Post-industrial
  - Production waste

- Multiple production methods:
  - Hot-washed
  - Cold-washed
  - Dry-processed
Structure of the R-PE Market - Illiquidity

- Market is illiquid and volume of feedstock opaque
- Unlike R-PET, R-PE flake market is small, with pellets dominating
- Pellets sold based on colour
- Difference in process types means wide range of qualities and prices, particularly for R-LDPE
- Post-consumer waste and hot-washed pellets are markets with most transparency
Structure of the R-PE Market – End-uses

- Major end-uses include:
  - Packaging
  - Outdoor furniture
  - Pipes and construction

- High wastage rates due to PP contamination

- Most applications price-driven

- Sustainability becoming increasingly important
Structure of the R-PE Market – Food Grade Shortages

- UK is only current source of food-grade R-PE and only for R-HDPE
- Post-consumer milk-bottle collection limited to 110,000 tonnes/year
- EU legislation restricting growth opportunities
- Lack of food-grade material encouraging inclusion of white material to meet demand
Structure of the R-PE Market – Packaging Recovery Notes (PRNs)/Packaging Export Recovery Notes (PERNs)

- Specific to UK market
- Current value at £185/tonne
- Encouraging export of mixed plastic waste and shortening post-consumer HDPE bale supply
Structure of the R-PE Market – Asia Import Bans and Basel Amendment

- China import ban leads to higher contaminants
- Increased bale supply, especially for LDPE
- Other countries introducing bans
- 10 May amendment to Basel legislation likely to lengthen lead times, increase costs of export
Current Market – LDPE Post-consumer Bale Supply

- Ban on waste exports to China = Europe structural oversupply
- Lower quality material being sold at a loss
- In most countries negative values capped by gate fees
- In Germany ban on plastic waste incineration removes price cap
- Other countries expected to follow
Current Market – HDPE Post-consumer Bale Supply

- PRN values pushing prices of UK bales higher
- PERNs reducing UK bale availability
- Virgin HDPE values remain key bale price-driver
- Sustainability targets reducing substitution ability of packaging sector
Current Market – R-HDPE Pellets

- Cosmetic and pharmaceutical and domestic goods packaging demand strong on sustainability
- Lack of food-grade driving substitution to other pellet grades and other plastics
- Demand in non-packaging applications remains weak because of near parity with virgin prices
Current Market – R-LDPE Pellets

- Packaging applications limited, mostly cost-driven
- Weakening virgin prices since Q4 added downward pressure in Q1
- China ban does not cover pellets
- Exports to Asia remain high
- Strong demand from India ahead of ban
- Rising demand from secondary sheet applications
Market Evolution

- Legislative framework likely to tighten
- Consumer demand increasingly centred on sustainability
- Pharmaceutical and cosmetic markets to pursue bespoke solutions
- Pharmaceutical and cosmetic market share to increase
- R-PET example suggests creation of 2-tier market
R-PE Market – Next Steps

- Adapt to new regulatory challenges
- Formalisation and standardisation of the industry
- Improvements in collection and sorting
- Increased transparency
The New ICIS R-PE report

- Covers post-consumer HDPE and LDPE bales
- R-HDPE and R-LDPE pellets
- Food-grade R-HDPE pellets
- Prices and supply and demand dynamics
- Launching late May

Contact Mark Victory:
mark.victory@icis.com
to receive the latest prototype
Impact of plastic recycling on virgin materials producers

Fabrizio Galiè, Global Lead for Polymers Insight
The circular economy

Definition:
The circular economy “entails gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system.”

(Ellen MacArthur Foundation)

End waste
of final products, making them back in the process as resources

Start from renewables
which means de-coupling from fossil fuels
The industry has to respond to consumers and legislations

DEMAND TO PRESERVE THE ENVIRONMENT

PROMOTE COLLECTION IMPOSE LIMITS

Petrochemical producers
Brands

Distributors
Industrial users
Implications on the polymers business at different levels

- **VOLUMES**
  - Substitution of virgin resin
  - Bans and limits to applications
  - “Do more with less”

- **PRODUCTS**
  - Metallocenes
  - Inter-polymer substitution
  - Multi-layer vs. Mono-layer

- **COSTS**
  - Raw Material
  - Logistics, including waste transfer
  - R&D
Short-term: bans to waste transfer change trade patterns

**Effects of waste import ban in China**

China Quarterly Import Volumes 2017-18 (Kt)

- Chinese ban prompted import (and production) of virgin material
- Waste material redirected to SEA (Vietnam, Malaysia, Indonesia, India, others?) with also Chinese factories relocating
- Some routes remain unclear
- Too huge volumes to be managed, ports congestion, insufficient logistics and processing capability
- Landfill and energy recovery prevailing?
- Most countries introducing bans
- More waste to be managed in country of origin
Long-term: recycling will impact volumes

- Growing share from larger recycling volumes and reduced consumption growth
- Mid-term some reduction in specific applications, especially single-use products and packaging
- But EU 2021 ban can only interest ~5% of EPS regional consumption, lower single-digits for PP and HDPE
- Bans to plastic bags are more “shocking”, e.g. Turkey HDPE shopping bags Jan 2019
- Long-term shares growing faster
- Base case scenario is evolutionary not revolutionary
Not a “pure price” matter

Consumers

- Use less packaging (except online shop?)
- Requires alternatives
- Re-use
- Regional differences (not necessarily related to wealth)

Legislation

- Regulates waste management
- Regulates applications scope
- Alters cost-structure
- Support logistics

Producers

- Adapt product portfolios
- New solutions (tech. And business models)
- Know-how acquisitions
- Consider waste as a feedstock
Thank you
Contact us

**Helen McGeough**  
Senior Analyst, Plastics Recycling  
✉️ helen.mcgeough@icis.com  
📞 +44 7816 299320

**Daria Grossi**  
Analyst, Plastics Recycling  
✉️ daria.grossi@icis.com  
📞 +39 0331 1425312

**Mark Victory**  
Senior Editor  
✉️ mark.victory@icis.com  
📞 +44 20 8652 8703

**Fabrizio Galié**  
Global Lead of Polymers Insight  
✉️ fabrizio.galie@icis.com  
📞 +39 0331 142 53 23
NEW

R-PET Annual Data

Spend less time filtering through information with price transparency analytics tools for the European market:

- Post-consumer collection volume by country
- Recycling capacity & yields by country

Sign up to receive updates
Circularity for Polymers: The ICIS Recycling Conference

5 November 2019 // Berlin, Germany

Key reasons to attend

Interactive agenda
- Collaborative Roundtable session
- Innovation Showcase
- FMCG Panel
- Open Mic

Key presentations
- European Commission Plastics Strategy
- Recycled polyolefins and r-PET market analysis

Exclusive networking opportunities
- Full value chain representation

Limited time offer

Super Early Bird now available
Register now and save €200 off the standard fee
Use promocode IRC19WEBINAR to unlock this offer

Check out the website for more details
www.icisevents.com/recycling