



Brussels, 4.3.2019  
SWD(2019) 92 final

**COMMISSION STAFF WORKING DOCUMENT**

**Assessment report of the voluntary pledges under Annex III of the European Strategy  
for Plastics in a Circular Economy**

{SWD(2019) 91 final}

## GLOSSARY OF ACRONYMS

### Plastic materials

|                  |                                 |
|------------------|---------------------------------|
| PET              | Polyethylene terephthalate      |
| PVC              | Polyvinyl chloride              |
| POs              | Polyolefins                     |
| <i>Including</i> |                                 |
| <i>PE</i>        | <i>Polyethylene</i>             |
| <i>PP</i>        | <i>Polypropylene</i>            |
| EPS              | Expanded polystyrene            |
| PS               | Polystyrene                     |
| ABS              | Acrylonitrile butadiene styrene |
| PUR              | Polyurethane                    |

### Organisations

|                |                                                   |
|----------------|---------------------------------------------------|
| EuPC           | European Plastics Converters                      |
| PRE            | Plastics Recyclers Europe                         |
| Petcore Europe | PET Container Recycling Europe                    |
| Vinylplus      | Voluntary Commitment of the European PVC industry |
| PCEP           | Polyolefins Circular Economy Platform             |
| EUMEPS         | European Manufacturers of Expanded Polystyrene    |
| SCS            | Styrenics Circular Solutions                      |

## 1. INTRODUCTION

Improving the quality and economics of plastics recycling is a core objective of the European Strategy for Plastics in a Circular Economy<sup>1</sup>. The Strategy announces a series of actions to achieve this objective, from improving product design to boosting recycled content in products to improving separate collection of plastic waste.

A key action of the European Strategy for Plastics is to call for voluntary pledges to use more recycled plastic materials in Europe by 2025. In Annex III of the Strategy, the European Commission called on industry to submit voluntary pledges in order to ensure that by 2025 10 million tonnes of recycled plastics find their way into products on the EU market.

By end 2018, 70 pledges have been submitted to the European Commission by companies and business organisations, including business organisations that represent the full supply chains for the major plastic materials currently recycled in Europe, namely POs, PET, PVC and EPS.

This report recaps the context of the European market for plastics to date (section 2). It describes the pledges received (section 3.1) and assesses to which extent the commitments by the pledgers contribute to achieve the 10 million tonnes target (section 3.2). It also provides an analysis of the conditions expressed by the pledgers to fully deliver their pledges by 2025 (section 4) and considers conclusions and next steps (section 5).

## 2. THE EUROPEAN MARKET FOR PLASTICS

The demand for plastics was 49.9 million tonnes in Europe in 2016 (Figure 1)<sup>2</sup>. Plastic waste collected in Europe in 2016 was 27.1 million tonnes (Figure 2).

The demand corresponds to all plastic materials used in one year to make products, but not all of this becomes plastic waste during the same year.

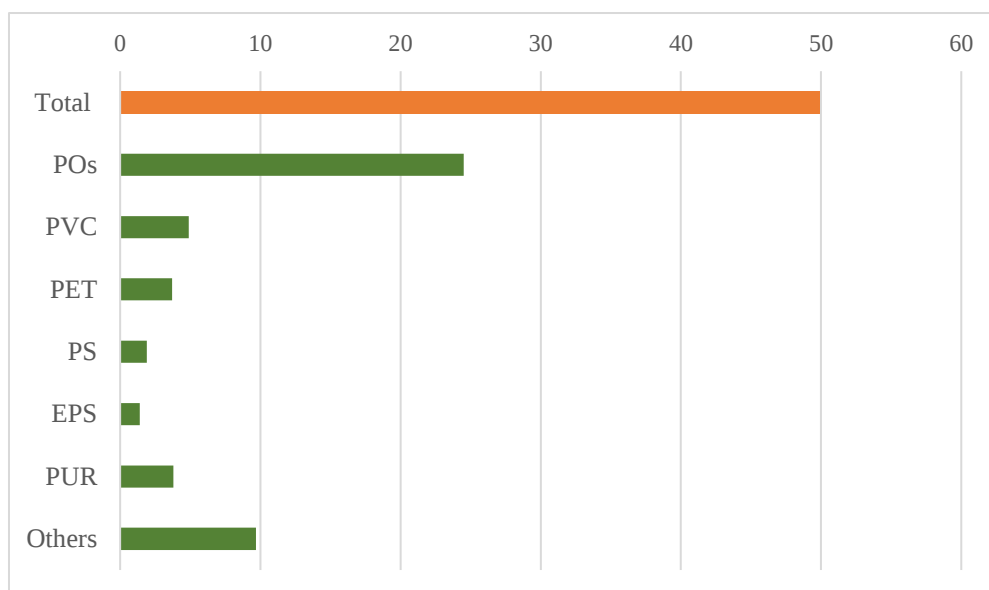
Plastic packaging, which has a shorter lifetime (a few days to a few weeks), quickly becomes waste and accounts for a large share of plastic waste in the EU (Figure 3). But many plastic articles have a longer lifetime, more than 1 year (e.g. construction materials, automotive parts, household appliances etc.). This plastic waste becomes available only after several years, and for various reasons, is often more difficult to recycle<sup>3</sup>.

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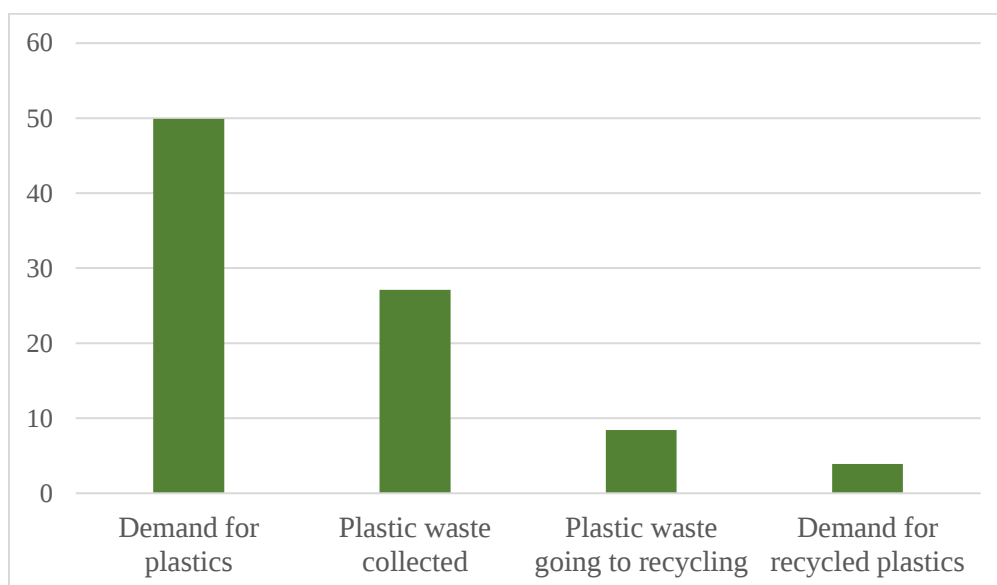
<sup>1</sup> COM (2018) 028 of 16 January 2018

<sup>2</sup> Source : Plastics Europe, total demand from plastic converters in the EU28 plus Norway and Switzerland

<sup>3</sup> For example, recycled plastics may not always comply with safety requirements for certain automotive parts; construction and demolition waste is usually heterogeneous (e.g. mixing plastic and other materials) and may not be easily separated into homogeneous fractions; old electronic and electrical plastic waste may contain flame-retardants that are now forbidden in the EU etc.

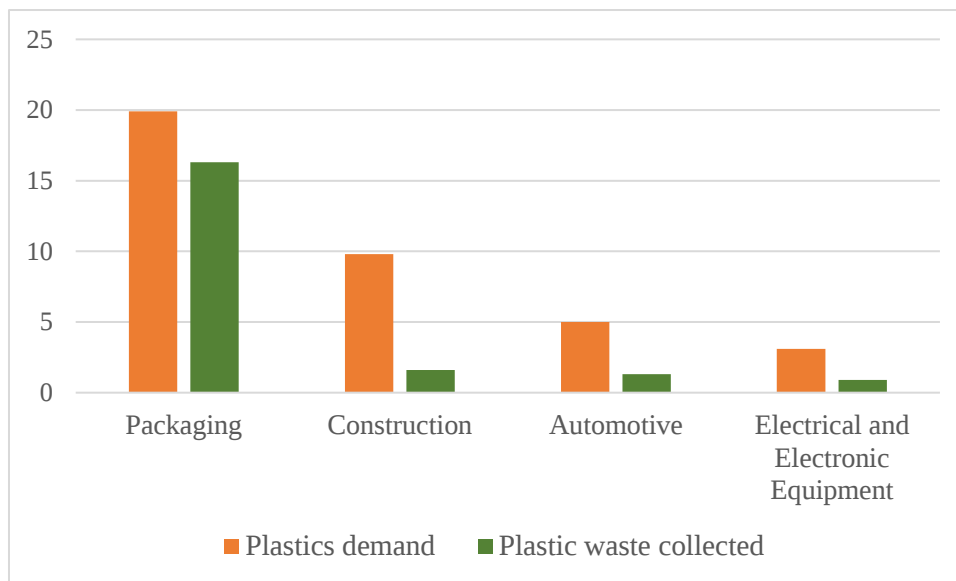


*Figure 1: Demand for plastics in Europe, 2016, million tonnes (source: Plastics Europe)*



*Figure 2: From plastics demand to recycled plastics demand, 2016, million tonnes<sup>4</sup>*

<sup>4</sup> Source: Plastics Europe. The demand for recycled plastics in 2016 (3.9 million tonnes) is mainly estimated from figures provided by pledgers for POs, PET, PVC and EPS. It is broadly consistent with other estimates (Conversio 2017). The underlying methodology may differ for different plastic materials, depending in particular on whether recycled materials from post-industrial waste are included. Consistent monitoring of the demand for recycled plastics in the EU is one key objective of the Circular Plastics Alliance (see section 5 of this report).



*Figure 3: Plastics demand vs. plastic waste collected in the four main economic sectors using plastics, 2016, million tonnes (source: Plastics Europe, Eurostat)*

Out of the 27.1 million tonnes of plastic waste collected in Europe in 2016, 31.1% went to recycling facilities, that is 8.4 million tonnes. The rest went to incinerators or landfills.

Out of the 8.4 million tonnes of plastic waste sent to recycling facilities, 5.3 million tonnes (63%) were sent to recycling facilities inside the EU, allowing European recyclers to sell approx. 3.9 million tonnes of recycled plastic materials to plastic converters and other customers on the EU market.

The demand for recycled plastic materials in 2016 thus accounted for 7.8% of the total demand for plastics.

Four main categories of recycled plastic materials were demanded in 2016 in Europe (Figure 4), namely polyolefins (POs), including polyethylene (PE) and polypropylene (PP); polyethylene terephthalate (PET); polyvinyl chloride (PVC); and expanded polystyrene (EPS).

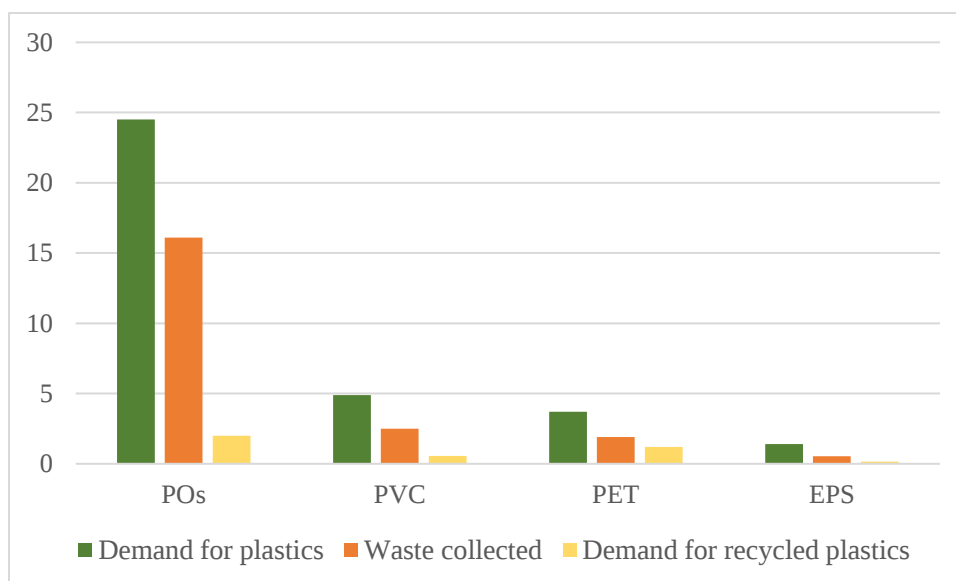


Figure 4: Demand for POs, PVC, PET and EPS, 2016, million tonnes<sup>5</sup>

The four categories of plastic materials shown in Figure 4 account together for 21 million tonnes of plastic waste collected, that is 77% of the total. A significant share of plastic waste is not recyclable in a cost-effective manner with the current technology, and sent to landfills or incinerators (disposal or energy recovery)<sup>6</sup>.

It is against this background about the EU market for plastics and recycled plastics that the pledges submitted by stakeholders have been analysed.

### 3. THE PLEDGES SUBMITTED

Companies and business organisations submitted 70 pledges to the European Commission under Annex III of the European Strategy for Plastics in a Circular Economy.

#### 3.1 Description of Pledges and Pledgers

##### 3.1.1 Recycled Plastic Materials Covered By the Pledges

The pledges received mostly cover the four main categories of plastic materials which are currently recycled in Europe, namely POs (including PE and PP), PET, PVC and EPS (in decreasing order of yearly volumes sold on the EU market).

<sup>5</sup> Source: Plastics Europe. The demand for recycled plastics in 2016 (3.9 million tonnes) is mainly estimated from figures provided by pledgers for POs, PET, PVC and EPS. It is broadly consistent with other estimates (Conversio 2017). The underlying methodology may differ for different plastic materials, depending in particular on whether recycled materials from post-industrial waste are included. Consistent monitoring of the demand for recycled plastics in the EU is one key objective of the Circular Plastics Alliance (see section 5 of this report).

<sup>6</sup> 8 Member States ban the landfilling of plastic waste, namely Austria, Belgium, Germany, Denmark, Finland, Luxembourg, the Netherlands and Sweden. In these countries, plastic waste that is not recycled is incinerated.

A few pledges have been submitted for other plastic materials, including PS and ABS.

### **3.1.2 Profile of Pledgers**

The Annex I provides a list of those pledgers who agreed that their names could be disclosed.

Pledgers include five organisations representing full plastics value chains, namely

- Vinylplus (PVC);
- Petcore Europe (PET);
- PCEP (POs);
- EUMEPS (EPS); and
- SCS (PS).

These ‘platforms’ represent the full supply chain for one or several plastic materials, including recyclers, producers of plastic materials, plastics converters, manufacturers of plastic parts or articles, brand owners etc.

Other pledgers can be mainly distinguished between

- Suppliers of recycled plastic materials, that is recyclers and producers of plastic materials, represented by organisations like Plastics Recyclers Europe (PRE) and the European Recovered Fuel Organisation (ERFO) as well as individual companies like Borealis, Indorama, Neste, Zeme, Lassila & Tikanoja, Aliplast, Plastix, Fischer, Kaneka Belgium, Dow Chemical and Repsol<sup>7</sup>; and
- Buyers of recycled plastic materials, including plastics converters with organisations such as PET Sheet Europe, EDANA and APE Europe, and manufacturers and brand owners (most other names in the list in the Annex I).

Pledgers also include

- Waste collectors (Hera Spa and LIPOR);
- Retailers (COOP Italia and the Swedish Food Retailers); and
- Other business organisations (Dansk Industri and Agoria).

## **3.2 Content and volume of the pledges**

The pledges are assessed collectively and the data presented is aggregated. This allows to protect the confidential data submitted by pledgers.

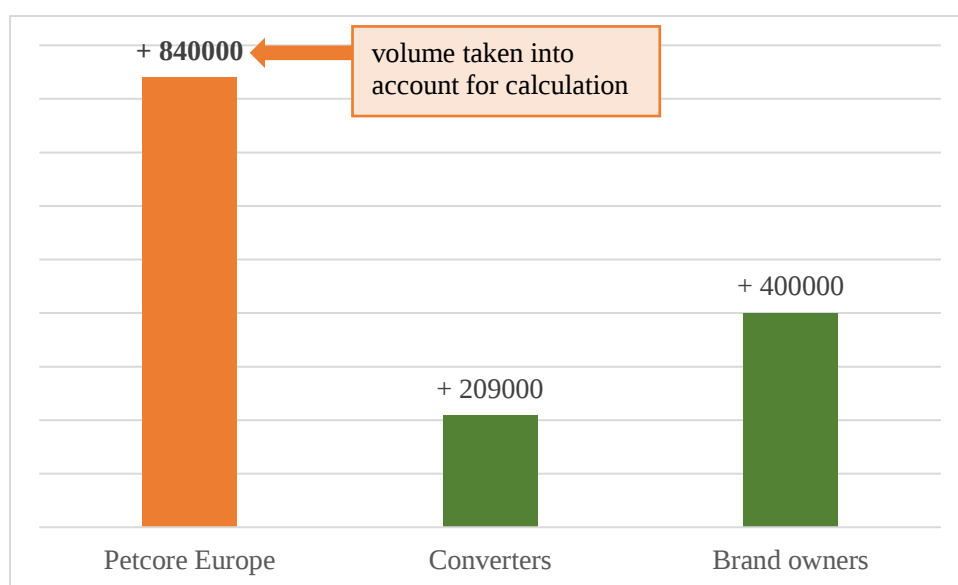
More than 50 pledges are expressed in tonnages of recycled plastic materials sold on the EU market or purchased and used in products in the EU by 2025. Many others are expressed as a percentage of recycled content in products. The rest includes actions to increase the uptake of recycled plastic materials in the EU, in particular commitments to only work with fully recyclable products by 2025 or to invest in new technology such as chemical recycling.

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<sup>7</sup> These suppliers of recycled plastic materials agreed their name to be published.

The assessment of the total volume of recycled plastic materials pledged by 2025 is exclusively based on the pledges expressed in tonnages, as communicated by the pledgers themselves. No interpretation or estimation has been done from the figures submitted by the pledgers.

Any potential overlap between the pledges has been neutralised, to avoid possible double counting, for example not to count twice the pledge by an individual company on the one hand and by its representative business organisation on the other hand, or the pledge by the supplier on the one hand and the pledge by its customer on the other hand. In the case of recycled PET for example (Figure 5), the pledges submitted by converters, brand owners and the Petcore Europe platform were not summed up. In this case, the amount retained is the pledge by the platform which represents the full supply chain, thus minimising possible double counting and providing more exhaustive figures. It is worth noting that the potential overlaps between the pledges submitted by brand owners on the one hand and plastics converters on the other hand are actually quite limited in the case of recycled PET.



*Figure 5: main volumes pledged for recycled PET, in tonnes*

Based on this approach, the quantitative assessment of the volumes of the pledges is that:

- 1) Suppliers of recycled plastic materials pledge to sell at least 11 million tonnes of recycled plastics on the EU market by 2025; and
- 2) Buyers of recycled plastic materials (such as plastics converters and manufacturers, i.e. the ‘demand side’) pledge to purchase and incorporate in products more than 6.4 million tonnes of recycled plastics in the EU by 2025.

Platforms like Vinylplus, PCEP and Petcore Europe represent the full supply chain for one or several plastic materials. These platforms report tonnages of recycled plastic materials that are pledged to be used by the value chain to make new products by 2025, hence they are considered to belong to the demand side for the above assessment.

The volumes pledged by buyers of recycled plastics (the ‘demand side’) show an increase compared to the 3.9 million tonnes of recycled plastics incorporated in products in 2016 (Figure 6), leading to an overall increase of over 60% in the EU market for recycled plastic materials in 2025 compared to 2016.

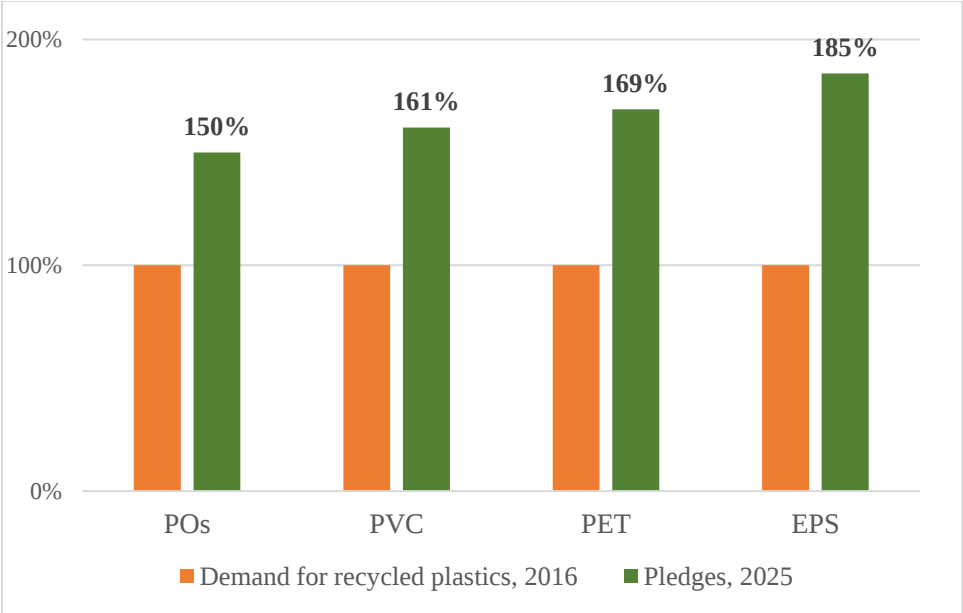


Figure 6: Pledges from the demand side vs. 2016 demand for recycled plastics

However, the pledges from the demand side are still below the target of 10 million tonnes. The pledges by the suppliers of recycled plastic materials, if fully delivered, would lead to a sharper increase in the EU market, and, if fully absorbed by plastic products sold in Europe, even exceeding the 10 million tonnes target by 2025 (Figure 7).

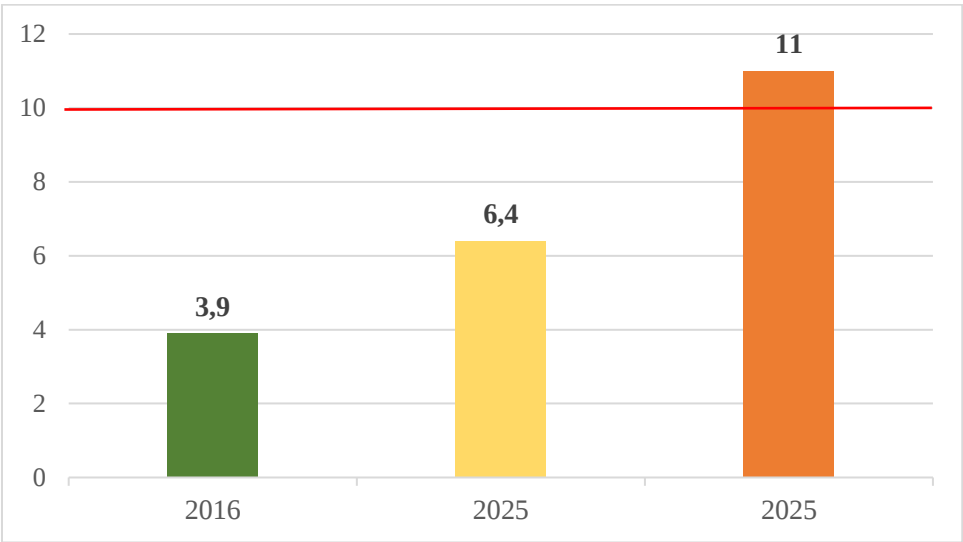


Figure 7: demand for recycled plastics in 2016 (in green) vs. pledges from the demand side (in yellow) and pledges from the supply side (in orange), in million tonnes

#### **4. CONDITIONS TO DELIVER THE PLEDGES**

This report analyses the conditions expressed by pledgers as pre-requisites to fully deliver their pledges by 2025. Conditions thus differ from ‘statements’ or ‘positions’ which are measures that pledgers deem useful to improve plastics recycling in Europe in general but not specifically required to allow the delivery of their individual pledge.

This report summarises the conditions most frequently expressed by pledgers. Conditions expressed by a small number of pledgers (one or two) are not taken into account below as they are too specific.

The conditions expressed by pledgers are fully consistent with the analyses, objectives and actions included in the European Strategy for Plastics in a Circular Economy<sup>8</sup>.

##### **4.1 Market conditions**

The condition most frequently expressed by pledgers from the demand side (e.g. plastics converters and brand owners) is market conditions. Many pledgers commit to use a certain volume of recycled plastic materials by 2025 provided the recycled plastics are available on the EU market in sufficient quantity and suitable quality, at competitive prices. Several brand owners indicate that their pledge could even dramatically increase if new recycled plastics become available (e.g. new colours, food grade recycled polyolefins) or if there is market acceptance for new standards (e.g. different colours and aesthetics) - without compromising hygiene and (food) safety.

The availability of recycled PET is particularly stressed by the PET supply chain. Recycling capacities of PET are currently not fully exploited, due to insufficient availability of sorted PET waste. Some pledgers thus indicated that any shortage in the supply of recycled PET or sudden price increase could negatively affect the delivery of their pledge.

##### **4.2 Greater collection and sorting of plastic waste**

To supply recycled plastics to the EU market in sufficient quantity and quality, recyclers and plastics producers require a sufficient feedstock, hence a sufficient amount of plastic waste collected for recycling. This is a condition very frequently expressed by pledgers from both the supply and demand side.

This entails both more plastic collected and better quality of sorted plastic waste.

###### **4.2.1 *More Plastic Waste Collected***

Many pledgers from both the supply and demand sides request increased collection of plastic waste, in particular separate collection of plastic packaging waste to feed mechanical recycling plants. Chemical recycling is frequently mentioned by pledgers as an upcoming game changer to deal with mixed and contaminated plastic waste, but very few pledgers have

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<sup>8</sup> COM (2018) 028

integrated chemically recycled plastics in their pledged volumes by 2025 as the technology is only emerging. These pledgers however underline the need for more plastic waste to feed chemical recycling facilities in the future – in particular plastic waste which is currently not recyclable and sent to landfills or incinerators. Education and awareness campaigns on plastic waste littering and proper disposal are also mentioned by a few pledgers as necessary to improve the collection of plastic waste.

#### **4.2.2 *Better quality of plastic waste***

To deliver the predictable quality of recyclates required by their customers, recyclers and plastics producers call for predictable quality of plastic waste. There is a consensus among many pledgers that more harmonised practices and standards for the collection and sorting of plastic waste across the EU are necessary to effectively secure the full delivery of the pledges. Better information on the chemicals and contaminants in plastic waste and easier shipment of plastic waste across borders are also frequently mentioned in this context.

### **4.3 Recyclable plastic materials and products**

To secure a stable feedstock of quality plastic waste, many pledgers require that more plastic materials and articles are genuinely designed for recycling and that they are designed in a way which makes recycling easy, cost-effective and predictable in terms of the quality of the output. PET bottles are mentioned by several pledgers as a best practice. The design issue is very frequently raised by pledgers dealing with plastic packaging. Many manufacturers or brand owners consider that design for recycling is a must, but several also warn that fragmented or diverging requirements at national or local level could put the delivery of their pledge into question.

### **4.4 Other conditions**

Although this is not expressed as a pre-requisite to deliver their pledges, many pledgers indicate that their pledge could significantly increase if technology develops. A significant number of pledgers mention chemical recycling as a game changer that is expected to be demonstrated and piloted at industrial scale in the near future. In this context, several pledgers stress the need for support programmes for close-to-market R&D on sorting, pre-treatment and recycling technology.

A significant number of pledgers also indicate that they could exceed their pledge if incentives to plastics recycling and recycled plastics would be introduced. There are however no common views on what the incentives should be (e.g. incentives to recycled plastic materials vs. products made of recycled plastics vs. investments in new plants and facilities; financial incentives vs. public procurement).

Finally, there are recurring calls by pledgers for common standards across Europe, such as definition of recyclability and recycling, certification of recycling plants, standards on collection and sorted plastic waste, and other methodological issues. Although these are not

pre-conditions to deliver the pledges, these are perceived as key enabling conditions to ensure the 10 million tonnes target can be reached on the EU market by 2025.

## **5. CONCLUSION, WAY FORWARD AND THE CIRCULAR PLASTICS ALLIANCE**

With 70 pledges received from industry, the pledging campaign under the European Strategy for Plastics in a Circular Economy gathered a true momentum in plastics value chains in favour of more recycling.

Pledges received from suppliers of recycled plastics, if delivered as expected, are sufficient to meet the target of 10 million tonnes of recycled plastics finding their way into new products on the EU market by 2025.

However, buyers of recycled plastics (such as plastics converters and brand owners, i.e. “the demand side”) pledge to use in their products approximately 6.4 million tonnes of recycled plastics in the EU by 2025. Based on this conservative assessment of the pledges submitted to the European Commission, the EU market for recycled plastic materials is expected to increase by over 60% by 2025<sup>9</sup>.

There is still a mismatch between the pledges from the supply and the demand sides. More needs to be done to ensure that the volume of the pledges from the demand side further increases so that the supply and demand for recycled plastics meet at 10 million tonnes on the EU market by 2025. To bridge the gap, further dialogue is necessary between the suppliers of recycled plastics and their customers.

There is an emerging consensus among pledgers that the key enabling conditions to deliver the pledges by 2025 are mainly better collection and sorting of plastic waste and greater recyclability of plastic materials and products.

The conditions expressed by the pledgers are consistent with the analyses, objectives and actions of the European Strategy for Plastics in a Circular Economy, which aim to improve product design, boost recycled content in products and improve separate collection of plastics. A number of actions are underway. For example, the revised Directive on Waste<sup>10</sup> foresees new separate collection obligations and improved producer responsibility systems. The amended Packaging and Packaging Waste Directive<sup>11</sup> introduces targets for the recycling of plastic packaging of 50% by 2025 and 55% by 2030. The agreement by co-legislators on the Directive on single use plastic items<sup>12</sup> provides that PET beverage bottles shall contain 25% recycled PET on average in each Member State by 2025 and 30% by 2030. It also sets the target to collect separately 77% of single use plastic beverage bottles by 2025 and 90% by 2029. The future revision of the Packaging and Packaging Waste Directive, the development of standards on the quality of sorted plastic waste and recycled plastics, support to R&D in new sorting and recycling technology, guidelines on separate collection and sorting of waste

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<sup>9</sup> From 3.9 million tonnes in 2016 up to at least 6.4 in 2025.

<sup>10</sup> OJ L 150, 14.6.2018, p. 109

<sup>11</sup> OJ L 150, 14.6.2018, p. 141

<sup>12</sup> Directive on the reduction of the impact of certain plastic products on the environment

or the development of criteria on recyclability and recycled content for Green Public Procurement and Ecolabel are additional examples of measures meant to support industry's efforts to use more recycled plastics.

As underlined by many pledgers, voluntary actions to address the identified conditions will not be effective if taken by individual actors in the value chain and not coordinated. For example, improving the recyclability of plastic products requires that at least recyclers, converters and manufacturers agree on design guidelines and standards.

In this context, to promote the necessary dialogue and cooperation within the plastics value chains, the European Commission announced the launch of a Circular Plastics Alliance on 11 December 2018<sup>13</sup>.

With this Alliance, the European Commission wants to provide plastics value chains with a space to collectively define the key voluntary actions to be taken in the short term and step up ambitions.

The Alliance's ultimate objective is to improve the quality and economics of plastics recycling in Europe and ensure the 10 million tonnes target is reached by 2025. The Alliance aims to strengthen the match between the supply and demand for recycled plastics. The Alliance will encourage further voluntary actions and investments in the short term. It will report on the possible obstacles hampering the industry's efforts to fully deliver their pledges and progress towards greater uptake of recycled plastics in Europe. Agreeing on a common system to monitor the use of recycled plastics in Europe is also essential to provide comparable and reliable data on the progress made towards the 10 million tonnes target<sup>14</sup>.

The Commission will later report on the progress made towards the 2025 target of 10 million tonnes of recycled plastics finding their way into products on the EU market.

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<sup>13</sup> [http://europa.eu/rapid/press-release\\_IP-18-6728\\_en.htm](http://europa.eu/rapid/press-release_IP-18-6728_en.htm)

<sup>14</sup> Some stakeholders such as the European Plastics Converters (EuPC) pledged to set up a reliable monitoring system to track the volumes of recycled plastic materials by plastics type and by country.

## ANNEX I – PUBLISHED LIST OF PLEDGERS

66 out of 70 pledgers agreed their names to be published.

|                                                     |                                                |                                                                 |
|-----------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------|
| Agoria                                              | Fischer Gmbh                                   | PET Sheet Europe                                                |
| Alfred Kärcher SE & Co. KG                          | Henkel                                         | Philips                                                         |
| Aliplast                                            | Hera Spa                                       | Plastics Recyclers Europe                                       |
| APE Europe                                          | HP                                             | Plastix AS                                                      |
| Barilla                                             | Iberostar Group                                | POLYOLEFIN Circular Economy Platform (PCEP)                     |
| Borealis                                            | IKEA                                           | REPSOL                                                          |
| Coca-Cola                                           | Indorama                                       | SP Group A/S                                                    |
| Confederation of Danish Industries (Dansk Industri) | Kaneka Belgium NV                              | Styrenics Circular Solutions (SCS)                              |
| CONTENUR                                            | Kaufland                                       | The Swedish Food Retailers' Federation (Svensk Dagligvaruhande) |
| COOP Italia                                         | KENOGARD S.A.                                  | Technology industries of Finland                                |
| Danish Brewers Association                          | Klöckner Pentaplast                            | Tetra Pak                                                       |
| Danone                                              | Lassila & Tikanoja plc.                        | Thrace Plastics Co SA (Thrace Group)                            |
| Dell                                                | Lexmark                                        | UNESDA                                                          |
| Dow                                                 | LIDL                                           | Unilever                                                        |
| Eceplast                                            | LIPOR (Intermunicipal Waste Management, Porto) | VH Plastics                                                     |
| EcoSynergy System                                   | L'Oréal                                        | Vinylplus                                                       |
| EDANA                                               | MACPAC SA                                      | Vosläuer Mineralwasser GmbH                                     |
| Electrolux                                          | Mayansi Circular Plastics SL                   | Werner und Mertz                                                |
| European Recovered Fuel Organisation (ERFO)         | Neste Corporation                              | WHIRLPOOL                                                       |
| European Manufacturers of EPS (EUMEPS)              | Nestlé                                         | ZEME Eco fuels & Alloys Limited                                 |
| European Federation of Bottled Waters (EFBW)        | Next Generation Recyclingmaschinen GmbH        |                                                                 |
| European Plastics Converters (EuPC)                 | P&G                                            |                                                                 |
|                                                     | PepsiCo                                        |                                                                 |
|                                                     | Petcore Europe                                 |                                                                 |

ANNEX II – MAIN EU LEGAL ACTS THAT FACILITATE RECYCLING AND THE UPTAKE OF RECYCLED PLASTIC MATERIALS

- Proposal for a Directive of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment, COM/2018/340 final - 2018/0172 (COD)
- Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste
- Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste
- Regulation (EU) No 660/2014 of the European Parliament and of the Council of 15 May 2014 amending Regulation (EC) No 1013/2006 on shipments of waste
- Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC
- Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products
- Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles
- Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC
- Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel
- Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC
- Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC
- Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)