



Creating value in a circular economy

Capitalising on investment opportunities in the European recycling industry

February 2024



Preface

In an effort to reduce the environmental impact of economic activities going forward, global leaders and industry stakeholders are setting challenging targets to stimulate circularity. These targets are further underlined by regulations and corporate goals to make sure ambitions are achieved.

As the transition towards a circular economy is still in its infancy, the increased focus of consumers and regulatory authorities on sustainability will lead to significant growth paired with numerous investment opportunities across the recycling value chain.

This linear-to-circular transition wave will cause major shifts in the recycling value chain which will require investments in every step, predominantly in advanced technologies, while new business models will also have to be developed.

This publication highlights investment opportunities within the European recycling space and how to capture and maximise value going forward. We explore the underlying growth drivers of the recycling industry, the challenges different actors in the value chain are facing, which investment opportunities are expected to arise, and how to capitalise upon these opportunities.



Table of contents

The circular economy Shifting powers	4
The plastic opportunity Where to invest	9
Riding the plastic recycling wave How to capture value?	16

Authors

Joeri Jägers
Strategy KPMG Netherlands

Lawrence Bolte
Strategy KPMG Netherlands

Nick Diver
Strategy KPMG Belgium

Arnoud Walrecht
Global lead partner circularity KPMG

Contributors:
Sjef Roijmans, Sven Meier,
Michel Hesselink

The circular economy: Shifting powers

Regulatory pressure and the increased focus of brand owners on sustainability drive the circular economy

Increased regulatory enforcement aimed at promoting recycling and reducing waste, in combination with the growing number of companies implementing sustainability strategies to cope with resource depletion, environmental impact and changing consumer behaviour are the driving forces behind the European recycling industry

Regulation

The European Green Deal^(1,2) was established to support the transition from a linear economy towards a circular economy and continuously sets new objectives in order to reach this goal. Its central piece, the **Circular Economy Action Plan**, targets the introduction of initiatives that will impact both primary resources, by modifying the design of products to enhance durability, and secondary resources, by establishing **recycling objectives** for various waste streams and subsequently elevating their recycling rates⁽³⁾. It is the latter which will predominantly drive the European recycling market in the coming years.

Extended producer responsibility (EPR) schemes will be a pivotal factor in achieving those objectives, forming a bridge between product manufacturers and waste management organisations. These schemes make manufacturers end-responsible for their products and ensure payments towards waste managers to enable circularity through recycling.

To further boost the uptake of recyclates in new products, the EU is also targeting product manufacturers via the introduction of **mandatory recycled content requirements** for plastics⁽³⁾, automotive vehicles⁽⁴⁾ and batteries⁽⁵⁾, and is expected to continue to do so for other types of products. The adoption of such targets will create sustainable demand from converters and make recycled content more competitive compared to virgin materials.

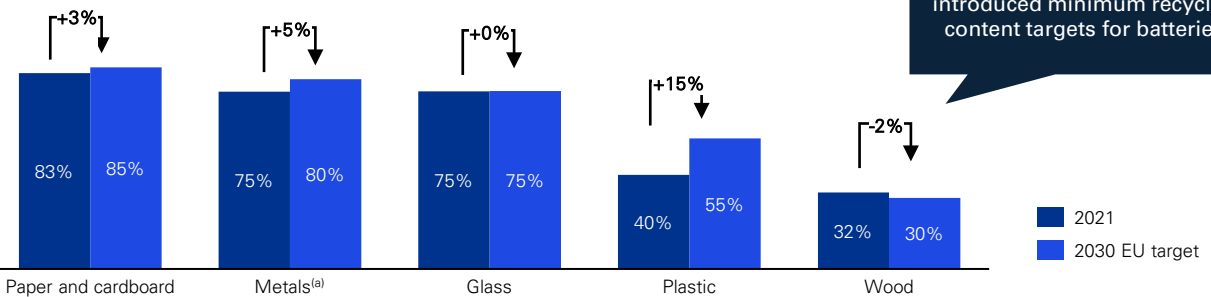
Corporate social responsibility & customer sustainability

Various companies have developed sustainability strategies which generally include objectives on multiple parameters such as carbon emissions and use of recycled materials. These internal targets are communicated to investors and subsequently influence decisions to purchase recycled materials.

The need for sustainability strategies is driven by (i) resource depletion⁽⁶⁾ and (ii) changing customer behaviour as consumers become more aware of their own ecological footprint and make more environment-based decisions.

Example: Current packaging recycling rates and the EU's target for 2030 per material type, 2021-2030FC (%)⁽⁷⁾

The EU has plans to implement a mandatory EPR scheme for textile waste in 2025⁽⁸⁾ and has introduced minimum recycled content targets for batteries



Note: (a) Lower target for aluminium (60%).

The largest growth within the circular economy is expected to come from low-maturity materials: plastics, batteries and textiles

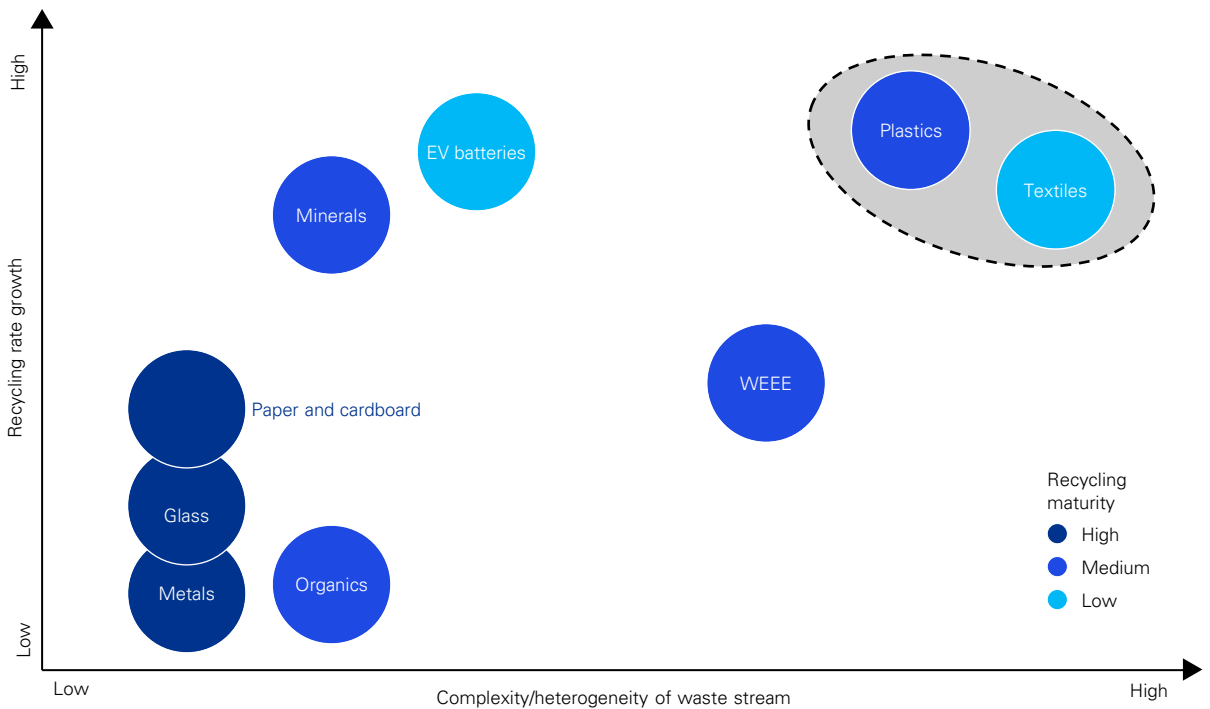
Market growth

Market growth is mainly driven by the gap between the current and target recycling rates. Presently, the gap is largest for (EV) batteries, plastics, textiles and minerals. Batteries and plastics are expected to show the most development in the years to come. Plastics and textiles have the largest value potential due to their high complexity to recycle (and create the infrastructure to do so).

Complexity of waste streams

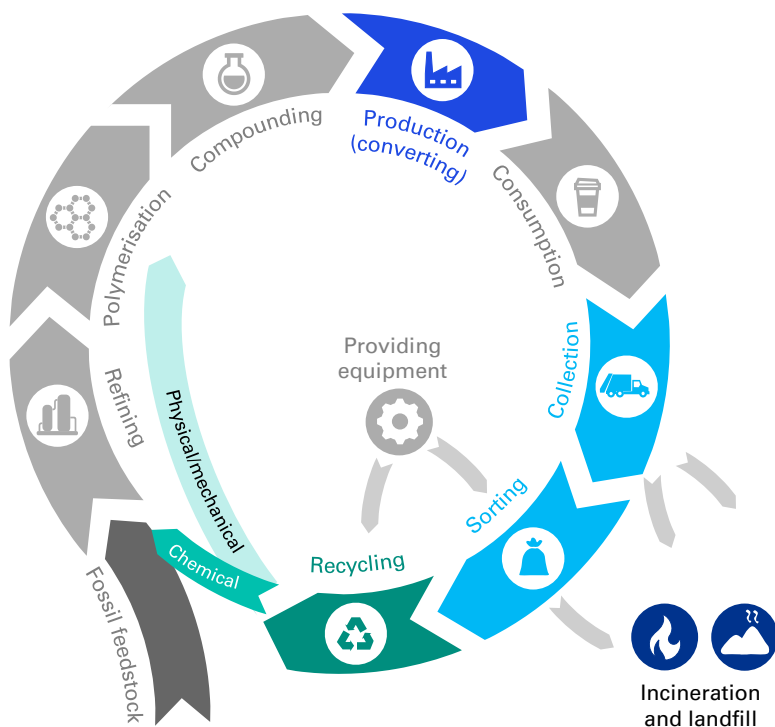
The more difficult it is to sort and subsequently recycle the waste streams into high-quality output, the more added value is being realised and thus a larger share of the value can be captured.

Indicative view on expected growth of (high-quality) recycling rates per material stream (excl. hazardous waste), complexity/heterogeneity and market value, 2020-2030FC (%)⁽⁹⁾



A range of regulatory interventions across the value chain is aiming to stimulate the reuse of plastics

Simplified overview of the plastic recycling process of post-consumer waste



Regulatory interventions along the value chain^(a)

Production

PPWD⁽³⁾ – Minimum recycled content

- Targets a minimum quota of recycled content of 10-35%

PPWD⁽³⁾ – Plastic tax

- Countries must contribute €800/t for unrecycled plastics

Sustainable carbon cycles⁽¹⁰⁾ – Sustainable carbon quota

- Targets a minimum quota of sustainable non-fossil carbon of 20%

Update PPWD⁽³⁾ – Re-use and refill targets (*proposed*)

- Various targets on reusing and refilling different packaging types

Incineration and landfill

EU ETS Directive⁽¹¹⁾ – Inclusion of incinerators

- Includes incineration in ETS, raising costs (2028)

Amending Directive 2018/850⁽¹²⁾ – Landfill restrictions

- Implements landfill restrictions across the EU (2030)

Collection and sorting

Waste shipment regulation⁽¹³⁾ – Plastic export bans

- Prohibits the shipment of plastic waste to non-OECD countries

Recycling

General waste directive⁽¹⁴⁾ – Municipal recycling rate

- Targets municipal waste recycling rate of 55% (2025) / 60% (2030)

PPWD⁽³⁾ – Plastic packaging recycling rate

- Targets plastic packaging recycling rate of 50% (2025) / 65% (2030)

PPWD⁽³⁾ – Total packaging recycling rate

- Targets total packaging recycling rate of 65% (2025) / 70% (2030)

PPWD⁽³⁾ – Chemical recycling

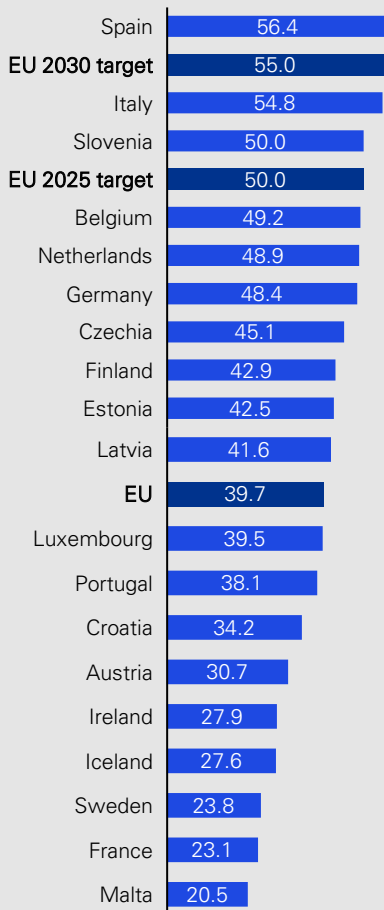
- Acceptance of chemical recycling and defines calculation method

Note: (a) Non-exhaustive overview of EU policies.

The recycling industry is shifting from a supply-driven market to a demand-driven market

SUPPLY-driven plastic recycling market: Results in higher supply of lower-quality plastic recyclates as quality is NOT a factor in reaching targets

Recycling rates and targets for plastic packaging waste for selection of EU countries, 2021 (%)⁽⁷⁾



DEMAND-driven plastic recycling market: Results in higher demand for higher-quality plastic recyclates as quality is pivotal in sustaining product quality

Mandatory content targets (will exist in addition to recycling targets)

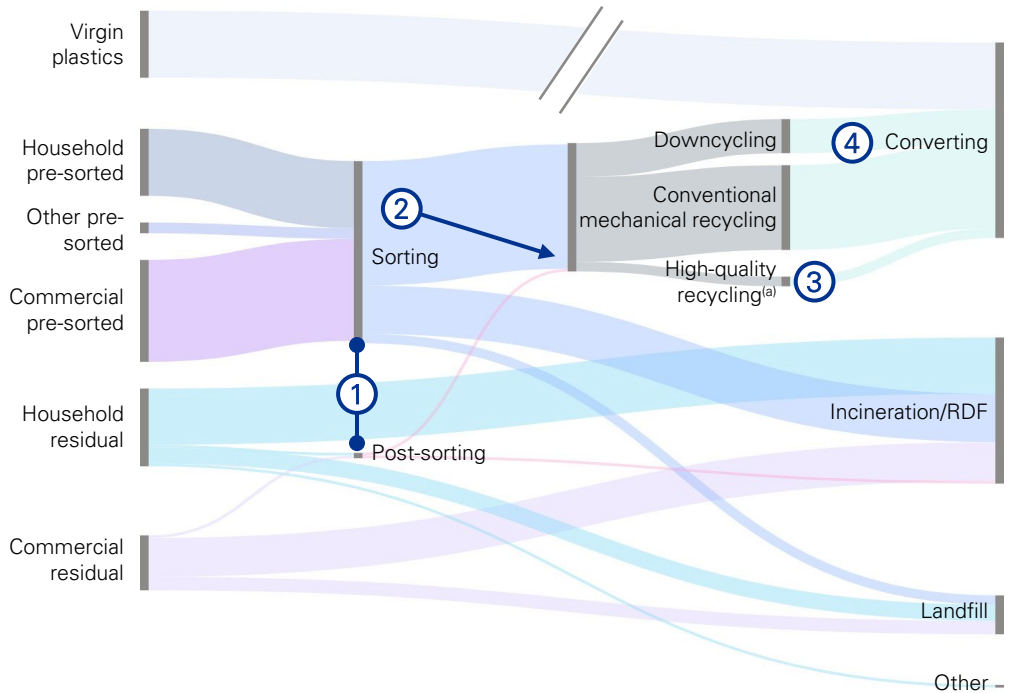
Sector	Main type of plastic	Minimum recycled content targets %		
Packaging (food) ⁽³⁾	PET, PP, LDPE	2030	10%	The revision of the EU Packaging and Packaging Waste Directive states that non-PET contact-sensitive packaging must contain a minimum of 10% recycled plastic, while food-grade PET plastic must contain at least 30% recycled plastic.
		2040	50%	
Packaging (non-food) ⁽³⁾	LDPE, HDPE, PP	2030	35%	The new mandatory content requirement for non-contact-sensitive packaging now calls for a minimum of 35% recycled plastic.
		2040	65%	
Automotive ⁽⁴⁾	PP, PUR	2030	25%	The EU has proposed regulation of a minimum recycled content percentage of 25% by 2030.
Other industries		Other industries are expected to follow suit in the coming years.		



The plastic opportunity: Where to invest

The circular economy requires more and better-quality feedstock and recycling to be able to satisfy future demand...

Flow of post-consumer plastic waste for the United Kingdom, Germany, Italy, the Netherlands, France and Belgium combined, 2020⁽⁹⁾



1 Expand sorting capacity

There is potential to expand sorting and post-sorting capacity to process more (mixed) waste streams and subsequently increase recycling input, as a major part of plastic waste currently still goes directly to

incineration.

Market attractiveness

Plastic waste management players Europe⁽¹⁵⁾

Future growth potential

- High
- Medium
- Low

2 Improve sorting technologies

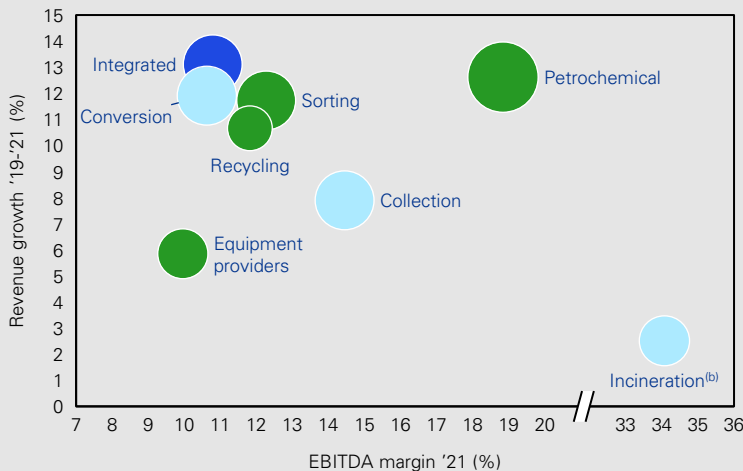
There is a need for advanced (post-) sorting equipment to create more homogeneous high-quality input for recycling.

3 Expand high-quality recycling capacity

Innovating and expanding promising recycling technologies is essential to increase the share of high-quality recycling capacity.

4 Adapt processes to heterogeneous inputs

Converting processes should be adjusted to deal with increasing recycling content, which is more heterogeneous in quality and composition compared to virgin feedstock.



...which will drive value for sorters, recyclers and equipment providers

Note: (a) High-quality recycling includes advanced mechanical recycling, physical recycling (e.g. dissolution) or chemical recycling (e.g. pyrolysis). (b) EBITDA margin for incineration is high as it is an asset-heavy business and depreciation is not taken into account. Additionally, incinerators had windfall profits due to the high energy prices they could charge.

The first step in the transition is to expand sorting capacity and improve sorting quality to divert more high-quality feedstock towards high-quality recycling

The circular economy ambition, driven by various legislative actions, is shifting the focus of sorting facilities from low-quality output from limited waste streams towards creating high-volume and high-quality output from various waste streams, which will require more advanced technology and capacity expansion

Requirement 1: Expand sorting capacity

Initially, regulations were not established to ensure large volumes of high-quality sorting output. Predominantly pre-sorted waste streams were sorted and sent to recycling facilities, while mixed plastics were either downcycled (to meet the recycling quota) or incinerated as the gate fees were significantly lower (compared to recycling).

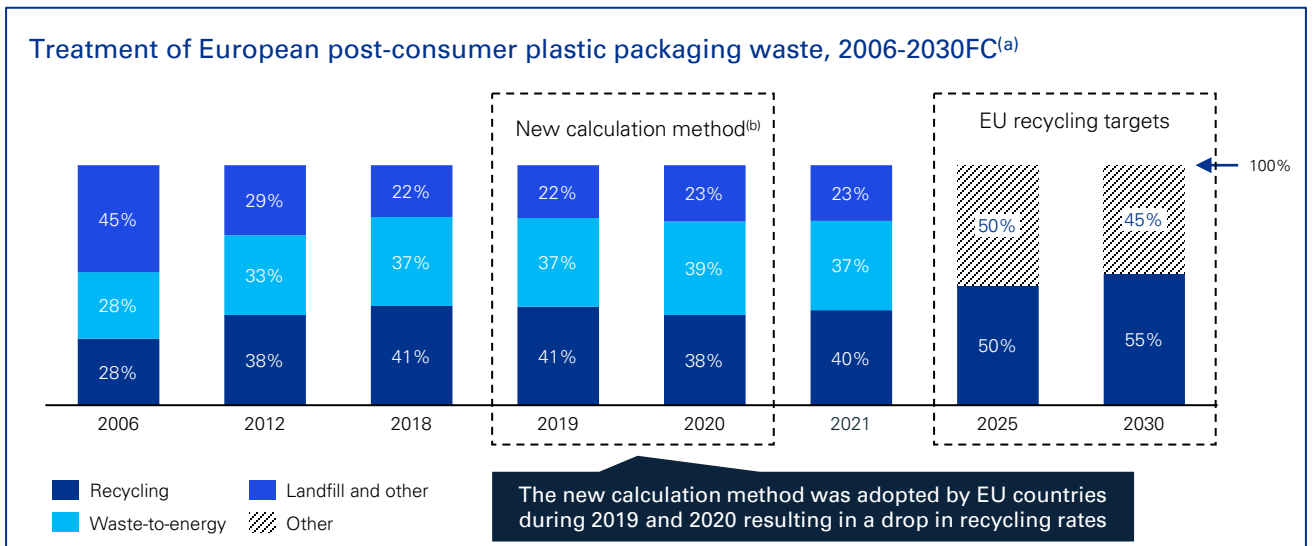
Recently, the method for calculating recycling rates has changed, dropping the recycling rate significantly (an estimated ~20% on average across the EU⁽¹⁶⁾) and thereby widening the gap with the EU's recycling targets.

This development has led to a change in mindset from various EPR schemes and governmental institutions. On the one hand, better pre-sorting by companies and households is required, with various organisations working to build awareness. On the other hand, more plastics (i.e. the mixed plastics) need to be sorted to bridge the current recycling quota gap. EPR schemes are currently willing to pay higher gate fees to sorting facilities compared to incinerators to meet the recycling quotas. This has increased the willingness of existing sorting facilities and/or integrated waste management companies to expand their sorting capacity. Significant capacity will be required in the coming years.

Requirement 2: Improve sorting technologies

Improved sorting technology is required to produce large volumes of high-quality sorting output which is essential to achieve the ambition of a circular economy.

Current sorting technology lacks efficiency in terms of quality and yield, whereas waste streams are typically not fully separated by material type and colour and yield significant sorting losses (going to incineration). New sorting technologies, including process automation and near-infrared sorting, amongst others, will lead to high-quality sorted output, by colour and material type, which can be recycled into high-quality output.



Note: (a) The figure includes only post-consumer plastic packaging waste which is a subset of total post-consumer plastic waste.

(b) The new calculation method has not been implemented simultaneously across countries, which in combination with recycling improvements explains why the drop between 2019 and 2020 is not equal to 20% (the estimated average drop across the EU).

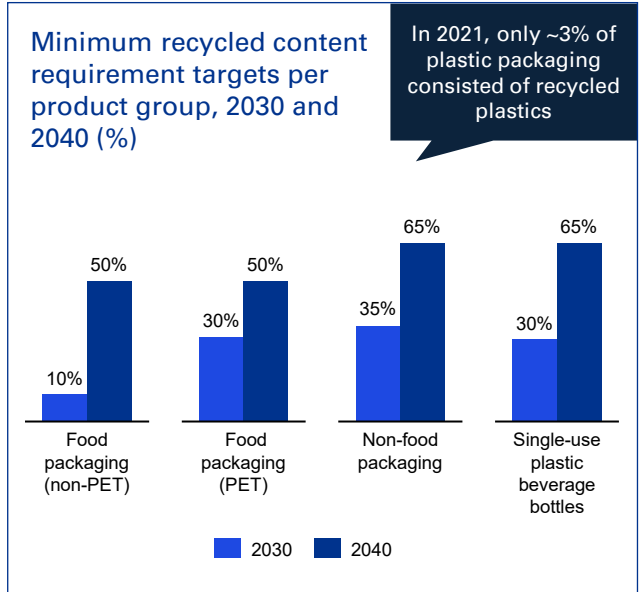
Next, high-quality recycling capacity (mechanical, physical and chemical) should be expanded

Requirement 3: Expand high-quality recycling capacity

Driven by the same regulations, recycling also requires significant investments to ensure sufficient capacity is built to meet EU recycling quotas. On top of these recycling quotas, recent regulation on mandatory content requirements⁽³⁾ requires certain levels of recycled content to be used in new consumer products, further increasing demand for recyclates.

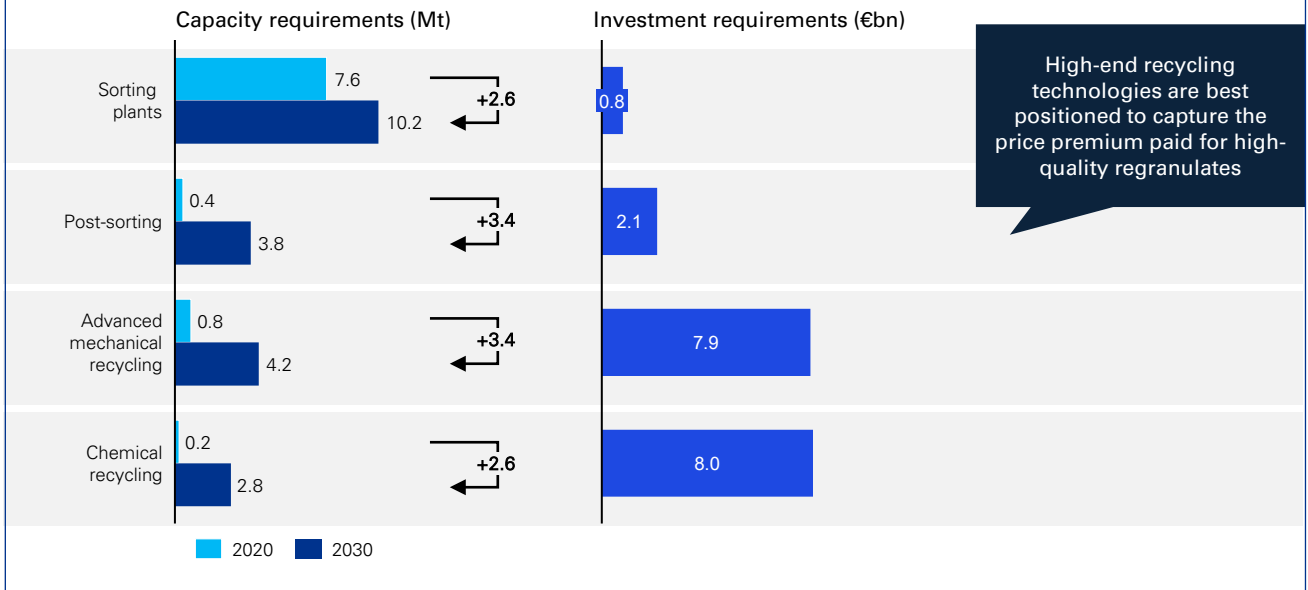
Historically, recycled content was only used in sectors requiring regranulates of relatively low quality (e.g. construction and agriculture) due to their cheaper price point compared to alternatives (i.e. virgin plastics). However, this new regulation requires all plastic packaging to include specific levels of recycled content depending on the product type. Sectors with a low share of recycled content have not historically purchased or used recycled content due to substandard quality. The consumer retail and automotive industries, for example, require recycled content to comply with certain safety and quality standards before being able to use it.

This will require not only large investments in capacity expansion but also in advanced recycling technologies to adhere to the standards set by the different sectors⁽¹⁷⁾.



Achieving these minimum content requirements is more challenging for some product types than for others as the effectiveness and maturity of recycling technologies can differ per product type. As a consequence, stimulation of existing and new advanced technologies is essential in realising the EU targets.

Indicative analysis of required capacity and investments towards 2030 to reach EU recycling targets⁽¹⁷⁾



Equipment suppliers can profit from the demand for sorting and recycling capacity

As increased regulation creates an attractive climate for sorting and recycling facilities, waste equipment providers aimed at servicing these facilities are likely to profit



Equipment supply is a highly attractive market supported by favourable market dynamics, businesses with stable cash flows and limited exposure to economic downturns

Waste equipment providers are expected to grow on the back of the increased need for more and better sorting and recycling. However, similar to the sorting and recycling industry, these providers currently lack the necessary capacity to meet this demand, resulting in a need for significant investments in expanding their capabilities. Moreover, advancements in technology and machinery are essential for these providers to meet mandatory content requirements for waste materials. This calls for the development of more sophisticated and complex equipment to meet the necessary standards.

Recycling and sorting equipment providers typically have stable cash flows as they tend to use a razor-razorblade business model: customers first purchase equipment and later require installation, maintenance services, upgrades and spare parts throughout the lifetime of the equipment.

The recycling and waste management sector is typically less vulnerable to economic downturns, as waste and recycling needs do not diminish in times of financial difficulty. This leads to a relatively stable demand for waste management services.

New business models

The razor-razorblade model is the most commonly used business model in the waste equipment market. However, new business models have recently been adopted by some companies to differentiate from their competition. The rental and lease of waste equipment, for example, offers recycling and sorting facilities a solution to reduce initial capital investments, lowering the threshold to enter the market. Other upcoming business models such as equipment-as-a-service, revenue-sharing and pay-per-use models are also being used more often to help reduce costs and improve the overall efficiency and sustainability of the waste management industry.

One-stop shop

Due to the increased share of integrated waste managers performing waste collection, sorting and recycling activities, they have a significant need for a variety of equipment to facilitate multiple steps in the value chain for different waste streams. This trend offers acquisition opportunities to expand product portfolios across the different steps in the value chain and across waste streams.

Converting processes deal with increasing recycling content, which can serve as a unique way for converters to differentiate themselves from competitors

Brand owners, driven by their own ambitions and regulations, are increasingly focusing on using less plastics or more recycled plastics in their products to reduce waste and environmental impact, which requires plastic converters to adapt their processes

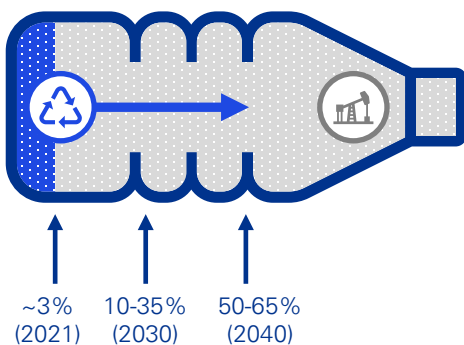
In the past, plastic converters would typically focus on processing one specific type of virgin resin, such as LDPE, using a specific technology, in order to create a specific application. This approach benefited from the fact that each type of resin had consistent properties and contamination levels, making the compounding process simpler.

Generally, virgin resins could be compounded into a wide range of applications using different technologies, with the choice of technology depending on the brand owners' requirements with regard to product design, required properties and production volume, amongst others. To differentiate themselves from the competition and gain a competitive advantage, converters could excel in areas such as product quality, innovative and customisable solutions, providing high-quality services, or size and scale to serve large brand owners.

With an increasing push by brand owners to use more recycled plastics, driven by mandatory content requirements, compounders may need to make some adjustments to their processes to handle materials with different properties and levels of contaminants. This may involve investing in new equipment, implementing quality control measures and providing internal training for staff. The process of incorporating recycled plastics can be complex and may require additional resources to ensure the quality of the final products.

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Implications of mandatory recycled content requirements in packaging for converters



1. Invest in new converting equipment to account for impurities and heterogeneity in recyclates
2. Secure recyclates via offtake agreements with or vertical integration of recyclers due to limited availability
3. Implement additional quality control measures and internal training for staff

Moreover, the limited availability of regranulates per supplier requires converters to purchase small batches from multiple sources, compounding the existing challenges. The ability to effectively navigate these challenges can serve as a key differentiator for plastic converters competing in the market.

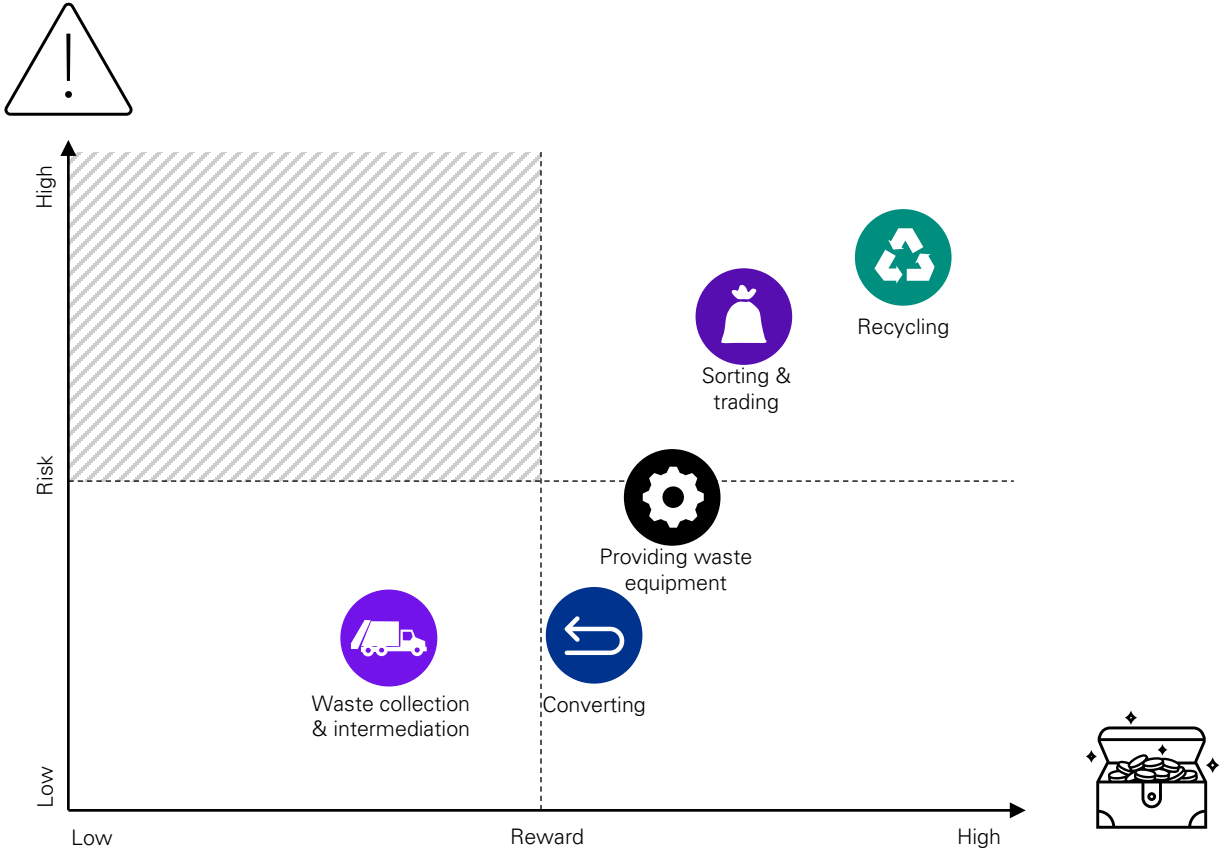
Not only can plastic converters take advantage of the opportunity to diversify their product offerings by incorporating more recycled content in their packaging, they can also benefit from the increasing consolidation trend in the currently fragmented market. Vertical or horizontal integration can lead to economies of scale by creating more supply security or by expanding operations to offer different or similar products. This can enable converters to increase sales and better serve large brand owners as they only work with converters that are able to satisfy their minimal service and volume requirements.



Riding the plastic recycling wave: How to capture value?

Investors can ride the plastic recycling wave via various opportunities along the value chain

Investment opportunities in the plastic recycling value chain – Indicative








Value chain step

Investment opportunity

	Waste collection & intermediation	Intermediation can drive step change in the waste collection market which is still relatively fragmented
	Sorting & trading	The circular economy requires high-quality inputs, in which sorting plays a crucial role
	Recycling	Expected demand for high-quality recycling outputs will drive investments in technology and capacity
	Converting	Industry consolidation within the converting space still has plenty of investment opportunities
	Providing waste equipment	Equipment providers can satisfy the increasing need for advanced recycling and sorting facilities by focusing on end-to-end solutions

Investors can target specific opportunities based on their risk and reward profile

Overview of main investment opportunities in the circular waste value chain

Value chain step	Main opportunity	Risk	Reward
 Waste collection & intermediation	Intermediary platforms for waste collection	● Low-medium risk: Requires willingness by market participants to collaborate and brand recognition of the platform. Limited capex required.	● Low-medium: Growth potential due to mutual benefits for waste producer and collector giving rise to possible network effects and entry barriers. Margins are, however, relatively limited due to cost consciousness of users.
 Sorting & trading	Capacity expansion with (new) advanced technologies	● Medium-high risk: High initial investments and requires (long-term) offtake agreements with EPR schemes and/or companies. Technology is relatively mature.	● Medium-high: Moderate to high growth potential due to expected capacity shortage in sorting and increasing regulation driving demand for high-quality sorting output. Limited complexity of sorting might impact margin potential.
 Recycling	Platform acquisition supported by roll-up Invest in new recycling technologies through minority stakes	● High risk: High initial investments, low maturity of high-end recycling technologies, and requirement to secure (long-term) offtake agreements with EPR schemes and/or companies and brand owners. Risks can be diversified or mitigated through minority stakes or vertical integration securing feedstock.	● High: Significant rewards due to increasing regulation driving demand for high-quality recyclates and expected shortage of capacity. Roll-ups and new technologies exhibit margin potential via economies of scale, superior output quality or lower production cost levels (depending on successfulness of technology).
 Converting	Platform acquisition supported by roll-up to increase application knowledge and scale benefits	● Low-medium risk: Mature industry with established technologies and entry barriers in place that can be acquired via a platform acquisition.	● Medium: Moderate potential via platform investment and bolt-on acquisitions that support scale benefits, unique capabilities (e.g. handling recycled plastics) or securement of feedstock and quality (vertical integration).
 Providing waste equipment	Develop end-to-end equipment solutions through buy-and-build	● Medium risk: Significant investments in R&D to develop new technologies. Limited offtake risk due to surge in demand and production constraints.	● Medium-high: Regulations are expected to fuel demand for sorting and recycling equipment. Significant value can be captured by developing an end-to-end offering of equipment capable of delivering higher-quality output. This can be realised through a targeted buy-and-build strategy.

Key: Expected level: ● High ● Medium-high ● Medium ● Low-medium ● Low.

Waste collection & intermediation

Intermediation can drive step change in the waste collection market which is still relatively fragmented



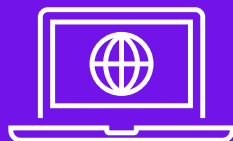
Main opportunity

Intermediary platforms

Intermediary parties enable efficient market functioning and add considerable value both upstream and downstream:

1. They lower the ecological footprint of companies by providing insight into their waste management and uncovering more sustainable opportunities (also important for CSRD reporting);
2. They are able to connect waste producers to a variety of (specialised) waste haulers thereby serving as a one-stop shop for all waste streams;
3. They can improve network density (by adding multiple stops on an existing route) to reduce the operating costs of waste haulers;
4. They can optimise waste composition and quality by clustering waste producers with similar waste compositions into routes which can improve the recyclability.

The roll-out of intermediation across Europe holds growth potential but varies depending on the need for more transparency and the willingness of market participants to collaborate with such platforms in a country.



Additional opportunity

Downstream integration by large waste haulers

Driven by regulatory initiatives and increased competitive pressure, economic value and profits are shifting further down the waste-to-materials value chain. As a consequence, large waste haulers are increasingly moving towards adding sorting and trading activities to their service offering, which is better protected by entry barriers as only a limited number of waste haulers have sufficient funding to establish an asset base for sorting (residual) waste.

Additional opportunity

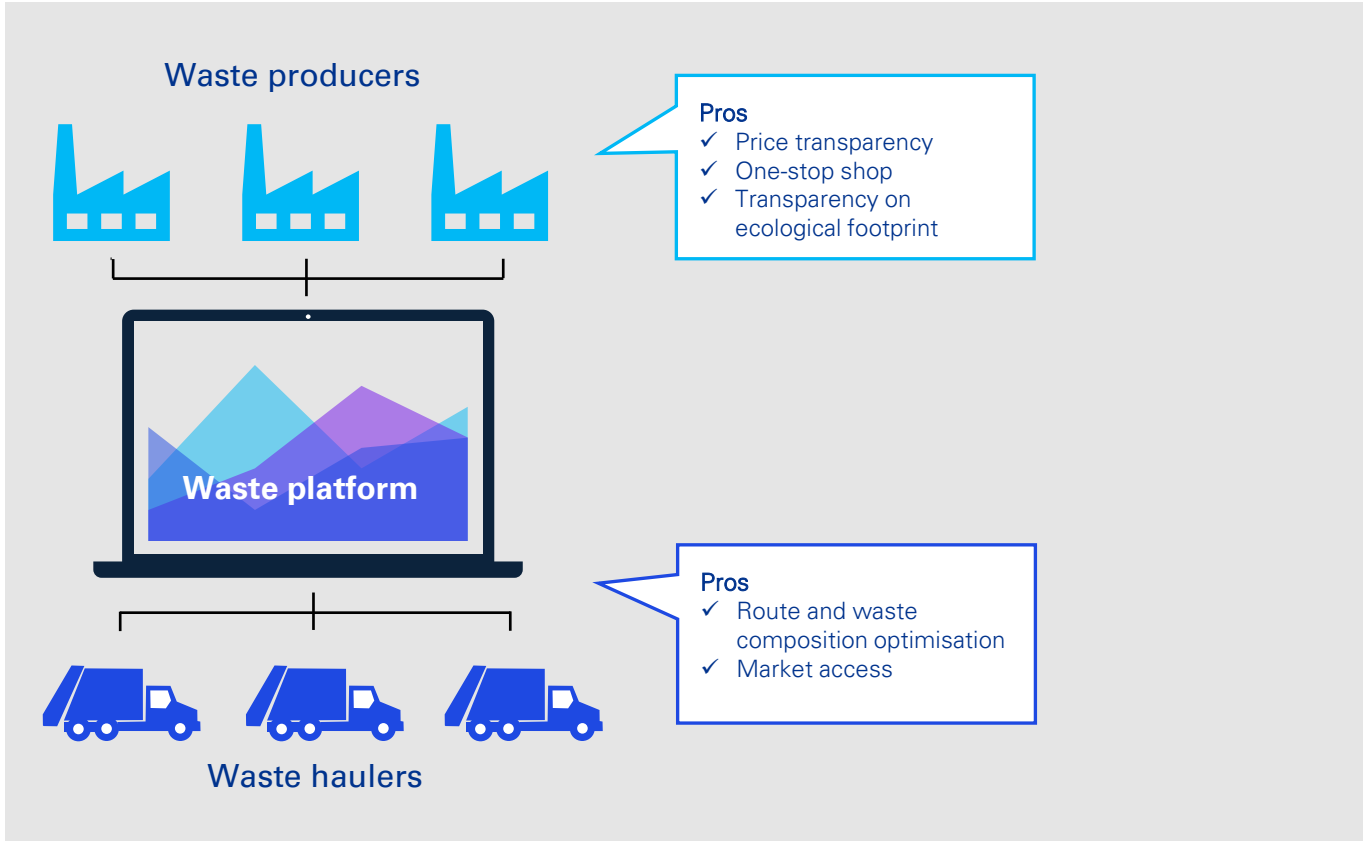
Buy-and-build in waste collection landscape

The waste collection market is quite fragmented and offers numerous opportunities to acquire specialist waste haulers (focusing on specific waste streams) or generic waste haulers. Large waste haulers are likely to initiate market consolidation to maintain market share, realise economies of scale and enhance bargaining power to secure feedstock as input for their processing activities.

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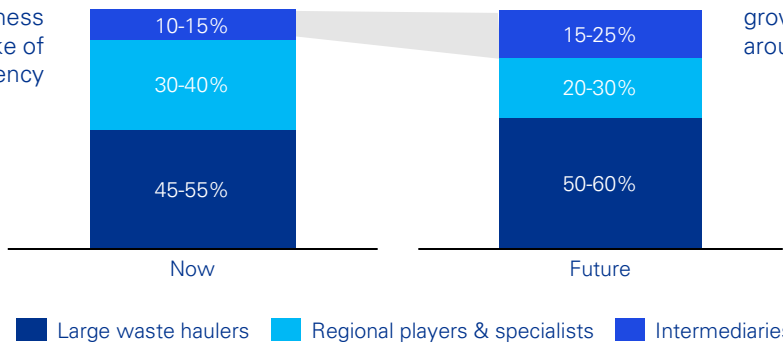
Waste collection & intermediation

Intermediation in the Netherlands



Example: Waste hauling market shares in the Netherlands⁽¹⁸⁾

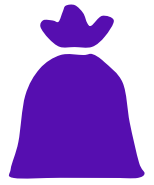
The Dutch waste market is well suited for intermediation as it is a mature market with high digital literacy and willingness to accept and embrace new business models for the sake of efficiency



Large waste management players expect the market share of intermediaries to grow and cap at around 20-25%

Sorting & trading

The circular economy requires high-quality inputs, in which sorting plays a crucial role



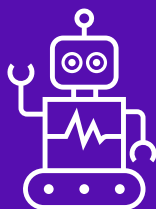
Main opportunity

Scale and technology

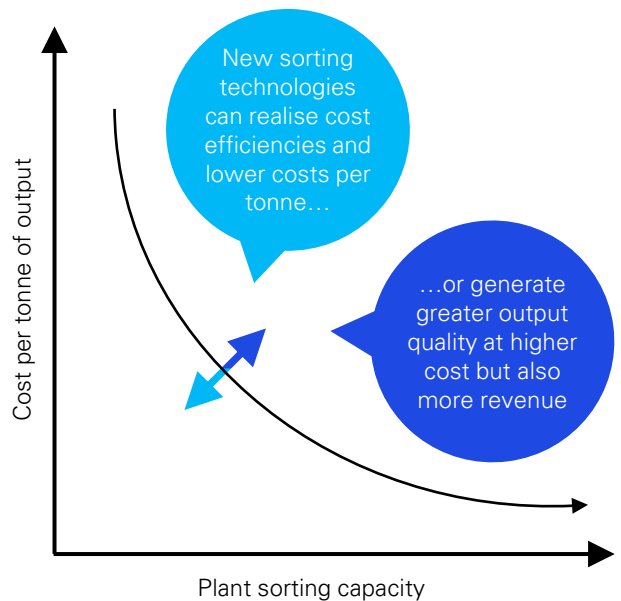
When investing in sorting and trading, the key is to push for high-quality output at the lowest cost possible. This can be realised by using (a combination of) the latest and best sorting technology that is available.

Additionally, sorting at scale will allow sorters to spread the investments per tonne of sorted output. Lastly, larger sorters will be able to improve performance quicker through learning effects which they can leverage across multiple facilities.

These capacity expansions can be realised either through greenfield investments in new sorting plants or by expanding capacity at existing plants using best-in-class sorting techniques.



Schematic impact of scale and technology



Recycling

Expected demand for high-quality recycling outputs will drive investments in technology and capacity



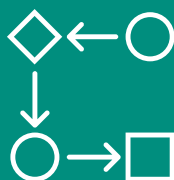
Main opportunity

Multi-solution strategy in the recycling market

Having multiple recycling solutions under one roof enables flexibility with regard to the input as well as the output. Different types of feedstock can be processed and diverted to the 'optimal' solution, while outputs can be more easily tailored to end-markets.

The plastic recycling market in Europe is still relatively fragmented and immature, providing ample opportunities for industry consolidation and realisation of economies of scale. Moderate entry barriers exist in the form of offtake agreements to secure feedstock from sorters or EPRs as well as high initial investment costs to set up a plant and become more substantial for advanced recycling plants. Strategic objectives should include:

- **Standardising output** – Ensuring consistent quality for specific applications;
- **High-end applications** – Focusing on providing regranulates which are transparent and can be used for high-end applications to capture a higher price premium (e.g. consumer packaging);
- **Integrating sorting capacity** – Securing feedstock volumes and high quality from own or partner sorting facilities, or engaging in long-term contracts with suppliers.



Additional opportunity

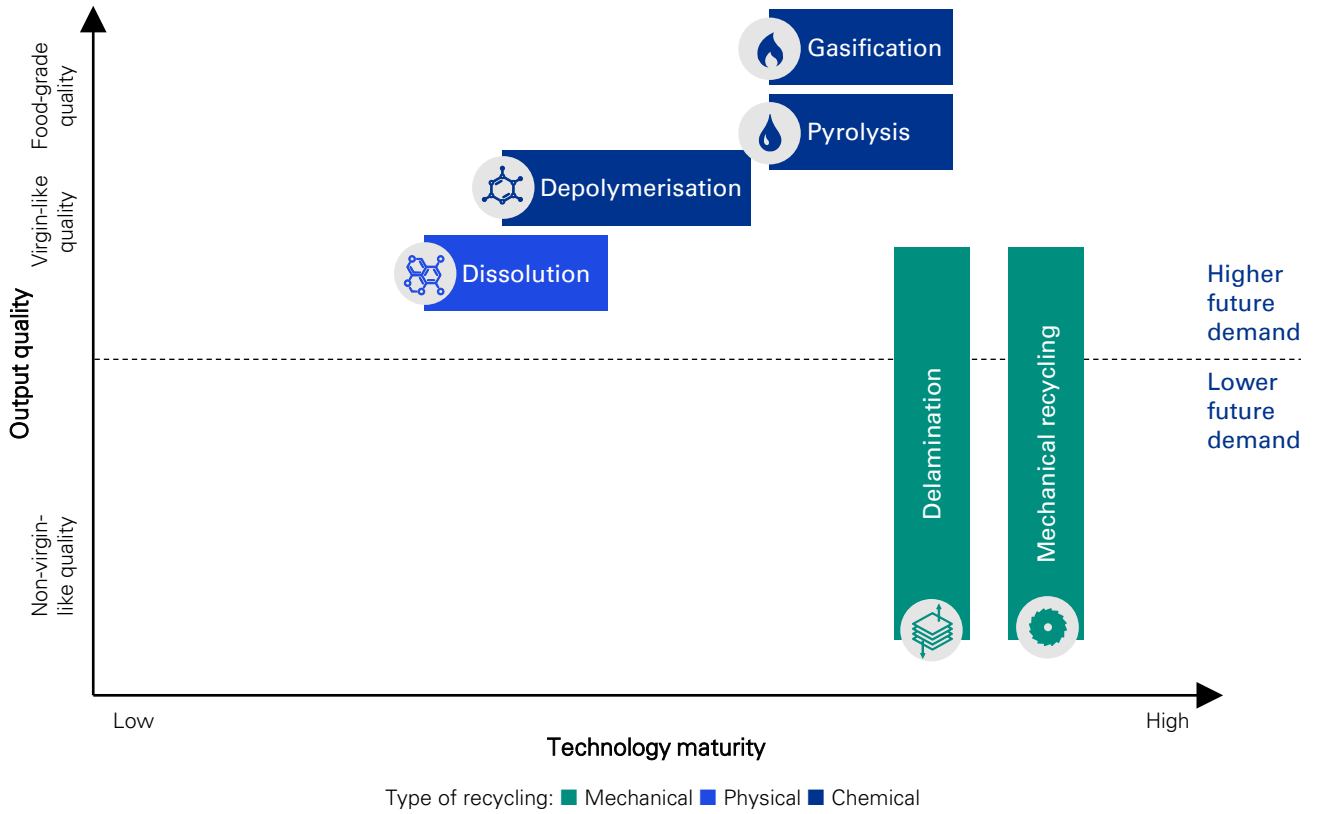
Invest in new recycling technologies (via minority stake)

New recycling technologies targeting more difficult-to-recycle plastics have significant upside potential as these will be needed to achieve the ambitious recycling targets as set out by the EU. However, investing in new recycling technologies can be risky due to their relative immaturity. Investors can acquire a minority stake in pilot technologies to gain exposure to the upside while limiting downside risk and retaining the current owners.

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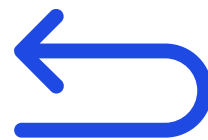
Recycling

Recycling technology maturity (non-exhaustive)



Converting

Industry consolidation within the converting space still has plenty of investment opportunities



Main opportunity

Buy-and-build in plastic converting market

Buy-and-build is an attractive strategy in this established but fragmented market which is protected by entry barriers. These can be strengthened by horizontal scaling and vertical integration.

The converting market remains fragmented despite recent M&A activity. It comprises players that specialise in certain subtypes of plastic and/or end-markets.

The entry barriers consist of (i) access to regranulates via relationships with suppliers, (ii) brand recognition and customer relationships, (iii) high investments in machinery and technology, and (iv) regulatory compliance and IP.

While horizontal acquisitions help to create the required scale to operate, upstream integration towards recyclers helps to secure feedstock at consistent quality. Downward integration into the label market can also be attractive for the higher margins.



Additional opportunity

Product differentiation through recycled share

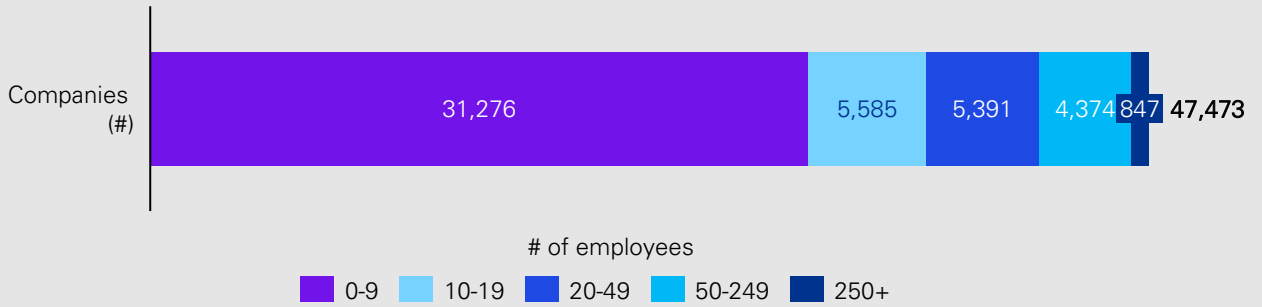
Companies that are able to secure and integrate significant amounts of recyclates in their end-products will gain a competitive edge over their competitors when recycled content quotas are introduced in 2030.

Key considerations should therefore include i) securing offtake agreements with recyclers and ii) adapting the production process to incorporate recyclates.

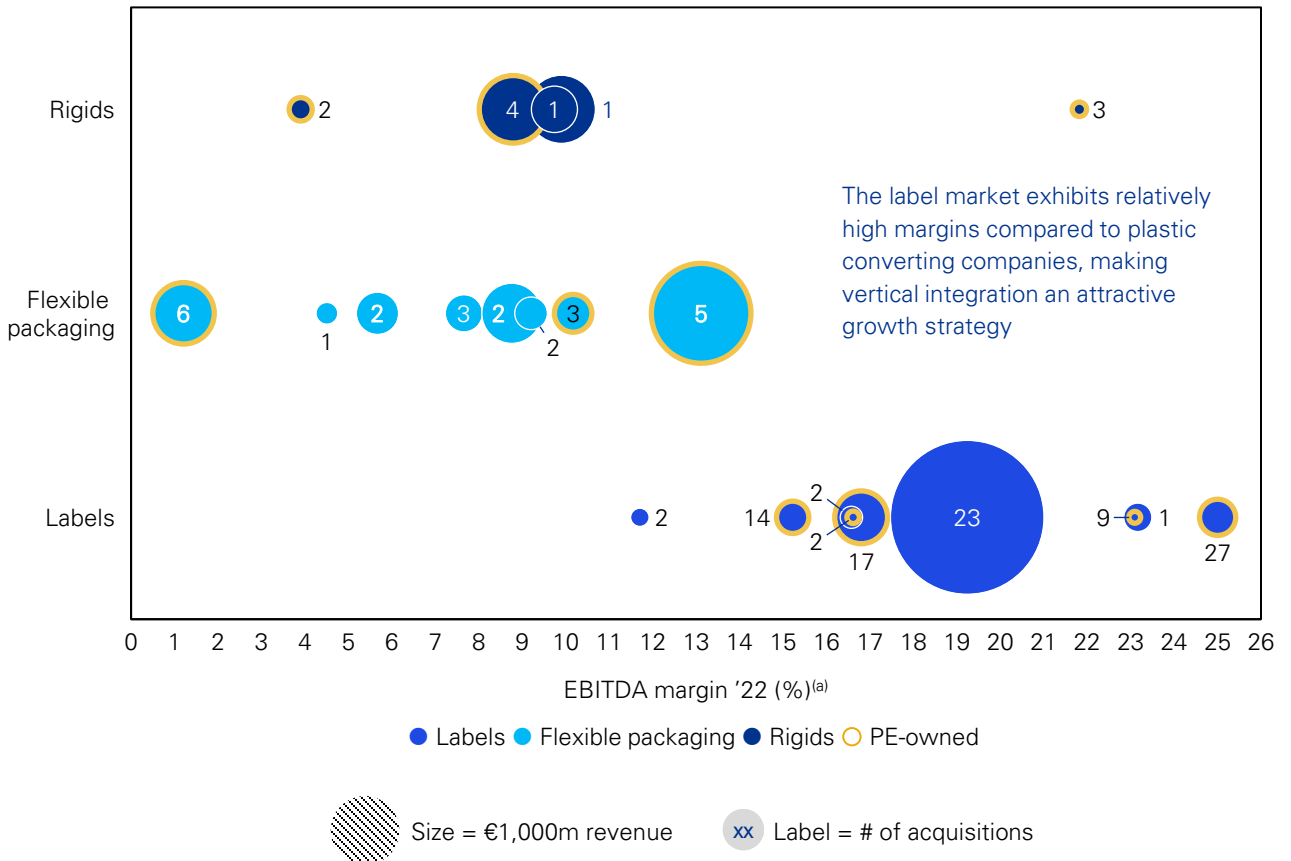
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Converting Fragmented landscape with room for consolidation

Plastic manufacturing companies by employee size class EU-27 (2020)⁽¹⁹⁾



Biggest buy-and-build platforms active in Europe⁽¹⁵⁾ (up to October 2023)



Note: (a) Where 2022 financials were not available, 2021 financials were used.

Providing waste equipment

Equipment providers can satisfy the increasing need for advanced recycling and sorting facilities by focusing on end-to-end solutions



Main opportunity

Developing end-to-end equipment solutions

Demand for higher-quality sorting and recycling output will drive demand for more specialised and advanced equipment. End-to-end equipment providers are best positioned to integrate and finetune different sorting and recycling technologies and offer supporting services.

The equipment manufacturing market has several large players mainly due to their presence in generic equipment (e.g. shredders), which has a large addressable market, and a long tail of smaller, specialised equipment providers focused on a specific waste (sub)type or technology. Significant entry barriers exist in terms of technological know-how and IP requiring sizable investments in R&D, especially for more advanced recycling equipment.

Investors may leverage this opportunity through a platform acquisition and adding several (specialised) equipment providers focused on vertical (sorting, recycling or converting equipment) or horizontal product expansion (targeting other sub- or new waste streams, e.g. textiles or paper) and become a one-stop shop.



Additional opportunity

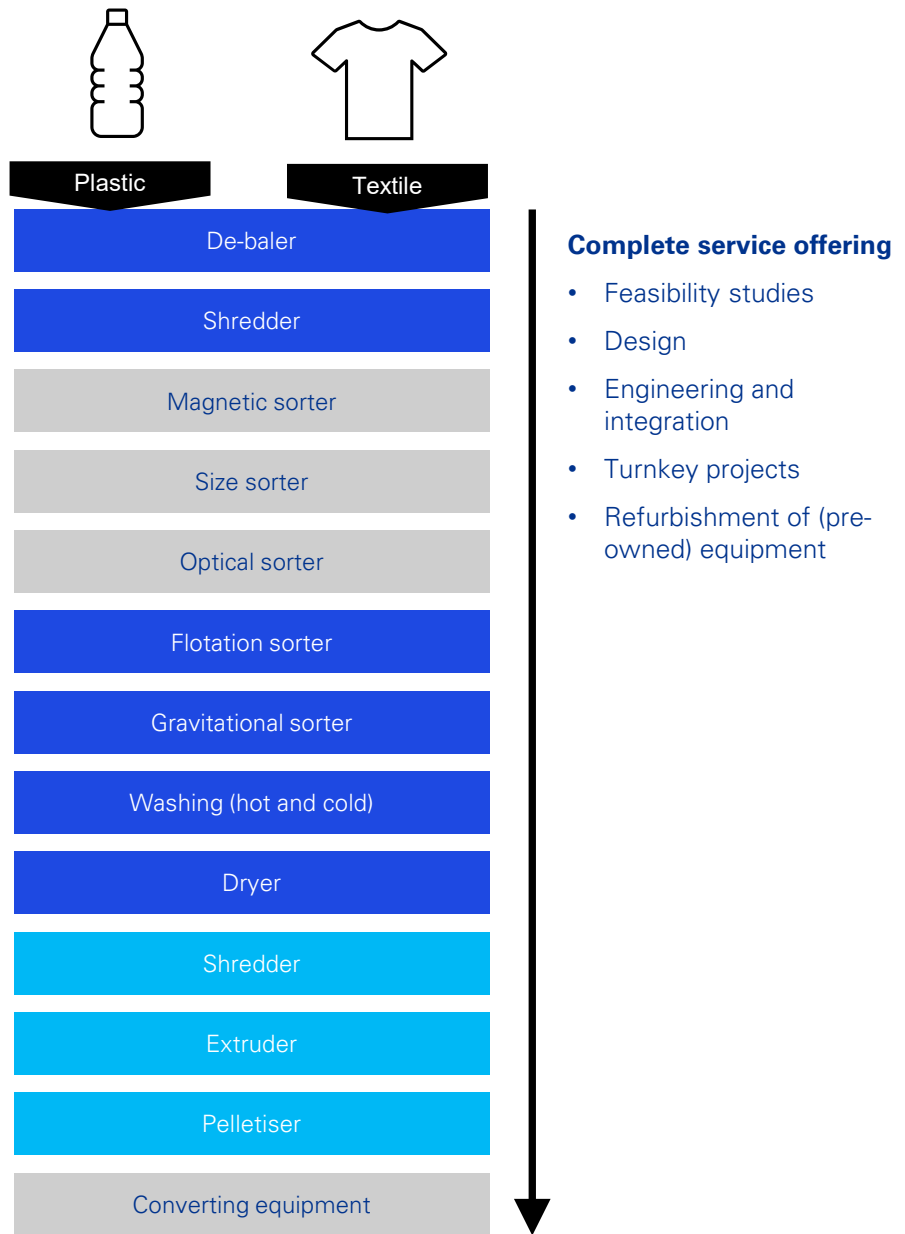
Explore new business models

Investors could explore new business models:

- Lease or rental partnerships with equipment providers to allow sorting and recycling companies to acquire equipment with limited capex;
- Leveraging the expected capacity shortage and increased cost consciousness of sorters and recyclers through offering refurbished equipment.

Providing waste equipment

Case study – A one-stop shop for high-quality regranulates



White gap
 Company A
 Company B

Through Company A's recently acquired stake in Company B, it aims to further integrate its equipment offering upstream, allowing for better finetuning and quality improvements

In recent years, Company A has expanded its product portfolio with new recycling equipment and technologies (e.g. deinking) as well as a complementary service offering focused on producing high-quality plastic recyclates

Glossary of terms

bn	Billion
Capex	Capital expenditure
CSR	Corporate social responsibility
EBITDA	Earnings before interest, taxes, depreciation and amortisation
EPR	Extended producer responsibility
EU	European Union
EU ETS	European Union Emissions Trading System
EV	Electric vehicle
FC	Forecast
HDPE	High-density polyethylene
IP	Intellectual property
LDPE	Low-density polyethylene
m	Million
M&A	Mergers and acquisitions
Mt	Megatonnes
OECD	Organisation for Economic Co-operation and Development
Opex	Operational expenditure
PE	Private equity
PET	Polyethylene terephthalate
PP	Polypropylene
PPWD	Packaging and Packaging Waste Directive
PUR	Polyurethane
R&D	Research and development
RDF	Refuse-derived fuel
t	Tonnes
WEEE	Waste from electrical and electronic equipment

Sourcing and notes

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Contact

Joeri Jägers

Strategy KPMG Netherlands

Jaegers.Joeri@kpmg.nl

Lawrence Bolte

Strategy KPMG Netherlands

Bolte.Lawrence@kpmg.nl

Nick Diver

Strategy KPMG Belgium

nickdiver@kpmg.com

Arnoud Walrecht

Global lead partner circularity KPMG

Walrecht.Arnoud@kpmg.nl

Contributors:

Sjef Roijmans, Sven Meier, Michel Hesselink



home.kpmg/socialmedia

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