



# The plastic recycling opportunity

## **An industry ready for consolidation**

*Realizing value series*

Demand for recycled plastics in Europe is increasing, driven by legislation, economics and the need for sustainable use of resources. However, the recycling sector has not yet been able to fully benefit from these favorable fundamentals due to quality issues and a lack of investment in recycling processes. In a highly fragmented market, these dynamics present unique investment prospects for consolidation. Everybody's talking about recycling – now is the time to grab the moment.

# The industry's time has come

The production and disposal of plastics put an enormous burden on the environment – something discussed in greater detail in KPMG's recent paper, *To ban or not to ban*.<sup>1</sup>

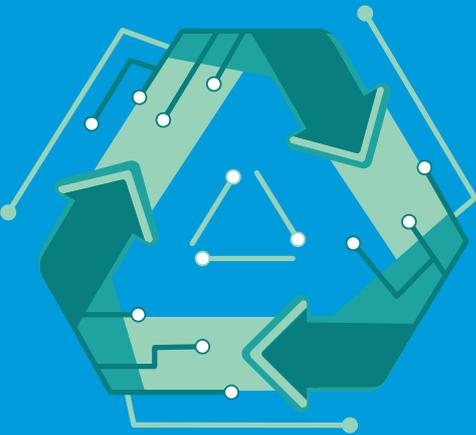
Every minute, more than one million plastic bags are thrown away after an average use of just 15 minutes.<sup>2</sup> According to Peter Thomson, UN Ambassador for Oceans, "plastic pollution has dire consequences for the future of many species, including humankind."<sup>3,4</sup>

This challenge has put plastic recycling very high on the agenda of the World Economic Forum, the European Commission and many other organizations, senior politicians and, perhaps most importantly, the general public. Legislation and escalating customer awareness have increased the volumes of plastic waste collected for recycling in Europe, which grew by 6 percent a year between 2012-2016,<sup>5</sup> with further rises anticipated towards 2020.

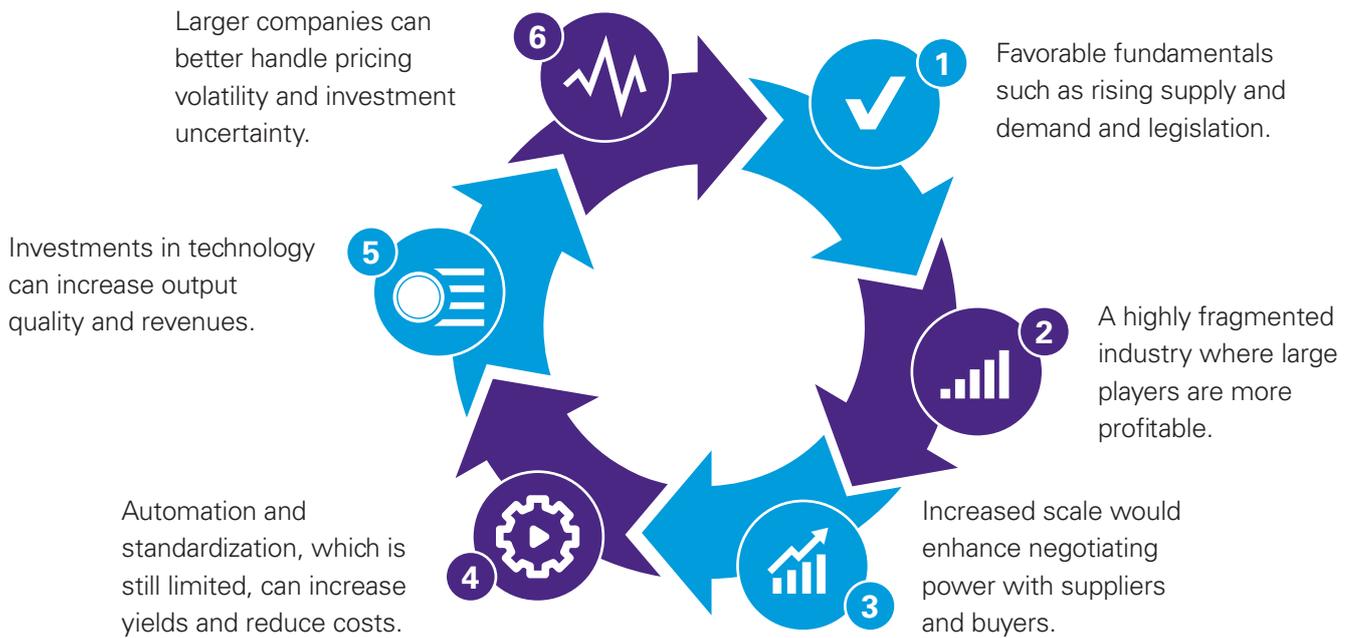
Demand for recycled plastics from large brand owners and industrial buyers is also increasing, driven by financial considerations, sustainability targets and customers' desire for environmentally-friendly products.

Despite these favorable conditions, the plastic recycling sector remains very fragmented and relatively immature, which is holding back recycling efficiency, quality and profitability.

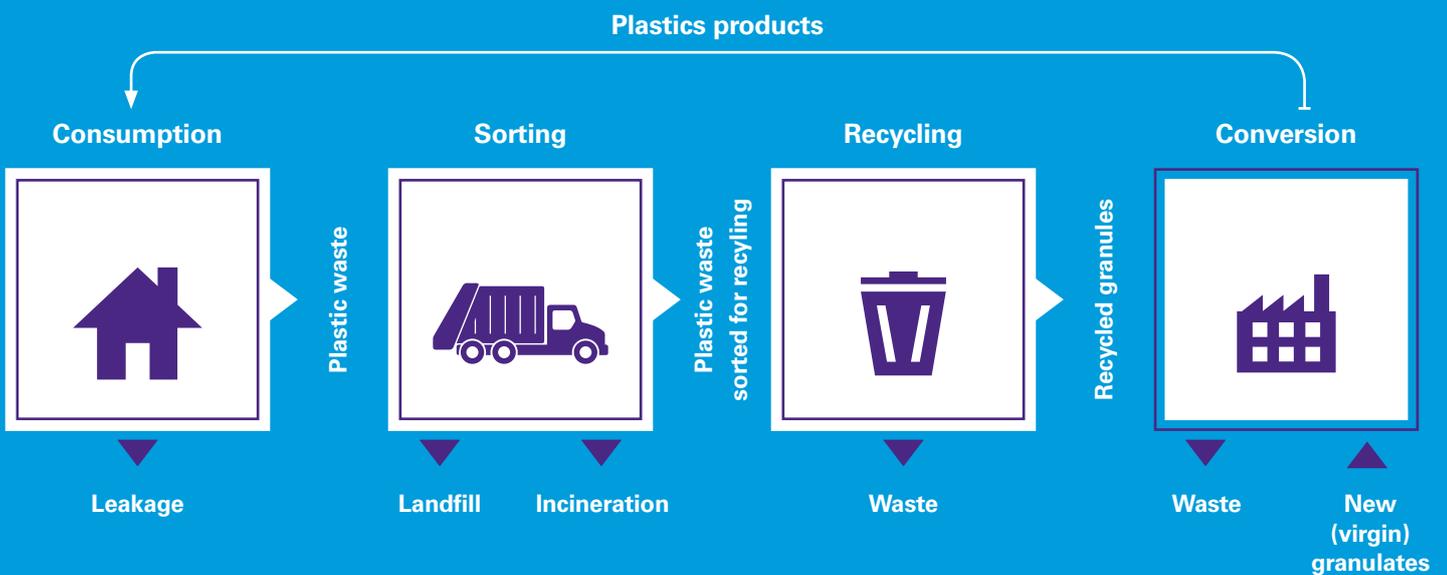
Industrialization – achieved through investments in technology and operational excellence – would result in higher yields, product quality and revenue. Furthermore, consolidation would result in economies of scale in operations, sourcing and sales. The industry lacks the means to invest and consolidate, as it consists of smaller companies with limited access to capital. Outside investment is, therefore, required to seize the opportunity.



**Figure 1: Six arguments for consolidation in European plastic recycling**



**Figure 2: Plastic recycling value chain<sup>6</sup>**



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# An increase in recyclable plastic

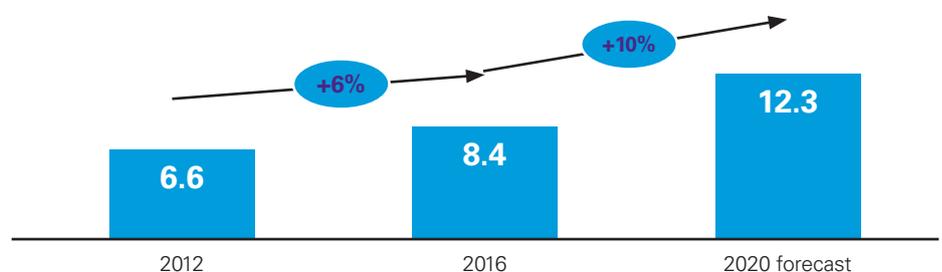
Regulation and heightened consumer awareness are driving up the supply of sorted plastic waste.

Plastic recycling is a hot topic that is constantly in the headlines and the market growth potential is huge. According to the most recent published figures, just 31 percent of all plastic waste collected in Europe was recycled, with the remainder either incinerated (causing CO2 emissions) or landfilled (squandering land). For plastic packaging specifically, the recycling percentage for collected waste is a bit higher at 41 percent.<sup>7</sup> When you consider the volume of plastic that is not even collected but leaks into the ecosystem, then the recycling percentages are even lower.

Given the environmental benefits of recycling plastic waste, the European Union (EU) has recently tightened recycling targets for its member states. The latest Circular Economy Package requires 55 percent of plastic packaging waste to be recycled by 2030 (compared to 41 percent in 2016) and a ban on landfilling of separately collected waste.<sup>8</sup> Both the EU and national governments are taking measures to reach these quotas; these include expanding the types of plastic packaging materials collected from households and deposit schemes for plastic bottles.<sup>9</sup>

Together with growing consumer awareness, these regulations are driving up supply for recyclers which KPMG estimates to grow 10 percent year-on-year from 2016.

**Figure 3: European plastic waste sent to recycling facilities (in megatonnes)<sup>10,11,12</sup>**



# Demand is growing swiftly

Financial and sustainability considerations are impacting demand.

Regulation is not the only factor influencing plastic recycling. Firstly, recycled plastics trade at a 20-40 percent discount<sup>14</sup> to 'virgin' (new, oil-based) plastics, making it financially attractive to plastic converters. The higher the price of oil, the more attractive recycled plastics become. Given the long-term scarcity of oil, the financial benefit might increase over time.

There is also far greater awareness of sustainability. Both industrial buyers of recycled plastic granules (regranulates) and end-consumers of plastic products are increasingly conscious of the environmental impact of their actions. Several major European companies like IKEA, P&G and LEGO use recycled instead of oil-based plastics. More and more end-consumers appreciate the use of recycled plastic in new products and are able to better sort their plastic waste:



**"Our strategy is to use more renewable materials and keep recycling as the centre of our value proposition."**

– Converter (Procurement Director)



**"Several companies like Coca-Cola and Danone are setting minimum quotas for the use of recycled plastics."**

– Recycler (Management)



**"Unlike a few years ago, where companies regularly switched between recycle and virgin depending on the price, companies that use recycle nowadays design their production process accordingly and stay with it."**

– Converter (Management)



**"Currently, we use 100 percent virgin, but we are planning to change to 80 percent pure recycle."**

– Converter (Product Manager)



## China

Until 2013, approximately half of total plastic waste in Western Europe was exported to Asia, primarily China, in order to fulfill the need for raw materials. However, China has imposed quality and import restrictions in light of environmental concerns around the import of highly contaminated plastic waste.

The first of these was 'Operation Green Fence' in 2013 followed by sharpened inspections in 2015 and 'National Sword 2017'. The fall in imports was also driven by lower economic growth and decreasing demand for plastic, as well as China's desire to protect its domestic recycling industry.

## In 2019, other Asian countries such as India and Malaysia followed China in limiting plastic waste imports.

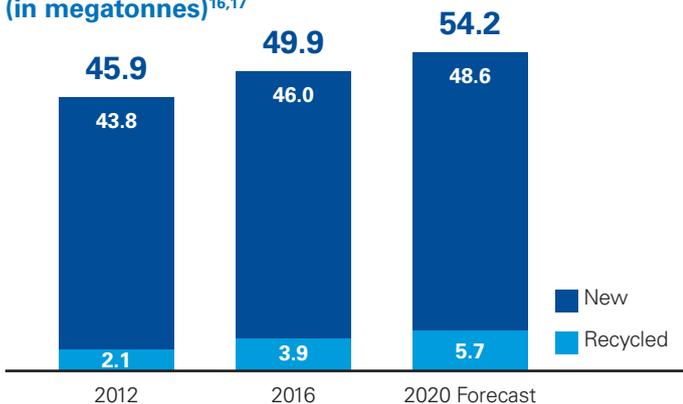
Although these declines have been partly balanced by increased imports of intermediate waste products (called regrind), the overall percentage of European plastic waste exported to Asia has diminished since 2013 and is expected to decline further. This has given rise to increased supply and lower prices of plastic waste bales in Europe.<sup>19,20</sup>

### Exciting growth potential

European plastic recycling has consistently outgrown the overall plastics market and has ample room for growth. According to recent figures, Europe processes approximately 50 megatonnes (Mt) of plastics per year with an annual growth rate of 2 percent between 2012 and 2016,<sup>14</sup> which is in line with economic growth.

Demand for recycled plastic grew significantly faster over the same period – by 17 percent.<sup>15</sup> There was an uptick from 2015 to 2016 in Europe due to Chinese import restrictions (see figure 4).

**Figure 4: European plastic demand, 2012-2020 (in megatonnes)<sup>16,17</sup>**



The increased supply of plastic waste was absorbed into the market due to favorable pricing and increased sorting and recycling capacity in Eastern Europe. Even excluding this effect, the growth rate was still a healthy 9 percent.<sup>18</sup>

Given the global transformation towards circular economies and lower carbon emissions, plastic recycling will increasingly replace virgin plastics production. Market participants consider recycled plastic to be the most important alternative to virgin plastics, as compared to other circular alternatives such as bioplastics. This view is supported by European legislation, which focuses strongly on litter reduction and thereby recycling, rather than bio-based or bio-degradable plastics. This paper focuses on mechanical recycling, as chemical recycling is not (yet) economically feasible on a large scale.

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# Obstacles to buying recycled plastic

Despite strong growth, penetration of recycled plastics is estimated at only 8 percent of the overall plastics market<sup>21</sup> – and forecast to reach 10 percent by 2020.

Three key obstacles are holding back a decisive breakthrough:



## 1. Recycled plastics are inferior to virgin plastics

KPMG professionals conducted extensive interviews with plastics converters reveal concerns over the quality and consistency of recycled plastics. Consequently, recycled plastics are often ‘downcycled’ towards lower-value applications, such as garbage bags and crates. However, this is not always the case, as referenced on page 11.



**“The quality must be sufficient for my end-customers. They want the same quality as from virgin.”**

– Converter (Representative)



**“For my B2B product it does not matter if there is a scratch or some traces of other materials in the plastic. However, for a smartphone case this is different.”**

– Converter (Product Manager)



**“We have done extensive testing and our products made of high-quality recyclate can be of the same quality as virgin-made products.”**

– Brand owner (Representative)



## 2. Virgin plastics remain price-competitive given relatively low oil prices

High virgin prices can incentivize plastic converters to switch to recycled plastics, but the current low oil price is not high enough to make a switch attractive.



## 3. Regulatory restrictions for food packaging

The European Food Safety Authority (EFSA) regulates the use of recycled plastics in food packaging, as chemicals can migrate from the packaging into food. There are three ways to use mechanically recycled plastics in contact with food: waste from the manufacturing site that has not been in contact with food; 'functional barriers' which is recycled plastics between layers of new plastics; and post-consumer recycled plastics from processes authorized by the EFSA in line with EU regulations.<sup>22</sup> Consequently, very few recycled plastics can be used in food packaging, although the EU plans to authorize over 100 new 'food safe' recycling processes that might increase usage.<sup>23</sup>

## Improving the sorting process

Certain plastics, when recycled, are of higher quality, notably Polyethylene Terephthalate (PET), which is used for most soft drinks. Recycled PET has (at least) price parity with virgin PET, so it is vital that collectors separate this waste from other forms of plastic, notably the polyolefin family, which includes High-density polyethylene (HDPE), Low-density polyethylene (LDPE) and Polypropylene (PP). Prices for recycled plastic such as HDPE and PP can be as much as 20-40 percent lower than their virgin versions.<sup>24</sup>

## Case study: Plastic recyclers searching for the right waste

Plastic recyclers tend to specialize in one or a limited number of plastic types such as HDPE, LDPE and PP, to name a few. Recyclers produce regranulates for industrial buyers, with whom they agree various quality standards around criteria such as density, melt-flow index and stability.

In order to guarantee product quality and quantity, plastic recyclers seek plastic waste bales with specific criteria. These often need to be sourced from various countries, which can be challenging due to the different collection schemes and sales methods for plastic waste. For example, Germany's competitive system, with several collection schemes and collecting companies, produces a relatively high proportion of contaminated waste. In Italy, on the other hand, Corepla has a monopoly and invests more in an efficient sorting process, reducing contamination levels.

## Understanding and analyzing the sourcing of waste, both quality and quantity, is key for investors or companies interested in the sector.

The quality of waste for these other plastic types can be improved by regulations that encourage better pre-sorting at households. Sorting standards in Europe change frequently and vary by country. Some regions have even switched to post-sorting of plastics from municipal solid waste. Another way to improve recycling is to produce packaging that easily decomposes, which allows better sorting and therefore better product quality. Many studies and other initiatives have focused on (regulation of) collection, sorting, and stimulating demand. However there are also a number of opportunities to make the actual recycling companies more efficient, effective and profitable.

# Inefficiency and lack of investment

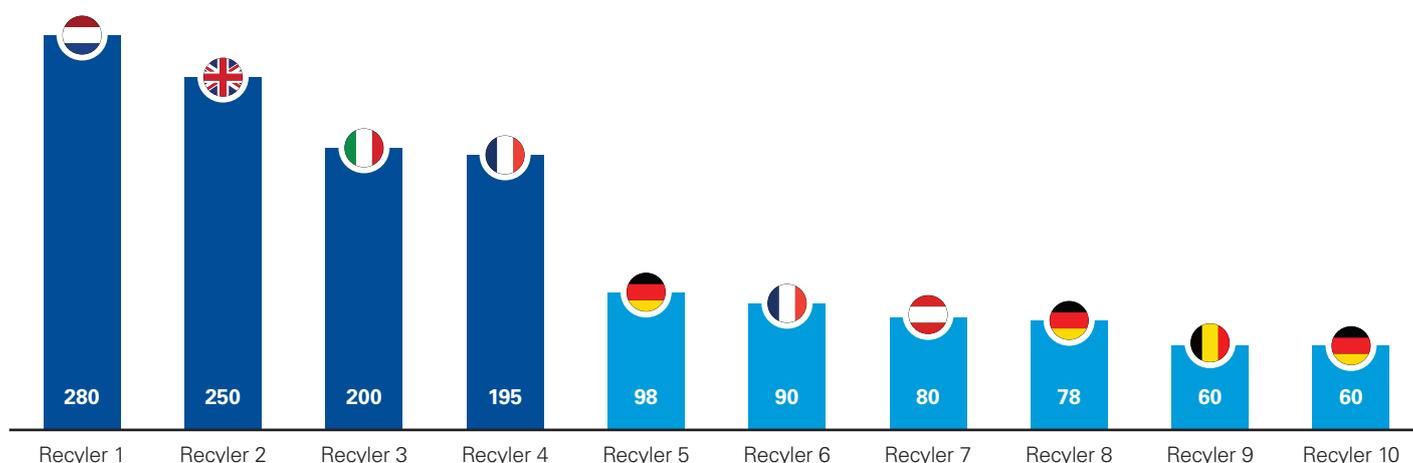
Recycling companies are at the heart of the plastic recycling value chain, but in an immature and fragmented sector, efficiency, quality and profitability all have room for improvement.

After plastic is collected and sorted by waste management companies, recycling companies convert waste bales into recycled plastics through a process of shredding, washing, further sorting and extrusion. The key challenge is to maximize the recycling yield (the ratio of recycled output to waste input) and quality (minimal contamination), while minimizing costs.

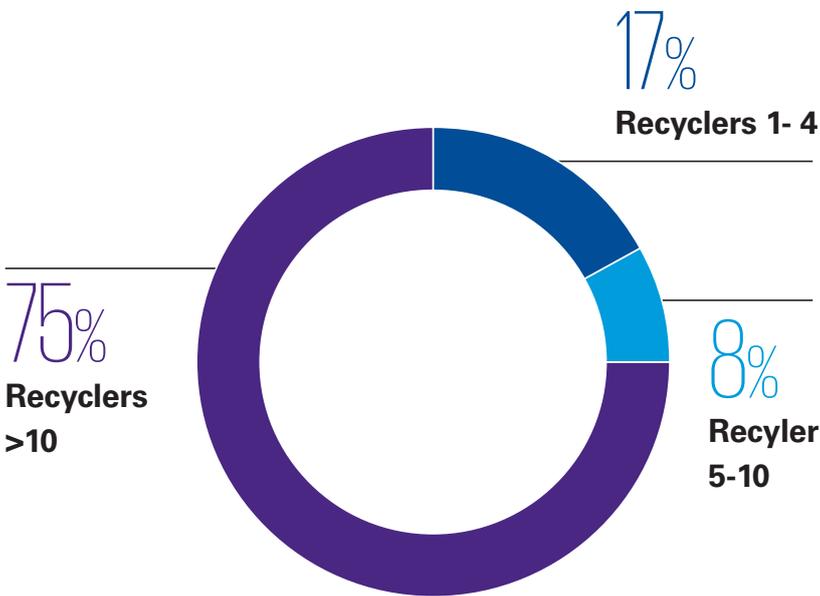
However, many plastic recycling companies have insufficient standardization, industrialization and operational excellence in their operations. This is largely due to the nature of the sector, which is characterized by small, entrepreneurial companies, with management teams that often have limited experience in the professional plastics industry.

There are approximately 1000 recycling companies across Europe<sup>25</sup> and the combined market share of the four largest is estimated at just 17%.<sup>26</sup> Even these players cannot match the resources of international petrochemical plastics manufacturers, which are primarily large, integrated multinationals. The high fragmentation also hinders the bargaining position with key suppliers (large waste management companies and plastic waste schemes) and key clients (large brand owners and plastics converters).

**Figure 5: Output capacity of European plastic recycling companies in 2018 (in kilotonnes)<sup>27</sup>**



**Figure 6: Market shares of recyclers in output capacity, 2018<sup>28</sup>**



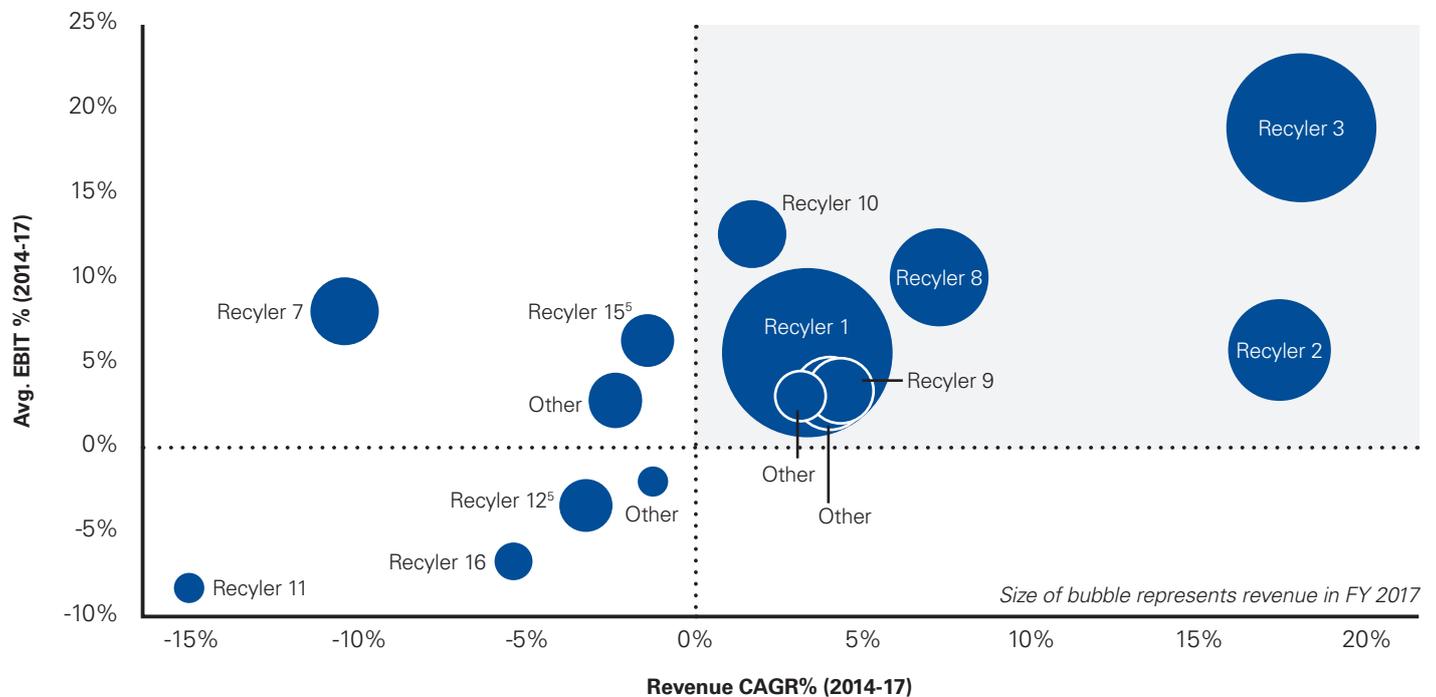
**Note:** Total capacity based on an estimated market volume of 4.7Mt in 2018 (see figure 4) and a KPMG estimated utilisation rate of 85% based on market feedback

**Sources:** Company websites, interview program, Plastic Recyclers Europe, CapitalIQ, KPMG analysis

As a result, industry profitability is relatively low, with average earnings before interest, tax, depreciation and amortization (EBITDA) of approximately 5 percent between 2012-2017.

Modest profitability offers recycling companies little room to adapt to volatile virgin plastic prices. But more importantly, it limits the ability to invest in better recycling techniques that could reduce the current high costs and make much-needed quality improvements. This in turn impacts recycled plastics' penetration and profitability; a vicious circle which cannot be broken by simply raising output prices, as quality is insufficient and/or virgin plastics are too cheap.

**Figure 7: Financial performance of selected key competitors<sup>1,2</sup>, 2014-2017**



**Notes:** (1) Only key players are compared due to availability of data; (2) Player 4 excluded due to lack of available data; (3) Revenue CAGR and EBIT average for 2015-17; (4) Revenue CAGR and EBIT average for 2014-16; (5) Revenue growth and EBIT average for 2016-17.

# A breakthrough with consolidation

Investing in industrialization and consolidation can increase efficiency, profitability and quality.

The current state of the recycling industry, highly fragmented with ample room for improvement, offers a unique investment opportunity to industrialize and consolidate.

Standardization, professionalization and investment in the latest technologies can help increase efficiency to increase yield, product quality and revenues. Furthermore, larger factories – through consolidation – would result in economies of scale. Enhanced scale should also strengthen recyclers' negotiating position for buying waste input and selling recycled output, which would improve margins. Bigger companies also bring more power to the debate on plastics recycling with governments and the EU. Additionally, there should be more funds available to invest in technology that improves quality, which in turn can boost price and demand for recycled plastics.

The success of Dutch plastic recycling company QCP, owned by SUEZ, LyondellBassell and a local private equity fund, is evidence that investments in technology and scale brings rewards. With its advanced factory, QCP produces recycled HDPE and PP of very high quality, which is sold for high-end applications at corresponding rates (rather than 'downcycling'). Larger plastic recycling companies tend to enjoy higher profitability than smaller ones (see figure 7), thanks to various benefits shown in figure 10.

However, as the industry emerged from small-scale companies with limited access to capital, few players have the means to invest and consolidate. This gives investors the chance to realize the sector's potential by employing a buy-and-build strategy: combining input volumes from several recyclers and processing them in an (new) efficient factories with the latest technology.



**Figure 10: The benefits of scale and investments in plastic recycling<sup>30,31</sup>**

Process step	Procurement of plastic waste	Shredding	Washing	Further sorting	Extrusion	Sales of recycled plastic
<b>Description</b>	Buying sorted (by plastic type and/or colour) plastic waste bales, mostly from waste management companies.	Shredding the plastic into small pieces.	Washing off labels and other impurities with lye, through sink-float machines or centrifuges.	Filtering out waste and unwanted plastic types and colors.	Melting and pressing through an extruder.	Selling recycled granulates to plastic converters.
<b>Benefits of increased scale/ investments</b>	Enhanced negotiating power results in lower cost per ton.	Larger shredders result in lower processing costs per ton.	Investments in the best washing techniques (centrifuges, hot wash) removes more waste and improves output quality.	More advanced and automated processes such as the use of (multiple) (flake) near-infrared will increase purity (color and type of plastic type), which strongly increases output quality and therefore sales prices.	Larger extruders result in lower processing costs per ton.	Enhanced negotiating power results in a higher price per ton.
Lower water and energy bills Processing costs can be reduced through automation of logistics between the recycling steps, which is still manual in many recycling factories						

This market solution is not without its challenges, but these can be overcome. Contracts are needed in order to secure input and sales, but there is a free market for both waste and recycled output. Also, synergies can, and should, be questioned for each business case. Finally, a large upfront investment is required to build a new factory and/or acquire companies.

There are other possible scenarios. Output quality and prices might only be increased through a separate collection system like PET. Separate collection results in the purest sourcing and output stream.

However, advanced and automated recycling techniques can go a long way to increase the quality levels of plastics which are not separately collected. Even the largest players must accept that government policies are uncertain, can take many years and vary by country. Regardless, every nation needs recycling companies to reach recycling targets, and the more efficient and advanced companies will benefit the most.

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# Seize the investment opportunity

A number of large players from adjacent industries have woken to the opportunities in the recycling sector, as evidenced by the M&A overview in figure 11.

These acquisitions are primarily focused on realizing strategic synergies. However, there is also a unique opportunity for private equity (PE) investors to consolidate and/or employ a buy-and-build strategy. Several PE players have already expressed interest, with some actually competing in M&A processes with strategic investors. PE investors must buy, consolidate and industrialize now. After that, strategic investors will be willing to pay a high(er) price, implying an attractive exit price for PE.

**Figure 11: Major M&A activity in recycling**

Year	Target	Target location	Acquirer	Acquirer location	Deal description/Acquirer strategic rationale
2019	Kruschitz Gesellschaft	Austria	Steinbeis	Austria	Horizontal diversification of plastic division <sup>32</sup>
2019	Societa Europea Rigenerazione	Italy	Sirmax	Italy	Horizontal diversification of plastic division <sup>33</sup>
2018	Manuli Stretch	Italy	Oxy Capital	Portugal	Turnaround strategy <sup>34</sup>
2018	Ecoplast Kunststoff Recycling	Austria	Borealis	Austria	Horizontal diversification, part of circular strategy <sup>35</sup>
2018	Plastic Recycling Zeitz	Germany	Remondis SE & Co	Germany	Geographical expansion <sup>36</sup>
2018	Waste Paper Trade C.V.	Netherlands	Cycle Link International	China	Support transition from purchasing to trading organisation <sup>37</sup>
2018	Lohner Kunststoffrecycling	Germany	Remondis SE	Germany	Horizontal diversification of plastic division <sup>38</sup>
2018	MultiPet	Germany	Veolia Umweltservice	Germany	Complement existing business <sup>39</sup>
2018	WIPAG	Germany	Albis	Germany	Horizontal diversification <sup>40</sup>
2017	QCP	Netherlands	LyondellBasell / SUEZ	Netherlands	Horizontal diversification / vertical integration <sup>41</sup>
2017	Van Scherpenzeel	Netherlands	Veolia Environnement	France	Further investment in waste chain <sup>42</sup>
2017	Abakus Serve	Germany	Undisclosed	Germany	N/A <sup>43</sup>
2017	MBA Polymers	China, Austria, UK	Elephant Equity	Germany	Buy-and-build <sup>44</sup>
2017	KWP Recycling	Austria	Schonmackers Umweltdienste	Germany	Continue development in the long term <sup>45</sup>
2017	Morssinkhof Rymoplast	Netherlands	Ikea	Netherlands	Vertical integration (minority stake) <sup>46</sup>
2016	MTM plastics	Germany	Borealis	Austria	Horizontal diversification <sup>47</sup>
2015	AKG Kunststof Groep	Netherlands	Veolia Environment	France	Expansion of recycling capabilities <sup>48</sup>
2014	Neo Eco Recycling	France	Baudelet Littoral	France	Expand offering (from collection to recycling) in the recycling space <sup>49</sup>
2014	Houweling-Recycling Activities	Netherlands	SITA Nederland Holding	Netherlands	Expansion of recycling capabilities <sup>50</sup>
2013	Prodhag Plastiques	France	Paprec Group	France	Geographical expansion <sup>51</sup>
2012	Express Recycling & Plastics	UK	Regain Polymers	UK	Expansion of recycling capabilities and geographical expansion <sup>52</sup>

**Note:** For transactions before 2017, only the largest have been selected.

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# Authors

**Tom Hesselink**

**Director**

**Global Strategy Group**

KPMG in the Netherlands

T: +31 20 656 7 856

E: hesselink.tom@kpmg.nl

**Emiel van Duuren**

**Manager**

**Global Strategy Group**

KPMG in the Netherlands

T: +31 20 656 4 420

E: vanduuren.emiel@kpmg.nl

# Contact Ireland

**Christopher Brown**

**Director**

**Global Strategy Group**

KPMG in Ireland

T: +353 1 700 4453

E: christopher.brown@kpmg.ie



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