



# THE EUROPEAN FILES

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## PLASTIC STRATEGY IN EUROPE:

THE TRANSITION TO A  
CIRCULAR ECONOMY



# A EUROPEAN STRATEGY FOR PLASTICS IN A CIRCULAR ECONOMY



*"I want to make our industry stronger and more competitive. The new Industrial Policy Strategy will help our industries stay or become the world leader in innovation, digitisation and decarbonisation."*

European Commission President Juncker, State of the Union Address, 13 September 2017

## A STRONG AND SUSTAINABLE EUROPEAN PLASTICS INDUSTRY

The plastics industry is very important to the European economy, and increasing its sustainability can bring new opportunities for innovation, competitiveness and job creation. But the way plastics are currently produced, used and discarded fails to capture the economic benefits of a more 'circular' approach and harms the environment. The Commission is taking action to modernise the plastics economy in Europe.

## THE EUROPEAN PLASTICS INDUSTRY



Almost **1.5 million** people employed



Annual turnover of **€350 billion**



**18%** of global plastic production each year

### Action SMEs said they have taken towards better resource efficiency:

#### Minimising waste



65%

and

#### Saving energy



63%

are the most common actions



**41%** of SMEs consider that resource efficiency actions decreased production costs.

Source: Eurobarometer, 2018

## EDITORIAL

# PLASTIC STRATEGY IN EUROPE: THE TRANSITION TO A CIRCULAR ECONOMY

Looking at post-war commercials praising a whole range of plastic products, one might wonder why, 60 years later, plastic is more often depicted as a threat to the environment and human health than a source of innovation and industrial pride. From a quantitative standpoint, plastic has grown ubiquitous in the global economy with ever-increasing flows. Everyday use and environmental concerns have led the community to promote a transition to a more circular model for the entire plastics industry.

Indeed, the European Commission has unveiled its strategy on plastics in the EU, which aims at:

- › improving the economics and quality of plastics recycling through recyclability and increased demand for recycled plastics;
- › curbing plastic waste and littering;
- › driving innovation and investment towards circular solutions;

These ambitious goals are underlined by an even more ambitious vision:

- › by 2030 all plastics packaging is either reusable or can be recycled;
- › by 2030, more than half of plastics waste generated in Europe is recycled;
- › by 2030, sorting and recycling capacity has increased fourfold since 2015.

Beyond these far-reaching targets, the recycling of plastic will face numerous challenges so it is fair to say that the road to an

environmentally sound and economically viable market for recycled plastics will be a bumpy one. For instance, the Chinese ban on certain types of plastic waste epitomizes the kind of threat that could jeopardize the already fragile economic equilibrium of plastic production and recycling in the EU. In the near future, public authorities and businesses will face tough choices over the best ways to phase out toxic substances, while avoiding major disruptions of plastic recycling markets.

How can those economic, social and environmental challenges be turned into opportunities in an age of disruption and volatility? Overcoming technical and economic barriers will certainly require a deep transformation of the whole value chain that encompasses plastic producers, designers, converters, plastic waste collectors and, finally, recyclers. Plastic packaging, for instance, represents an important economic stake and should be at the forefront of the new circular business model. Other sectors and market players will probably follow and seize these opportunities, thereby strengthening the current momentum.

According to J.M Keynes, “The importance of money flows from it being a link between the present and the future”. This is also true for the future of plastic production and consumption in Europe, as funding will be necessary to move from quantity to quality in terms of plastic recycling. (i.e. upgrading existing infrastructures and build new recycling capacities).

Of course, scarce public resources and low carbon prices add another layer of complexity to an already tricky situation, but the strategy on plastics clearly conveys the message that investment should be regarded as growth and innovation drivers.

This issue of the European Files intends to highlight these opportunities for growth under the new economic model and to deepen the debates that are driving the Plastic Strategy. Without a confident policy initiative, the environmental challenges ahead will only exacerbate our current economic and social situation.

**LAURENT ULMANN**

**Management:** The European Files / Les Dossiers Européens - 19 rue Lincoln, 1180 Brussels

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# TABLE OF CONTENTS

|                                                                                                                       |           |                                                                                                        |           |
|-----------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------|-----------|
| <b>A first-mover advantage to enhance European competitiveness</b>                                                    | <b>6</b>  | <b>Recycling of plastics – key element of the circular economy</b>                                     | <b>18</b> |
| <b>Jyrki Katainen</b> , Vice-President and Commissioner for Jobs, Investment and Competitiveness, European Commission |           | <b>Miroslav Poche</b> , MEP (S&D Group), Member of the ITRE Committee                                  |           |
| <b>Europe's New Plastics Strategy – Building a Legacy for the Juncker Commission</b>                                  |           | <b>Combining existing policy instruments to boost plastic waste management</b>                         | <b>19</b> |
| <b>Plastics have a bright future ahead of them</b>                                                                    | <b>7</b>  | <b>Jeremy Wates</b> , Secretary General of the European Environmental Bureau                           |           |
| <b>Karmenu Vella</b> , European Commissioner for the Environment, Maritime Affairs and Fisheries                      |           | <b>Plastics, chemicals and regulation</b>                                                              | <b>20</b> |
| <b>European Plastic Strategy, toward a sustainable economy</b>                                                        | <b>8</b>  | <b>Björn Hansen</b> , Executive Director of European Chemicals Agency (ECHA)                           |           |
| <b>Elżbieta Bieńkowska</b> , European Commissioner for Single Market, Industry, Entrepreneurship and SMEs             |           | <b>We got to talk about what's in the plastics</b>                                                     | <b>21</b> |
| <b>Turning plastics wastelands into fields of gold</b>                                                                | <b>9</b>  | <b>Monique Goyens</b> , Director general of BEUC, The European Consumer Organisation                   |           |
| <b>Mark Demesmaeker</b> , MEP (ECR Group), Rapporteur on the Plastics Strategy, Member of the ENVI Committee          |           | <b>Towards plastic resourcing</b>                                                                      | <b>22</b> |
| <b>Make plastic valuable!</b>                                                                                         | <b>10</b> | <b>Antoine FREROT</b> , Chairman & CEO, VEOLIA                                                         |           |
| <b>Karl-Heinz Florenz</b> , MEP, (EPP Group), Member of the ENVI Committee                                            |           | <b>The challenge of sorting in local communities: a challenge in Europe</b>                            | <b>24</b> |
| <b>Plastics: a societal, educational and innovative challenge</b>                                                     | <b>11</b> | <b>Janko Kramžar</b> , Director of Snaga Ljubljana, waste management company                           |           |
| <b>Miriam Dalli</b> , MEP (S&D Group) coordinator in the ENVI committee                                               |           | <b>The world has no use of single use plastic</b>                                                      | <b>25</b> |
| <b>Raising ambition levels and capturing opportunities</b>                                                            | <b>12</b> | <b>Margrete Auken</b> , MEP (Group of the Greens/European Free Alliance), Member of the ENVI Committee |           |
| <b>Rob Opsomer</b> , Systemic Initiatives Lead, Ellen MacArthur Foundation                                            |           |                                                                                                        |           |
| <b>Valuing recycled plastic, an industrial and employment challenge for tomorrow</b>                                  | <b>14</b> |                                                                                                        |           |
| <b>Jo Leinen</b> , MEP (S&D Group), Member of the ENVI Committee                                                      |           |                                                                                                        |           |
| <b>Take up the challenge of protecting resources through innovation; a European plastic strategy</b>                  | <b>15</b> |                                                                                                        |           |
| <b>Gerben-Jan Gerbrandy</b> , MEP (ALDE Group), Member of the ENVI Committee                                          |           |                                                                                                        |           |
| <b>Citeo in the loop of the circular economy</b>                                                                      | <b>16</b> |                                                                                                        |           |
| <b>Jean Hornain</b> , Director General of CITEO                                                                       |           |                                                                                                        |           |



# Plastic Strategy in Europe:

## The transition to a circular economy

|                                                                                                                    |           |                                                                                                                                            |           |
|--------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>The development of plastic waste recycling: An environmental and industrial challenge</b>                       | <b>26</b> | <b>Designing out the waste: Potential of plastics in European market</b>                                                                   | <b>37</b> |
| <b>Sébastien Petithuguenin</b> , General Manager of Paprec Group                                                   |           | <b>Sirpa Pietikäinen</b> , MEP (EPP Group), Member of the ECON Committee                                                                   |           |
| <b>Balancing voluntary commitments and regulatory measures</b>                                                     | <b>29</b> | <b>A paper perspective on the Plastics Strategy</b>                                                                                        | <b>38</b> |
| <b>Alexandre Dangis</b> , EuPC Managing Director                                                                   |           | <b>Sylvain Lhôte</b> , Director General of CEPI, the European association representing the paper and board industry                        |           |
| <b>Plastics recycling: Going beyond the percentages</b>                                                            | <b>30</b> | <b>Steps towards the development of a truly sustainable Europe</b>                                                                         | <b>39</b> |
| <b>Daniel Calleja Crespo</b> , Director General of DG Environment European Commission                              |           | <b>Karl-H. Foerster</b> , Executive Director, PlasticsEurope                                                                               |           |
| <b>Leading the way to clean and affordable polymers</b>                                                            | <b>31</b> | <b>Plastics: global problem, systemic solution</b>                                                                                         |           |
| <b>Bernard Pinatel</b> , President, Refining & Chemicals, Total                                                    |           | <i>Innovation towards a circular economy for plastics has to be systemic, and so should the supporting policies</i>                        | <b>40</b> |
| <b>Our vision? Plastic waste as a feedstock for our future products</b>                                            | <b>32</b> | <b>Jack Metthey</b> , Director, Directorate Climate Action and Resource Efficiency, DG Research & Innovation, European Commission          |           |
| <b>Alfred Stern</b> , Executive Vice President Polyolefins and Innovation & Technology, Borealis AG                |           | <b>Michiel De Smet</b> , Policy Officer, Directorate Climate Action and Resource Efficiency, DG Research & Innovation, European Commission |           |
| <b>EU plastics strategy and the Beverage Carton Industry</b>                                                       | <b>34</b> | <b>Rewarding plastics recycling environmental benefits</b>                                                                                 | <b>42</b> |
| <b>Dennis Jönsson</b> , President and CEO of Tetra Pak                                                             |           | <b>Emmanuel Katrakis</b> , Secretary General of EURIC                                                                                      |           |
| <b>The challenges posed by plastic throughout the value chain and taking into account their entire life-cycle</b>  | <b>35</b> |                                                                                                                                            |           |
| <b>Benedek Javor</b> , MEP (Group of the Greens/European Free Alliance), Vice-Chair of the ENVI Committee          |           |                                                                                                                                            |           |
| <b>Responsible by design: how Europe can turn the tide on sustainable products</b>                                 | <b>36</b> |                                                                                                                                            |           |
| <b>Ariadna Rodrigo</b> , Product Policy Campaigner at Zero Waste Europe and member of the Rethink Plastic alliance |           |                                                                                                                                            |           |



# A first-mover advantage to enhance European competitiveness



**Jyrki KATAINEN**

*Vice-President and Commissioner for Jobs, Investment and Competitiveness, European Commission*

On 16 January the European Commission adopted the first ever Europe-wide Plastics Strategy. It is an important milestone for our agenda to establish a truly functional circular economy in Europe. To me, the Plastics Strategy is of particular importance - it being a decisive step towards creating a genuine Single Market for plastics in Europe. It will help to tackle the challenge of ever increasing marine litter and – at the same time – give the economic impetus to European business. A clear win-win.

Plastics are a part of our daily lives. Most of us are in contact with plastics, in one shape or form, each day. We feel bothered by throwing away single-use plastics that will take more than a century to decompose, while knowing that recycling options are limited. It is so, since most plastic compounds cannot be mixed in recycling, which means that their lifespan and eventual reuse is very limited. We need standards in plastics production for this reason – especially in single-use plastic packaging, which accounts for nearly 60% of all plastic waste in Europe each year.

According to estimates, only 5% of the value of plastic packaging material is retained in the economy. The rest goes to waste after a very short lifespan. The annual bill for our economies amounts up to €105 billion. We simply cannot afford this type of behaviour in the long-term. Our circular approach, where

plastics are standards-based, will generate an economic incentive to put waste materials back into the economy. This will create new opportunities for European companies.

One thing must be clear – our strategy is not just about recycling. We have proposed to rethink and improve the functioning of the entire complex value chain, from plastic producers, designers, retailers to recyclers and consumers. The aim is that by 2030, all plastics packaging must be reusable or recyclable. This will require a much higher uptake of recycled plastics in new products, which currently is only at 6%. By creating more stable markets for recycled plastics we aim to ensure that the demand for recycled plastics is quadrupled in the next 12 years.

A genuine Single Market for recycled plastics would broaden an existing unsaturated market and create new submarkets, while attracting additional investment into Europe. Simultaneously we will enable businesses and Member States to upgrade their waste management infrastructure by support through the EU structural funds, the European Fund for Strategic Investments (EFSI) and the EU research and innovation programme Horizon 2020. For instance, the Horizon 2020 has already financed €250 million worth of plastic-related innovations, with an additional €100 million being made available. For our Plastics

Strategy to function, we need to increase our recycling capacity across Europe, which means devoting significant financial resources towards improving the material quality of recycled plastics.

Of course, reducing plastic waste is not merely about recycling existing plastics, but also about substituting plastics with more sustainable solutions. Our Strategic Research Innovation Agenda for Plastics, which will be developed later this year, will focus on developing smarter and more recyclable plastic materials and products, more efficient recycling processes, removal of hazardous substances and contaminants from recycled plastics, and solutions addressing the problem of microplastics.

By being first-movers and innovative in this field, we can most effectively secure the competitiveness of the plastic industry in Europe, which employs directly and indirectly as many as 1.5 million people.

It is important for us to set things right from the beginning. It is always the case that good policies put in place in Europe are copied elsewhere across the world. Thus the goal of Plastics Strategy is not only to have a positive impact in Europe, but to lead the global strategy on recyclable and reusable plastics.



# Europe's New Plastics Strategy – Building a Legacy for the Juncker Commission

## Plastics have a bright future ahead of them



**Karmenu VELLA**

*European Commissioner for the Environment, Maritime Affairs and Fisheries*

Europe had a remarkable demonstration of this recently, with the successful testing of a 3D printer in zero gravity conditions, on board the International Space Station. A European printer, made in Europe using European technologies, opening the way to a future where spare parts and tools can be made to measure, using reusable plastics 400 km above the Earth.

Europe believes in that future, and that's why we have set out a new Strategy for plastics, to strengthen the industry and ready it for the challenges ahead. Europe's plastics industry currently employs 1.5 million people, producing nearly 50 million tonnes of the material every year. The strategy will protect those jobs, while also addressing the problems that spring to mind when we think of plastics – low recycling, littering on land and at sea, and inadequate levels of investment.

The first task of the strategy is simple business sense: if we want change at scale, we need to improve the economics, and the quality, of plastic recycling. Plastic packaging makes up 60 percent of all Europe's plastic waste, so it's logical to start here. The headline target is to make all plastic packaging reusable or recyclable by 2030; this will help Member States achieve 55% plastic recycling targets agreed in the review of waste legislation. New rules are being developed to improve the recyclability of

plastics, and increase the demand for recycled plastic content.

The uptake of recycled plastics in new products is very low, around 6%, concentrated in low-value or niche applications. This low demand means few incentives to invest in the processing capacity that will improve the quality of recyclates, bringing down costs. The recent restrictions on exports of plastic waste to China further increase the pressure to increase European demand for secondary plastics.

With more plastic collected, and more demand for secondary plastics it will be easier to improve and scale up recycling facilities. A better and standardised system for the separate collection and sorting of waste across the EU will also improve the economics of recycling, saving around a hundred euros per tonne collected. The changes will be complemented with measures to stimulate design for circularity, encouraging traceability of products, improving separate waste collection, and a reliable system to verify recycled content, to build confidence about what goes into recyclates.

Rather than imposing regulation, we have opted for a pledging campaign, asking all stakeholders to make voluntary pledges to boost the uptake of recycled plastics. But these pledges are just a start, and we are also looking into other incentives, and ways of removing the barriers to higher use of recycled plastics in domains such as packaging and the automotive manufacture.

The second strand is curbing plastic waste. When half the litter found on Europe's beaches is single-use plastics, the scale of the problem is all too clear. Citizens are demanding strong, effective action, and we intend to deliver. The aim is to prevent items like bottles, cutlery, straws, cotton buds and cups and lids from entering our environment in the first place, through a new legislative proposal on single-use plastics.

Work is ongoing at speed, as the aim is to adopt a proposal in May. Single-use plastics are a broad social issue, and cutting their use means adopting a different mind-set. The Commission is setting a good example, phasing out the use of all single-use plastic cups in water fountains and vending machines in its buildings and meetings, in the hope that others follow this lead. This

proposal will also address the issue of fishing gear that is lost at sea, with severe consequences for marine species and fisheries.

If we want more success stories like the Altran Italia 3D printer referred to above, more investment will be essential. EU funding will help address this issue, channelled through a new Strategic Research Innovation Agenda for Plastics that will help guide future funding decisions. The focus will be the design of smarter, more recyclable plastic materials and products, more efficient recycling processes, removing hazardous substances and contaminants from recycled plastics, and addressing microplastics.

Horizon 2020 will play an important role as well. Europe's biggest research programme is investing an additional EUR 100 million in plastics innovation, on top of more than EUR 250 million already invested so far. The European Structural and Investment Funds, together with the European Funds for Strategic Investments, are already supporting projects that are helping build a more sustainable and innovative plastic value chain.

The feasibility of a private-led investment fund is also being examined. The idea is to finance investments in innovative solutions and technologies to reduce the environmental impacts of plastic production.

But however much funding Europe generates, these global issues require a global response. So the final component in the strategy is action on the wider stage, with the Commission working closely with its international partners to prevent plastic waste and marine litter in regions such as East and South-East Asia, the Mediterranean, and in major world river basins, and working towards international standards on sorted plastic waste and recycled plastics.

To take the plan forward, we need companies to come forward with more pledges to boost the uptake of recycled plastics before our 30 June deadline. The more pledges we get, the greater the potential for creating the positive feedback loops the industry needs.

This strategy is a sturdy base to build on, and its solid foundations will be part of the legacy of the Juncker Commission.

# European Plastic Strategy, toward a sustainable economy



**Elżbieta BIENKOWSKA**

*European Commissioner for Single Market, Industry, Entrepreneurship and SMEs*

Some products take a few seconds to make, a minute to be consumed and centuries to disappear from our environment. As a consequence, plastics are starting to make our citizens seriously worried and plastic waste is becoming a concern that cannot be ignored by policy-makers and by industry.

Or I should rather say plastics as their chemical nature and their specific features are as diverse as their applications: from flexible blood pouches and lightweight and durable car bumpers to packaging of our drinks and foods and the clothes that we are wearing. All these products contain plastic polymers because of the infinite possibilities and functions polymers offer, their adaptability and relatively low cost.

Plastics help us meet many societal needs in areas such as transport, logistics, infrastructure, food, water and energy supply or medical care. But there is also a downside to the use of plastics. Their durability means that they do not degrade easily when discarded or disposed of in our landfills.

It is a matter of fact that innovation in the plastic sector has not until now been to improve the recyclability of plastics. Designing plastic items has been done to exploit the extraordinary features of this material as if its production didn't have any consequences for the environment after use.

Can we really continue to produce plastics without taking care of the piles of plastic waste?

Can industry continue to rely only on plastics produced from fossil resources and ignore

the fact that plastic waste itself is a valuable resource?

Today experts estimate that the equivalent of 3,5 billion barrels of oil per year could be saved if we recycled all global plastic waste.

With the support of the Plastics Strategy adopted on 16 January 2018, it should be possible and economically realistic for designers, resin makers, compounders, converters, waste collectors and recyclers to retain the value of the plastic material in the cycle.

It will not only save money and resources but also prevent half a million tonnes of plastic waste to end up in the oceans, 8 million tonnes of plastic waste to be dumped in landfill and another 10 million tonnes to be incinerated.

What the Commission envisions through the Plastics Strategy is to transform the plastic value chain into a smart, innovative and sustainable industry, with reuse and recycling activities integrated into production chains.

This is an opportunity for European business. If the value chain coordinates its efforts for a more circular and sustainable economy, with the help of our innovation frameworks and support to investments, then the European plastics industry will remain the very innovative sector that it has always been but with an added value in terms of reduced impacts on the environment.

This will lead to growth and jobs in Europe and reconcile plastics and sustainable development, by decoupling its growth from plastic waste generation.

The shape that the Commission has given to the Strategy represents a toolbox where all useful instruments will be considered equally as long as they contribute to the same goals. It is not only about centralised regulatory tools but it is essentially more about shared responsibility between the Commission, the Member States, local authorities and all concerned stakeholders.

This holistic approach distributed along each stage of the plastic lifecycle calls upon each actor along the value chain to take its own share of responsibility. They are invited to commit on voluntary actions and/or to implement the regulatory actions to support more sustainable or circular plastics.

Where the concerns of plastic outweigh their benefits, the Commission announced some regulatory initiatives. This will be the case for addressing the concern of marine litter and microplastics.

As regards microplastics intentionally added to products, works have been initiated to restrict their use after a proper assessment according to the Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Further studies are ongoing in cooperation with the concerned sectors to address microplastics which are generated during the use phase (textiles, tyres).

Marine littering which is mainly associated with inappropriate plastics waste management finds also its origin in the wrong behaviour of consumers who throw away the single-use plastic items after consumption, instead of placing them in the recycling bins.

Building on efforts already under way in EU Member States, various options ranging from awareness raising campaigns to phasing out from the market are under assessment for some single-use items clearly found in the marine environment and which affect economical activities, such as tourism and fisheries.

The Commission announced the ambitious objective to make all plastic packaging reusable or recyclable by 2030, as a signal to plastic industries that they should innovate and organise themselves around such common objectives.

In my view this approach translates the better regulation principles to address the systemic failures observed in the plastic value chain.

The Strategy results from a major effort carried out jointly with Member States, industry, users, consumers and civil society. Continuing to work closely together on a strong commitment basis is crucial in order to move from a linear to a circular economy here in Europe as well as worldwide.

I am very keen to fill the toolbox of the Plastics Strategy as much as possible during this Commission mandate and to work on adaptation of regulatory instruments, standards, life-cycle assessment tools and supporting measures including a specific research and innovation agenda.

All these actions on Commission's side, combined with the efforts of others should contribute to the very ambitious transformation of one of our industrial flagships into the most resource efficient sector. This illustrates the purpose of our renewed Industrial Policy.

This will then show the way to other sectors, including other chemical sectors, and convince them of the feasibility and the economic durability of the Circular Economy.

# Turning plastics wastelands into fields of gold



**Mark DEMESMAEKER**

MEP (ECR Group), Rapporteur on the Plastics Strategy, Member of the ENVI Committee

Plastic is a valuable and important material, but it has some significant drawbacks. In the current linear plastics economy, plastics are developed to last in perpetuity, but are often still designed to be disposed of after use. Only 5% of the value of plastic packaging materials remains in our economy, 95% of the value leaks away, leading to an annual bill of up to EUR 105 billion. The Commission is absolutely right in saying that we can simply not afford this. In this regard, I welcome the Plastics Strategy as a crucial step forward in our transition to a circular economy. Boosting recycling rates and preventing the generation of new plastic waste upfront are key.

However, if we really want to move towards a New Plastics Economy, in which we find new smart and circular ways to manage plastics throughout the entirety of the value chain, a more holistic and integrated vision is needed. The focus of the Commission's Strategy is still very much on sustainable plastics as a material rather than on a sustainable and circular model. We need a more radical paradigm shift.

## Creating a Single market for recycled plastics materials

Until now, the uptake of recycled plastics in new products remains low: only around 6% according to the Commission's figures, something it is eager to address. During the plenary debate on January 17, Vice-President Katainen was clear: "Our objective is to support

*the creation of more stable markets for recycled plastics and ensure the demand for recycled plastics is multiplied by four."* How do we follow through and actually achieve this? In this article I would like to present my ideas for three key building blocks to create a genuine single market for secondary plastics.

### 1. Quality standards for building trust

It is clear that quality standards are essential in order to stimulate the market for secondary plastics. There is currently a mismatch between the quality of recycled plastics and the quality needed for the functionality of a certain product. If recycled plastics are used at all, everybody wants the very best quality, even though this is not always necessary for all applications: for example food grade quality is not required to make garden furniture. This is due to a lack of trust, verification and transparency. We therefore need to develop recycling grades which match with the functionality of various products.

Verification is key in this regard. A European audit scheme is already available for use, EuCertPlast which has been developed by industry. This scheme allows for audit controls to be conducted at the company level.

However, I believe that an independent third party certificate, which conducts controls also at the material and product levels, could equally offer an important step forward. The Belgian Quality Association has developed a QA-CER certification scheme to this end. QA-CER understands that providing confidence to the various stakeholders involved, through accessibility, traceability, transparency and independence, is essential in order to boost the use of recycled content in new products.

### 2. Push for recycled content

Trust in verified quality standards is a necessary first step to boost recycled content. Some companies already use recycled content. I still find the Ocean Plastic Project of Ecover an inspiring example because they use recycled ocean plastic in their bottles and thereby also engage in awareness raising on the devastating consequences of marine litter.

However, to really pull the market in a certain direction, we need clear engagement from big industry players. Positive pledges like Danone's commitment to make its Evian

plastic bottles from 100% recycled plastic by 2025, Coca-Cola's intention to use on average 50% recycled content in its bottles by 2025, and Unilever's global commitment for 25% recycled plastic content by 2025, can be real game changers.

It will be very interesting to see how big players will start coupling their brand identity to a sustainable and circular business model. The new rules on Extended Producer Responsibility, agreed in the revised waste legislation, can also play a powerful role here.

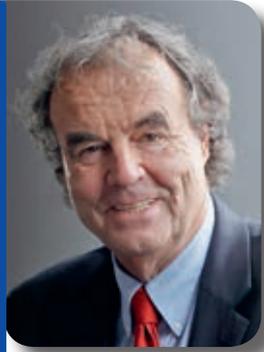
### 3. Design for circularity in procurement

Procurement and design for circularity are a third important building block to create a single market for recycled plastics. A Green Deal on circular procurement is currently ongoing in Flanders, initiated by Circular Flanders and inspired by an earlier Dutch example. This shows the power of both public and private procurement to boost innovation in business models. Nevertheless, circular procurement is still the exception, not the rule. In order to boost it, various actions could be taken, also at EU level, by stimulating and supporting innovation, research and the exchange of best practices. The EU could set up an EU learning network on circular procurement so that the lessons learnt from various Green Deals are gathered and offer support for the establishment of future Green Deals. Furthermore, lessons learnt from voluntary bottom-up actions could pave the way for establishing binding rules for public circular procurement.

### Conclusion

The Chinese import ban on plastics waste offers an immense opportunity for the EU to shift into forward gear. We need to use this momentum to invest and innovate. If we succeed in developing a holistic approach covering the entire value chain through circular business and consumption models, we can create a win-win situation for all stakeholders involved. We can turn plastics wastelands into fields of gold!

# Make plastic valuable!



**Karl-Heinz FLORENZ**

MEP, (EPP Group), Member of the ENVI Committee

Plastic already played an important role in the negotiations on the waste package. The soon to be adopted package will improve our collection, our recycling rates and reduce landfill. The Parliament obtained some substantial improvements that will be game changers, such as the stricter separate collection of plastic (the key enabler for high quality recycling, but at only 30% today) or an increased recycling rate for plastic packaging to 55% in 2030 (in the face of strong resistance from several Member States). Separate collection and higher recycling targets go hand in hand with our ban on the landfill of separately collected waste as well as the expression of good intent from Member States no longer to allow any kind of waste suitable for recycling or recovery in landfills from 2030. It is a logical consequence that the Commission calls for all plastic packaging to be recyclable by 2030. The recycling targets combined with the landfill targets will also lower the incineration of plastics which has increased in recent years to today's 39%.

Waste directives deal, as their name suggests, with the end-of-life phase of our products. But in the circular economy perspective we have to focus on the full life cycle. So the Parliament also put focus on the top of the waste hierarchy: prevention. There is now a list of measures to be taken by Member States to prevent the generation of waste, such as the promotion and support of sustainable

production and consumption models in line with the Sustainable Development Goals. Using economic instruments to achieve a waste reduction is now an obligation, but the choice of the instrument is open, for example in most circumstances landfill charges will be needed, but other instruments such as 'Pay-as-you-throw' systems or fiscal measures to promote the uptake of secondary raw materials can also help. Another important economic element helping to treat plastic efficiently is the mandatory extended producer responsibility for all packaging waste, most significantly for plastic packaging which accounts for about 60% of post-consumer plastic waste. Product design was addressed with the request to update the so called 'essential requirements' for the composition and nature of packaging. By the end of 2020 these should be reinforced, then enforced, as they are currently quite general and broad and therefore hardly implemented. One key criteria of the essential requirements is that the packaging must be designed and produced to allow reuse and high quality recycling

Getting to agreement on the waste package was a major achievement. It puts us on the right track, but that is only the beginning of the journey.

95% of plastic packaging material value, meaning 70 to 105 billion Euros per year, is lost in Europe after one very short first-use cycle according to a study by Ellen McArthur Foundation. This should make us think. The targets that were set so far measure the amount of recycled material. But it does not give any information on the quality of the recycling process nor the quality of the recycled secondary raw material, nor if we managed to keep the value of the material in the cycle. How much value is actually retained after one use cycle when it comes to the different material types of plastic? We need to know this to assess if we are on track for a true circular economy which captures value, creates strong economics as well as better environmental outcomes. The more we manage to retain the value in the circle, the more economically interesting it will become to invest in high quality recycling and the more we invest in high quality recycling, the more we will succeed in keeping that value in the circle. So our policies should help private investors to make decisions in this direction. Today not only do we collect a small

proportion of waste plastic for recycling but this small portion is mostly downcycled into lower value applications that are not again recyclable after their use. I believe that the development of standards, a longstanding demand of mine, as well as the cooperation across the value chain will drive the development of effective markets that keep the value of the material in the chain.

The Chinese ban on imports of European waste has demonstrated that circular economy is not just a theory to which we pay lip-service whilst we try to continue on the business-as-usual path. It is an inevitable path, and the earlier we follow it, the more benefits we will reap and the less disruption we will face. That is why we need a future-oriented policy, embraced by Member States and industry failure to invest in this direction will backfire.

Low quality plastic waste cannot be conveniently offloaded in China anymore. Until recently 85% of European exported plastic waste ended up in China, with one Member State sending 95% out of sight and out of mind. Europe is today forced to change rapidly the way it approaches and handles plastic because of a decision taken by a country 8000 kilometres away. These massive amounts of plastic waste cannot be simply diverted to other countries, the incinerators are already working at full capacity in Europe, and the junk yards are filling up as no one wants this low quality material. My hope is that the Chinese ban will be a 'sputnik moment' for our plastic and our recycling industry and a wake-up call for the Member States. The announcement by European Environment ministers in March that they recognise the need to increase recycling rates for plastic seems to be a first sign of an attitude adjustment.

Our circular economy just got a reality check.

# Plastics: a societal, educational and innovative challenge



**Miriam DALLI**

MEP (S&D Group) coordinator in the ENVI committee

**D**o you know which one product is common to several sectors such as buildings, packaging, vehicles, electronics and agriculture? Plastics.

The use of plastics has grown exponentially since the 1960s – 20 times higher to be exact – it has led to some great and beneficial social, education and technological benefits over time. It has even become essential in seeing that people do not suffer from hunger and its elimination may very well result in an increase in food waste.

But human behavior is abusing of plastics, catching consumers in a vicious circle. Plastics have now become a story of the good, the bad and the ugly.

Through their use in food and water packaging, plastics contribute to consumer health and safety. In food packaging, plastics ensure a “safe, time-dependent storage of fresh produce and other food” through means of “temperature and atmosphere control inside the package”.

But what happens once consumers are done with their packaged product?

As consumers, many of us are guilty of adopting lax attitudes in waste disposal. We do not recycle enough. We do not reuse enough. We have to ask ourselves whether we

are disposing of waste properly: some do not separate; others simply dump it out on the street; some are even as reckless as throwing waste out of the car’s window or chuck it straight into the ocean from a boat’s deck.

Governments and communities are now investing in educational campaigns and raising awareness. Others have introduced fines. But a cultural change is also needed.

A lot of the waste generated ends up in our oceans. Over the past 10 years, every year some 13 million tonnes of plastic waste entered our oceans. Tiny pieces of plastics, amounting to hundreds of thousands of tonnes, make their way into the food chain as they are absorbed by ocean creatures. Micro-plastics have been passed up the food chain to fish, and are also a growing human threat to humans health.

Recycling plastic should not be as hard and effective ways of increasing collection rates are needed. Many countries already adopt a deposit scheme for plastic bottles as well as glass ones. Even my home country of Malta has proposed a cash-for-bottles scheme as it plans to collect more than 70% of the plastic bottles placed on the market by 2019.

A look at EU member states confirms that plastic waste recovery is still very uneven in Europe. According to Conversion Market & Strategy GmbH, landfills are still the first or second option of treatment for plastic post-consumer waste in many countries. Data published shows that landfill bans foster higher recycling waste: countries with landfill restrictions of recyclable and recoverable waste have, on average, higher recycling rates of plastic post-consumer waste.

- › Europeans generate 25 million tonnes of plastic waste, but less than 30% is collected for recycling
- › The plastics industry directly employs over 1.5 million people in Europe
- › 27.3% of collected plastic waste in Europe ends up in the landfill
- › 31.1% of collected plastic waste is recycled
- › 41.6% is used toward energy recovery
- › 63% of recycled collected plastic waste is recycled within the EU

The growth of jobs in waste management will be a boon in addressing the challenge of plastics and the future. The EU is offering practical support to help businesses and citizens through a number of programmes. In Spain, for example, the European Social Fund committed more than €22 million to a green jobs programme which has helped around 60,000 people acquire skills through 2000 different training courses.

Innovation has brought us bioplastics, which can aid in the process of making an environmentally sound transition towards quality plastic recycling and packaging.

Bioplastics, such as plastics derived from Polylactic Acid, are starch and cellulose based and they are typically derived from corn and sugarcane. Unlike traditional plastics, bioplastics are compostable and recyclable. Although it is not as durable as other plastics, it has many consumer applications, including uses in food and water packaging.

Innovation will not only create more jobs in recycling, but it can be a means to turn waste into infrastructure: in Colombia, architect Oscar Mendez is building homes out of plastic waste to tackle the issue of urbanization, poverty and high waste.

We need to continue to support efforts in reducing plastic use, such as with reusable water bottles, and reducing tap water phobia. Moreover, increasing water quality in Europe and innovating water purification methods could lead to a decrease in the use of plastic bottling and improve overall health through a decrease in diseases.

According to the World Health Organisation, of the 912 million people living in the WHO European Region, in 2015 more than 62 million lack access to an adequate sanitation facility and 14 million do not use a basic drinking-water source.

An effective strategy is not one which blames a particular element in the hope that fear prompts change. To the contrary, we need not only to support educational efforts in teaching children the simple alternative methods to make less use of plastic but we need to continue supporting research and innovation as it looks to find sustainable use of plastic and reusing it.

# Raising ambition levels and capturing opportunities



**Rob OPSOMER**

Systemic Initiatives Lead, Ellen MacArthur Foundation

In just over half a century, plastics have become pervasive throughout the economy due to their versatility and cost-effectiveness, growing their production volumes twenty-fold. Yet alongside clear benefits, today's plastics system has significant drawbacks. Released in 2016, *The New Plastics Economy: Rethinking the future of plastics* report by the Ellen MacArthur Foundation found that today only 14% of plastic packaging is collected for recycling globally; the rest of it is either incinerated, landfilled or ends up as litter, often in the ocean. If current trends continue, by 2050, our oceans could contain more plastics than fish, by weight.

In Europe, plastic waste amounts to approximately 25 million tonnes per year, and the collection for recycling rate remains low with a mere 30%, despite being significantly better than the global average. And solely focusing on end of pipe measures will not address the full extent of the issue. As Vice-President of the Commission Frans Timmermans recently pointed out, *"The only long-term solution is to reduce plastic waste by recycling and reusing more. This is a challenge that citizens, industry and governments must tackle together."*

The greatest challenge lies with the 30% of plastic packaging (by weight), equivalent to 10 billion garbage bags per year, which will likely never be reused or recycled without fundamental redesign and innovation. These everyday items, such as sweet wrappers, sachets and fast food packaging, which are currently unrecyclable, make up approximately half of all plastic packaging by number of items. They are today – by design – destined for landfill or incineration after a single short use, often with the risk that they will end up in the environment as litter.

Innovation is needed, especially for small formats, so that they are less likely to leak out of collection systems. Beverage cans are a good example of the potential of redesign. The tear-off tab, being a small-format item, was difficult to collect and prone to becoming litter, until it was replaced in the 1970s by the stay-on tab that is prevalent today.

As the Ellen MacArthur Foundation's 2017 report *A New Plastics Economy – Catalysing action* finds, over 20% of plastic packaging could be profitably reused, for example, by replacing single-use plastic bags with reusable alternatives. Many countries have introduced a small charge for the bags incentivising reuse alternatives. This has often led to large decreases in single-use plastic bag use. In the UK, for example, a 5p charge led to an 85% reduction, while a gradual phase out in France allowed for a reduction in use from 10 billion to 700 million bags per year between 2002 and 2011<sup>2</sup> (they have been banned since July 2016). Outside the EU, countries such as Rwanda have banned single use plastic bags completely.

Businesses are also starting to capture other reuse opportunities. For example, many products we use every day such as home cleaning products and liquid soap currently come in single-use bottles and consist mainly of water, together with a small volume of 'active ingredients'. The company Splosh provides customers with refills in dissolvable sachets, that they can mix with water in a refillable bottle at home. Innovative ways of

delivering products to customers such as this could produce 80%-90% packaging material savings and 25%-50% packaging cost savings, benefiting both businesses and customers.

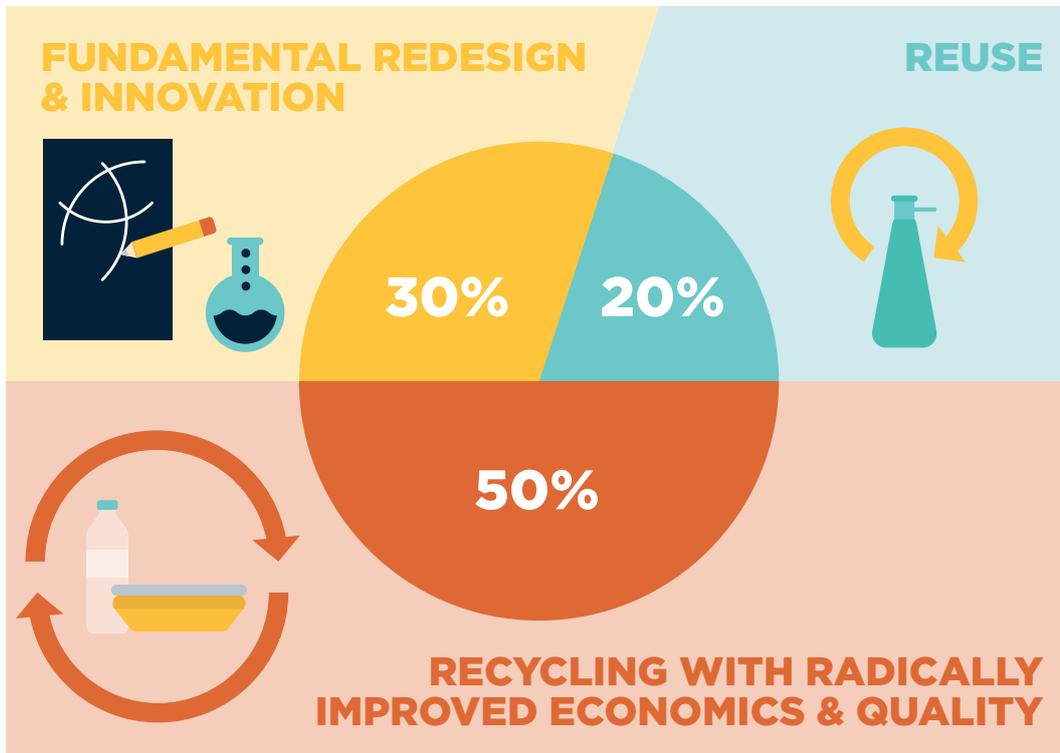
If improvements were made both to packaging design and to the systems for managing plastic packaging after use, the remaining 50% of plastic packaging could be profitably recycled. The choice of materials, colours, formats and other design factors all affect the ease and cost-effectiveness with which plastic packaging can be recycled. Relatively small changes can make a dramatic difference: for example, drinks bottles made of clear PET, such as those used for bottled water, are much easier to recycle than opaque PET bottles of which about 5,000-6,000 tonnes are sold in France alone each year, adding an estimated USD 1-2 million per year to the cost of recycling them.

Significant progress has been made over the past months towards creating a circular economy for plastics. In January 2018, at the World Economic Forum Annual Meeting in Davos, 11 leading brands, retailers, and packaging companies announced that they are working towards 100% reusable, recyclable, or compostable plastic packaging by 2025. In the same month, the European Commission published its strategy for plastics in a circular economy. But we're not there yet. We need to raise the ambition level, and industry and policymakers need to continue to drive action, with the aim to capture the economic and environmental benefits the current model overlooks.

<sup>1</sup> [http://europa.eu/rapid/press-release\\_IP-18-5\\_en.htm](http://europa.eu/rapid/press-release_IP-18-5_en.htm)

<sup>2</sup> <https://www.ecologique-solidaire.gouv.fr/fin-des-sacs-plastique>

THREE DISTINCT TRANSITIONS STRATEGIES TO ACCELERATE THE SHIFT TOWARDS THE NEW PLASTICS ECONOMY (SHARE OF PLASTIC-PACKAGING MARKET BY WEIGHT)



Source: New Plastics Economy initiative analysis (see Appendix in: World Economic Forum and Ellen MacArthur Foundation, *The New Plastics Economy – Catalysing action* (2017, <http://www.ellenmacarthurfoundation.org/publications>) for details)

PLASTIC PACKAGING SEGMENTS THAT NEED FUNDAMENTAL REDESIGN AND INNOVATION

| EXAMPLES                                                                                             | SHARE OF PLASTIC PACKAGING MARKET % BY WEIGHT | PRIORITY SOLUTIONS                                                                                                |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>SMALL-FORMAT</b><br>Lids, tear-offs, caps, sachets and generally all items smaller than 40 - 70mm | ~10%                                          | <b>REDESIGN</b><br>packaging formats and/or delivery models (and after-use systems)                               |
| <b>MULTI-MATERIAL</b><br>Packaging with inseparable layers of different materials                    | ~13%                                          | <b>INNOVATE</b><br>in materials and reprocessing technologies                                                     |
| <b>UNCOMMON MATERIALS</b><br>Uncommon plastic packaging materials like PVC, EPS, PS                  | ~10%                                          | Actively explore to <b>REPLACE</b> as a priority PVC, EPS, PS by known alternatives                               |
| <b>NUTRIENT-CONTAMINATED</b><br>Coffee capsules, organic waste bags, takeaway food packaging         | NOT QUANTIFIED                                | <b>SCALE UP</b><br>compostable plastics for targeted applications to help recover nutrients of packaging contents |

**FUNDAMENTAL REDESIGN AND INNOVATION is needed for >50% of plastic packaging (by no. of items), or >30% of plastic packaging (by weight)\***

\* Total is not the sum of separate categories due to overlap

Source: New Plastics Economy initiative analysis (see Appendix in: World Economic Forum and Ellen MacArthur Foundation, *The New Plastics Economy – Catalysing action* (2017, <http://www.ellenmacarthurfoundation.org/publications>) for details)

# Valuing recycled plastic, an industrial and employment challenge for tomorrow



**Jo LEINEN**

MEP (S&D Group), Member of the ENVI Committee

The European Commission's Plastic Strategy rightly emphasises the need for increased plastic recycling. The objective to make all plastic packaging recyclable in 2030 will pose clear chances, but also challenges for companies and employment in the EU. The Commission might promise a "new plastics economy", but the future will hold many uncertainties for EU industries and their employees in this sector. To turn the transition to a circular economy into a success story for Europe, politics need to set the right incentives and should manage the process carefully – together with businesses.

While economic growth is a priority of the current Commission, reducing damaging effects on the environment and climate must be the primary objective of this exercise. The EU needs to stick to the important principle of waste prevention. The use of plastic needs to be reduced in order to avoid plastic waste that is often incinerated or littered with harmful effects on our ecosystem. This needs to be reflected in the concrete measures that the Commission is preparing implementing the plastic strategy. Efforts to improve recycling rates by intelligent product design and standardisation are an important step, but will definitely need to be complemented by further actions to reduce material use in general.

According to the Commission, the plastic sector employs 1.5 million people in the EU.

While more recycling will increase the sorting and recycling facilities and create new jobs in this field, existing employment in production can be expected to go down. The Commission aims at 200.000 new jobs in the EU until 2030. It is unclear, however, if this will compensate job losses.

Plastic is a valuable material in many devices and will play an important role for climate protection. Material efficiency through light and long lasting feedstock has a huge potential to decrease emissions and energy consumption. Plastic use in electronic products, cars or buildings will certainly go up in the next years. Innovations in this field will be highly appreciated. Investing research and finance into this effort could be very profitable for companies. New jobs in this area will often require higher-educated employees, but they will have a long-term perspective.

By far the biggest share of plastic is used in packaging, however, where prospects are less optimistic. Compared to plastic use in products and devices, plastic packaging often has a short life span, can usually not be re-used and only partly ends up in recycling. In 2015, almost 20 million tonnes, 40% of Europe's plastic demand, was used in packaging. These dimensions show the importance of reducing packaging in line with the waste hierarchy established in the Waste Directives. Where packaging is essential, the use of recycled materials, but also alternative feedstock needs to be incentivised, for example by tax advantages.

A consistent implementation of the Waste Framework and the Packaging Waste Directives in all Member States will be key to increase separate collection of plastic. Additionally, the financial advantages for recycling plastic need to increase. Industrial and job potentials will emerge once sorting and recycling increases in Europe. The Commission calculates with 500 new facilities in the EU. This development will only take place, however, once it is more profitable to recycle plastic than to choose the production from raw material. As recycling is still labour intensive and costly, incineration and landfill charges will contribute to such a switch.

The Commission's "Pledging Campaign" is an interesting approach in this regard. While regulation is needed as well, this call for voluntary pledges to increase plastic recycling and the demand for recycled plastic may create a race between industries for the most workable and innovative solutions. The "new plastic economy" should aim at products with higher quality and sustainability that can keep up with international competition. This way, the European circular economy could emerge as a promising sector offering rather safe and exciting jobs.

The current debate around China's decision to ban waste imports reminds us on how much of valuable material is shipped outside of Europe. Currently, the EU does not have the capacities to treat this one million tons of plastic waste that go to China each year. Due to lower costs, huge parts of it will still be shipped to other countries in Asia. If we want to build a real circular economy in the EU, the absurd export of waste needs to be reassessed. The review of the Waste Shipment Regulation due in 2020 could be an appropriate occasion to address the issue through legislation. The important side effect of keeping collected waste in Europe could lead to a further push for domestic employment.

Despite the expected employment challenge due to reduced material production, increased plastic recycling and the circular economy model in general will open many economic opportunities. Less input of resources and an increased efficiency will also decrease production and energy costs of companies, for example. It is also a major chance for companies to shape this process actively. Jobs will emerge both, for workers as well as higher-educated employees. While materials like traditional plastic might play a smaller role in the future, a switch to materials like glass, steel and metal as well as recycled plastic can boost more sustainable employment. This will require a certain degree of flexibility and innovation in companies, clever political steering and flanking social measures to manage the dynamics in employment in a positive way.

# Take up the challenge of protecting resources through innovation; a European plastic strategy



**Gerben-Jan GERBRANDY**

MEP (ALDE Group), Member of the ENVI Committee

It can be argued that Europe's global competitiveness and the resilience of its economic and social model hinges on an effective use of resources. The circular economy agenda must be seen as part of a broader strategy to tackle future economic, social and environmental challenges. This will indeed require a paradigm shift from a linear to a circular economic model; it is all about making the optimal use of limited natural resources and make sure nothing is wasted. As such, sustainability and resource efficiency are not simply another environmental story but a core precondition economic success. The circular economy can provide solutions for many of the EU's most pressing long-term challenges, and it therefore holds tremendous opportunities for Europe so long as it is integrated into the bigger picture.

This is of course particularly true for plastics. Plastic as a material has a special place within our global society; it is nearly impossible to imagine life without it. The versatility and applicability is virtually unchallenged. It also has a huge potential as a recyclable material. It plays a significant role in the European economy with 1.45 million employees and a turnover of €350 billion. Plastics do however have a significant impact upon the environment. To make plastics, precious resources are needed, such as fossil feedstocks, water and energy. Some take centuries to break down. When it comes to resource efficiency

both preventative measures (reducing use) and reuse measures are needed to reduce environmental pressure. Plastics currently tends to work in a linear model of produce, use, dispose (often badly, i.e. landfill, littering, CO<sub>2</sub> emission). The plastic recycling market has been stagnating in Europe. Low fossil fuel prices, little new development in technologies, low demand and lack of high-quality supply on the market means that there is still focus on virgin plastics. Roughly 9% of new plastic materials come from recycling at the moment. This needs to change.

Fortunately the European Commission has realized this came forward with a well-thought out Plastics Strategy. Essentially the strategy is based around a simple economic tenet: the EU is losing 95% of the value of the plastics it produces. That means that to start benefiting from the full potential of plastics we need to do several things. Perhaps most importantly we need to start developing a stable market for secondary raw materials. It is important to create the best possible regulatory and policy framework and allow innovation to prosper. First movers must be encouraged from the get-go. Regulatory barriers and cross-compliance must be mapped and scrutinized. Quality standards and definitions must be harmonized. Legislative certainty must be given to create stable investment platforms. These matters should be a given in policy making in general, especially in the EU, where we have a common market.

Everyone can agree that work must be done to be across the entire plastics value chain, from design, production and to end-of-life businesses. Innovation is and will be a key driver to help upscale the circular economy, especially for plastics. Not just as way to develop new, smarter technologies or place new, improved goods on the market, but a deep and comprehensive integration of the concept innovation. A strategy where we rethink how we view products, service or processes.

The last element is especially interesting. Businesses evolve, change and adapt their business models. Policy makers and legislators have a responsibility to facilitate the right incentives for innovation to thrive, but often forget to look critically at themselves when it comes to new ideas, concepts and structures.

This can range from failing to implement existing policy, no political prioritization, opposing rationales with proven benefits (such as ambitious waste targets) to not considering all measures available, especially fiscal incentives at a supranational level.

Europe is currently at a crossroads when it comes to the transition to a sustainable economy. Bit by bit the mood is changing from hesitancy to optimism. New strategies and action plans are being developed with the right language and tone. Those at the highest political are, hopefully, beginning to see the added benefit of an ambitious, EU driven transition. The real environmental mettle of this Commission will be tested come May, with various legislative acts planned. The EU plastic bags Directive was much resisted when it was first proposed as it was considered too radical. It turns out it was extremely effective and innovative. The single-use plastics proposal has the same potential. It can be an empty legislative shell or it can tackle multiple issues, such as prevention, boosting recycling and even own resources all at once. Lets see whether the EU really is the driver of innovation and take the necessary steps to really kick start the circular economy.

# Citeo in the loop of the circular economy



**Jean HORNAIN**

Director General of CITEO

## What is Citeo, and why Citeo?

The French producers' organisations for household packaging and for paper in France, respectively formerly known as Eco-Emballages and Ecofolio, have merged to become Citeo.

We aim to combine economic and environmental performance by devising eco-design and cost-effective recycling solutions involving all actors of the value chain. Hence the name of Citeo which refers to a community of citizens free and united by common purposes ("cité"). We need more believers and actors to shift the paradigm of linear economy to circularity.

## Does Citeo support the Plastics Strategy published on January 16?

The Circular Economy Package currently being finalised is key to enhance circularity of secondary-raw materials. Citeo will especially support decisions that will develop competitiveness of secondary-raw material in order to boost plastics recycling.

## How does Citeo intend to boost plastics circularity?

Citeo has to help its clients meet the several targets fixed or due to be fixed regarding plastics:

- At the European level: a target of 100% of recyclable or reusable plastics in 2030, plus a target of 50% of plastics packaging recycled in 2025, and 55% in 2030;
- At the national level: a foreseen national target of 100% of recycled plastics by 2030; and 75% of recycling of all household packaging by 2022.

When the Green Dot system started in France in 1993, only plastics bottles and flasks were selectively collected.

For the past 3 years, Citeo has been working on the expansion of the sorting instructions to include all plastics packaging. By 2022, 100% of the territory shall be covered vs 25% today. For packaging (a separate plan also exists for graphic paper recycling), more than 250 projects are being developed and over €3.5bn will be paid by the industry over 2018-2022.

Citeo also works at a dedicated plan with Carrefour, Coca-Cola, Danone Eaux France, Groupe Casino, Nestlé Waters, PepsiCo, Roxane and U in view of increasing the recycling of plastics bottles, notably in cities like Paris and Marseille, where collection performances are low.

## Concretely, which actions are taken?

These plans converge to optimise the collection service rendered to the consumers-citizens where a need has been identified like in cities, where collection needs to be boosted, or in premises receiving public like train stations and stadiums, thanks to the densification of the collection scheme (bring-banks, reverse-vending machines, modular pieces of furniture like Trilib' in Paris).

## So Citeo is developing deposit with reverse-vending machines?

When a deposit system is in place, consumers pay a deposit fee which they can claim back when bringing back the empty container. So far we have been experiencing reverse vending machines only for gratification purpose and for plastic bottle : no deposit is paid by consumers. The machines deliver vouchers of 1 or 2 cents of euros when the plastic bottle is returned, valid for ulterior shopping or to be offered to a charity association.

Both deposit and gratification systems raise the same questions in terms of their real impact on potentially higher recycling performances and overall costs of recycling when a mature yellow bin system has already been built as it is the case in France

There are discussions taking place on deposit for recycling in France in view of the publication of a Circular Economy Roadmap by the end of March.

Two main issues need to be addressed before considering setting up a deposit scheme. Firstly, all actors have invested billions in setting up the current "yellow bin" system, enabling recycling rate for household packaging to reach 68% in 2016 (86% for glass). Replacing the yellow bin by deposit for plastic beverages packaging would question the entire collection and sorting system in France. Secondly, the low performances of recycling mainly concern cities and on-the-go consumption. Taking these two issues into account, Citeo is conducting an impact study



of a deposit scheme and at the same time, of alternative solutions targeting cities to boost collection and recycling. Preliminary results will be known before the summer.

**You are speaking of business model of RVMs complementary to a collective scheme, of impacts of a deposit-scheme on the same collective scheme. Don't you think that the environment benefits like stopping littering shall prevail over economic considerations?**

We believe that littering is a real issue that needs to be tackled at its roots, especially by educational, communication programmes, not to exclude sanctions to ban these incivilities. Littering issue does not depend on whether there is a deposit scheme or not: it depends on the commitment of the entire community to maintain our environment clean.

**Do you think that Citeo's actions plan can help France reaching its targets?**

The first results are encouraging as there is a spill-over effect of the collection of all plastics packaging on other materials (+6 kg per inhabitants) but this might not be sufficient.

Citeo strongly advocates for pay-as-you-throw schemes to be set up in view to incentivise all consumers to sort more papers and packaging.

We also believe that such high targets cannot be achieved without a landfilling ban of recoverable materials.

Those are two strong drivers that we would like our government to consider as a priority.

**Would those measures be sufficient?**

Those measures focus on the end of the life-cycle of a packaging.

As expressed in our brand, we need all energies to make circularity work out.

We therefore develop actions towards consumers-citizens to raise their awareness.

We also work at the production stage with our clients to eco-design graphic papers and packaging, and to switch for more recyclable materials when technically and legally possible (safety & health concerns).

We are as well closely working with end-users of plastics and plastic producers in order to increase demand for secondary-raw materials and avoid the use of virgin plastics.

**Is Citeo's fee modulation scheme efficient for switching towards recyclable packaging? This scheme has inspired Brussels. I guess you support the generalisation of this system?**

Citeo invented this tool e.g., the bonus and penalty scheme, which Brussels has indeed recognised as a good practice. As a result all European schemes shall set criteria to modulate fees.

Yet, without harmonisation of the applicable criteria, our clients may face trade barriers. A different scheme is already in place in Italy since the beginning of the year; another one shall start in Germany in 2019.

By experience, Citeo promotes simple, feasible, and adaptable-to-innovation criteria. We worked last year with ARA, DSD, Ponto Verde, Repopol, Repak and Valpak, our counterparts respectively in Germany, Austria, Portugal, England, Ireland and Poland, on a paper showing the path towards European criteria, which we shared with the industry.

We are now initiating the second step which consists in identifying common criteria.

**Is the modulation of fees especially relevant for plastics?**

Yes, indeed. The Citeo's bonus and penalties mostly bear on plastics materials due to their diversity, and constant innovations.

Yet, it does not work as a stand-alone principle. It is critical to set up appropriate services to accompany companies of all size. For instance, we develop software to assess the recyclability of a packaging. A catalogue of good practises can also be consulted online as well as guides on plastics packaging do's and don't's.

Another key point is to guarantee effective recycling by ensuring the availability of market outputs otherwise eco-design becomes meaningless.

We thus also lead several R&D projects with clients in view of finding these solutions, for instance, for PET packaging with mineral opacifier and for paper and board containing mineral oils.

**Work is thus in progress for plastics recyclability. How could they be supported?**

Citeo strongly believes in the societal project of circular economy. Citeo also advocates that plastics can be fully part of it but they require time and investments for the actors to adapt at every stage of a packaging life-cycle (eco-design, sorting, collection and recycling). Market restrictions shall remain an ultimate solution.

Extended Producers Responsibility is one tool to be successful. The Member States must go further by setting complementary drivers as previously mentioned e.g., pay-as-you-throw; landfilling ban for recoverable packaging.

We also need to involve the producers of the virgin materials in view of closing the plastics loop as it has already happened for other packaging materials.

[www.Citeo.com](http://www.Citeo.com)



# Recycling of plastics – key element of the circular economy



**Miroslav POCHE**

MEP (S&D Group), Member of the ITRE Committee

The European Union has taken the priority to use materials more efficiently with the presentation of the action plan on the transition to circular economy in 2015. The aim is to reduce material intensity as well as to prevent the waste production and to treat waste in more sustainable and economically meaningful way. Plastic waste represent substantial challenge in this context. More than 25 million tonnes of plastic waste are produced in the Union every year. It represents one of the largest and the fastest growing categories of waste in Europe. Moreover the demand for plastic has been increasing over the years too due to its wide range of use in various sectors and industries.

At the same time, only approximately 30 percent of plastic waste is collected and recycled which is indeed very low figure. The remaining volume of plastic is incinerated, landfilled or littered, hence, contributing to large environmental problems such as greenhouse gas emissions, local pollution or marine litter. For example, 4 percent of the plastics production end up in the oceans every year, damaging the maritime ecosystems and negatively affecting communities dependent on fisheries or tourism. Another example of the environmental impact of the unsustainable practices in plastic waste treatment is the fact that its incineration represents around one percent of global CO<sub>2</sub> emissions. Simply by eliminating this practice we would be able

to cut the emissions by 400 million tonnes a year.

It is evident that we need to adopt more sustainable ways we use plastic. Our priority should be to prevent the waste production, therefore, to support reuse of the plastic products which goes hand in hand with their better design. Also it will be important to limit the consumption of “single-use” plastics. There has been some progress when it comes for example to plastic backs. However, we will have to focus on other items such as small packaging, disposable cups, lids, cutlery and other products of everyday use.

Nonetheless, it will not be possible to eliminate plastic waste production at all. For this reason, the new European plastic strategy will have to focus in particular on recycling. There is still substantial potential for improvement. As it has been already mentioned, almost 70 percent of the plastic waste is incinerated or landfilled, hence the material is lost for secondary use. The current practices are therefore highly inefficient from the economic and environmental point of view. There are two issues which will have to be addressed in order to improve the situation. First, the European Union will have to support the market for secondary plastics. At the moment the demand for recycled plastics is approximately 6 percent of overall demand for plastics in the Union. Instead the majority of the plastic waste is exported and treated in third countries, for example China. The aim of the strategy should be to stimulate innovation in this sector, to increase the potential of the use of plastics as secondary material and to improve the design of products to make them more recyclable. Investments in new recycling and production capacities will have to be supported while at the same time product manufactures will have be stimulated to take more recycled plastics and integrate it into their production processes. For this purpose, economic instruments to reward the use of recycled material should be developed at the level of both the European Union and the Member States.

However, we will have to focus on the consumers and their behaviour too. With substantial amount of plastic to be mixed with other communal waste, it makes it more

difficult and more expensive to separate it from other materials. Therefore, the consumers should be motivated to change their behaviour and attitudes to waste. More active information campaigns and education focused on more responsible handling of the waste will be important part of our future plastic strategy. Another possibility how consumers can play an active role in changing the situation is by changing their shopping behaviour. If consumers demand that products they purchase contain recycled plastics, the manufactures will have to reflect it in their design.

It is more than clear that tackling the issue of plastic waste will not be easy and will require various actions that will address different parts of the problem. However, we cannot achieve truly circular economy if we will keep irretrievably losing two-thirds of plastic waste on landfills or in incineration plants.

# Combining existing policy instruments to boost plastic waste management



**Jeremy WATES**

Secretary General of the European Environmental Bureau

Once known as an innovative material, plastic has become the symbol of our throw-away society and has been linked to several problems including marine litter and the collapse of entire ecosystems.

Increasing plastic production over the past four decades coupled with the lack of effective policies to address its downstream effects has given rise to the current levels of pollution. Yet despite the growing demand, only [5% of plastic waste was recycled](#) effectively world-wide in 2013, while 40% was buried and a third was littered.

In January all eyes were on the European Commission, which released Europe's first-ever strategy targeting single-use plastic items and aspiring to make all plastic packaging recyclable or reusable by 2030.

In the meantime, several countries across Europe took the lead, vowing to either phase-out certain single-use plastic items or reduce their availability on the market.

But the current situation requires more than a 'one size fits all' solution. And so the European Commission and member states are now tasked with coming up with a combination of laws to overcome the plastic pollution crisis.

Apart from avoiding the unnecessary use of disposable plastic, environmental groups have called for policies to improve plastic design and waste management.

## Make plastic responsible by design

All plastic should be made responsible by design so that only long-lasting, recyclable and toxic-free plastic materials are placed on the market.

Under extended producer responsibility schemes, whereby the price of a product includes a fee to cover the costs of its eventual responsible disposal, producers should pay modulated fees reflecting the environmental impact of products: the more durable and recyclable the material, the lower the fee. This way we create a more competitive market for reusable and recycled plastic.

Design is also important to ensure that plastic items are toxic-free. Apart from posing a threat to human health, hazardous substances also hinder efforts to recycle and recover materials safely.

For example, recent studies found that some toys made from recycled plastic contain highly toxic flame retardants that are typically found in plastic components of electronic products.

The European Commission is currently analysing policy options for ensuring disclosure of information about hazardous substances in products so as to avoid that certain toxic materials are put back on the market when recycled.

A global monitoring system can enhance transparency on hazardous substances in product supply chains. Everyone, from consumers to recyclers, should be made aware of where certain chemicals are found in products and materials as well as their concentrations.

## Better management of plastic waste

Producers, retailers and municipalities need to step up efforts to achieve maximum collection and recycling, while avoiding leakages into the environment.

Separate collection of plastic waste is one of the key enablers of recycling. But currently tonnes of unsorted and uncollected plastic items still leak into our environment every day.

Producers should help by taking greater financial responsibility for the collection and recycling of all plastics, including those that end up in mixed bags or are littered. Part of their contribution could also include campaigns to raise awareness about littering and clean up our beaches and landscapes.

However, both the financial contribution of producers and the risk of littering would be

much lower if the plastic that is placed on the market is of higher quality and value that can be reused or recycled.

Similarly, consumers can also play an important role. Through deposit-refund schemes, people can pay a small deposit at the point of sale which will be refunded when the reusable and recyclable packaging is returned.

Waste collection fees paid by households should also be based on the quality of separate collection as well as weight or volume of the waste generated, rather than on a fixed charge. This would create an incentive for people to consume less plastic and sort different materials correctly.

## Financial instruments in support of the Circular Economy

Incineration and landfill taxes are great examples of financial instruments that can foster reuse and recycling. If burning and burying waste are made more expensive, we create the market conditions to recycle more. Likewise, some have interestingly suggested a tax on virgin plastic placed on the market.

Along with direct taxation, policy makers could also consider a carbon credit for recycling – in other words, incentives for recycling based on its contribution to climate change mitigation and greenhouse gas emissions reduction.

This way, EU countries can fully reap the benefits of recycling and address the externalities relating to the extraction of virgin materials for plastic.

## Closing the loop of our economy

EU institutions and governments can choose from a wide range of policy instruments to boost the reuse and recycling of plastic, and reduce plastic pollution.

This will in turn make Europe less dependent on finite resources. It will pave the way to a circular economy in which increasing recycling and reuse operations can boost job creation, save people money and reduce greenhouse gas emissions linked to over-production.

We are already moving in that direction. All it takes is the willingness to speed up the transition.

# Plastics, chemicals and regulation



**Björn HANSEN**

Executive Director of European Chemicals Agency (ECHA)

Today, plastics are important and ubiquitous materials in our economy. They make our lives easier in many ways and often cost less than alternative materials. However, some plastic products contain hazardous chemicals and when these plastics end up in the environment, they can have a negative impact on nature. When recycled, today's plastics, can only undergo a limited number of recycling loops, which often involve them being downgraded in quality. As recognised by the European Commission in its communication on the Chemicals, Products and Waste Interface, moving to circularity will therefore require innovation – enabling chemical recycling or material circularity without quality loss. This move is an opportunity for Europe to make better materials – better for the economy and better for health and the environment.

## Plastics are chemicals

In its 'circular economy' packaged of December 2015, the Commission adopted an action plan stressing the importance of developing a well-functioning single market for secondary raw materials. This challenge can only be met if the legislative framework for materials travelling through the cycle – primary materials, products, waste, secondary raw materials – functions at all levels within the single market. As part of the deliverables, the Commission published two communications in early 2018, one on plastics, focusing on the next decade and a broader one, looking ahead many decades, but

also what to do in the mean time. Both look at plastics and chemicals.

From a chemicals legislation perspective, plastics are 'mixtures' or 'articles'. Once the plastic takes its final form – molded into a plastic bottle, toy, or food wrapping foil – it becomes an 'article'. Up until then it is a mixture. This means plastic, as it moves from its monomer, additive and stabiliser constituents, through the polymer to the finished article, moves through the various requirements in REACH and CLP from registration, through classification and labelling to restrictions of substances in the finished article.

As a follow-up to the 2013 Green Paper on Plastics, the Commission recently announced a Europe-wide strategy on plastics as a part of the transition towards a more circular economy. The goal is to make all plastic packaging in the EU recyclable by 2030 and to reduce the consumption of single-use plastics. Achieving these goals requires organisational and behavioural changes, creates economic opportunities and new business models and will stimulate innovation in recycling technologies and even in polymer chemistry. These innovations should consider the chemicals angle, in particular REACH and CLP, in order to increase sustainability.

Such innovations provide a strong business case for transforming the way products are designed, produced, used and recycled. By taking the lead in this transition, the European Union hopes to create new investment opportunities and jobs.

## Chemicals, waste and regulations

The communication on Chemicals, Products and Waste takes these goals one step further – looking at the long term and at all materials, not just plastic. In essence, a material waste stream, leaving the waste phase, is a substance or mixture under REACH and CLP. This shows how intertwined the chemicals and waste legislation actually is and how the product legislation is dependent on both. But it also shows that circularity of materials can not be achieved without looking at the chemicals angle.

In fact, the chemicals policy objectives fit well with the waste policy objective and this is evident when both policies are viewed using the waste hierarchy. Eliminating substances of very high concern, substituting hazardous chemicals with less hazardous ones and, where this is not possible, minimising their use and tracking

them, are prerequisites of the first step in the waste hierarchy: prevention.

The best way to prevent substances of concern in waste is by avoiding their use in products. This in turn is consistent with the priorities of the waste hierarchy, leading to high quality recovery, including preparation for re-use and recycling, in an environmentally sound way while ensuring high standards of protection of human health.

## Next steps, involving ECHA

In response to the high levels of plastic leaking into our environment and its harmful effects, solutions have been sought to design biodegradable and compostable plastics. However, most plastics that are currently available and labelled as biodegradable only degrade under specific conditions, which do not occur in the natural environment, and can therefore still cause harm to ecosystems.

Furthermore, it is estimated that 2 to 5 % of all plastics produced end up in oceans. Some of these are *microplastics*, that result either from the grinding of larger plastic pieces in the sea or from the release of microplastics intentionally added to products. Although microplastics intentionally added to products represent a comparatively small proportion of all those in the sea, they could be causing problems 'upstream' in our inland waters and soils. In response to this, several countries, including some EU Member States, have taken action to restrict their use and the cosmetic industry has also taken voluntary action.

In line with the REACH procedures for restricting substances that pose a risk to the environment or health, the Commission has therefore started the process of restricting the use of intentionally added microplastics and of oxo-degradable plastics, by requesting ECHA to review the scientific basis for taking regulatory action at the EU level.

## Additional information:

ECHA to consider restrictions on the use of oxo-plastics and microplastics

<https://echa.europa.eu/-/echa-to-consider-restrictions-on-the-use-of-oxo-plastics-and-microplasti-1>

Call for evidence on possible restriction of microplastics

<https://echa.europa.eu/-/call-for-evidence-on-possible-restriction-of-microplastics>

# We got to talk about what's in the plastics



**Monique GOYENS**

Director general of BEUC, The European Consumer Organisation

Most parents and grandparents keep some older toys around – such as plastic dinosaurs, building blocks and dolls. Recently, there have been reports that such toys could endanger the health of our kids and grandkids: in January 2018, a team of UK scientists for example found high amounts of harmful chemicals in second-hand building bricks.<sup>1</sup> While these chemicals may have been legal when the tested toys were first placed on the market, today they are no longer allowed under current EU toy safety standards.

Yet even brand-new toys are not necessarily safe for our kids. Last February, the EU chemicals agency, ECHA released results<sup>2</sup> which showed that one in five of all plastic toys tested contained restricted plasticizers – chemicals used to soften plastics.

We indeed live in the plastic age. Owing to their inexpensive, multipurpose, durable and light-weight nature, plastics are everywhere. They are in our smartphones and computers, in our cars, in the material that wrap food, and yes, even in cosmetics. Yet, there is growing consensus that the ubiquity of plastics is a problem for human health

and the environment, with plastic pollutants showing up in the water we drink<sup>3</sup> or in the air we breathe.<sup>4</sup>

According to a recent EU poll,<sup>5</sup> three in four EU citizens are concerned about the impact of plastic products on their health and on the environment. So, it is great news that the European Commission now wants to take the plastic bull by the horns through its new strategy for plastics in a circular economy.<sup>6</sup>

The Commission plans to encourage re-use and recycling of plastics and, to phase-out certain problematic plastics. That is good news. But, in case of recycling and re-using, what about the chemicals used to produce the plastics? How will the Commission ensure that the millions of tonnes of recycled plastics it wants to reinject into new products are *safe* for consumers? Strangely enough, the plastics strategy hardly mentions this issue at all.

## Plasticizer problems

All plastics rely on chemicals to achieve their specific properties *e.g.* hardness, softness, colour, resistance to sunlight or flames. This is what makes plastic fantastic, but many of the chemicals that enable these properties are not fantastic themselves.

Scientists have shown that some widely used plastic additives, such as Bisphenol A or the phthalates DEHP and DBP, disrupt our hormonal systems. The additive cadmium, a toxic heavy metal, causes cancer, while other additives may cause harms in humans or animals ranging from damages to the immune system to severe allergies.

The EU restricts the use of certain harmful additives, such as some phthalates in toys or bisphenol A in baby bottles. But there are dozens, if not hundreds, of plastics additives in use, some we know are problematic, others we are only beginning to suspect.

## Re-think the design of plastics

A more circular plastics economy means that we need to kick our plastics addiction, but also rethink what is in the plastic material itself. Robust protections against chemicals of concern are missing for many consumer products such as childcare products and, when they do exist, national authorities do not check them as often as they should.<sup>7</sup> Before closing the loop on a new circular plastics economy, we need a plan on how to ensure that harmful chemicals do not end up in the plastics in the first place.

A large and growing share of cheap plastic goods on the EU market are imported. Yet, manufacturers in third countries do not always comply with EU chemicals legislation. Consumers however expect that the same protections apply, whether a product is produced in the European Economic Area or outside it. This regulatory gap can therefore give consumers a false sense of security and risks undermining their confidence in EU chemicals legislation. The same standards and checks must apply equally to domestically produced and imported goods.

Clearly, new EU rules to encourage plastics recycling should not perpetuate the use of harmful chemicals. While risks may be managed in virgin plastics during first use, risks become increasingly unpredictable when recycled plastics are reincorporated into future goods. This was recently illustrated when toxic, and even banned, flame retardants showed up in plastic toys made from recovered e-waste.<sup>8</sup> To prevent this, we need more effective control of where recycled materials end up.

As the European Commission's First Vice-President Frans Timmermans observed<sup>9</sup> last year, "the technological challenge is not a problem, and it's not even a financial problem... It's a problem of governance." Then, let's fix the governance of chemicals in consumer products to ensure a sustainable circular economy. We are all ears, EU Commission.

1 Scientists from the University of Plymouth analysed 200 used plastic toys which they found in homes, nurseries and charity shops. <https://www.plymouth.ac.uk/news/many-second-hand-plastic-toys-could-pose-a-risk-to-childrens-health-study-suggests>

2 Enforcement Forum, Harmonised Enforcement Project on Restrictions. REF 4 Project report. Available at: [https://echa.europa.eu/documents/10162/13577/ref\\_4\\_report\\_en.pdf/b5f35cd9-64a4-c120-1953-e9e176b9c282](https://echa.europa.eu/documents/10162/13577/ref_4_report_en.pdf/b5f35cd9-64a4-c120-1953-e9e176b9c282)

3 <https://www.theguardian.com/environment/2017/sep/06/plastic-fibres-found-tap-water-around-world-study-reveals>

4 <https://www.theguardian.com/environment/2016/may/09/people-may-be-breathing-in-microplastics-health-expert-warns>

5 Special Eurobarometer 468: Attitudes of European citizens towards the environment.

6 [http://europa.eu/rapid/press-release\\_IP-18-5\\_en.htm](http://europa.eu/rapid/press-release_IP-18-5_en.htm)

7 See *e.g.* <http://ec.europa.eu/environment/chemicals/non-toxic/pdf/Sub-study%20b%20articles%20non-toxic%20material%20cycles%20NTE%20final.pdf>

8 [http://ipen.org/sites/default/files/documents/toxic\\_toy\\_report\\_2017\\_update\\_v1\\_5-en.pdf](http://ipen.org/sites/default/files/documents/toxic_toy_report_2017_update_v1_5-en.pdf) IPEN, "Pops recycling contaminates children's toys", 2017

9 Opening Speech, Stakeholder Conference on 'Reinventing Plastics - Closing the Circle', 2017

# Towards plastic resourcing



**Antoine FREROT**  
Chairman & CEO, VEOLIA

**T**he decision of the Chinese government to ban imports of plastic waste as early as January 2018 is having a big impact on current plastic recycling markets and industry. Is it a good omen, boding well for the future of recycling, or a looming disaster that will leave the whole industry in limbo? As the process unfolds, both doomsayers and utopians will certainly be proven wrong, leaving market players and regulators with a daunting yet exciting task of moving from a purely quantitative approach to a more quality-based plastic recycling industry.

Recognizing this momentum, the European Commission recently published its strategy on plastics. To companies like Veolia, this initiative is an opportunity to shed light on closely intertwined challenges that can harness the benefits of plastics while addressing its drawbacks. As the overall production of plastics is still booming, setting up an efficient plastic recycling value chain is crucial to meet policy objectives.

## A buoyant environment for plastics recycling and recyclers

When looking into plastic production, figures are striking and call for a global response, as plastics have grown ubiquitous but generate a lot of waste. World production

of plastics is continuously increasing: it is currently 330 Mt p.a. and is expected to quadruple by 2050. Most of it comes from Asia (50%), followed by Europe and Russia (21%) and the three NAFTA countries (18%). Demand is also largely dominated by Asia. It is distributed among the packaging sectors, which account for 30% of the world's packaging sector and even 40% in Europe, followed by construction (25%), automotive (17%) and agriculture (8%).

From a market-oriented perspective, the turnover of the global plastics market can be estimated at €300 billion, despite the fragmentation of players and the large share of the informal sector. Regarding recycled plastics, the size of the market is 15 times smaller, i.e. €20 billion. Nonetheless, there is significant growth potential as only 9% of the tonnages produced between 1950 and 2015 were recycled. Today, the recycling rate of plastic is still very low compared to other materials<sup>1</sup>.

However, manufacturers are starting to rethink their production methods and forecasts predict that the market for recycled plastics is expected to grow by 7% per year by 2025, faster than for virgin plastic production. But numerous obstacles and issues have not been yet addressed.

## The need to overcome existing barriers to set up a resilient plastics recycling industry in Europe

Veolia's revenues in plastic reprocessing are currently €280 million/y and we expect to continue expanding our activities in this field. From an industrial perspective, the narrow path between the devil (ambitious yet unreachable targets without required investment) and the deep blue sea (unsustainable flows of poor quality recyclates) would be to help the whole value chain of plastic recycling to adjust its economic equilibrium, treatment capacities, and innovative technologies to this new qualitative leap. This would require urgently addressing the following issues:

- low oil prices, which hamper the profitability of plastics recycling: at \$50 a barrel, new plastics are cheaper than recycled plastics;
- collection difficulties, particularly for packaging, and challenges in sorting mixed plastics;
- psychological as well as regulatory barriers to the use of recycled plastics by industry, such as norms or standards restricting or limiting the intake of recycled plastics;
- the lack of investment in new treatment capacities and innovation, especially in the realm of hard, multi-layer and composite plastics (computer shells, mobile phones, car bumpers, etc.).

In this context and provided some of these barriers could be lifted, Veolia's ambition is to structure a recycling and recovery industry for plastics and to offer an alternative to virgin materials that meets our clients' specifications and grade: in a nutshell, we aim to help reinvent the plastics market by integrating it into the circular economy. In practice, we have already included this ambition in our business objectives as we plan to increase our turnover in this activity to €1 billion by 2025.

## The inclusion of the economics of plastics in a more global circular economy strategy

The main challenge, in our view, is to develop the demand for recycled raw materials, thereby relocating part of this industry to Europe and meeting ambitious recycling targets at national and European level. Creating new outlets for recycled plastics is, indeed, a prerequisite if market players are to invest time, money and expertise in the undertaking. In this respect, the pledge by industry to incorporate 10 million tonnes by 2025 is a great first step. Should European industry not live up to this ambitious task, other policy options could be activated, such as minimum recycled contents for manufacturers to incorporate more recycled plastics into their production processes. Public procurement also represent a powerful pull, as contracting authorities have the means to set the rest of the value chain in motion.

<sup>1</sup> 80% of ferrous metals are recycled, 60% for paper, 50% for glass and 30% for plastic (collected for recycling)

As is often the case for business undertakings, the anticipated costs and return on investment tend to take precedence over other considerations. In recent years, the recycling sector has been undermined by price volatility on both waste bales and virgin prices, which jeopardizes the economic equilibrium of recycling companies and deters their clients. If nothing is done, a whole sector of activity could disappear along with the industrial and technological edge that has been developed over decades. This implies that the price of recycled plastics should be competitive enough for producers to make the right decision both for themselves and for the environment. To this aim, Veolia has long advocated monetizing the environmental benefit of recycling, preferably at European level. The available policy toolkit is well known - carbon tax, reduced VAT, recycled raw-material tax credit, exemption from energy taxes - but political will is essential to restore the imbalance between the prices of virgin and recycled plastics, especially at Member State level.

Besides the obvious notion of profitability, lack of visibility and clarity can deter market players from investing in a given business. Plastics recycling being at the crossroads of product manufacturing and waste management, both sides should be consistently regulated to avoid frictions and uncertainty when transiting from one status to the other. The EU communication on the interface between chemical, product and waste legislation as well as the outcome of the negotiations on the new waste directives are unique opportunities to solve the conundrum facing recycling markets: how to phase out substances of concern and increase recycling rates at the same time? Indeed, some of these legacy substances, today deemed "of concern", were added to plastics years ago and are now found in plastic waste. A pragmatic approach is therefore needed to facilitate the transition to a toxic-free material flow, which should be our primary goal, while allowing valuable materials to be recycled for specific uses, provided this is based on a proper risk assessment.

According to the Ellen MacArthur Foundation, "Without fundamental redesign and innovation, about 30% of plastic packaging will never be reused or recycled". This is a wake-up call for the industry as a whole to cooperate better, including upstream players like plastic producers and product manufacturers but also downstream players like recycling and waste management companies. Indeed, the lack of interaction between design and recycling experts can impact the recyclability of products once it becomes waste. As recyclability is broader than just



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dismantling, product manufacturers should ensure that an economically and technically viable recycling industry can actually deal with their plastics and the additives they contain.

### Conclusion

The transition towards circular economy has led to profound changes in the missions of our company. Our role is no longer just to

eliminate waste but to re-inject it into the economy. Our business model has evolved from a service operator to a producer of renewable resources. As both markets and regulation are the main drivers behind this move, regulators and companies should continue working closely together to ensure that our waste can become the Secondary Raw Materials our economy needs to prosper.

# The challenge of sorting in local communities: a challenge in Europe



**Janko KRAMŽAR**

*Director of Snaga Ljubljana, waste management company*

**L**jubljana, European Green Capital 2016, is the European capital with the largest share of separately collected waste (according to a European Commission study) while keeping waste management costs among the lowest in Europe.

In 2017, we separately collected 68% of the city's waste, which marks a ten-fold increase over the last 10 years. This is the highest figure of any European capital, and we already exceeded the EU's recycling target for 2020 by almost 20%.

In the analysis commissioned by the European Commission in 2015, Ljubljana emerged as a top performer on the list of the 28 EU capitals for separate collecting and thus being recognised as an example of good practice. A key ingredient for Ljubljana's success was the introduction of door-to-door collection and well managed and innovative communication.

This is a remarkable achievement in which policy-makers, businesses and citizens have worked together to create a more sustainable urban environment.

Being our best in sorting is not the last stop; however, it is essential for achieving even more ambitious goals.

## From sorting to zero waste and circular economy

Mayor Zoran Janković: "If we want to preserve our planet for future generations all cities in the world have to adopt the green

capital values. Together with our colleagues and numerous partners, we are more than ever actively oriented towards the circular economy, one of the key elements securing the survival of the planet. If we learn to use and consume less, to reuse things and continue to follow the sharing economy principles, we and our environment will come out as winners."

Therefore, Ljubljana's sustainable and environmentally responsible waste management system solutions are in sync with the circular economy and zero waste principles.

With Zero Waste Strategy 2035 we became the first European capital to be a member of the Zero Waste Europe network. We embrace the best waste management practices in the EU by strengthening three waste management priorities (prevention, reuse and recycling), improving the separation and treatment of waste, and encouraging citizens and businesses to reduce the amount of waste they generate in the first place.

Ljubljana's Regional Waste Management Centre (RCERO), the most modern waste treatment facility in Europe, plays an important role in the transition towards a circular economy. It manages biodegradable and residual waste of one-third of the country's population. The facility processes 150 thousand tonnes of mixed waste, and 20 thousand tonnes of bio waste each year, creating 30 thousand tonnes of raw, recyclable material, 60 thousand tonnes of fuel and seven thousand tonnes of compost. The electrical energy and heat energy from the biogas produced in the process is reused directly in the facility. At the end of the process, just five percent of residual waste ends up in a landfill. In the facilities of the regional centre, we seek to prevent the production of waste at source, recycle and reuse.

## Sustainable society initiatives and responsible consumerism

From 2013, we went beyond encouraging recycling, to include a series of consumer-oriented initiatives and facilities for repair, re-use and exchange. We are systematically introducing actions and measures for waste prevention and responsible consumerism.

"Get used to reuse" is a socially responsible initiative to encourage reusing as well as responsible consumerism with respect to ourselves, the environment and our wallets. With the help of a "recycled" song "Letiva (Let's fly)",

video manifesto, posters, container stickers, events and workshops in district communities and the Re-use Centre, and with online, social and educational activities, we offer an alternative to the mindless consumerism and conviction that new things are better than the old or reused ones. Results: in the last four years, the share of still useful things that end up in waste bins is decreasing, and the awareness for responsible consumerism is raising. The statistics show that in RE-use Centre in mid-2014, 75 items per day changed the owner and today the average number of items sold reach number 150.

With socially responsible initiative "Raise your voice against food waste" we also focus on food waste and ways that citizens can be more responsible about the amount of food they buy and throw away. We address them with a song "Bin Blues" played on radio stations, through urban interventions (protests of waste bins), activities for children, collaborating with media, non-governmental and other organisations.

Kabiné Šerinjon is an inspiring project based on collaborative consumption that promotes ethical practices in the fashion industry, encourages a responsible approach to our consumer habits, and supports local designers. It allows you to book clothes and accessories through a free app – and all the items available are either vintage or made by Slovenian designers.

In 2016, we have launched a campaign against plastic bags under the slogan "I'm not lasting, but therefore less annoying. I'm a biodegradable bag." to reduce the use of plastic bags in markets. We want to stress the responsibility all of us have towards the environment and at the same time encourage customers to use their shopping bags or baskets for their purchases.

# The world has no use of single use plastic



**Margrete AUKEN**

MEP (Group of the Greens/ European Free Alliance), Member of the ENVI Committee

When strolling through the supermarket, it is easy to get frustrated by all the plastic packaging. I am sure we can all recall images of individually wrapped apples, or pre-peeled oranges cloaked in soft polymer material. Single use plastic containers for hand soap, plastic straws, plastic wrapping for plastic straws - you name it. [Science](#) tells us that by 2015, 6300 Mt of virgin plastic waste had been generated globally, of which 9% had been recycled, 12% incinerated and 79 accumulated in landfills or ending up in the natural environment. If trends were to continue as up until then, 12000 Mt will be landfilled or end up in our nature by 2500.

Fortunately, it seems we can curb this trend. Awareness has grown over the last years, and pressure on policy-makers has made it impossible not to take action. It was about time! Not much has happened since the so-called Plastic Bag directive, which I was the rapporteur on and which was adopted in spring 2015. Heck, not much has happened on the legal obligations laid upon the Commission as a result of the plastic bags directive! The report to the Parliament on the nasty oxo-degradable plastic was only submitted in January, 8 months past the legal deadline. The methodology for calculating plastic bag consumption is 21 months delayed.

But Europe is finally catching up! With the launch of the Plastic Strategy, the EU will

finally give focus on this urgent matter. Particularly the forthcoming law proposal on how to make all single use plastic on the EU market recyclable by 2030 can be a game changer - if the ambitions are high enough, if we send clear message to the plastic industry and if we make sure that there are midterm evaluations so we have evidence that progress are indeed made.

In order to achieve this ambitious target, it is important that we work closely together with all stakeholders. First of all we must sit down and listen to the producers - how can we make legislation that pushes them in the right direction? This requires a close cooperation with industry and that they know we are working with them and not against them. The plastic industry is a big and considerable part of EU economy and generated a 340 million turnover in Europe in 2015, while employing 1.5 million people. It is essential that this industry is turned into one that makes products, which will enable plastic to become an environmental aid and not an environmental burden.

The publication of the Plastic Strategy comes at a time where the momentum is higher than ever. Consumers are increasingly aware of how their consumption has an impact on society. But awareness helps little if they have no tools to change their behaviour. It is not enough to tell well-meaning citizens that their kitchen cloth releases micro plastic into the environment, they need a reliable alternative. They still need to wipe their tables. Innovation must give them real alternatives. The momentum amongst citizens must be nursed by empowering them to make a genuine difference and giving them actual, sustainable possibilities.

Now I am not one to argue that all plastic is bad. Plastic packaging can be necessary. Plastic packaging preserves food, has a relatively low carbon footprint in the production phase and is easily transportable. However, it has to be used with caution, and where it makes sense. We need to impose a critical evaluation of when to use plastic packaging. Do we really need to put the toys inside a carton box in a plastic bag? Do we really need that straw in our drink?

The upcoming legislative proposal will focus on defining the concept of design for recyclability. It is a sound way to decrease the amount of plastic use and to avoid incineration and landfilling. Plastic products of higher quality and of better design and thereby of higher value *will* help boosting the market of recyclable plastic. The intentions are good.

It is only a few years ago that I got into a fight with Commissioner Timmermans over his "small on small things, big on big things"-approach, which led him to argue that the plastic bags directive, that I was rapporteur on, belonged in the "small things" category. The success of the plastic bag directive seems to have convinced him that a proper management of plastic use is indeed a big thing!

Although I do not wish to give Timmermans a shock, I will give him praise where praise is deserved. This proposal has a good ring to it. It presents potential for considerable progress after years of mismanaging plastic consumption.

Nevertheless, that does not mean that my wish list is empty. The Plastic Strategy still lacks proper initiatives on unintentionally added micro plastic. It still lacks a proper approach to chemicals and endocrine disruptors in plastic. And we need guarantees that plastic that is sorted for recycling is indeed recycled properly, and not landfilled, incinerated or exported.

I am grateful to the Commission for finally changing it's mind on the hitherto mismanagement of plastic. Now it is up to the European Parliament to make up for the shortcomings in the Strategy.

# The development of plastic waste recycling:

## An environmental and industrial challenge



**Sébastien PETITHUGUENIN**  
General Manager of Paprec Group

**A**rising tide of concern about plastics pollution has appeared in Europe, with recent reports proving widespread damage to the environment. It is nevertheless ubiquitous in our everyday life and increasingly produced – up by 33% these past 8 years. Thus, recycling plastics becomes more necessary than ever to quickly reduce environmental pollution, and support the movement towards a circular economy. In 2016, plastic post-consumer waste was mostly sent to energy recovery (41.6%) or landfill (27.3%), while only 31.1% was recycled.

In France, 902,000 tons of collected plastic waste are collected and processed to enter the sorting and recycling operation each year, and producers incorporate 250,000 tons of them into their new products. The most used polymers were PET (widespread in packaging), PVC (in building and construction), PP (very used in packaging and automobiles), and HDPE (also in packaging).

Paprec therefore calls for a shift in the approach to waste, and supports both the European Union and the French government in their recent regulation to promote a more circular economy. That is why Paprec Group has been investing in plastic recycling since 2000 and is now the major player on the French market thanks to 12 specialized sites. We collect and process nearly 350,000 tons of plastic waste every year.

### European Strategy for Plastics: an ambitious framework for all public and private stakeholders in the loop

A plastic-free world is not the right solution as that material significantly improved our quality of life, from preserving food and transporting water, to making more durable appliances and more energy-efficient buildings, to saving a large amount of fuel during transportation thanks to lighter containers. On the contrary, a circular economy for plastics would recycle that material several times, thus significantly reducing the use of non-renewable resources and CO<sub>2</sub> emissions, but also creating jobs in Europe for sorting and transforming plastic waste. Therefore, increasing the incorporation of recycled material, designing recyclable products, and better collecting waste are essential but require cooperation throughout the value chain and regulatory incentives.

On 16 of January 2018, the European Commission published the long-awaited “European Strategy for Plastics in a circular economy”. As an ambitious roadmap, that Strategy deals with the economics of plastics recycling, quality of raw material, and pollution from plastic waste. Different levers are recommended to ensure the development of plastic waste recycling.

Before the recycling stage, the European Union focuses on the improvement of product design and means of waste collection. Both measures are prerequisites for a sustainable plastic recycling economy. Ecodesign is essential to make waste truly recyclable and incorporate recycled material. Recycling can be cost-efficient and a support to downstream industries only if the end-of-life of the product is taken into account from the design and production stages. This requires all stakeholders – from producers to recyclers – to engage in a permanent exchange about current and future goods entering the market. Cooperation can make it possible for R&D departments to take into account the technical constraints of recycling, for marketing departments to understand all the benefits of secondary raw material, and for recyclers to produce material adapted to specific needs. Such an industrial challenge would benefit from an institutional structure gathering industrial actors, as France is trying to do with the “Center of Expertise for Recycling.” Moreover, separate collection will indeed help increase recycling rates. Separation at source of recyclable waste – and sometimes plastics – prevents them from being soiled by bio-waste and polluted by hazardous substances, limits the number of steps to eliminate miss-sorted waste, and makes it economically profitable to separate the different materials and then plastic resins.



Unfortunately, public policies too often focus on packaging – and even more household packaging – while the other 60% of plastic waste also require specific collection systems, such as the building sector where only 26% is recycled in Europe. Recycling is the solution for both industries and consumers to accept plastics in the long-term.

After the recycling stage, European quality standards for sorted plastic waste would also be an efficient tool to foster confidence among producers, and subsequently supports replacement of virgin material by secondary raw material. Equally, funding innovation and modernization will ensure a lasting growth to green industries. Increasing demand is necessary to enable further industrial investments. Innovation will also develop bio-based plastics – made from renewable resources but not necessarily biodegradable – and we consider them to be a good opportunity if they fit the existing recycling processes. That is why we welcome that European initiative, which took into account the value chain and encourages the 28 Member States to take decisive measures in order to tackle this industrial and environmental challenge.

### French Roadmap for a circular economy: a national project with the potential to boost the recycling industry

The ecological transition must be achieved quicker, as pollution is rising and while industrial infrastructures are already in place. Hence, since October 2017, France followed the lead of the European Union by putting to the vote measures to shift from a linear to a circular economy.

For a better management of waste, France is considering deposit scheme systems. While this mean has proven very effective in Germany, Denmark and the Netherlands, the

French collection and sorting logistics have been built around a so-called “yellow bin” that does not distinguish between recyclable products. With a continuously increasing 56% recycling rate for plastic hollow containers and an ongoing investment cycle of 1 billion euros in the modernization of waste sorting facilities, we do believe that a deposit scheme would have a limited impact. Collection systems have to be adapted to each Member State. Accordingly, a deposit scheme focusing on bottles and cans consumed away from home would be more effective as those streams currently end up in the nature or are not separated from non-recyclable waste.

Nevertheless, the French Roadmap also puts forward innovative proposals to support incorporation of secondary raw material into new products: voluntary commitments or, in case of failure, mandatory incorporation rates or certificates of incorporation. Negotiations for Green Deals will soon start and could make our country a forerunner of the ecological transition. As 1 ton of recycled PET produces 70% less CO<sub>2</sub> and requires 83% less energy than virgin PET, incorporating more recycled plastics appears to be a necessary step in the fight against climate change. Recycling is one of the answers to the environmental challenge as it greatly limits greenhouse gas emissions. This is why we also believe an increase of the carbon price in the European Trading Scheme, and the creation of negotiable recycling certificates would further support a green European economy and its industrial actors.

### Recycled plastics as a green and high-quality material for European industries

New regulation is the opportunity to assess the state of the market. Fears have arisen regarding both the quality and quantity of secondary raw material. It should

be made clear that European recyclers take very seriously the matter of quality, hence their efficient sorting processes, regular quality controls and traceability of the streams. New technologies also help us continuously improve quality, and innovation needs to be spread in the production processes where the “best available techniques” can guarantee very high levels of recycled material in products. Single-use and short-lived plastics – like packaging – are of course a priority. Nevertheless, secondary raw material already appears today to be of similar quality to fossil-based material. Recycled plastics can obtain similar certifications and be fully substitutable to primary raw material. Besides, quantity depends on both collection of waste and demand for recycled material. Investments will be made by recyclers when capacities are exceeded but, currently, 30% of the French production is sent beyond our borders. Moreover, French norms must adapt to this newly-introduced material as current norms sometimes prevent incorporation in everyday goods. Therefore, concerns about quality and quantity should not anymore be barriers preventing incorporation of recycled material.

The development of plastic waste recycling is both an industrial challenge, which requires the commitment of all economic stakeholders, and an environmental challenge, as the magnitude of climate change makes it necessary to quickly shift towards a circular economy. It is finally time for Europe to live up to its own ambitions, and it is a once-in-a-lifetime opportunity for the plastic industry to modernize and progress in public perception.





European Commission



## Changing the way we use plastics

It's light, it's cheap, it's everywhere and we can't live without it. Plastic is fantastic, but it has serious downsides as well. It's time to rethink plastic, and ask some tricky questions:

- How can we get away from single-use plastics?
- Can we make recycling it easier?
- And how can we stop plastic from ending up where it doesn't belong?

### EUROPE PRODUCES A HUGE AMOUNT OF PLASTIC: 58 MILLION TONNES EVERY YEAR



Most of the raw material is fossil fuel based. Thus, if the current production trends continue, **by 2050** plastics could account for 20% of oil consumption, 15% of greenhouse gas emissions, and **there could be more plastics than fish in the sea.**

Source: PlasticsEurope

### EUROPE PRODUCES 25 MILLION TONNES OF PLASTIC WASTE



Source: PlasticsEurope, 2014

EU initiatives like higher recycling targets and more effective legislation for drinking water (cutting the need for bottled water) are improving the situation, but stronger action is needed.

More than 60% of plastic waste still comes from packaging, but only 40% of that packaging is recycled.

Sources: PlasticsEurope and Eurostat

# Balancing voluntary commitments and regulatory measures



**Alexandre DANGIS**

*EuPC Managing Director*

This year started in Brussels very hard as “The EU Plastics Economy year”. On 16th January 2018 the European Commission has published its long awaited EU Plastics Strategy as part of its Circular Economy Package. In almost all EU countries, politicians and media are very interested in the “Plastics Story” due to merely the marine litter issues facing our planet.

Needless to say that we cannot continue as an industry to put our heads in the sand and continue business as usual. More consumer transparency requests, due the growing digital society needs about what really happens with the plastics waste in Europe, is driving our plastics business now more than ever to think more circular. We therefore should embrace the EU Plastics Strategy and work with all stakeholders including polymer suppliers, brand owners, public authorities and OEMs towards its objectives.

It is more than clear for society that plastics waste management in the European Union will have to improve to safeguard the image of plastic products. Working together as industry and authorities is the only way forward. For this reason, European Plastics Converters - EuPC and five other organisations have set up a framework of voluntary commitments with an open book towards EU regulators. Setting the scene for a real transformation of our plastics industry in the next decades.

As a start in 2018 PCEP Europe (Polyolefins Circular Economy Platform Europe) has been set up with a clear mandate to deliver and report to the EU regulators in a transparent way on 60% recycling and reuse of collected polyolefin packaging, 75% design for recycling by 2030. By 2020 PCEP Europe will set a recycling target for agricultural PO film and other sectors will follow in 2025. Lessons have been learned from the PVC and PET value chain collaborations that since many years are organized vertically with their respective industry partners in VinylPlus and Petcore Europe.

Time has come also for brand owners to move on from “pledges” to putting into practice all these elements that will drive the circularity of the future plastics industry in Europe. 10 Million tons of reusing recycled polymers into finished products by 2025 is a huge challenge set by the EU Commission but we have to stretch our common efforts in achieving as close as possible this objective.

Circularity of polymers is not only a packaging challenge but a general one for the plastics industry. Polymer families need to ensure they develop their value chains taking into account the end of life options. The technological limits of mechanical recycling might have been reached but can still contribute far more to the use of recycled plastics if proper

sorting and plastics waste separation infrastructures will be set up in Europe.

Chemical recycling of polymers will need to be seriously exploited at industrial level in order to develop new resource efficient supply chains for the petrochemical business in Europe.

Education is key and has an important role to play even in Europe after almost 25 years of EU Plastics packaging waste regulations implementation. Worldwide media support should start to help to educate all consumers globally on how to handle waste in a circular economy. Schools should embrace the spirit and principles of the circular economy to prepare the next generation of consumers that will have to live in a world even with more plastics to safeguard our health, safety and comfort on this planet.

Plastic products are a key factor of our daily lives and they will continue to help our society in its continuous development. Although studies demonstrate that other parts in the world are responsible for 80% of marine litter, also in Europe efforts on recycling of plastics and more efficient waste management schemes are still needed. We are still landfilling and wasting resources in certain parts of Europe. Here, regulators need to ensure this will stop. Hence, the need to work more “closely” together and finding the right balance between regulatory measures and industry voluntary actions and commitments! Actions are needed now towards stopping the 10 largest polluting rivers in the world that bring plastics waste into our oceans.

The age of the new EU Plastics Economy has arrived and the industrial transformation has started. Circular polymer value chains will develop further and every partner in the circle will have to fight for its profits (added value) but one thing is certain, all partners are connected now and the game has started.



# Plastics recycling: Going beyond the percentages



**Daniel CALLEJA CRESPO**

Director General of DG Environment  
European Commission

It has been said that 99% of statistics only tell 49% of the story. So if we want to understand the plastics story, we need to go beyond the recycling percentages and look at how to get the most value out of plastic as a material at all stages of its life-cycle, and indeed how to prolong that life cycle.

As we celebrate the landmark agreement reached on more ambitious municipal waste recycling targets between the European Parliament and Member States in Council – including a plastic packaging recycling target of 55% by 2030 – we still need to keep some questions in our heads: shouldn't we be going beyond the percentages to look at the quality as well as the quantity of recycling? And shouldn't we also be reducing the total amount of plastic waste, not just increasing the percentage recycled?

European waste targets are a proven and powerful way to drive improvements in Europe's waste management. They set clear challenges, and getting from less than 30% plastics recycling today to 55% by 2030 is one such major challenge. Targets will not be met just because they exist. Their value is also in providing clear signals to industry, recyclers, governments and municipalities about the investment and infrastructure decisions that are needed.

The Commission has set waste targets firmly in the wider context of the circular economy, implying a more holistic approach to material management, including economic incentives, standards, and investment. As part of the Circular Economy Action Plan, the Plastics Strategy adopted by the Commission in January

sets out such a holistic vision of how to move towards a "New Plastics Economy", by recognising the need for binding legislative targets to be accompanied by other instruments, by setting further objectives, such as making all plastic packaging easily reusable or recyclable by 2030, and by addressing issues such as the interface of chemicals, products and waste.

Such a holistic approach will help us reach our targets, but it will also help us go further. Because targets are, after all, a means to an end. To succumb to "targetitis", by focussing on them exclusively, would mean that we don't take account of some clear limits to those targets. Let me outline two important ones.

First, thinking uniquely in terms of tonnes, cubic metres and percentages of plastics recycled means we don't think about quality. The economic and industrial opportunities of improved materials management depend not just on volumes, but equally on the economic value of those materials. A successful circular economy keeps value in the loop, but if we achieve 55% plastics recycling, it does not mean that 55% of the value of the plastics goes back into the loop. Indeed recent research in Sweden<sup>1</sup> suggests that about half of that value is lost, even if the weight recovered for recycling is high. All too often we take higher value plastics and recycle them into low value aggregates or for single-use products. This also increases the likelihood that the plastic will only go around the loop one more time before being buried or burned.

As we move closer to our 55% goal we also need to promote high quality recycling, leading to high quality secondary plastics. In the Plastics Strategy we already make proposals designed to improve recyclability, and to tackle downgrading, mixing, contamination and loss of plastics in recycling systems and processes. In this way we can come closer to producing secondary plastics that are capable of replacing primary plastics, we can boost their demand and make it more profitable to produce higher volumes. The Strategy addresses the need to improve the supply and demand for secondary plastics, and the need for a fourfold increase in sorting and recycling capacity in Europe.

I am optimistic about the Europe's ability to achieve this. Those businesses that find ways to keep value in the loop will be the ones to capture and exploit that value. There is major economic potential in improving our handling of materials, not only environmental benefits, and technology is opening up this potential further. As we move forward we will need to harness the possibilities of big data and digital platforms, making possible digital ledgers of product components, digital marking of substances, tracking, sorting and automation. These will reduce processing costs, facilitate cleaner, more specialised and "closed" loops and drive up the quality of recycling. We will see the European Digital Agenda and the Circular Economy Agenda coming closer together.

A second reason to go beyond a narrow target approach: product design needs to be looked at if we are to reduce recycling costs and improve quality, whether it is in the essential requirements for low value plastic products such as packaging, or in ecodesign for durability and recyclability of more complex and high value products such as electronics. We also need to make the supply chains work better, for example by tackling the split incentives which mean that valuable materials aren't recuperated. And we need to boost levels of recycled content in new products, including through green public procurement.

Every year Europeans generate about 25 million tonnes of plastic waste; if we can achieve a 55% collection rate for recycling it will be a major achievement, and certainly a big improvement on landfilling or incineration. But we cannot ignore that half of the value of original plastic is lost in recycling. So let's go for quality as well as quantity.

This brings me to a final point; those 25 million tonnes of plastic waste. Waste reduction and re-use trumps recycling in the resource hierarchy, so we need to reduce those 25 million tonnes at the same time as we increase the proportion of it that is recycled. These two objectives are fully compatible. To achieve both simultaneously we need to eliminate as a priority those plastics that are hardest to recycle, those containing substances of concern, those that escape proper recycling pathways or are down-cycled. Many of these issues will be directly addressed in our imminent proposal on single-use plastics and marine litter.

<sup>1</sup> Material Economics "Retaining Value in the Swedish Materials System"

# Leading the way to clean and affordable polymers



© Bruno Mazotier

**Bernard PINATEL**

President, Refining &amp; Chemicals, Total

**T**otal's ambition for 2035 is to be the responsible energy major. In practical terms, that means providing energy that is affordable, reliable and clean. Total's petrochemical activities play a key role in achieving this ambition. We develop, manufacture and market polymers that are used in the packaging, automotive, construction, household appliances and medical sectors. As the second largest European petrochemical producer, we are active in polyethylene, polypropylene and polystyrene — which represent more than 60% of the global demand for plastics.

World population growth and the indisputable added value of plastics drive an average growth of 3% per year for these materials. Their use significantly reduces carbon emissions compared to many alternative materials. Nevertheless all stakeholders of plastics must come up with the solutions to decrease plastics' environmental footprint in order to meet the growing demand while limiting climate impact. As a pioneer in developing innovative polymers, Total intends to lead the way in the new circular economy of its polymers.

## Polymers, built-in advantages to reduce the environmental impact of products

Plastic has a built-in advantage when it comes to reducing the carbon footprint of products because it is lighter than other

materials such as glass and metal. Increasingly, metal automotive parts are being replaced by lighter composite materials, which reduce fuel consumption and, ultimately, carbon emissions. Cutting a vehicle's weight by 200 kilograms reduces fuel consumption per 100 kilometers by 0.5 liters.

Our researchers have developed technologies that further reduce the use of polymer materials. Our Lumicene range of packaging films, for example, are 25% thinner but just as strong as conventional films, and our Excell-R for insulation reduces the amount of product needed by 20%.

We are also developing renewable, biobased and recycled raw materials for plastics.

## Total Corbion PLA, 2nd largest global producer of bioplastics

Total and Dutch company Corbion are building a plant in Thailand to produce polylactic acid (PLA), a biobased polymer made from sugar or starch. PLA is part of tomorrow's solutions: biodegradable, bringing a wealth of new functional properties like all invented thermoplastics have brought. With a capacity of 75,000 tons per year, the facility will make Total Corbion PLA the world's second largest bioplastics company.

## Total, a pioneer in plastic recycling

We have made plastic recycling a priority in our developments for a number of years. The work carried out at our research center in Feluy, Belgium, will broaden the market for recyclates by adapting their properties. Despite sorting and recycling, current recyclates contain a mixture of products. As a result, average properties do not meet the technical requirements for many applications. The approach taken by our product development teams consists of adding a designed amount of booster per recyclate type. Boosters are specific virgin materials developed by R&D teams leveraging our technological expertise in catalysis and polymerization processes. The boosted properties combined with the average properties of recyclates allow us to meet customer specifications. We have thus produced polypropylene and polyethylene grades containing at least 50% recycled materials that perform just as well as virgin polymers. These grades are currently being qualified by our customers. We have also achieved a world first in polystyrene: industrial-scale production of polystyrene

containing a significant percentage of recycled packaging while delivering optimum performance.

## Wide scale plastic recycling will require everyone's participation across the value chain

We are working in close cooperation with recyclers to streamline the different stages of the manufacturing process and ensure performance that can be consistently repeated. We are enhancing the performance of booster/recyclate blends with partner customers that are committed to reducing the environmental footprint of items manufactured. Everyone across the value chain must take part if we are to achieve the ambitious objectives set out in the European Union's circular economy roadmap. The required investments are vast for a value chain facing a challenging economic environment. The E.U.'s sorting and recycling capacity must be increased and technology must be developed to improve recyclate performance for downstream businesses at an acceptable cost.

In order to recycle 50% of plastic packaging within seven years, we will have to expand collection across the E.U. and develop sorting and recycling tools that can handle products not yet recycled in sufficient quantities. Although by nature a local activity, recycling will have to become an integral part of the European plastic market and meet standards that guarantee performance, quality and reproducibility for the downstream market.

Given the high cost of recycling operations, incentives - for example incentives linked to carbon emissions reduction - will be necessary to encourage the use of recycled materials in manufacturing.

The need to reduce pollution in rivers and oceans and to optimize resources must foster our drive to bring landfill plastic waste to an end. Scaling up recycling is the preferred option, but waste-to-energy will also be necessary for complex waste that is difficult to recycle with an acceptable environmental impact.

# Our vision? Plastic waste as a feedstock for our future products



**Alfred STERN**

*Executive Vice President Polyolefins and Innovation & Technology, Borealis AG*

**B**orealis fully supports the European Commission in its call for action to accelerate the journey towards a circular plastics economy. We believe that plastics are too valuable to be thrown away and that the recently announced EU Plastics strategy is a good step towards acknowledging this.

For Borealis, plastics should be reused, recycled and – only as a last resort - recovered for energy, rather than being sent to landfills. We strongly believe that neither landfilling nor low-end energy recovery in municipal waste incinerators are appropriate and sustainable end-of-life scenarios. We see the issue of littering, in particular marine littering, as a case for change that requires a joint approach by industry, legislators, communities and consumers.

We also believe we have to put things into context. Notwithstanding the fact that marine littering is a serious issue, we have to face the brutal facts – no matter how we look at it, our biggest challenge today is climate change caused by anthropogenic activities and related greenhouse gas emissions. It is clear from the climate disasters in the last years that this is where we must act now!

## Plastic delivers amazing solutions to global challenges

Life on our planet with more than 7 billion people can only be sustained with the

significant contributions of plastics to reduce greenhouse gas emissions. Food protection and food waste reduction, renewable energy, water and sanitation supply to all and weight reduction in transportation would not be possible without the contribution of plastics. If we substitute all the plastic in the products we use every day with other materials, we would be making matters worse for the planet. We would consume more energy and emit more greenhouse gases. Imagine making a Tesla or the electric vehicles for the Chinese market without plastic compounds.

We cannot ignore this and when we want to achieve a circular plastics economy this needs to be a central consideration of our work; we must not ignore these facts.

At Borealis, we see opportunities to use our value creation through innovation approach to make a next step and generate new and additional solutions for societal challenges. Making plastics circular is the biggest opportunity that we see and by far outperforms any contribution that could be made by bio-based or bio-degradable polymers. We must not create convenient excuses for society to “stay calm and keep on littering” but instead we must pursue our target of zero plastics to landfill. Plastics are valuable raw materials and need to be re-used and recycled. Why don't we treat plastics like we do with glass, metals or paper? Iron, steel, copper, and aluminium have become some of the most recycled materials in the world. Why is it so hard to lift plastics up to the same standard?

Creating a circular plastics economy is the step change we at Borealis want to see. This is our vision.

## Our call for action #1: The EU needs to become a world leader in managing and steering plastic waste streams

The versatility of plastics and their many different uses, from car parts to flexible food packaging, builds on our ability to make thousands of different kinds of plastics, each with their own composition and material characteristics. This incredible diversity is also the challenge when it comes to making plastics more circular. We see 3 key success factors in this area:

- The separate collection of all plastics.
- The standardization and identification of plastic applications.
- A hierarchy scheme and correlating economic incentives to clearly establish a ranking that our first preference is to reuse and recycle plastics. Energy recovery should be a last resort for the separated plastics that cannot be recycled in an eco-efficient way. Landfilling of plastics must be reduced to zero.





**Our call for action #2: The Circular Economy Package needs to include higher and transparent recycling targets and a harmonised calculation method**

- Creating and enforcing a legal framework that promotes the availability and reliable supply of feedstock for recycling and provides incentives for industry to use recycled materials will be a necessary condition to make our dream a reality. Clear rules and stringent execution by Extended Producer Responsibility schemes, can give all actors in the value chain the right incentives to change their approach to corporate sustainability.
- Our Borealis experience with our own recycling activities in mtm plastics in Germany, is that we could and would like to produce more recycled plastics if there were more raw materials available that could be recycled at economic terms.
- Our call, therefore, is for higher and ambitious recycling targets, but also for transparent and standardised calculation methods. We have to create a common platform to monitor our progress towards the Circular Economy in an objective and consensual way and allow us to understand the impact of our own improvement initiatives.

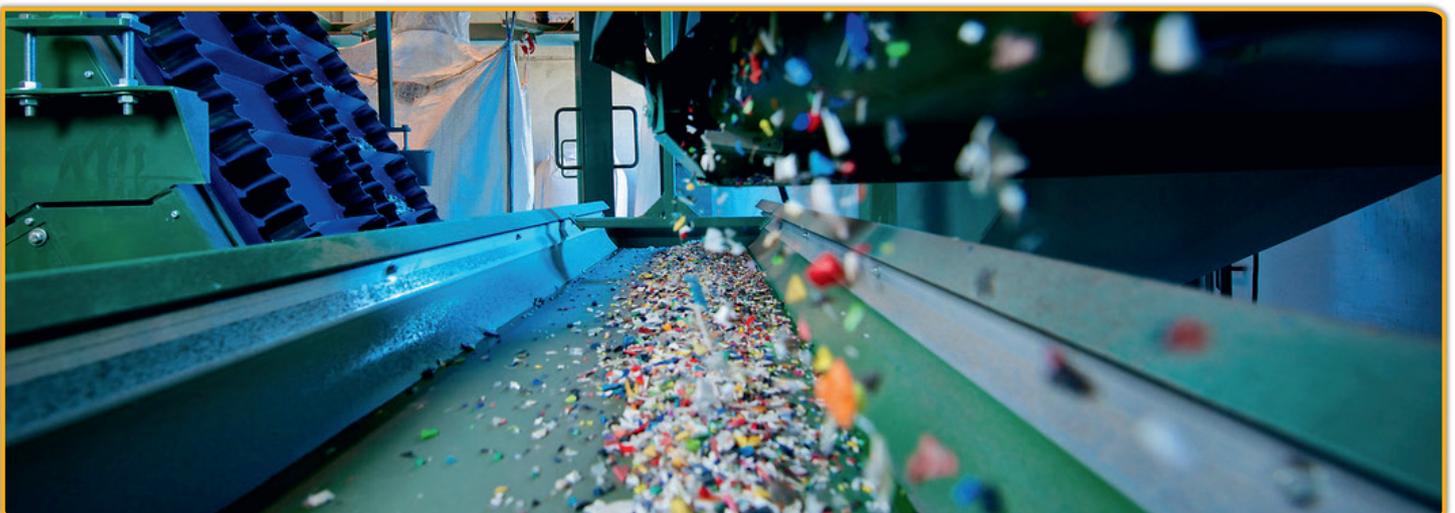
**Our call for action #3: The EU can help encourage research and cooperation along the value chain**

- Design for recycling or eco-design of our products and services will be a key driver for success. Plastics as a material class are ideally suited for recycling, often better than alternative materials. However, we must evolve in our way of working to consider the need for recycling at the design phase of our products. Today we focus too much on other functionalities, visual appearance and convenience. Too much packaging consists of multi-material solutions that have perfect performance scores – as long as recycling or circularity are not requirements. The only way to change this is to have the entire value chain cooperate and communicate, so that it can put a stronger focus on the quality and recyclability of plastic waste.
- Last but not least we have to invest into research and development in this area to create innovation that allows us to continuously upgrade the quality of the waste streams and recycled materials.

**Closing the circle with plastics is a GREAT economic opportunity!**

Last year the EU-commissioner for the Environment, Karmenu Vella, visited Borealis in Schwechat, in Austria. Vella stressed that we need to optimize the life cycle and the recycling of plastics and that we need to do this at a European level. He concluded that we can turn the problem of plastic in the environment into an economic opportunity for the European Union and that industry needs to be part of this solution.

Europe can indeed become a pioneer in plastics reuse, recycling and recovery and it is a great opportunity for all of us. I am convinced that there are solutions to the challenges and that plastics and innovation will play a central role to realize them. To accelerate the journey and for our dream, our vision to become a reality rather sooner than later, we rely on a solid foundation and framework that turns the circular economy into an economic opportunity for the pioneers, like Borealis and others. Significant investments in research and development and production capacity will be required. A purposeful and visionary regulatory framework will help enormously to promote and accelerate these investments by providing a reliable, quality feedstock supply and steadily growing demand for recycled products. With this our Borealis dream that one day plastic waste will become the feedstock for our future products will become reality.



# EU plastics strategy and the Beverage Carton Industry



**Dennis JÖNSSON**

*President and CEO of Tetra Pak*

Recent weeks have seen widespread support from business, politicians and other stakeholders for the European Commission's Plastics Strategy, the first ever Europe wide strategy on plastics. It forms part of the Commission's ambitious Circular Economy Package. Tetra Pak is proud to be the first company from the packaging industry to publicly pledge our support to the initiative. We fundamentally believe that the packaging industry must play its part in reducing the impact business has on the environment and consumption of natural resources. In fact, industry needs to lead the charge towards meeting the EU's goal of developing a sustainable, competitive and low carbon circular economy.

We believe that industry (alongside Governments) should do three things to achieve this. The first is to help member states achieve the new recycling targets for packaging. The second is to increase the use of recycled plastics. Finally, there needs to be a recognition that recycling is not enough to achieve a truly circular economy. There also needs to be a focus on replacing the use of plastics and increasing the use of renewable materials where possible.

## Recycling targets for packaging

In 2016, 47% of beverage cartons were recycled across the EU. To further increase recycling rates in practice, it is important that

separate collection for beverage cartons are in place, and that proper recycling solutions for the different package components are available.

Tetra Pak cartons are generally made from paperboard, plastic and aluminium. These materials can all be recycled using relatively simple techniques, and turned into new products, cutting the amount of waste sent to landfill and reducing demand for resources.

Worldwide we drive recycling solutions for both paperboard and the non-paper materials. Going forward we will specifically focus on scaling solutions for the non-paper components of our packages, while simultaneously encouraging innovation in paper recycling to get even more value out of the high-quality paperboard used in our cartons, thereby increasing the value of used beverage cartons. A good example is our continued support of extended producer responsibility (EPR) collections schemes and the work we do with our industry partners to ensure that solutions to fully recycle all the components in beverage cartons are in place across Europe by 2030.

## Recycled plastics

It is also important that the quality of recycled plastics is improved. Today there is no food-grade recycled plastic available for the polymers we use in our packages. It can only be made available with EU measures permitting the safe use of recycled plastics in contact with food. We therefore welcome a European Commission move to allow this to happen, in conjunction with the food safety authorities, and would look to support the process with our expertise. As a business we have committed to using recycled plastics once they are validated as safe and are legally acceptable for use as a food contact material.

## Renewable Feedstock

While a focus on recycling is important and one we support, it is only one part of the solution. To "close the circle", governments and businesses would need to pursue a dual approach that promotes the use of secondary raw materials and sustainable sourcing practices for primary materials such as those already available for paper-based products. This includes replacing plastics with paper-based materials wherever possible.

Because beverage cartons are manufactured mostly from renewable materials, they are one of the most environmentally-sound packages available for liquid food. Our packages are made from around 75% paperboard from responsibly managed forests. We use plastic as a protective layer and to produce the package openings and closures.

Currently we are working to substantially increase the use of polymers made from renewable feedstock for the plastics in our packages. In the words of our founder, "A package should save more than it costs" and our ambition is to produce a package derived entirely from renewable resources. Renewable resources replenish naturally over time and, therefore, can be used again if sustainably managed, e.g. wood.

When it comes to plastics, currently our progress is hampered by limited availability of plastics made of renewable materials. To meet our growth ambition, we need to have European renewable feedstock supplies. We would welcome political incentives encouraging the use of renewable packaging materials and thus stimulate the necessary investments in innovative solutions replacing fossil-based plastics. We would be very happy to collaborate with the European Commission and business partners on defining requirements for sustainable sourcing of bio-based feedstock used for plastics as we have successfully done on paperboard.

As a global leader in providing food processing and packaging solutions we are committed to leading by example when it comes to deploying the potential of a circular economy for packaging and equipment. The EU Plastics Strategy presents an important step towards achieving a low-carbon, circular economy. We look forward to playing our part in delivering the Strategy and going beyond this to achieve the circular economy ambition.

# The challenges posed by plastic throughout the value chain and taking into account their entire life-cycle



**Benedek JAVOR**

MEP (Group of the Greens/ European Free Alliance), Vice-Chair of the ENVI Committee

Plastic pollution is becoming an ever more pressing problem globally. The following are just a few examples that indicate the complexity of the problem: highly polluted seas and freshwater streams, presence of plastic in all levels of the food-web, millions and millions of tons of related CO<sub>2</sub> emissions, and hazardous compounds from plastic released into the environment.

In the past few years, the EU has conceptualised its efforts to solve its resource and waste crisis as Circular Economy and plastic pollution should be managed also in the framework of the Circular Economy approach. As we start the implementation of the Circular Economy Package, it is essential to adapt and properly implement it to offer the best solutions for the problem of plastic pollution and to overcome the potential obstacles in order to harvest all the benefits of the Circular Economy. This requires the involvement of all actors of the society for an efficient outcome.

Of the many challenges in the plastic value chain, product design is of utmost importance for a twofold reason. Considering that at the moment the biggest volume of short-life goods is generated by the packaging sector and that product design plays a tremendous role in limiting waste and increasing recyclability and/or reusability of products, a waste-free and a better product design should be incentivised in order to avoid unnecessary

waste and to make the products more durable, easy to repair and to recycle. Some MS already started to support repair services but the first step needs to be undertaken at the very beginning of the plastic value chain. In this sense, for instance, strict measures are needed against the widely experienced practice of planned obsolescence.

From an environmental perspective, the composition of plastics is also a key factor, as many of our daily used plastic goods contain elements that are harmful for the nature and/or for human health. Here is where a phase out of such goods and/or substances should be considered.

The EU's plastic market analysis also points out that the industry is the biggest user of plastic materials, whereas household-direct-use accounts for a much lower percentage.

The aggregate demand rose by 6,7% between 2012 and 2015, therefore in order to meet the raising demand with less raw material we need to increase the ratio of the reuse of plastic by way of making industries interested in the use of recycled materials. In this respect, the key to the success is getting closer the plastic producers and the waste processors.

It appears that some MS managed to start such closer relationships, as for instance "Eco-Industrial Parks" were established in the UK, Netherland, Finland, Germany and Denmark to strengthen the cooperation between the industrial actors.

I believe that this should be broadened as much as possible as the final aim has to be to cooperate with all actors and regions along value chains: after all cooperation is one of the fundamental types of ecological coexistence mechanisms on the planet. It is simple and natural.

The Commission should set out strong and positive incentives for the industries to help achieve this symbiosis process and to bring the industrial actors to think ecological in the first place, as I believe that merely paying more taxes and fines is not a suitable measure. The Commission should enforce the higher ratio of recycling, and subsidize companies only when they invest in a sustainable innovation

that respects the waste hierarchy. The final product producers should have plans for the reuse or the recycling of their products before the product is released into the market.

The supply side of the plastic market also faces challenges. First of all, the producers must use, whenever possible, environmentally non-harmful polymers and additives. Furthermore, there is a need for standardization of components in order to facilitate reuse. The price of recycled plastics needs to be the same or below that of fresh raw materials.

What is more, the already existing plastic pollution and landfills are also a challenging problem. The EU has to insist that companies extracting resources from waste by applying innovative recovery technologies should receive the right incentives and necessary support. Available plastic decomposer technologies must be exploited to the fullest extent and pollution reduction efforts for affected areas should increase.

The EU post 2020 budget is the perfect tool to increase plastic recycling and reuse, and to reduce landfill waste and incineration. In the last budgetary period the Member States invested, in total, more money in the lower levels of waste hierarchy (inc. MBT, thermal treatment, incineration, landfill) than in the higher level solutions (incl. minimalisation, sorting, recycling). This must stop.

In the Circular Economy Package the Commission proposes to ban the landfilling of plastic by 2025. At the moment, less than one third of the plastic waste is recycled, so one can only conclude that MSs should step up their efforts.

In sum, a lot more needs to be done and a concerted effort must be undertaken by all stakeholders involved to reduce plastic materials and plastic use for our environment, for biodiversity and, of course, for our own health.

# Responsible by design: how Europe can turn the tide on sustainable products



**Ariadna RODRIGO**

*Product Policy Campaigner at Zero Waste Europe and member of the Rethink Plastic alliance*

Today's products are designed to become trash faster than ever. This "take-make-use-throw away" model is based on the assumption that an unlimited pool of natural resources will always be available at a low cost. Can better design turn the tide and make Europe's use of materials and products sustainable?

There is a lot at stake. The current system is not only expensive for consumers, who have to foot the bill of their municipal waste management, while constantly replacing short-lived products. It also results in the depletion of the natural resources that we all, including the future generations, depend on. Most of these resources are extracted outside of Europe, thus shifting the environmental impacts to other regions, where the water, land and forests that represent a source of livelihood for the local population are being exhausted and polluted. What's more, once the materials and products are turned into waste, we ship them outside Europe for others to deal with. Our consumption, and the economic system designed to promote it, is unjust from start to finish.

Driving product design requires a framework of incentives to be put in place, especially to incentivise companies to change. Unfortunately, the current legislative and economic system has failed to trigger the necessary change. Many barriers can be found in a number of policies, resulting in a system that rewards the business model of designing

products for trash. The good news is that EU legislators have the opportunity to make some easy fixes. Here are a few solutions to start with.

## Material design needs to be part of the Ecodesign Directive

The success of the Ecodesign Directive in making products energy-efficient needs to be replicated for material design. This legislation could address areas ranging from planned obsolescence and better repair to easy dismantling and upgradability of products. For example, products can be designed to last longer by introducing minimum durability requirements for their key components, such as making smartphone screens shock-resistant. Products could be made easier to disassemble and recycle by avoiding combining different materials, particularly plastics, and using hazardous chemicals.

## Create the right economic incentives

The current economic incentives to promote sustainable and non-toxic design, such as Extended Producer Responsibility (EPR) schemes are simply not delivering. To start with, such schemes only cover the costs of waste management, with no variable fee to promote better design. What's more, such schemes are only used for 18% of our municipal solid waste<sup>1</sup>. Enabling the EPR system to reward good design needs to go hand in hand with an increase in its scope to include all products, starting with the most problematic, such as single-use ones.

Furthermore, there are no incentives for retailers to reduce the amount of packaging in their products, meaning that consumers are left to deal with all the unnecessary and unwanted packaging waste. What if the retailer had to physically deal with the packaging that it puts on the market instead? Such a strong incentive would place waste prevention at the centre of businesses product and packaging specifications, changing entire supply chains overnight.

## Avoid harmful substances, make chemical content traceable

Two of the main barriers to recycling and establishing strong markets for secondary raw materials are the presence of harmful chemicals in materials and products, as well as the lack of sufficient information on this content. This brings in risks all along the value chain, not only when products are manufactured and used, but also when they become waste.

Recycling industries and waste managers do not have information on the chemical content of the waste they have to deal with; they are powerless to avoid further exposure of their employees and, further down the line, of the consumers of products made of recycled materials. The problems associated with the lack of traceability are further exacerbated in the case of materials recycled outside of the EU, often in substandard conditions. Such a total lack of traceability of materials has been highlighted particularly by the presence of toxic flame retardants stemming from recycled plastics in children's toys on the EU market<sup>2</sup>.

Even the plastics that are considered high-quality and easy to recycle, such as PET, can be problematic. In fact, PET can release antimony trioxide and phthalates, which are considered to be highly toxic chemicals. PET recycling can therefore be hazardous for workers and consumers (especially when it is re-used or heated), as well as for the environment. So, although citizens might welcome the increase in recycled input materials in products such as water bottles, the benefit for the user is not always clear.

## Design is key

Until design becomes the centre of waste and resource policies, we will be neglecting the trigger for clean supply chains and a zero-waste future. The Commission's effort to increase recycling in Europe through the Circular Economy Package and the Plastic Strategy, although laudable, merely serves to patch up a system that continues to produce waste, exposes us to toxic materials and promotes short-lived products.

<sup>1</sup> <http://zerowasteurope.eu/wp-content/uploads/edd-free-downloads-cache/ZWE-EPR-policypaper.pdf>

<sup>2</sup> <http://english.arnika.org/publications/toy-or-toxic-waste-an-analysis-of-plastic-products> and <http://ipen.org/documents/toxic-toy-or-toxic-waste-recycling-pops-new-products> are some of the recent examples

# Designing out the waste: Potential of plastics in European market



**Sirpa PIETIKÄINEN**

MEP (EPP Group), Member of the ECON Committee

Plastics are everywhere. There are more types of plastics than we can count. Plastics play a role in our everyday lives from safeguarding our food to serving as light but efficient insulation in buildings.

The problem is not plastic as such. The problem is their incorrect and wasteful use. Making plastics requires energy, currently in most cases fossil fuels. If plastic ends up as waste, disposing of it requires further energy. Europe has been exporting over half of its plastic waste to third countries such as China for management. In the absence of developed waste management systems, plastics often end up in incineration, landfill or ends up in seas and oceans. If plastics are incinerated, as currently is the case with 30% of plastic waste in Europe, the process again generates CO<sub>2</sub>. This cycle is unsustainable.

Two thirds of plastic waste is generated from packing waste. The smaller and thinner the plastic wrapping is, the most likely it is to escape the waste-collection systems and end up degrading or dissolving into our soil and waters. This means that the use of plastics in packing should be drastically reduced and replaced with reusable packing or other, such as biobased package materials.

Europe has the potential to develop the world's most sophisticated plastics reuse and recycling system. The decision by China not to

continue to accept plastic waste from Europe is in this sense a blessing in disguise. Europe should not be exporting what are essentially precious resources. The recycling capacity in Europe should be developed to make use of these materials at their highest possible value and feed them into new processes, closing the loops to ensure high quality resources maintain their value throughout the recycling process. The Finnish bottle recycling system of PEP-bottles, based on a bottle-deposit, is an efficiently functioning example to build on.

The aim of the circular economy should be to fully design out waste and to ensure that we only have products that are upgradeable, repairable, reusable and recyclable. A mandatory product passport based on these requirements and the material content should be developed. Additionally, minimum guarantees for consumer durable goods should be established to further producer responsibility. To attain these goals the Ecodesign Directive should be changed to be based on these horizontal requirements of all goods produced and imported to EU markets.

Modular thinking can support the circular economy design, with everything from mobile devices to buildings being composed of modules that can be repaired, replaced, or updated and upgraded. This is what consumers also want. The 2014 Eurobarometer

found that 77% of Europeans would rather repair their old appliances than buy new ones.

Europe can be a trailblazer in this arena. Most plastics companies also recognise the potential and are active in the discussions for progressive legislation and incentives for creating a truly circular plastics economy. A Common feature of forward-looking businesses is the fact that they do not criticise politicians who promote stricter environmental and climate standards. Quite the contrary, the future-oriented businesses acknowledge the fact that a well-targeted and ambitious regulatory framework is the prerequisite for companies to grow and our economy to prosper in the long term. Intelligent resource use is first and foremost a question of industrial and competition policy.

Certain choices with regards to economic investments have to be made in order to stay ahead of the game. Will Europe hold on to outdated subsidies for coal-based energy production? Or will they remain relevant and ahead of the game in transition to a circular economy? The level and focus of European investments into research and innovation, including through the EU's Horizon 2020, will influence future European competitiveness in this regard.



# A paper perspective on the Plastics Strategy



**Sylvain LHÔTE**

*Director General of CEPI, the European association representing the paper and board industry*

**T**his opinion should start off with a disclaimer. I have worked on plastics and waste management for twenty-five years, from the first Packaging Waste Directive to the PVC industry voluntary commitment and managing sustainability programmes for a major plastics producer. I am today the Director General of the European association for the paper and board industry. My aim here is not to compare one material against the other, but I can share an informed perspective on making the circular economy work for all, paper, metal and plastics alike.

First, we need to be realistic, fixing the plastics “waste mess” will take time and there won’t be easy shortcuts. It took more than twenty years for the paper industry to reach a 72% recycling rate for all paper, board and carton in Europe. To do so, the industry has invested in technology and processes, developed eco-design rules and recycling standards, ran information and best-practices campaigns across entire countries. The metal, the glass, even some sectors of the plastics industry have also done so. But why didn’t it happen for all plastics? I believe the conceptual mistake made in the early nineties was to fall in love with incineration as opposed to sustaining value through recycling. At that time, climate change was a distant concern. The idea being that “hiding in a mixed collection bag” would make it easier *and* cheaper for the plastics industry. This logic has trapped

entire sectors of industry on a non-recycling path. Time has changed and it is encouraging to witness a real mind shift within the plastics industry. Over the years, this experience also taught us that a few “basic” policy steps are required to make circularity work.

The very first step is to push for collection and quality recycling of each material stream to make the sorting of waste post-collection far less challenging and thereby obtain higher value materials. In operational terms this means enforcing separate collection at local level and setting high quality standards for materials for recycling. Yes, this implies that each material should effectively pay for their collection and recycling and that some countries should change their waste management practices. But the results are there. We do not need to reinvent the wheel and add other layers of complexity such as deposit schemes. Where separate collection is enforced, quality recycling develops which benefits the circular economy and European manufacturers.

The second step is to enforce design for recycling or real biodegradability. The packaging industry has brought a wealth of innovation: to better protect our products (we often forget what packaging is meant for), to improve their appearance (there is a marketing need as well), to reduce overpackaging (which is costly). Yet, were all these innovations designed for recycling or to be readily biodegradable if littered? The answer is no. Some, like oxo-degradable plastics, could even put at risk both recycling and the environment.

Europe needs packaging that is fit for purpose *and* that fits into its recycling chains. Yes, we will hear some objecting that this may “kill innovation”. What it will do however is to spearhead design innovation (an area where Europe excels) and help the sorting industry to treat more, yet less complex, waste streams.

Once the foundations are set, the third step is actually to let the market work! A counter-example is the idea of “minimum recycled content for products”. This sounds great to grow markets for recycled materials but is for all intents and purposes wrong. We learned in the paper industry that access to quality materials, cheaper than virgin ones, drives

their market and use. This is also a matter of business competition and market specificities. On a more personal note, I also wonder why Europe should waste its time regulating the recycled content of my “daily life”? How many civil servants (or consultants) will we need to micromanage the recycled content of my yoghurt pots, my napkins or my shopping bags? We have seen this endlessly discussed by ecolabel or green procurement “experts” with questionable benefits. Europe should for once trust business and consumers, or in other words, to “be big on big things, and small on small things”.

The Commission strategy may fall short on some issues: advancing the ongoing shift to fossil-free feedstock is one, fostering a sustainable sourcing of raw materials is another. Yet, the strategy does try to bring plastics back to the Circular Economy. The good news is that none of this requires years of studies or debates. The EU waste directives have been revised, the data is there and the best practices are known. In policy, like in business, where there is a will, there is a way.

# Steps towards the development of a truly sustainable Europe



**Karl-H. FOERSTER**  
Executive Director, PlasticsEurope

develop a joint vision for a circular Europe capable of giving answers to citizens' demands.

Our *Plastics 2030 Voluntary Commitment to increase circularity and resource efficiency* is the best example of how our industry is committed to support this transition to a more sustainable and resource efficient Europe. Our commitment has been the result of a cross-industry dialogue facilitated by the European Commission, and is meant to secure the achievement of the goals within the European Commission's Strategy. Our main objective is to ensure high rates of re-use and recycling with the ambition to reach 60% for plastics packaging by 2030. This will lead to achieve our goal of 100% re-use, recycling and/or recovery of all plastics packaging in the EU-28, Norway and Switzerland by 2040. However, our commitment goes far beyond that.

Finally, we will complement these efforts with other actions aimed at enhancing plastics' resource efficiency and accelerating innovation for circularity. This will involve: further research into alternative feedstocks; more frequent updates of product Life-Cycle Inventories and Environmental Product Declarations; the publication of extended waste data; new eco-design guidelines for plastics packaging; and standardization of industrial best practices and methodologies.

Increasing circularity and resource efficiency will only be possible if all the relevant sectors work together. Our commitment shows that our industry will be part of this transformation.

<http://www.plasticseurope.org/en/focus-areas/strategy-plastics>

The European Commission's recent publication of the *Strategy for Plastics in a Circular Economy* is an admirable step towards the development of a truly sustainable Europe. The plastics industry welcomes the initiative and supports the vision to create a more circular plastics economy in Europe.

It is clear that we are currently facing significant sustainability challenges, both as a society and as an industry. Citizens are demanding changes in the interest of environmental sustainability and consumer welfare, and we must offer them convincing responses. The plastics industry is willing to contribute to finding the right solutions. In fact, we see the Strategy for Plastics as an opportunity to

In fact, it is a set of concrete actions that will allow the industry to evolve into a more circular model. Besides the abovementioned target, the industry has set a series of ambitious initiatives up to 2030 aimed at preventing the leakage of plastics into the environment and improving resource efficiency. For example, the industry will continue organising educational projects across Member States to increase awareness on sustainable consumer behaviour; will strengthen the programme to prevent pellet loss (Operation Clean Sweep®) by increasingly involving the entire value chain; and will launch new research activities to complete knowledge gaps on the most common plastic items being littered in the marine environment, with a view to identify suitable solutions.

### PlasticsEurope's signature:

PlasticsEurope is a leading European trade association, with centres in Brussels, Frankfurt, London, Madrid, Milan and Paris. We network with European and national plastics associations and have more than 100 member companies, who are responsible for producing more than 90% of all polymers across the 28 member states of the European Union, plus Norway, Switzerland and Turkey.



# Plastics: global problem, systemic solution

## *Innovation towards a circular economy for plastics has to be systemic, and so should the supporting policies*



**Jack METTHEY**

Director, Directorate Climate Action and Resource Efficiency, DG Research & Innovation, European Commission



**Michiel DE SMET**

Policy Officer, Directorate Climate Action and Resource Efficiency, DG Research & Innovation, European Commission

**T**o drive system change towards a much-needed circular economy for plastics, systemic innovation is crucial. Policymakers play an important role in fostering such systemic innovations by creating the right enabling conditions across the plastics value chain, and beyond.

The challenges posed by the plastics economy demand system change. While plastic brings benefits as a functional material, the current system has severe drawbacks, including economic loss and environmental damage. These symptoms of a dysfunctional system are becoming more apparent by the day, for example through marine litter.<sup>1</sup> As outlined in the Commission's Plastics Strategy,<sup>2</sup> transitioning towards a circular economy for plastics would result in better economic, environmental and social outcomes, while harnessing the benefits of this material. Driving the transition towards a circular economy, Europeans can turn the challenges into opportunities and set the example for resolute action at global level. To break the current

stalemate, and lift the entire plastics economy, incremental progress will not suffice though – system change is the only long-term solution.

**Innovation is an indispensable part of the systemic transition towards a circular economy for plastics.** While system change benefits from the accumulation of multiple small steps, it also requires big leaps forward, if not technological breakthroughs. The Plastics Strategy mentions innovation as a key enabler for the transformation of the system, with innovation areas spanning the entire value chain: renewable feedstock, advanced

materials, product design, business models and reverse logistics, collection and sorting mechanisms, recycling technologies, and full biodegradability. Innovation is also relevant for developing methods to assess the impact of plastics and micro-plastics pollution, as well as remediation technologies. Living up to its Communication, the Commission will devote an additional EUR 100 million to financing priority measures in the run-up to 2020, and it will develop a Strategic Research and Innovation Agenda on plastics to provide guidance for future research and innovation funding after 2020.

**Innovation for system change needs to be systemic itself.** Use of the term 'systemic innovation' has increased recently.<sup>3</sup> Depending on the context, the systemic aspect could refer to the need for a co-ordinated system fostering multiple parallel innovations beyond the boundaries of a single organisation, to the enabling environment offered through policies and governance at different levels, to the purpose of changing society fundamentally, to the systems thinking aspect of the innovation process, or to a combination of these. Putting aside the academic nuances, it is fair to say that a mix of the above interpretations is needed to transition towards a circular economy. Indeed, the principles of a

3 G. Midgley and E. Lindhult, *What is Systemic Innovation?*, Centre for Systems Studies, Research Memorandum 99 (2017)

1 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, *The New Plastics Economy — Rethinking the future of plastics* (2016, <http://www.ellenmacarthurfoundation.org/publications>); J. R. Jambeck et al., *Plastic waste inputs from land into the ocean* (Science, 13 February 2015)

2 COM(2018) 28 («European Strategy for Plastics in a Circular Economy»)



circular economy – designing out waste and pollution, keeping products and materials in use, and regenerating natural systems – drive value generation at different levels, from individual actor to the entire economy, but to derive its full potential, coordinated action has to happen across and beyond the value chain, in parallel. In this way, systemic innovation can trigger change to a system such that it improves its ability to maintain itself over time to the benefits of business, citizens and the environment. For example, innovative product design improving disassembly and recyclability could benefit the producer through a leaner production process and better marketing. However, only when the actors managing after-use collection, sorting and recycling are capable of capturing the opportunities offered through the new product design, the full potential could be realised for all actors involved, and for the system as a whole. Similarly, innovation aiming to create such value through fundamental change has to involve multiple actors at different levels across, and surpassing, the supply chain, supported by the right enabling conditions, and guided by a shared system vision.

**The case of plastics clearly shows why we need systemic innovation to drive fundamental transitions in our society.** In the past, innovation in plastics often took place in silos, optimising for a specific aspect, such as barrier properties. While these innovations have delivered improvements in one domain, such as food preservation or transportation, they often weakened value creation in other steps in the value chain, mostly downstream, like collection or recycling. Moreover, they sometimes even damaged connected systems, such as eco-systems and industries based thereon. An example could be the design of small single-use items prone to leak into the marine environment. As explained above, going forward systemic innovation should enable the best of both worlds by creating value for the entire system, including the innovative actor. In addition, systemic innovation should benefit connected systems, or at least not degrade them. In the construction materials industry, for example, innovative design for safe use, deconstruction, reuse and recycling could bring benefits across the value chain, covering raw materials supply, customer loyalty, supply chain transparency and resource efficiency. Such design would require innovation into materials, products, business models, reverse logistics and reprocessing technologies, progressed in a co-ordinated way to maximise value for both the entire construction sector and the individual actors. At the same time, connected systems, such as infrastructure, healthcare, and real estate, will benefit from such innovation.



**Policymakers are uniquely positioned to put in place enabling conditions for systemic innovation towards a future-proof plastics economy.** Given the systemic nature of the challenges posed by plastics, policymakers should support upstream and downstream innovations to happen in parallel towards a common mission. Having a perspective outside of particular value chains, policymakers could nurture such an innovation eco-system through different measures: foster pre-competitive collaboration and open innovation at different levels, from citizen innovators to multinational labs; provide funding and incentives for investments in mission-oriented innovations; develop infrastructure that underpins the common direction of travel; install outcome-oriented fiscal and regulatory frameworks to promote innovation; or ensure transparency of, and access to, information on economic, environmental and social impact of plastics across the supply

chain. As this fundamental transition will be intertwined with other societal challenges, policymakers also have to ensure the systemic innovation will benefit from interactions with the wider public, civil organisations and other industries, while reinforcing system change in other areas. Given the policy instruments at hand, they could and should foster such innovation, guided by an ambitious vision of a system that benefits business, citizens and the environment alike.

**In summary, system change is the only long-term solution for the challenge posed by plastics, to achieve better economic, environmental and social outcomes. As with other fundamental transitions in our society, systemic innovation is crucial to move towards a circular economy for plastics. Policymakers could, and should, play a key role in fostering such systemic innovation across the plastics value chain, and beyond.**



# Rewarding plastics recycling environmental benefits



**Emmanuel KATRAKIS**  
Secretary General of EURIC

The European Commission got it right in the *Plastics Strategy* ('the Strategy'). "In the EU, the potential for recycling plastic waste remains largely unexploited. (...) Less than 30% of such waste is collected for recycling" [while] landfilling and incineration of plastic waste remain high – 31% and 39% respectively". In other words, despite substantial progress to recycle more plastics, so much is still wasted today. To reverse this trend, plastics recycling is a must. It is both resource and climate efficient: plastics recycling closes the loop by turning waste into new resources

currently landfilled or incinerated and hence "reduce dependence on the extraction of fossil fuels for plastics production". In addition, plastics recycling saves a huge amount of CO2 emissions. As exemplified in *the Strategy*, recycling 1 million tons of plastics save CO2 emissions equivalent to taking 1 million cars off the road. This staggering number is derived from a [study](#), carried out by the French EPA, ADEME, together with the French Federation of recyclers, FEDEREC, which measures recycling's environmental benefits based on the life cycle analysis.

To boost investments in plastics recycling, many key challenges need to be addressed through a mix of voluntary and binding measures.

- First of all, **eco-design**: more than **80% of the environmental impact of a product is determined at the design stage**. Still today, a number of products containing plastics made of multilayers materials are unrecyclable. The work initiated to start integrating resource efficient requirements within eco-design regulations or to better define recyclability and recycled content for energy related products within CENELEC clearly goes in this direction. Yet, much more needs to be done to better design products for recycling and achieve the target set in *the Strategy* "to ensure that, by 2030, all plastics packaging (...) is reusable or easily recycled".

The modulation of fees paid by producers to EPR schemes taking onboard the recyclability and recycled content of products placed on the market can be an important element to reward well-designed products and penalize unrecyclable ones, if effectively implemented;

- Second, **correct market failures**: recycled plastics' prices are correlated with crude oil prices but the market fails to reward recycling net environmental benefits in terms of emissions and energy savings. Hence, it is crucial to devise and implement at European and national levels economic incentives, such as tax rebates or CO2 certificates, to reward these benefits and level the playing field with virgin polymers;
- Third, **pull the demand for recycled plastics**, through green public procurement and recycled content targets for specific products;
- Last but not least, improve **legal certainty** in particular linked to the interface between EU waste and chemicals legislation and end-of-waste status to provide the necessary predictability to investors and create a genuine internal market for plastics recycling.

Achieving the ambitious objectives set in *the Strategy* will require strong commitments across the plastics value chain. EuRIC is ready to fulfill its share.





10 SEPT 2018

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# EUROPEAN RECYCLING CONFERENCE 2018



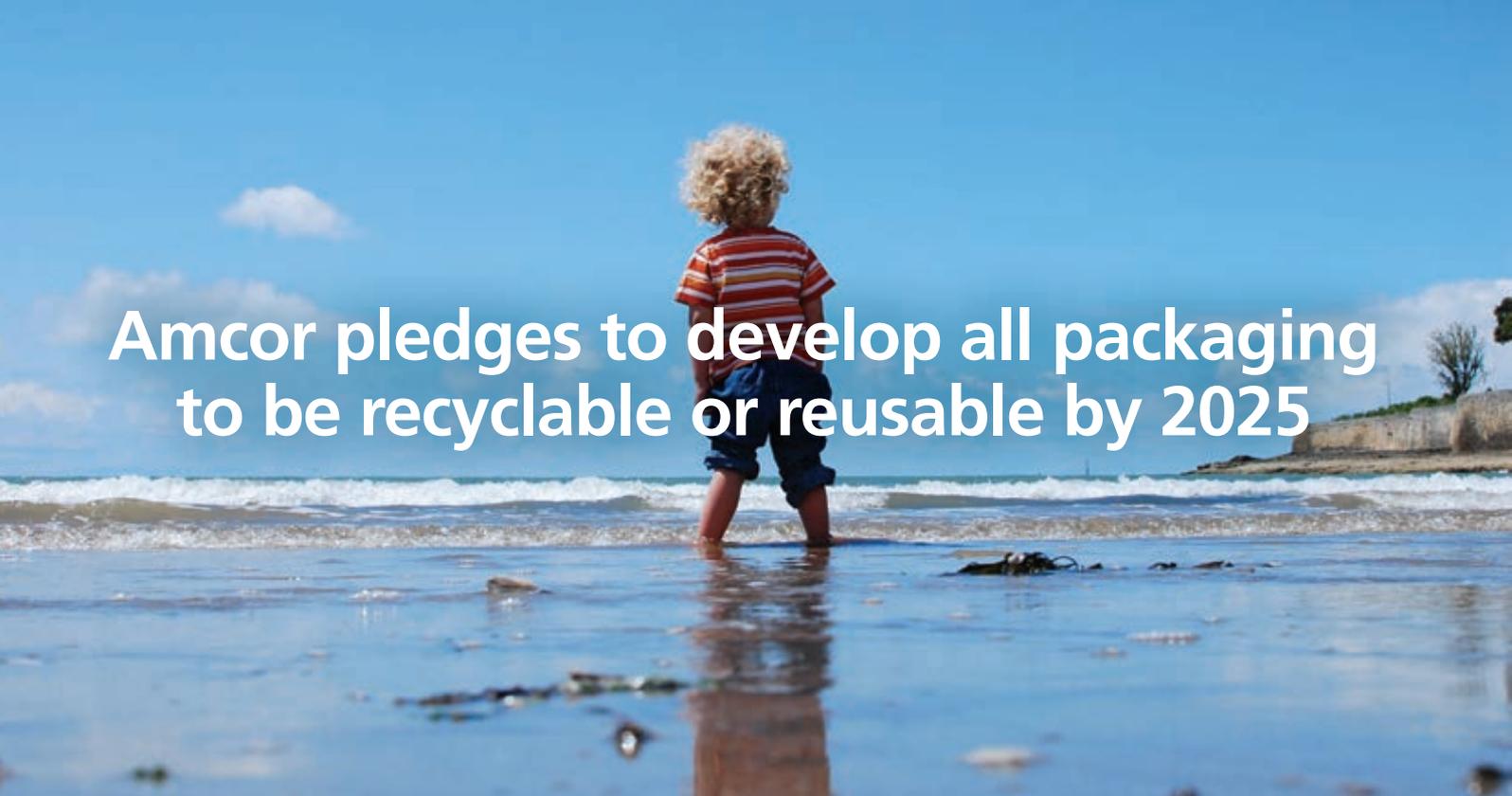
More information : [www.euric-aisbl.eu](http://www.euric-aisbl.eu)

In cooperation with :



Verband Deutscher  
Metallhändler e.V.  
Handel Recycling Produktion





# Amcor pledges to develop all packaging to be recyclable or reusable by 2025

## Amcor is the first global packaging company to make that commitment

We have also pledged to increase our use of recycled materials, and drive more recycling of packaging around the globe. That joins us with other leading companies – most of them our customers – making similar pledges, in partnership with the Ellen MacArthur Foundation.

Packaging is vital. It assures that food, beverages, and a broad range of pharmaceutical, medical and other everyday products are safe and effective. It significantly limits environmental implications from food and other product waste.

***Amcor is constantly creating packaging that is better for the environment.***

Most of our packaging is already developed to be recyclable and reusable. We are determined

***Amcor's aspiration is to be the leading global packaging company.***

to do much more by overcoming significant challenges that remain. Our team is innovative and inspired. Our reach is worldwide. And we work closely with customers, suppliers, environmental organizations and others who share our ambition.

Leadership means simultaneously winning for our team, our customers, our investors and the environment. Delivering on our 2025 Pledge will help Amcor do exactly that.

Learn more about the pledge and Amcor's sustainability achievements at [www.amcor.com/sustainability](http://www.amcor.com/sustainability)

**Better for the Environment. Better for People. Better for Business.**

