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Moving towards a circular economy for plastics in the EU by 2030

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Contents

EXECUTIVE SUMMARY

We are living in the era of plastics. Since the 1950s, they have been commonplace in our daily lives. But despite their usefulness, plastics create significant sustainability issues. The single use nature of many plastic products means that most of the plastics produced globally have already become waste, with only 9% having been recycled. In short, the current relationship of producers, retailers and consumers with plastics is unsustainable in both socio-economic and environmental terms.

A growing number of international agreements, EU policies, national measures and business initiatives are trying to tackle the plastic waste problem. EU measures include the Circular Economy Action Plan, the Strategy for Plastics in a Circular Economy, and a legislative initiative on single-use plastics (SUPs) proposed in May 2018. But is the existing and planned action at the EU level ambitious enough?

The EU has no specific quantified targets for plastic waste prevention or for reduction in SUPs. It is calling for a four-fold increase in demand for recycled plastics (from the current 6% of demand), whilst companies such as Coca Cola and Evian have ambitious targets for recycled content in their packaging (50% by 2030 and 100% by 2025 respectively). Proposed EU level product bans, for example on plastic cotton bud sticks and plates, are following in the footsteps of national bans such as those in France.

The EU is aiming for 90% of SUP bottles to be collected by 2025, but Germany already recycled 93.5% of its PET bottles in 2015. The EU target to recycle 55% of plastic packaging by 2030 is low compared to targets for most other materials, and significant barriers to recycling still need to be tackled.

So far, policy has focused more on the applications of plastics (e.g. packaging, SUPs); greater focus is needed on reducing our reliance on plastics and tackling the raw material aspect of the value chain. As well as the environmental benefits of reduced plastic use, supporting innovative materials and business models offers the EU important opportunities for economic benefits and job creation.

Windows of opportunity for increased EU ambition include the implementation and monitoring of the newly revised EU waste legislation, the decision-making process on the newly-proposed Directive to reduce the impact of SUP products, and discussions stemming from the Commission's proposal for Member State contributions to the EU budget based on the amount of non-recycled plastic packaging.

So what more can the EU do by 2030 and beyond?

An EU target on (plastic) waste prevention would demonstrate true commitment to waste prevention and re-use, and support reduced SUP consumption. **Quantified collection targets** should be developed for all SUP items covered by the proposed Directive, not just SUP bottles. Steps should be taken to improve **transparency and information exchange**, on both statistics and the polymer and chemical content of plastics. **Market-based instruments** should be more consistently and effectively supported to address plastic waste. The Commission should support **coalitions of municipalities** who prevent plastic waste and pollution, recognise **citizens' role** in a sustainable plastics economy, and support **private sector innovation**. Eco-design or other **standards for plastic products** should be further developed. And the EU should contribute to **a more credible development agenda to address the global challenges of plastic waste**, recognising its role as a producer and exporter of plastic products and waste in the globalised plastics economy.

1 Plastics: where are we now?

1.1 Plastics: important but problematic

We are living in the era of plastics. Since the 1950s, plastics have been commonplace in our daily lives. It has been estimated that 8,300 million metric tonnes (Mt) of virgin plastics have been produced globally to date[1]. Annual global production of plastics has increased twentyfold since the 1960s, reached 322 million tonnes in 2015, and is predicted to double again over the next 20 years[2].

In Europe, the largest use of plastics is for packaging, which accounted for almost 40% of the 49 Mt of plastics demand in 2015 (around 42% globally[3]). This is followed by building and construction related applications (almost 20%), automotive applications (around 9%) and electronics (almost 6%[4]).

The wealth of different types of modern plastics have many useful characteristics, including being convenient, cheap, often lightweight, flexible and durable. Despite their usefulness, however, plastics create sustainablility issues not merely due to the volume being used, but also by virtue of the range of uses, as well as the diversity of polymers and additives which can hamper recycling. In short, the current relationship of producers, retailers and consumers with plastics is unsustainable in both socio-economic and environmental terms.

The single use nature of many plastic products means that most of the plastics produced globally have already become waste (6,300 Mt by 2015). Of this only 9% has been recycled, 12% incinerated and 79% sent to landfills or leaking – one way or another – into the natural environment[5]. In Europe, almost 26 Mt of plastic waste are generated annually[6], 59% of which is packaging[7], and less than 30% of which is collected for recycling, with 31% landfilled and 39% incinerated[8].

Estimates suggest that globally, between 4 and 12 million Mt of plastic waste entered the marine environment in 2010[9], and that around 150,000 to 500,000 tonnes of plastic waste enters the oceans from the EU annually[10]. Plastics account for an estimated 80% of marine litter[11], with 50% of beach litter consisting of single-use plastic (SUP) items [12]. Plastics, including microplastics, also now

[1] Geyer, R., Jambeck, J. and Law, K. L. (2017) Production, use, and fate of all plastics ever made, in Science Advances 19 Jul 2017: Vol. 3, no. 7, e1700782, DOI: 10.1126/sciadv.1700782, http://advances.sciencemag.org/content/3/7/e1700782.full

[2] European Commission (2018) A European Strategy for Plastics in a Circular Economy, COM/2018/028

[3] Geyer et al. (2017)

[4] Plastics Europe (2016) Plastics – The facts 2016. https://www.plasticseurope.org/application/files/4315/1310/4805/plastic-the-fact-2016.pdf

[5] Geyer et al. (2017)

[6] Plastics Europe (2016) Plastics – The facts 2016. https://www.plasticseurope.org/application/files/4315/1310/4805/plastic-the-fact-2016.pdf

[7] Eunomia (2017)

[8] European Commission (2018) A European Strategy for Plastics in a Circular Economy, COM/2018/028

[9] Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, A., Andrady, R., Law, K. L. (2015) Plastic waste inputs from land into the ocean. Science 347, 768-771 (2015)

[10] Eunomia (2016), Study to support the development of measures to combat a range of marine litter sources: Report for European Commission DG Environment, http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/MSFD%20Measures%20to%20Combat%20Marine%20Litter.pdf

[11] European Commission (2018) A European Strategy for Plastics in a Circular Economy, COM/2018/028

[12] Joint Research Centre (2017), Top Marine Beach Litter Items in Europe

contaminate terrestrial habitats, soils and freshwater[13]. And it has been estimated, based on 2012 data, that the production of plastics and incineration of plastic waste generates around 400 Mt of CO_2 globally per year[14].

Extrapolating these production, waste and waste management trends, there could be approximately 12,000 Mt of plastic waste in landfills or the natural environment by 2050[15]. This represents not only a loss of non-renewable resources (i.e. the fossil fuels that around 90% of plastics are made from[16]), but also a loss of potentially valuable secondary raw material, and associated loss of value to the global economy. Around 95% of the value of plastic packaging material (between EUR 70 and 105 billion per year) is estimated to be lost to the economy after one very short-lived use[17].

1.2 The global dimension of plastics

Both the benefits and problematic aspects of plastics are globalised: plastic materials, products and waste are traded across the globe, but plastic pollution presents a global sustainability crisis.

Evidence shows that the leakage of plastics to the environment is more acute where waste management infrastructure is less developed. For example around 90% of all ocean plastic is estimated to find its way into the oceans via just 10 rivers, eight of which are in Asia and two in Africa[18].

In response to the recognition that this is a global issue, a growing number of international agreements and frameworks are providing the basis for international action on plastics. For example, the **UN Sustainable Development Goals** include several targets of relevance to plastics, notably within SDG 12[19] to ensure sustainable consumption and production patterns, and SDG 14[20] to conserve and sustainably use the oceans, seas and marine resources for sustainable development. The 2016 **United Nations Environment Assembly (UNEA-2)** Resolution 2/11 on Marine plastic litter and microplastics invited all countries "in cooperation with industry and other stakeholders, at the national, sub regional, and international levels, to organise and/or participate in annual campaigns for awareness-raising, prevention and environmentally sound clean-up of marine litter". **United Nations Regional Seas**

[13] See e.g. Wagner, M., Scherer, C., Alvarez-Muñoz, D., Brennholt, N., Bourrain, X., Buchinger, S., Fries, E., Grosbois, C., Klasmeier, J., Marti, T., Rodriguez-Mozaz, S., Urbatzka, R., Vethaak, A. D., Winther-Nielsen, M., Geifferscheid, G. (2014), Microplastics in freshwater ecosystems: What we know and what we need to know. Environ. Sci. Eur. 26, 12 (2014); Rillig, M. C. (2012), Microplastic in terrestrial ecosystems and the soil? Environ. Sci. Technol. 46, 6453–6454 (2012); Zubris, K. A. V. and Richards, B. K. (2005), Synthetic fibers as an indicator of land application of sludge. Environ. Pollut. 138, 201–211 (2005)

[14] Ellen MacArthur Foundation (2016) The new plastics economy, https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

[15] Geyer et al (2017)

[16] Bio-based and biodegradable plastics are estimated to account for only around 4 Mt of annual global production (Geyer et al., 2017).

[17] Ellen MacArthur Foundation (2016)

[18] Schmidt, C. et al. (2017) Export of Plastic Debris by Rivers into the Sea, in Environmental Science & Technology, Vol. 51, No. 21; November 7, 2017

[19] Including the target to achieve the sustainable management and efficient use of natural resources by 2030 (Target 12.2), for the environmentally sound management of chemicals and wastes and a significant reduction in releases to water and soil by 2020 (Target 12.4), and to substantially reduce waste generation through prevention, reduction, recycling and reuse by 2030 (Target 12.5).

[20] Includiing the target for the prevention and significant reduction of marine pollution of all kinds, in particular from land-based activities, including marine debris, by 2025 (Target 14.1).

Programmes[21] include measures to reduce and prevent marine litter. Signatories to the 2018 **G7 Ocean Plastics Charter** (the EU, France, Germany, Italy, the UK and Canada) have pledged to take action towards a 'resource-efficient lifecycle management approach to plastics in the economy'. The operational framework of the **G20 Action Plan on Marine Litter** identifies the need to address pollution from both land and sea based sources. Measures identified include promoting the socio-economic benefits of policies to prevent marine litter, promoting waste prevention and resource efficiency, and promoting sustainable waste management.

Also of significance is the entry into force at the start of 2018 of a **Chinese ban on imports of non-industrial plastic waste**. China is estimated to have imported 45% of total global plastic waste generated since 1992 (amounting to around 106 Mt), and estimates suggest around 111 Mt of plastic waste will be displaced by 2030 as a result of the new Chinese policy[22]. In 2016, EU countries sent around 1.6 Mt of plastic waste to China – almost 20% of the total amount it collected – but in 2017 exports fell from 163,000 tonnes in January to just 12,000 tonnes in December in anticipation of the ban, with exports instead shifting to other countries including Vietnam, Malaysia, Hong Kong and Turkey[23]. In addition, China is still in the process of improving its waste management infrastructure; an estimated 1.3 to 3.5 Mt of plastic flows into the oceans from the Chinese coastline each year[24].

A growing awareness of the issue of waste exports, and the leakage of plastic waste from destination countries with poorer waste management standards than those in the EU and other developed countries, both highlight the need for the EU to take responsibility for the waste it produces and support more concerted and coherent action both at home and on a global level.

1.3 EU plastics policy: state of play

There are many reasons why **Europe must play a central role in supporting the move towards a circular economy for plastics to 2030**. European waters are already impacted by marine litter. For example, the Mediterranean is one of the seas most polluted by plastics, with up to 700 tonnes entering its waters each day[25]. Europe is a major producer of plastics, contributing 20% of global plastics supply in 2016[26]. Plastics waste produced by European consumer good brands and other industries pollutes beaches and waterways across the globe[27]. Europe is a major exporter of plastic waste. Prior to the introduction of Chinese restrictions on the import of plastic waste, Europe contributed 37% of global waste exports with an estimated material value of 2.4 EUR billion. Europe's economy will benefit from being more productive and efficient with all resources, including plastics.

[21] Programmes cover the Mediterranean, North-East Atlantic, the Baltic Sea Area, the Wider Caribbean Region, the Northwest Pacific Region, the Black Sea Area and the South Pacific.

[22] Brooks, A. L., Wang, S. and Jambeck, J.R., The Chinese import ban and its impact on global plastic waste trade, in Science Advances 20 Jun 2018: Vol. 4, no. 6, eaat0131, DOI: 10.1126/sciadv.aat0131, http://advances.sciencemag.org/content/4/6/eaat0131.full

[23] Politico (2018) China's trash ban forces Europe to confront its waste problem, https://www.politico.eu/article/europe-recycling-china-trash-ban-forces-europe-to-confront-its-waste-problem/

[24] Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, A., Andrady, R., Law, K. L. (2015) Plastic waste inputs from land into the ocean. Science 347, 768-771 (2015)

[25] UNEP-MAP (2015) Marine Litter Assessment in the Mediterranean – 2015, https://wedocs.unep.org/rest/bitstreams/9739/retrieve

[26] Plastics Europe (2017)

[27] Greenpeace International (2017), Nestlé, Unilever, P&G among worst offenders for plastic pollution in Philippines in beach audit, 22 September 2017, https://www.greenpeace.org/international/press-release/7621/nestle-unilever-pg-among-worst-offenders-for-plastic-pollution-in-philippines-in-beach-audit/

There is also significant potential for Europe to benefit from competitive advantage and job creation opportunities by being at the forefront of developing more sustainable solutions for plastics.

In this sense, Europe is embedded in the global plastics economy, and has both the responsibility and the potential to lead actions to change our relationship with the material.

In recent years, the EU has been increasingly focussing on developing policies to specifically address some of the problematic issues around plastics. In 2015, the European Commission pledged in its **EU Action Plan for a Circular Economy**[28] to develop a strategy addressing the challenges posed by plastics. This came to fruition in January 2018 with the publication of a **European Strategy for Plastics in a Circular Economy**[29].

The Strategy sets the following objectives:

- All plastics packaging in the EU to be reusable or recyclable in a cost-effective manner by 2030
- Recycling of over 50% of plastics waste generated in Europe by 2030
- Four-fold increase in sorting and recycling capacity and improved separate collection by 2030
- Four-fold increase in demand for recycled plastics, supported by an established market
- Greater use of innovative materials and alternative (i.e. non-fossil fuel) feedstocks for plastic production, where they are demonstrably more sustainable
- Increased use of circular solutions to promote plastic waste prevention, such as reverse logistics for packaging and alternatives to disposable plastics
- A 'drastic' decrease in the leakage of plastics into the environment
- A leading role for the EU in the global context of dealing with plastic waste and pollution

A **legislative initiative on single-use plastics** was proposed by the Commission in May 2018, with the overarching aim of reducing the environmental and health impact of plastic products and promoting the transition to a circular economy. [30] It targets in particular some of the SUP that are most often found as litter on EU beaches, together with fishing gear. On the 24th October 2018, the European Parliament voted[31] [32] to adopt the proposal for a Directive on the reduction of the impact of certain plastic products on the environment with amendments[33]. The measures adopted include:

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[28] European Commission (2015) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Closing the loop - An EU action plan for the Circular Economy (COM/2015/614)

[29] European Commission (2018) 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)

[30] European Commission (2018) Proposal for a Directive on the reduction of the impact of certain plastic products on the environment (COM/2018/340), http://ec.europa.eu/environment/circular-economy/pdf/single-use_plastics_proposal.pdf

[31] European parliament (2018) Plastic Oceans: MEPs back EU ban on throwaway plastics by 2021. http://www.europarl.europa.eu/news/en/press-room/20181018IPR16524/plastic-oceans-meps-back-eu-ban-on-throwaway-plastics-by-2021

[32] Rethink Plastics Alliance (2018) European steps forward to cut on sinlge-use plastics, but it's just the beginning. https://rethinkplasticalliance.eu/news/new-item/?utm_source=RPa+policy+makers+%2B+media&utm_campaign=67e858b1b2-EMAIL_CAMPAIGN_2018_10_24_08_34_COPY_01&utm_medium=email&utm_term=0_aba2efd161-67e858b1b2-245763205&mc_cid=67e858b1b2&mc_eid=d1ece746e1

[33] Amendments adopted by the European Parliament on 24 October 2018 on the proposal for a directive of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment (COM(2018)0340 – C8-0218/2018 – 2018/0172(COD)):

- A EU-wide ban of single-use plastic cotton buds, straws, plates and cutlery (with exemptions until 2023), beverage stirrers, balloon sticks, oxo-degradable plastics and expanded polystyrene food containers and cups
- An obligation for EU countries to adopt measures to achieve a 25% reduction of the consumption of food containers and cups for beverages
- An obligation for EU countries to reduce post-consumption waste from tobacco product filters containing plastic by 50 % by 2025 and 80 % by 2030,
- Extended Producer Responsibilty (EPR) schemes that include the cost of clean up and awareness raising measures
- Harmonised standards and an Extended Producer Responsibility (EPR) scheme for fishing gear, as well as a 50% collection target and a 15% recycling target for fishing gear by 2025
- An obligation to separately collect 90% of beverage containers and ensure they are produced from 35% recycled content by 2025
- An obligation to prevent the use of hazardous chemicals in the composition of sanitary items
- An obligation to label products to inform consumers about the presence of chemicals of concern in certain single-use plastic products

The 2015 Circular Economy Package included a proposal to amend the Packaging and Packaging Waste Directive[34], including its recycling targets. In May 2018, **Directive 2018/852**[35] was adopted, setting plastic packaging recycling targets of 50% by weight by 2025 and 55% by weight by 2030, showing significantly more ambition than the previous target of 22.5% to be achieved by 2008.

The proposed **Monitoring Framework for the Circular Economy**[36], included in the 2018 Circular Economy Package, contains several indicators of relevance to plastics.[37] As part of the same package, the Commission proposed amendments to the Directive on Port Reception Facilities for the Delivery of Waste from Ships[38], with the aim to improve the protection of the marine environment against discharge of waste from ships. The Commission also published a Communication on the impact of oxo-

http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2018-0411+0+DOC+XML+V0//EN&language=EN

[34] Directive 94/62/EC

[35] DIRECTIVE (EU) 2018/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste

[36] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS on a monitoring framework for the circular economy, COM/2018/029 final

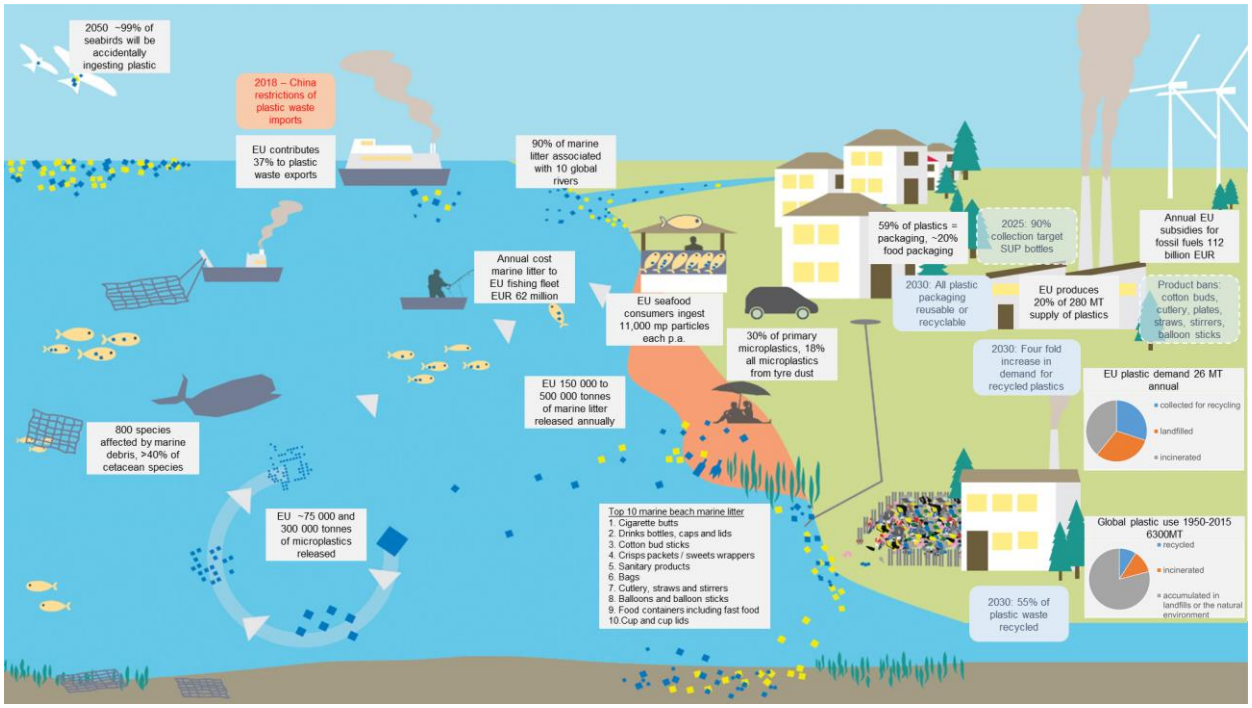
[37] Indicators relevant to plastics include: plastic packaging recycling rates, secondary raw materials' share of overall materials demand, and the volume of imports and exports of selected recyclable raw materials.

[38] 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/2018/033 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1531928430656&uri=CELEX:52018PC0033

degradable plastics[39] which concluded that they do not fully biodegrade in the environment and so policies would be developed to restrict their use in the EU.

The proposals for the EU's budget for 2021-2027 period include a **plastics-related 'tax'**. The proposal is for a national contribution to the EU budget based on the amount of non-recycled plastic packaging waste in each Member State, at a rate of €0.80 per kg. This has been presented as a new, 'modern source of funding for the EU budget'[40], estimated as raising up to €7 billion in revenues from 2021-2027[41].

The 2018 Circular Economy Package also included a **Communication on the interface between chemical, product and waste legislation**[42]. This recognises four critical issues that are potentially hampering progress towards a circular economy, which are relevant to plastics as well as to other products. These are: a lack of information about substances of concern in products & waste; the presence of such substances in recycled materials ('legacy substances'); uncertainties about how waste can become new material; and confusion over how hazardous waste and chemicals are classified. However, as yet it is unclear what this Communication might lead to in practice.



[39] REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL on the impact of the use of oxo-degradable plastic, including oxo-degradable plastic carrier bags, on the environment, http://ec.europa.eu/environment/circular-economy/pdf/oxo-plastics.pdf

[40] European Commission (2018) Press release: EU budget: Commission proposes a modern budget for a Union that protects, empowers and defends, Brussels, 2 May 2018, http://europa.eu/rapid/press-release_IP-18-3570_en.htm

[41] Proposal for a COUNCIL DECISION on the system of Own Resources of the European Union, COM/2018/325 final - 2018/0135 (CNS), https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1527242435118&uri=CELEX%3A52018PC0325

[42] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS on the implementation of the circular economy package: options to address the interface between chemical, product and waste legislation (Text with EEA relevance) options to address the interface between chemical, product and waste legislation), COM/2018/032

2 Is EU plastics policy ambitious enough?

2.1 Is existing EU policy ambitious enough?

As outlined above, the EU has put forward numerous policies and pieces of legislation related to plastics. But are these efforts – several of which are yet to be fully implemented – ambitious enough to adequately to address the problematic issues around plastics, and to enable the EU to achieve its ambition of becoming a world leader in developing a circular economy for plastics?

The following sections outline some of the major challenges for EU policies on plastics, and where gaps exist in the current legislation. A table providing a comparison of the level of ambition of selected existing and planned global, EU, Member State and business/industry-led plastics-related initiatives is provided in annex to this paper.

Waste management, separate collection and recycling

Improving the quality of separate collection and increasing the rate of recycling for plastics are important objectives to reduce the environmental impacts of waste, and many EU countries already lead globally on recycling. On collection, the EU is aiming for 'improved' separate collection by 2030, and for 90% of SUP bottles to be collected by 2025 (if the proposed Directive is adopted). Whilst the 90% bottles target seems ambitious, it relates only to a single plastic product, and is put into perspective by comparison with both current performance and future targets of some European countries. For example Germany already recycled 93.5% of its PET bottles in 2015 and Norway collects 95% of its PET bottles[43], whilst France is aiming to collect 100% of recyclable plastic waste by 2025[44] and even to achieve 100% recycling of plastic by the same date[45]. It is also notable that Coca Cola, which is alone estimated to be responsible for placing 110 billion SUP bottles on the market each year[46], has pledged to collect and recycle the equivalent of 100% of its global primary packaging by 2030[47].

A key EU recycling target under the revised waste legislation is to recycle 55% of plastic packaging by 2030. This remains low compared to the targets for most other materials and lower than the overall target of 60% for municipal waste.[48] In addition, other initiatives around Europe already have more ambitious targets. For example the UK Plastics Pact, with over 90 government, business and NGO signatories, aims to achieve 70% recycling/composting of plastic packaging by 2025[49]. Higher recycling rates are hampered by the diversity of polymers, additives and materials found in mixed as well as sorted waste, the chemical limits on mechanically recycling polymer chains (which degrade with successive uses), and the information gaps which exist between products and waste management.

[43] https://www.dw.com/en/plastic-bottle-recycling-champion-norway-or-germany/a-44880423

[44] République Française (2018) Feuille de route économie circulaire: 50 mésures pout une économie 100% circulaire, https://www.ecologique-solidaire.gouv.fr/sites/default/files/Feuille-de-route-Economie-circulaire-50-mesures-pour-economie-100-circulaire.pdf

[45] https://www.ecologique-solidaire.gouv.fr/100-plastiques-recycles-en-2025-55-industriels-et-federations-sengagent-en-faveur-du-recyclage-et

[46] The Guardian (2017) Coca-Cola increased its production of plastic bottles by a billion last year, says Greenpeace, 2 October 2017, https://www.theguardian.com/environment/2017/oct/02/coca-cola-increased-its-production-of-plastic-bottles-by-a-billion-last-year-say-greenpeace

[47] Coca Cola (2018) Taking Action Toward a World Without Waste, Jun 4 2018, https://www.coca-colacompany.com/stories/taking-action-toward-a-world-without-waste

[48] http://www.consilium.europa.eu/en/press/press-releases/2018/05/22/waste-management-and-recycling-council-adopts-new-rules/

[49] http://www.wrap.org.uk/content/the-uk-plastics-pact

Whilst these issues are acknowledged (in the interface Communication in particular) it is not clear what policies will be applied to overcome these barriers.

Reducing waste production and material consumption

Plastic recycling rates and targets are of course important, but represent only part of the waste hierarchy, and recycling is perceivably less efficient than waste prevention or reuse. The EU has no specific targets for prevention, i.e. to reduce the overall level of waste arisings. A few Member States have proposed overall waste reduction targets (non-specific to plastics), e.g. Austria 15% reduction by 2030, France 50% by 2025 and Scotland (UK) 15% by 2025.[50] Re-use targets are generally coupled with recycling targets, and no explicit measures to increase re-use have been proposed.

Recycling rates themselves are relative to the economy as a whole, so increased recycling does not necessarily mean a reduction in overall quantities of non-recycled waste. For plastics in particular, existing mechanical recycling processes often require the input of virgin materials. Furthermore, plastics are generally recycled in open loops into lower value products (downcycling) such as fibres for textiles. This means there is very little true recycling (i.e. a product being recycled back into the same product), since recycling often does not directly substitute the use of virgin materials. For many products, such as food contact materials (representing around 20% of the total market for plastics[51]), there are barriers (e.g. food safety legislation) to the use of recycled material because of toxicity risks.[52] Future ambition should be to ensure that recycled material can truly substitute virgin plastics, including by phasing out toxicity, thereby achieving increased use of higher quality recycled plastics. Policy, research and innovation will all have a role to play in achieving this.

Targets and other policy drivers (e.g. standards, material bans) for recycled content may help reduce virgin material demand, and the G7, EU and private sector have various goals to this end: the G7 wants to increase recycled content by 50% 'where applicable' by 2030; the EU wants to see a four-fold increase in demand for recycled plastics (from the current 6% of plastics demand); Coca Cola is aiming for 50% recycled material in its packaging by 2030, Evian for its plastic bottles to be made only from recycled plastic by 2025, and Unilever for all of its plastic packaging to be fully reusable, recyclable or compostable by 2025[53].

Targeting plastic products

A number of plastic products, including microplastics deliberately added to products and single use packaging, are short-lived and particularly liable to become litter. Measures targeting these kinds of products could help to reduce their environmental impacts and are under development at the EU and national level – such as the proposals on SUPs which explicitly target the most common marine litter items.

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[50] http://en.mfvm.dk/fileadmin/user_upload/MFVM/Miljoe/Cirkulaer_oekonomi/Advisory-Board-for-Circular-Economy-Report-2017-Content_Single_pages_WEB.pdf

https://www.ecologique-solidaire.gouv.fr/sites/default/files/Feuille-de-route-Economie-circulaire-50-mesures-pour-economie-100-circulaire.pdf

http://www.gov.scot/Publications/2016/02/1761

[51] Estimate based on best available data – see Schweitzer et al (2018) Unwrapped how throwaway plastic is failing to solve Europe's food waste problem. https://ieep.eu/publications/plastic-packaging-and-food-waste-new-perspectives-on-a-dual-sustainability-crisis

[52] Geueke, Groh & Muncke (2018) Food packaging in the circular economy: Overview of safety aspects for commonly used materials. Journal of Cleaner Production 193. https://www.sciencedirect.com/science/article/pii/S0959652618313325

[53] https://www.unilever.com/news/press-releases/2017/Unilever-commits-to-100-percent-recyclable-plastic.html

On SUPs, the level of ambition appears similar at the global and EU level, aiming at a 'significant reduction' in their use. A lack of a quantified target however makes this commitment difficult to measure. Economy wide reduction targets could be developed to raise the ambition of policy. Likewise, measures could be taken to reduce the use of these products via public procurement, in the UK central government offices are to be made SUP free[54], with this being achieved in Defra within 6 months[55].

The EU is following in the footsteps of some of its Member States by adopting a ban on plastic cotton bud sticks and plates in its Directive on SUP; cotton buds will be banned in Italy in 2019 and France in 2020, and France will also ban plastic cups and plates from 2020. The EU adopted measures also go further by including bans on SUP cutlery, straws, stirrers and balloon sticks. Regarding microbeads, several Member States (see **Error! Reference source not found.**) have already banned – or plan to ban plastic microbeads in certain products, whilst the European Chemicals Agency published in July 2018 a note on the potential scope of an EU level restriction on certain uses of microplastics[56], as announced in the EU Plastics Strategy.

Analysis by UN Environment reveals that bans and regulations on SUPs are in place in countries and municipalities across the globe. For example, more African countries have policies in place on plastic bags than European ones.[57]

Just transition, harmful subsidies and risks for industry

In the medium and long term, regulations and investments could help to shape demand for plastics in different ways – efforts should be made to ensure a just transition in both environmental and socio-economic terms. The prices of plastics are closely coupled to fossil fuel markets. Currently, European governments support fossil fuel consumption via environmentally harmful subsidies – existing subsidies for fossil fuels are estimated to be around EUR 112 billion annually. Member States have committed to removing harmful subsidies under various global frameworks, but evidence suggests countries will not meet this goal.[58]

International developments, including shale gas expansion, coal to olefin technology and expected loss of revenues from oil-derived transport fuel in the future (e.g. due to increased efficiency and electrification), are anticipated to increase global (virgin) plastic production capacity, which could undermine efforts to reduce consumption of virgin resin.[59] Some estimates suggest that plastics' share of global oil consumption could increase from 6% in 2014 to 20% in 2050, and from 1% to 15% of the carbon budget over the same timescale[60]. So far, policy focus has been placed more on the application

[54] HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

[55] Personal communication with a Defra official (May 2018)

[56] European Chemicals Agency (2018) Note on substance identification and the potential scope of a restriction on uses of 'microplastics', https://echa.europa.eu/documents/10162/13641/note_on_substance_identification_potential_scope_en.pdf/6f26697e-70b5-9ebe-6b59-2e11085de791

[57] p.25 UN Environment (2018) Single use plastics – a road map to sustainability. https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?sequence=1&isAllowed=y

[58] ODI & CAN Europe (2017) Phase-out 2020. https://www.odi.org/sites/odi.org.uk/files/resource-documents/11762.pdf

[59] http://www.ciel.org/wp-content/uploads/2017/09/Fueling-Plastics-How-Fracked-Gas-Cheap-Oil-and-Unburnable-Coal-are-Driving-the-Plastics-Boom.pdf

[60] https://www.ellenmacarthurfoundation.org/news/the-new-plastics-economy-rethinking-the-future-of-plastics-infographics

level of plastics (e.g. packaging, SUPs) with little focus on the raw material production side of the value chain.

Conversely, EU and national policy making on reducing plastics has the potential to reduce investment in plastics production which could adversely affect the industry. However with careful consideration, potential losses in the industry and its employees can be mitigated, for example by developing and using expertise to further integrate recycling activities and recycled content into business models.

Much of the discourse around plastics has focused on substituting materials and replacing plastics with alternatives, including bioplastics, but also conventional materials such as glass and paper. Potential socio-economic losses in the plastics industry may be offset with growth in other material sectors, or indeed in waste management. Indeed, a number of studies suggest circular economy measures will support job creation in the EU[61]. However, in environmental terms, the substitution of plastic products with other materials is also not without risks. The impact assessment linked to the recent proposal for a directive on SUPs recommended substitutes for cotton buds, cutlery, straws, drink stirrers and balloon sticks.[62] In contrast, plastics industry sponsored analysis of material substitution argues that swapping plastics for other materials in consumer goods will result in a number of natural capital costs, including increased transport emissions or freshwater demand.[63]

Integrated and coherent policies on decarbonisation, circular economy transition, material and design innovation and the removal of harmful subsidies are much needed, particularly to support the creation of green jobs and a just transition away from unsustainable plastic use.

Consumer issues and public health

Plastics are important materials for consumers, and many of the associated challenges are linked to consumer behaviour, lifestyles and public health. As mentioned, the proposals on SUPs identify specific products but much less is said about the link with lifestyles that drive their consumption.

On one hand plastics, including packaging, facilitate global supply chains and the availability of diverse products in increasingly popular disposable or on-the-go formats. On the other hand, the disposable and linear nature of these products is precisely the problem. One question that is still to be fully addressed is whether the convenience of plastics can be retained while preventing the negative impacts of plastic waste. Many actions to address plastic waste can be citizen led, notably using reusable or refillable containers and packaging, but may also need to be supported by public and private sector actions. Indeed new companies are emerging with more innovative business models, such as MIWA in the Czech Republic and Algramo in Chile (both offering alternatives to SUP packaging in stores) or CupClub and Replenish (offering alternatives to SUP beverage containers).

Plastics have also raised a number of public health issues. Firstly, there are eco-toxicological impacts of micro- and nano-plastic particles entering the food chain of humans and other species, with particles found for example in seafood, bottled and drinking water, honey and salt. A recent FAO report examines the issue of microplastics in fisheries and aquaculture in more detail.[64] Secondly, recycled plastics may mix polymers and additives, and depending on the application this could present

[61] European Commission (2018) Impacts of circular economy policies on the labour market. http://trinomics.eu/wp-content/uploads/2018/07/Impacts-of-circular-economy-on-policies-on-the-labour-market.pdf

[62] http://ec.europa.eu/environment/circular-economy/pdf/single-use_plastics_impact_assessment.pdf

[63] Trucost & ACC (2016) Plastics and Sustainability. https://www.trucost.com/publication/plastics-and-sustainability/

[64] FAO (2017) Microplastics in fisheries and aquaculture. http://www.fao.org/3/a-i7677e.pdf

toxicity risks to consumers.[65] While the EU Plastics Strategy identifies potential health risks in relation to plastics, no concrete actions are proposed to address them.

2.2 What are the windows of opportunity to address this?

As explained in this paper, many actions to address the problems associated with plastics use are being undertaken not just at the EU level but also within its Member States and around the globe. In addition, there is widespread public awareness of the issues around plastic waste, and increasing buy-in by business, producers and retailers. Now is therefore an opportune moment to push for a stronger level of ambition with regards to achieving more sustainable use of plastics in the future.

Specific windows of opportunity at the **EU level** include the implementation and monitoring of the newly revised EU waste legislation. Member States will need to devise sound national policies to achieve the new municipal waste recycling targets (55% by 2025, 60% by 2030 and 65% by 2035), overall packaging recycling targets (65% by 2025 and 70% by 2030), and plastic packaging recycling targets (50% by 2025 and 55% by 2030), as well as the introduction of mandatory EPR for all packaging by 2024. This should be closely monitored by the European Commission, along with regular reporting on achievements towards the various objectives of the Plastics Strategy.

Another key opportunity is the decision-making process on the newly-proposed Directive to reduce the impact of SUP products. It will be crucial to ensure that the highest possible level of ambition is maintained within the Directive, to ensure decisive, long-term and sustainable reduction in the use of unnecessary SUP.

It will also be interesting to follow reaction to the Commission's proposal for national Member State contributions to the EU budget based on the amount of plastic packaging that is not recycled. This proposal could potentially open the door to wider discussions on environmental fiscal reform and the removal of environmentally harmful subsidies.

At the **global level**, implementation of the SDGs and other UN, G7 and G20 charters and pledges should also provide a useful driver for continued action to lead to more sustainable plastic use. Lastly, the Chinese restrictions on waste imports have served as a necessary wake up call for plastic waste exporting nations, and the need to consider the global footprint of the material.

[65] IEEP (2018) Policy Approaches to Incentivise Sustainable Plastic Design. OECD, Paris. http://www.oecd.org/environment/waste/background-paper-policy-approaches-to-incentivise-sustainable-plastic-design.pdf

3 Policy recommendations

3.1 What more can/should the EU do by 2030 and beyond?

As demonstrated in the previous section, some aspects of existing and planned EU plastics related policy can be considered as having a reasonable or even high degree of ambition towards achieving more circular and sustainable plastic use. However in other areas higher levels of ambition can be seen at the global, Member State or industry level. For this reason it is crucial to ensure, if the EU truly wants to take a leading global role on the issue, that the existing levels of ambition are not diluted, but strengthened, and that action is taken not only on recycling and end-of-pipe solutions, but also on prevention, reduction, reuse and innovation throughout the value chain.

Develop an EU target on waste prevention based on an absolute reduction in annual waste arisings. A number of Member States have already established targets for reducing waste production, either specific to (certain types of) plastic waste or relating to several materials. Progress to 2030 could be tracked against a baseline year. Data to support such a measure is already available via Eurostat and national statistical reporting. A prevention target would support the implementation of the waste hierarchy by demonstrating real commitment to waste prevention and re-use, and supporting reduced SUP consumption. The EU could also investigate virgin plastic consumption reduction targets to stimulate reuse and ensure recycling brings environmental benefits.

Since targets have only recently been agreed for the recycling of plastic packaging (50% by 2025 and 55% by 2030), it is unrealistic to suggest that these could be revisited again in the immediate future. However **more rigorous statistical reporting tools for recycling should be implemented** to better understand the EU recycling market. Existing methodologies often report on waste collected for recycling, rather than the share of waste which is actually reprocessed. Consequently, reporting can inflate recycling rates (for example by up to a third in the UK[66]). The revised waste Directives require stricter recycling reporting – efforts should be made to ensure accurate reporting and comparable data. Existing data also fails to distinguish between open loop downcycling and true recycling. Future reporting could explore whether a distinction in recycling end-use will be useful for policy making.

Establish quantified collection targets for all SUP items covered by the Directive, not just for SUP bottles. This would help to recover more plastic waste for recycling and potentially make an important contribution to the achievement – or even exceedance – of existing and future EU targets for plastic waste recycling.

Develop a clear policy response to the interface Communication to support information exchange between product manufacturers, waste managers and recyclers, and the creation of markets for quality secondary plastics. Policies should encourage upstream measures to ensure that new plastics placed on the market are benign by design, toxin free and easily assimilated into re-use or recycling loops. Clear and science based decisions should be made about how to manage the risks of legacy substances in products already on the market. **Transparency and information exchange should also be promoted to enable traceability of the polymer and chemical content of plastics**; this is one of the most critical barriers to achieving a higher rate of plastic recycling in the EU.

Support more consistent and effective implementation of market based instruments to address plastic waste. Application and successful implementation of MBIs (including DRS and EPR schemes) varies across the Member States. The Commission's **ongoing work on developing minimum**

[66] http://www.eunomia.co.uk/uk-overestimates-plastic-recycling-by-a-third/

requirements including eco-modulation of fees in EPR schemes should be used to better harmonise schemes and support eco-design, supporting re-use as well as recycling.

More careful consideration should be given to the design and implementation of a plastics tax. This must not be introduced merely as a revenue raising tool, and should support the upper levels of the waste hierarchy rather than simply boosting recycling.[67]

While some MS and regions lead on Green Public Procurement for plastics others lag behind. **The Commission should establish a coalition of municipalities who prevent plastic waste and pollution,** comparable to the Covenant of Mayors for Climate and Energy.

Further **develop eco-design or other product standards for plastic products**. This could take various forms, such as a requirement for a certain amount of recycled content in specific plastic products, restrictions on the types of polymers that can be used for certain products, restrictions on additives to plastic products that hamper recycling, clear definitions of bio-plastics and biodegradable plastics, and so on.

Establish a more credible development agenda to address the global challenges of plastic waste, recognising and evaluating more carefully the EU's role as a producer and exporter of plastic products and waste in the globalised plastics economy. This could include 'plastic-proofing' or, more broadly 'circular economy-proofing' development cooperation investments, developing new investment tools and platforms to exchange best practice, and continued support for international research efforts.

The EU should **recognise citizens' role in a sustainable plastics economy and provide clear messages on how to reduce single use plastic waste in their day to day lives** – e.g. using reusable containers. Support should be given to private sector enterprises, such as retailers, restaurants and tourist services, which facilitate citizens in doing so. Research should inform public awareness on the potential risks associated with plastics in the environment and the food chain.

Support a just transition for plastics and the plastics industry, supporting green jobs and removing harmful subsidies on fossil fuels. In general systemic preventative measures should be sought to address plastic waste and pollution, identifying risks associated with simply substituting plastics for alternative materials. **Develop sectoral sustainability initiatives to identify and support those areas where durable plastics add real value added in the economy** in terms of innovation, growth and resource efficiency, including in the built environment, mobility and electrification, contrasting such products with wasteful single use products that bring externalised costs to the economy.

Attention should be given to how new materials (e.g. biodegradable and bio-based plastics), recycled content, new technologies (e.g. new recycling techniques, 3D printing, RFID) and new business models (e.g. sharing models), can become part of the solution to plastic waste while avoiding risks and unseen trade offs.

Finally, and more broadly, to improve the monitoring of progress, **the use of certain caveat or vague wording should be minimised** within policy and legislation that can contribute to promoting more sustainable plastic use. Examples include 'recyclable in a cost-effective manner', 'improved separate collection', 'greater use of innovative materials', 'drastic decrease in the leakage of plastics into the environment', and 'significantly reduced consumption of SUP food containers and cups'. Whilst these

[67] Rethink Plastic Alliance, quoted in CIWM (2018) EU Tax On Non-Recycled Plastic Waste Is "Against Waste Hierarchy", 9 May 2018, https://ciwm-journal.co.uk/new-eu-non-recycled-plastic-packaging-waste-tax-will-fail-to-address-plastic-pollution-crisis/

are all worthy objectives, without more meaningful and measurable targets it is almost impossible to understand either the level of ambition of the progress made towards achieving it.

Annex 1 Comparison of ambition of selected global, EU, national and business-led plastics initiatives

This table provides an overview comparison of the level of ambition of selected existing and planned global, EU, Member State and business/industry-led plastics-related initiatives. This does not aim to be comprehensive, but rather offers some insight into whether the EU's current level of ambition in certain areas of action related to plastics can be seen as leading the way, or whether other existing initiatives are more ambitious.

Issue	Global level	EU level	National level	Business/industry level
Prevention	'Significantly reduce' SUP[68]	'Significantly reduced' consumption of SUP food containers and cups within six years[69]	UK aiming for zero avoidable[70] plastic waste by end 2042[71]	Dutch supermarket Ekoplaza plans a plastic-free aisle in all 74 branches by end 2018[72] Plastic packaging eliminated from UK food store Iceland's own-brand products by end 2023[73]
Collection	-	'Improved' separate collection by 2030[74] 90% of SUP bottles separately collected by 2025[75]	France aiming for 100% of recyclable waste collected by 2025[76]	Coca Cola to collect and recycle equivalent of 100% of its global primary packaging by 2030[77]

[68] G7 (2018)

[69] COM/2018/340

[70] 'Avoidable' is defined UK's 25 Year Environment Plan as that which is 'technically, environmentally and economically practicable'.

[71] HM Government (2018)

[72] Ekoplaza (2018)

[73] Financial Times (2018) Coca-Cola joins push to cut plastic waste, 19 January 2018, https://www.ft.com/content/9059c2dc-fd30-11e7-9b32-d7d59aace167

[74] EU Plastics Strategy (COM/2018/28)

[75] COM/2018/340

[76] République Française (2018)

[77] Coca Cola (2018) Taking Action Toward a World Without Waste, Jun 4 2018, https://www.coca-colacompany.com/stories/taking-action-toward-a-world-without-waste

Issue	Global level	EU level	National level	Business/industry level
Recycling/reuse	Recycle and reuse 55% of packaging by 2030[78]	50% of plastic packaging recycled by 2025 and 55% by 2030[79] Recycling of over 50% of plastics waste generated in Europe by 2030[80]	France aiming for 100% recycling of plastic by 2025[81]	Plastics Europe goal of 100% re-use, recycling and/or recovery of plastics packaging in EU-28, Norway & Switzerland by 2040; 60% re-use and recycling by 2030[82] UK Plastics Pact goal of 70% recycling/composting of plastic packaging by 2025[83]
Bans	-	Bans on plastic cotton bud sticks, cutlery, plates, straws, stirrers and balloon sticks[84] Potential regulatory action to restrict intentionally added microplastics (considered through REACH substance restriction process)[85]	French ban on plastic tableware (cups/plates) & cotton buds (2020)[86], and cotton buds in Italy (2019) Ban on SUP non-biodegradable bags in Italy (2014), SUP bags in France (2017) Bans on plastic microbeads in The Netherlands (2014), UK (2018),	Unilever phased out microbeads in its personal and home care products in 2014[90]

[78] G7 (2018)

[79] Directive 2018/852

[80] EU Plastics Strategy (COM/2018/28)

[81] République Française (2018)

[82] Plastics Europe (2018)

[83] http://www.wrap.org.uk/content/the-uk-plastics-pact

[84] COM/2018/340

[85] COM/2018/340

[86] Décret no 2017-291 du 6 mars 2017 relatif aux conditions de mise en oeuvre de l'interdiction de mise sur le marché des produits cosmétiques rincés à usage d'exfoliation ou de nettoyage comportant des particules plastiques solides et des bâtonnets ouatés à usage domestique dont la tige est en plastique, http://ec.europa.eu/growth/tools-databases/tris/en/index.cfm/search/?trisaction=search.detail&year=2016&num=542&fLang=FR&dNum=1

[90] https://www.unilever.com/sustainable-living/what-matters-to-you/micro-plastics.html

Issue	Global level	EU level	National level	Business/industry level
			France (2018)[87], Sweden (2018)[88], Ireland (2018/19), Belgium (2019)[89], Italy (2020)	
Economic instruments	'Strengthening' market-based instruments to prevent ocean plastics[91]	EPR for plastic food & beverage containers & packaging, cups, cigarettes/filters, wet wipes, balloons, plastic bags, fishing gear[92] Proposal for a plastics-related 'tax' of €0.80/kg of non-recycled plastic packaging waste in each Member State[93]	SUP bag taxes in Ireland (2002), UK (2015) Plastic packaging taxes in Belgium, Denmark, Estonia, Finland, Latvia, The Netherlands, Slovenia Deposit refund schemes for plastic bottles in Denmark, Estonia, Hungary, Italy (Piemonte region), Latvia, The Netherlands, Poland, Slovenia, Spain, Sweden	
Materials	Work towards 100% reusable, recyclable or recoverable plastics by 2030[94]	All plastics packaging reusable or cost-effectively recyclable by 2030[96] Greater use of innovative materials and alternative feedstocks[97]		All McDonald's packaging made from renewable, recycled or certified sources by 2025[98]

[87] http://ec.europa.eu/growth/tools-databases/tris/en/index.cfm/search/?trisaction=search.detail&year=2016&num=543&fLang=FR&dNum=1

[88] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/forordning-1998944-om-forbud-mm-i-vissa-fall_sfs-1998-944

[89] http://ec.europa.eu/growth/tools-databases/tris/en/search/?trisaction=search.detail&year=2017&num=465

[91] G7 (2018)

[92] COM/2018/340

[93] European Commission (2018) Press release: EU budget: Commission proposes a modern budget for a Union that protects, empowers and defends, Brussels, 2 May 2018, http://europa.eu/rapid/press-release_IP-18-3570_en.htm

[94] G7 (2018)

[96] EU Plastics Strategy (COM/2018/28)

[97] EU Plastics Strategy (COM/2018/28)

[98] Altmin, L. (2018) By 2025, all of McDonald's Packaging to Come from Renewable, Recycled or Certified Sources; Goal to Have Recycling Available in All Restaurants. Oak Brook: McDonald's Corporation.

Issue	Global level	EU level	National level	Business/industry level
	Guide development and appropriate use of new innovative plastic materials & alternatives[95]			UK Plastics Pact goal to eliminate problematic and unnecessary SUP packaging by 2025[99] All Coca Cola consumer packaging 100% recyclable by 2025[100] Nestlé and Danone to develop 100% bio-based plastic bottle made from waste e.g. sawdust/ cardboard[101]
Recycled content	Increase recycled content by 50% 'where applicable' by 2030[102]	Four-fold increase in demand for recycled plastics[103]		50% recycled material in Coca Cola packaging by 2030[104] All Evian plastic bottles made from only recycled plastic by 2025 (FT, 2018) Adidas to use only recycled polyester in its clothing/shoes by 2024[105]
Marine litter	Prevent & 'significantly reduce' marine debris by 2025 (UN SDG 14)	'Drastic decrease' in leakage of plastics into the environment[106]		

[95] G7 (2018)

[99] http://www.wrap.org.uk/content/the-uk-plastics-pact

[100] Coca Cola (2018)

[101] Nestlé Group (2017) Danone and Nestlé Waters Launch NaturALL Bottle Alliance with California Startup to Develop 100% Bio-Based Bottles. Paris: Nestlé Group.

[102] G7 (2018)

[103] EU Plastics Strategy (COM/2018/28)

[104] Coca Cola (2018)

[105] Financial Times (2018) Adidas vows to use only recycled plastics by 2024, 15 July 2018, https://www.ft.com/content/73ca70d8-84e1-11e8-96dd-fa565ec55929

[106] EU Plastics Strategy (COM/2018/28)

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