



*European Economic and Social Committee*

NAT/721  
Strategy for Plastics in a Circular Economy

## **OPINION**

European Economic and Social Committee

**Communication from the Commission to the European Parliament, the Council,  
the European Economic and Social Committee and the Committee of the Regions –  
A European Strategy for Plastics in a Circular Economy**  
[COM(2018) 28 final]

**Proposal for a Directive of the European Parliament and of the Council on port reception  
facilities for the delivery of waste from ships, repealing Directive 2000/59/EC and amending  
Directive 2009/16/EC and Directive 2010/65/EU**  
[COM(2018) 33 final - 2018/0012 (COD)]

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Consultation	European Parliament, 05/02/2018 Council, 09/02/2018 European Commission, 12/02/2018
Legal basis	Articles 100(2) and 304 of the Treaty on the Functioning of the European Union
Plenary Assembly decision	19/09/2017
Section responsible	Agriculture, Rural Development and the Environment
Adopted in section	03/05/2018
Adopted at plenary	23/05/2018
Plenary session No	535
Outcome of vote (for/against/abstentions)	193/00/01

## 1. Conclusions and recommendations

- 1.1 The EESC has supported the Commission's policy on the circular economy from the outset, but feels that it should be pursued in close collaboration with the social partners and civil society organisations by means of forward planning exercises, and with the involvement of institutions of higher education and the various training centres.
  - 1.1.1 The following must also be in place: effective educational and training measures; design and behavioural incentives; high-quality common technical and regulatory standards; attractive and rewarding schemes, including tax and financial schemes; a systemic and cross-sectoral approach; and widespread and smart use of digital applications.
- 1.2 Respect and defence of goods which are part of the dynamic balance of the biosphere do not appear out of nowhere; they are the natural by-products of an awareness fuelled by culture and the realisation that what is created has not been created in order to be exploited and destroyed for economic gain, but rather in order to be used, improved and preserved intelligently, in the genesis of universal anthropomorphism<sup>1</sup>.
- 1.3 New discoveries, such as polymers, have made humankind's work and life easier, but they must be managed throughout their lifecycle to ensure that they do not harm the patterns of nature.
  - 1.3.1 The Committee believes that it is essential to develop a culture of eco-design of polymer materials which will promote subsequent use of secondary polymers.
  - 1.3.2 A cultural revolution is needed in behavioural patterns and in production, distribution and consumption patterns to turn waste into a valuable resource to be reused, to include civil society and the entire range of educational establishments.
  - 1.3.3 The EESC considers that for both economic and health and safety reasons, an industry strategy geared towards reuse must be developed, particularly in the now vast packaging industry. This strategy should involve businesses with experience in recycling processes and should aim to harmonise and engineer skills, both upstream and downstream.
  - 1.3.4 Acting in close cooperation with European and international bodies, national standardisation bodies should step up the process of using labelling to recognise secondary raw materials. European standardisation here will improve consumer safety when it comes to new products.
  - 1.3.5 The EESC feels that research and innovation should play a key role, particularly the Joint Technology Initiative on Institutional public-private partnerships under Horizon 2020 focusing

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<sup>1</sup> Benedetto Croce; in the history of everything that has human form, in the universe.

on developing bio-based products<sup>2</sup> and other initiatives promoting a circular and sustainable approach under the next Framework Programme 9.

- 1.3.6 Priority must be given to the process of digitally labelling the various types of plastics for the purpose of identification, separation and possibly elimination using common methodologies. It is particularly important to ensure that these secondary raw materials contain none of the toxic substances which appear in raw materials not intended for use with food or in children's toys.
- 1.4 The EESC considers that action must be taken by means of chemical analyses conducted under the REACH programme to curb microplastic pollution, one of the biggest dangers to the environment and human health.
- 1.5 The EESC firmly supports the Commission's proposals to equip ports with facilities for the collection of waste and the requirements imposed on ship owners to comply with waste disposal procedures.
  - 1.5.1 The EESC considers that a similar policy should also be applied to rivers, which collect much of the pollution in the seas.
  - 1.5.2 The EESC considers that fishing associations and the social partners should be involved, both culturally and through national and/or European funds, in cleaning up polymer residue from seas and rivers and in raising awareness about river and marine waste. When properly trained, they could also participate in the part of the industry active in ports and along the rivers during the initial stages of recycling, particularly when the fishing season is closed to allow fish to reproduce.
- 1.6 The EESC considers that the emergence and development of new complementary activities, by-products of the circular economy, calls for current waste legislation to be revised. This legislation derives from Directive No 2008/98/EC which makes the person in possession of the waste responsible, often without establishing the mechanisms for its reuse.
- 1.7 The EESC considers that eco-design<sup>3</sup>, which so far has been applied to energy savings, should be brought into play for the circular economy, particularly as regards plastic.
- 1.8 The EESC considers that appropriate regional agreements on marine pollution are needed, extending them to cover proximity policies and the Euromed and Baltic agreements.

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<sup>2</sup> The Bio-based Industries Initiative is a Public-Private Partnership (PPP) between the European Commission and the Bio-based Industries Consortium (BIC). The Consortium currently brings together more than 60 European large and small companies, clusters and organisations across technology, industry, agriculture and forestry. They have all committed to invest in collaborative research, development and demonstration of bio-based technologies within the PPP. It will include €3.8 billion investments in bio-based innovation from 2014-2020 (Horizon2020); EUR 1 billion of EU funds and EUR 2.8 billion of private investments.

<sup>3</sup> Directive 2005/32/EC and subsequent amendments.

1.9 Voluntary agreements within and between sectors by industries and local and regional administrations should be supported and encouraged, promoting corporate certification (EMAS and CSR) and green boats<sup>4</sup>.

## 2. Introduction

2.1 Plastic, understood as a generic term for a group of polymer materials, is an important and ubiquitous material in our economy and daily lives. It helps promote sustainable and competitive growth, long-term employment and many technological and design innovations.

2.2 Plastic – from monomers to polymers – was discovered in the mid 1950s by two scientists: Natta and Ziegler. In 1953, a German chemist, Karl Ziegler, managed to derive a type of plastic from oil – polyethylene – made up of polymer molecules<sup>5</sup>. The Italian chemist Giulio Natta derived a different polymer: polypropylene, patented under the name "Moplen". This discovery was instrumental in triggering a crisis in the mining industry which, throughout human history, had provided the materials<sup>6</sup> needed to manufacture objects for both daily life and work.

2.3 Plastic is derived from oil, with two kilograms of oil yielding an average of one kilogram of plastic.

2.3.1 These new materials<sup>7</sup> were then used to make a very wide range of objects: they do not rust and are light and unbreakable. In 1973, the first PET bottle was produced<sup>8</sup>.

2.4 The EESC has previously emphasised<sup>9</sup> how "the transition to a circular economy could improve the outlook for achieving the Europe 2020 strategy objectives".

2.5 Indeed, the Committee believes that the transition to a European circular economy can improve the outlook for the systemic competitiveness of the EU "providing it is based on a shared European strategic vision with active participation from the world of work, governments, employers and employees, consumers and legislative and regulatory authorities at various levels"<sup>10</sup>.

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4 See Article 8(5) of COM(2008) 33.

5 Together with Giulio Natta, Ziegler discovered the stereospecific synthesis of polypropylene, using catalysts containing titanium; these types of catalysts are commonly known as Ziegler-Natta catalysts. In 1963 they won the Nobel Prize for Chemistry.

6 Zinc, blende, calamine, barite and bakelite.

7 PE (polyethylene); PP (polypropylene); PS (polystyrene); PET (polyethylene terephthalate); PVC (polyvinyl chloride).

8 Patented by the American engineer, N. Convers Wyeth.

9 EESC opinion, [OJ C 230, 14.7.2015, p. 91](#).

10 EESC opinion, [OJ C 230, 14.7.2015, p. 91](#).

- 2.6 The EESC points to the launch of the 2014 package<sup>11</sup> – which was subsequently withdrawn – and that of December 2015 with the adoption of an EU action plan for the circular economy, which made plastics a key priority.
- 2.7 In the EESC's view, "behaviour change can be best achieved through clear price signals, i.e. by offering convenience and competitive pricing to consumers. These can be achieved through Extended Producer Responsibility (EPR) schemes and/or green taxation."<sup>12</sup>.
- 2.8 Europe's plastics industry generated a turnover of almost EUR 350 billion in 2016; it comprises around 62 000 businesses, employing more than 1.5 million workers, and produces 60 million tonnes<sup>13</sup>.
- 2.9 Today, plastics are present in every aspect of day-to-day life: from transport to construction, from telecommunications to consumer goods, and from food to health.
- 2.10 Some 80 % of EU plastics businesses are SMEs with fewer than 20 employees, and medium/large companies amount to around 20 %<sup>14</sup>.
- 2.11 Every year, Europeans generate 25 million tonnes of plastic waste. Less than 30 % of this is recycled<sup>15</sup>.
- 2.12 According to a recent European study (footnote 15), if plastic were to be replaced by other materials, in its principal applications, the weight of packaging would increase almost fourfold; there would be a 60% increase in the volume of waste produced and a 57 % increase in lifecycle energy consumption.
- 2.12.1 On the other hand, 95% of the value of packaging is lost after being used once. 72 % of the 78 million tonnes used for consumption is not recovered, with 40% going to landfills and 32 % not covered by official collection systems.
- 2.13 This is why it is so necessary to develop the eco-design of plastic, to make it more recyclable and thus increase demand for recycled plastic across the various industrial sectors and distribution channels, and among consumers and individual Europeans.
- 2.13.1 Improved dialogue with the recycling industry is needed to understand its production process, requirements and technologies.

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11 See SWD(2014) 208 and SWD(2015) 259 fin.

12 EESC opinion, [OJ C 230, 14.7.2015, p. 91](#).

13 See report on "L'eccellenza della filiera della plastica per il rilancio industriale dell'ITALIA e dell'EUROPA 2017" (The key role played by the plastics industry in the industrial renewal of Italy and Europe, 2017) <https://www.ambrosetti.eu/wp-content/uploads/parte-2.pdf>.

14 Ambrosetti, *L'eccellenza della filiera della plastica nell'UE*, 2015.

15 European Commission, press release, 16 January 2018.

- 2.14 Recycled plastics should be revamped and upgraded by means of a standardisation and certification labelling process.
- 2.15 In a circular economy, plastics must be seen as a valuable common tangible heritage, as they are vital for sustainable and competitive economic development geared towards people, health and the environment, provided that objects made with this raw material are no longer seen as "waste to be disposed of", but rather as "objects to be recovered".

### 3. **Seas and plastics**

- 3.1 Seas and oceans cover 70 % of the Earth's surface, and seawater accounts for 97 % of its water resources. The oceans are our strongest allies against climate change and were included in the Paris Agreement, with a special report from the IPCC dedicated to the oceans.
- 3.2 Marine litter, and in particular plastics and microplastics, are another major threat to oceans and are therefore a global concern, affecting all the oceans of the world. Every year, millions and millions of tonnes of litter end up in the ocean worldwide, posing environmental, economic, aesthetic and health problems. Marine litter can cause serious economic damage: losses for coastal communities, limitations on tourism, and impediments to shipping and fishing.
- 3.3 The potential cost across the EU for coastal and beach cleaning has been assessed at almost EUR 630 million per year.
- 3.4 Taking into account its accumulation and dissemination, marine litter may be one of the fastest growing threats to the health of the world's oceans. Balanced and effective circular-economy measures are needed here at both international and European levels, with EU marine litter reduction targets of 30 % by 2025 and 50 % by 2030.
- 3.4.1 In order to meet these targets, the existing legislation needs to be amended: currently, waste is the property of the person who collects it, discouraging collection.
- 3.4.2 Incentives need to be explored for people (particularly fishermen) who could cooperate on cleaning up the seas and rivers, partly by tapping the European Maritime and Fisheries Fund (EMFF).
- 3.5 On 18 December 2017, the Council adopted conclusions on eco-innovation and stressed "the need for coherence between innovation support policies and other policies, in particular with the focus of the protection of human health, the environment and the transition to the circular economy"<sup>16</sup>.
- 3.6 For its part, the EP has adopted a number of documents on this subject: from its resolution of 9 July 2015 on resource efficiency: moving towards a circular economy; to the resolutions it

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<sup>16</sup> <http://data.consilium.europa.eu/doc/document/ST-15811-2017-INIT/en/pdf>, Council conclusions of 18.12.2017, *Eco-innovation: enabling the transition towards a circular economy*.

adopted in February 2017 on the waste package; to its resolution of 18 December 2017 on "International ocean governance".

- 3.7 Measures to clean up the Mediterranean Sea could find synergies with the Prima Programme (PPP), which provides for ecological measures for environmental purposes<sup>17</sup>.

#### 4. **The Commission's proposals**

- 4.1 The strategy proposed by the European Commission is aimed at protecting the environment from plastic pollution and, at the same time, promoting growth and innovation, thus seeking to transform the economic challenge of a linear paradigm – production-distribution-consumption-behaviour – into a circular model that is self-sustaining through efficient use of resources, which comes to consider "waste" as "**resources to be regenerated**".

- 4.2 Reuse, recycling and recovery would become key words around which a new paradigm would be built to promote new design, sustainability, innovation and competitiveness throughout the internal market and in international markets.

The proposed strategy includes 40 measures, 15 recommendations for national and regional authorities and eight recommendations addressed to industry.

- 4.3 The proposal for a directive on port reception facilities introduces new standards to combat the problem of marine waste, with measures intended to guarantee that waste produced on board ship or collected at sea is not dumped into the ocean but rather brought back on land to be processed properly. Provision is also made for measures to reduce the administrative burden on ports, vessels and the competent authorities.

#### 5. **General comments and recommendations**

- 5.1 In the Committee's view, if a strategy on plastics is to be successful, the following must be in place: effective educational and training measures; design and behavioural incentives; high-quality common technical and regulatory standards; attractive and rewarding schemes, including tax and financial schemes; a systemic and cross-sectoral approach; widespread and smart use of digital applications; and broad and participatory forward planning exercises, with the aim of accompanying the process with a genuine **European culture of plastic circularity based on an analysis of the entire product lifecycle**.

- 5.2 Microplastic pollution is one of the biggest dangers for the environment and human health. Microplastics are often used in detergents, cosmetics, furniture and paints. **The EESC believes** that this form of pollution should be tackled at source through EU-level action under the **REACH** programme.

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<sup>17</sup> COM(2016) 662 final and EESC opinion, [OJ C 125, 21.4.2017, p. 80](#).

- 5.3 **In the EU, around 40 % of plastic is used once and is the biggest source of pollution: a minimal cost per plastic bag has slashed the number of bags used. The EESC recommends extending this measure to all types of single-use plastic.**
- 5.4 The EESC considers that priority must be given to rolling out digital labelling of the various types of plastics for the purposes of identification, selection and possibly exclusion of dangerous substances. Plastics often contain toxic substances which are banned in materials that come into contact with food and in toys. Recycling plastic could mean that these substances appear in other products, so it is imperative to guarantee and certify that "secondary raw materials" do not contain toxic substances.
- 5.5 National legislation varies in terms of amounts and what is allowed. A single **harmonised** – and stricter – set of laws would benefit consumers.
- 5.6 The EESC believes that measures should be developed giving priority to:
- common reporting methodologies;
  - digitalising products, processes and components by digitally labelling the various types;
  - highly efficient infrastructure for collection and sorting, equipped with optical readers;
  - standards and certification for products, processes and facilities;
  - professionalising and monitoring recycling;
  - extended producer and consumer responsibility reward schemes;
  - an EU pilot project focusing on the organisation, design and competitive commercial development of a genuine European market in high-quality secondary plastic materials, promoting green public procurement.
- 5.7 The separate collection and particularly recycling of PET<sup>18</sup> can create economic benefits in the EU, generating new economic activity and jobs.
- 5.8 To date organic recycling by means of composting<sup>19</sup> has been favoured, as well as landfill and energy recovery through incineration<sup>20</sup>, particularly in the iron and steel and cement industries, with the appropriate filtering of waste gas.
- 5.9 Recycling plastic into new items is becoming increasingly prevalent, either of the same type (bottle-bottle), or of a different type (plastic-fabric). However, this requires a system of incentives for consumers<sup>21</sup> and easy identification by means of digital readers at collection points.

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18 PET: polyethylene terephthalate, composition (C<sub>10</sub>H<sub>8</sub>O<sub>4</sub>)<sub>n</sub>. It is derived from crude oil (C<sub>9</sub>H<sub>18</sub>). It is a thermoplastic resin, suitable for contact with food.

19 **Compost** is what is left after organic waste is kept moist and allowed to rot.

20 RDF, **refuse-derived fuel**. During the combustion process, the bonds between the H and C atoms in the plastic are broken, releasing large amounts of heat.

21 For example, the compulsory deposit in Germany and the obligation on retailers to collect the empty bottles in Switzerland.

- 5.10 Recycled PET can be used as a fibre for the production of summer and winter fabrics, overalls, military uniforms, tyre reinforcements, poles, conveyor belts, film for packaging and printed products.
- 5.11 With vigorous technical and legislative standardisation and certification, even after recycling, and if the processes are properly conducted and certified<sup>22</sup>, PET remains chemically inert and therefore suitable for applications that involve safe contact with food<sup>23</sup>.
- 5.12 **With regard to marine litter**, the EESC is in favour of coordinating the directive with the International Convention for the Prevention of Pollution from Ships (MARPOL) and considers that addressing the issue of waste from fishing vessels and pleasure craft will help solve the problem of marine pollution, provided that there are appropriate exemptions for small vessels and restricted traffic ports.
- 5.13 The fisheries fund (EMFF) should be tapped to involve fishing organisations in organised marine waste collection. When properly trained, fishermen could supplement their unreliable fishing earnings by turning to collection and the recycling industry.
- 5.14 The same approach applies to cleaning up rivers by using cooperatives, amending current legislation<sup>24</sup>.
- 5.15 The EESC believes that priority must be given to developing regional agreements on marine pollution, particularly in marine and river areas.

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<sup>22</sup> Prevent the generation of acetaldehyde, by optimising the melting temperature and residence time. Exclude decontamination.

<sup>23</sup> Some Member States' legislation stipulates that food containers can be made of no more than 50% secondary plastic materials. Moreover, these secondary plastic materials cannot come into contact with food; therefore, recycled plastic in the parts of the container which might come into contact with food are covered with "virgin" plastic.

<sup>24</sup> Estimated 1.15 and 2.41 million tonnes of plastic waste currently enters the ocean every year from rivers, with over 74% of emissions occurring between May and October. The top 20 polluting rivers, mostly located in Asia, account for 67% of the global total.

## 6. Specific comments

6.1 **From PET to yarn.** PET recycling involves a non-polluting, innovative chemical/mechanical process, which conserves the purity of the fibre, reducing energy and water consumption and reducing CO<sub>2</sub> emissions by about 30 %, and all without producing slag or waste.

6.1.1 The first step is recovering the raw material, through separate collection. After the stages of: crushing, washing, grinding, drawing, drying and granulation, the PET is transformed into a new polymer, through a non-polluting process, which primarily exploits temperature variations. At the end, the molten polymer that is obtained is sent to an extruder. It is cut to the desired length, in a range of synthetic recycled yarns, in high-quality, high-performance polyester.

6.2 The transformation of PET<sup>25</sup> (polyethylene terephthalate) into fabric is innovation, respect for the environment and quality: from production techniques to design.

6.2.1 Technical data<sup>26</sup>:

- 2 kg of oil (C<sub>9</sub>H<sub>18</sub>) produces 1 kg of PET (C<sub>10</sub>H<sub>8</sub>O<sub>4</sub>)<sub>N</sub>;
- 1 1.5-litre bottle has a mass of 38 grams;
- 1 0.5-litre bottle has a mass of 25 grams;
- It takes approximately 27 1.5-litre bottles to make a fleece sweatshirt (330 g/m<sup>2</sup>);
- 27 bottles amount to 1 026 grams of PET, or about 2 052 grams of oil;
- The CO<sub>2</sub> reduction for 2 052 grams of oil (24.2136 kWh)<sup>27</sup> is **6.39239 kg/CO<sub>2</sub>**.

6.2.2 Another example: 53 900 1.5-litre plastic bottles can be recycled and converted into an excellent polyester that can be made into 7 000 bags, with savings of 3.34 tonnes of CO<sub>2</sub><sup>28</sup>.

## 7. Issues for consideration

7.1 Commitments at national level:

- education, starting at school, on the sorting of waste (including plastics!), particularly within the family;
- setting up of cooperatives/associations to collect plastic, in cooperation with municipalities and businesses, and take it to centres for processing and certification as "secondary plastic material";
- adapting current standards on waste to what is required for plastics collection.

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25 Polyesters come from PET and are available either as staple fibres or as smooth or bulky yarn or microfibre.

26 Source: Pielleitalia S.r.l Grassobbio Bergamo.

27 Source: JRC Ispra: Conversion factor for crude oil:

- 11.8 MWh/t
- 0.264 tCO<sub>2</sub>/MWh

28 See footnote 28 JRC Ispra.

- 7.2 The EESC supports dialogue between stakeholders with a view to setting up a fund to invest in plastic recycling technologies and establishing a European market in high quality secondary plastic.
- 7.3 Through H 2020 **and the new Framework Programme 9**, including with studies on bacteria<sup>29</sup>, the EESC supports the Joint Technology Initiatives, and specifically the institutional public-private partnership (one of the 7 JTI) on Bio-based Industries.

Brussels, 23 May 2018

Luca JAHIER  
President of the European Economic and Social Committee

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<sup>29</sup> Kyoto Institute of Technology and Keio University, along with other Japanese research institutes, have isolated a bacterium – *Ideonella sakaiensis* – that can "devour" plastic, using it as a source of sustenance and growth, by means of the chemical action of only two enzymes. See: [science.sciencemag.org/content/351/6278/1196](https://www.sciencemag.org/content/351/6278/1196) - YOSHIDA & OTHERS. University of Portsmouth biologist Professor John McGeehan and his colleagues accidentally created a super-powered version of the plastic-eating enzyme, published in the journal Proceedings of the National Academy of Sciences 2018.