

ROADMAP			
TITLE OF THE INITIATIVE	Strategy on Plastics in a Circular Economy		
LEAD DG – RESPONSIBLE UNIT	DG ENV, B1 (coordinated with units B2, B3, C1 and C2) DG GROW, D2 (coordinated with units C1, D1 and D4)	DATE OF ROADMAP	26/01/2017
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ADDITIONAL INFORMATION	http://ec.europa.eu/environment/circular-economy/index_en.htm http://ec.europa.eu/environment/waste/plastic_waste.htm		
This Roadmap aims to inform stakeholders about the Commission's work in order to allow them to provide feedback and to participate effectively in future consultation activities. Stakeholders are in particular invited to provide views on the Commission's understanding of the problem and possible solutions and to make available any relevant information that they may have. The Roadmap is provided for information purposes only and its content may change. This Roadmap does not prejudice the final decision of the Commission on whether this initiative will be pursued or on its final content.			

A. Context, Problem definition and Subsidiarity Check
Context The transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised, is an essential contribution to the EU's efforts to develop a sustainable, low carbon, resource efficient and competitive economy. Plastics is one of the five priority areas addressed in the “<i>EU action plan for the Circular Economy</i>”¹. The latter sets out a clear commitment to preparing a strategy that addresses the challenges posed by plastics throughout the value chain and taking into account their entire life-cycle, such as reuse, recyclability, biodegradability, the presence of hazardous substances of concerns in certain plastics and marine litter. This follows up on the Commission's “<i>Green Paper on a European Strategy on Plastic Waste in the Environment</i>”², which launched a broad reflection on possible responses to the public policy challenges posed by plastic waste and provided input to the ongoing review of EU waste legislation. Proposals to review the Waste Framework Directive (WFD) and the Packaging and Packaging waste Directive (PPWD)³ address issues such as separate collection of plastic waste and set recycling targets for municipal waste and plastic packaging. A Directive to reduce the use of light-weight plastic carrier bags was adopted in 2015⁴. The implementation of the existing acquis, notably on separate collection of plastic waste is a key prerequisite. The plastics strategy intends to support and complement these measures by providing a systemic perspective and creating synergies with other actions, such as on prevention, eco-design, work on the interface between waste, chemicals and product policies, measures to boost markets for secondary raw materials, use of economic instruments, etc. The strategy on plastics touches on a wide range of EU policies, from climate action, the protection of the marine environment to industrial policy, research and innovation. Problem the initiative aims to tackle Plastic is an important material for our economy. Global plastics production has grown exponentially since the 1960s, reaching 311 million tonnes produced in 2014, a twentyfold increase. It is expected to reach up to 1.2 billion tonnes annually by 2050. The European plastics industry plays a vital role in the EU economy, with 1.45 million employees and a turnover of 350 billion (including converters and machine building producers). While EU plastics production has stabilised over recent years, its share on the global market is decreasing. In Europe over 40% of plastics are used in packaging, 20% is used in construction and less than 10% by the automotive industry. Other common applications include furniture, household appliances, electric and electronic goods and

¹ http://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC_1&format=PDF

² <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0123&from=EN>

³ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015PC0595> and <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015PC0596>

⁴ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2013%3A0761%3AFIN>

agricultural uses. While plastic materials are a driver of our economy, a number of environmental issues related to their production, use, and end-of-life need to be tackled. Externalities are not systematically factored into the prices either of the material itself or the final product. Packaging applications are particularly relevant; their functionality has to weigh in with their considerable littering potential. Consumer behaviour also comes into play. The new initiative on plastics aims to address three interrelated issues:

1) High dependence on virgin fossil feedstock

More than 90% of plastics today are produced from fossil fuel feedstock and plastics production gives rise to approximately 400 million tonnes of GHG emissions per year (2012) globally. If current trends continue, by 2050 it could rise to 20% of global oil consumption and 15% of the global annual carbon emissions.

1.1 Alternative feedstock: In the long-term, the decoupling of plastics production from virgin fossil feedstock and life-cycle GHG impacts is necessary. In addition to recycling, biomass and CO₂ are potentially available as primary feedstock, but their viability and environmental impacts need to be better assessed.

1.2. Technical barriers to feedstock recycling: Innovative technologies should be developed for processing alternative feedstock, such as converting mixed plastic waste into virgin polymers, and for addressing the presence of substances of concern in plastics that could otherwise be recycled.

1.3. Incentives for feedstock diversification: Financial incentives are still being offered that favour less resource-efficient solutions, such as energy recovery processes instead of mechanical or feedstock recycling.

2) Low rate of recycling and reuse of plastics

Reuse and recycling of end-of life plastics remains very low, in particular when compared to other material streams. In 2014, the EU generated about 25 million tonnes of post-consumer plastic waste of which only 30% was recycled. Landfilling (31%) and incineration (39%) rates are very high and, while landfilling has decreased over the past 10 years, incineration has been growing, with big disparities between Member States, linked to various states of implementation of existing legislation. The EU exports almost half of the plastics collected for recycling. The problem has economic roots as market conditions for plastics recycling are suboptimal (high fixed costs of recycling vs. low market price of virgin material), also because externalities are not properly accounted for. Many different elements lead to this situation and their relative importance may also vary, depending on the specific application (e.g. packaging, construction materials, WEEE, etc.): small quantities of certain types of plastic (e.g. per polymer type), difficulty in obtaining economies of scale, process losses (e.g. only about half of what is collected for recycling is actually recycled), and quality issues (e.g. linked to presence of additives or mixing of different types of polymers). Good data are missing on the different plastic flows.

2.1. Weak incentives for a market for secondary plastic materials: The economic incentives to use recycled plastic materials in products are weak. There is no constant high flow of high quality recyclates and no clear horizontal approach on how to deal with legacy substances in recyclates, that carefully weighs pros and cons of allowing recycling of certain materials versus elimination of the chemicals of concern⁵.

2.2. Low recyclability of plastics: many plastic materials and products are designed to be thrown away not taking into account resource efficiency aspects, such as durability, recyclability, reusability or reparability. Design facilitating recycling seems crucial, especially for single-use plastics on top of prevention.

3. Significant leakage of plastics into the environment

It has been estimated that globally, in 2010, 5 to 13 million tonnes of plastic waste end up in the environment, in particular in the oceans. Plastic packaging is estimated to represent the highest share, as its weight, size and low-value make it prone to uncontrolled disposal. As regards marine litter, while land-based sources are predominant, sea-based sources such as shipping or fishing are not negligible. This problem is global, as the bulk of plastic leakage takes place outside of the EU (in particular in fast-growing Asian economies) and collective efforts are needed. New sources of plastic leakage, e.g. single-use plastic products and microplastics, are on the rise, posing new potential threats to animal and human health. Microplastics – used intentionally in products or generated during the products' life cycle, e.g. through car tyre wear or from washing clothes – are of particular concern as their small size (less than 5 mm) increases their potential toxicity.

3.1. Negative impacts on marine-related bio-diversity, human health and economy: The level of marine pollution with plastic litter and microplastics is alarming. Microplastics are entering the food chain with yet unknown consequences. The Circular Economy Action Plan refers to an aspirational 30% reduction target for litter items found on beaches and for fishing gear found at sea.

3.2. Lack of a clear sustainability framework for biodegradable plastics: Biodegradable plastics could be a positive development in specific circumstances, but could exacerbate consumer negligence, the existing leakage problem, the release of microplastics in soils and water and the risk of cross-contamination of conventional plastic waste streams. Work on definitions and standards is needed (biodegradable, compostable, home-compostable). Oxo-degradable plastic fragments over time into small particles which remain in the environment and may increase pollution. Directive 2015/720 on plastic bags requires the Commission to present a report

⁵ See e.g. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52000DC0469&rid=1>

examining the impact of the use of oxo-degradable plastic carrier bags on the environment. 3.3. Low levels of consumers' awareness: There are few incentives for consumers to keep plastic wastes in controlled circuits. The awareness raising and educational programmes as well as of extended producer responsibility schemes are also important factors. Better information should enable consumers to take purchasing decisions for more sustainable plastic products, including for disposable ones.
Subsidiarity check The EU's right to act is based on articles 114 and 191 of the Treaty on the Functioning of the European Union (TFEU). The main problems addressed by this initiative cannot be addressed through exclusive action at the level of the Member States because of their trans-boundary nature (e.g. marine plastics pollution) and of potential ramifications for the internal market. In the absence of a strategic European dimension, uncoordinated or unilateral actions by the Member States (e.g. regarding to product design) would risk increasing market fragmentation. While actions at national and local level can help address some of the problems' drivers (e.g. ensuring good implementation of the waste management rules or using economic instruments to encourage more sustainable practices), a number of key obstacles to, e.g. higher plastic reuse and recycling, can potentially be removed at lower societal costs through EU action (e.g. by creating the right framework for economies of scale in material and product design, recycling, improving cooperation and information flows across a trans-national value-chain, avoiding market fragmentation and ensuring a level playing field for economic operators).
B. What does the initiative aim to achieve and how The strategy aims at (1) decoupling plastics production from virgin fossil feedstock and reducing its life-cycle GHG impacts (2) improving the economics, quality and uptake of plastic recycling and reuse, and (3) reducing plastic leakage into the environment. Pursuing these objectives should directly contribute to the implementation of the Circular Economy action plan, but also to the EU's jobs and growth agenda and the Energy Union's vision for a low carbon, energy efficient economy. The strategy and pursuance of its objectives will also contribute to the implementation of actions under the UN Agenda 2030, more specifically towards achievement of the Sustainable Development Goals 3 (3.9), 6 (6.3 and 6.6), 8 (8.7), 9 (9.4), 12 (12.4 and 12.5) and 14 (14.1)⁶. Indeed, the Strategy should seek to improve framework conditions for investments and innovations that enable the plastic and related industries and the entire value chain using plastics to become more circular, resource-efficient and reduce its carbon footprint, in line with the climate and energy goals of the EU. It will require innovation of the whole plastics system, built on a shared vision and enhanced cooperation between all stakeholders. In preparation of the strategy, a number of different actions will be explored with a view to identifying those with the strongest EU-added value and highest impact in tackling the problems identified.
C. Better regulation
Consultation strategy The launch of stakeholder consultations related to this initiative will be announced in the consultation planning that can be found at http://ec.europa.eu/yourvoice/consultations/index_en.htm . The Consultation will look for additional evidence, data and information, including technical background, expected costs, benefits and other effects. Member State authorities, industry associations, trade unions, civil society organisations and third countries will be consulted. Targeted consultation activities might be carried out to gather specific technical evidence.
Impact assessment The strategy will propose actions in order to tackle the problems defined above. All the proposed actions considered will be taken forward in line with the Better Regulation principles, including, where appropriate, through the preparation of Impact Assessments. The impact assessment on the revision of waste legislation has assessed the economic and environmental benefits of plastic waste/plastic product related measures leading to more separate collection, more recycling and generally a higher availability of separately collected materials.⁷
Evaluations and fitness checks

⁶ <https://sustainabledevelopment.un.org/sdgs>

⁷ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014SC0207>

The Fitness Check of five waste stream Directives⁸ also covered the Packaging and Packaging Waste Directive and evaluated, inter alia, ex-post the effectiveness, efficiency, relevance and coherence of provisions relating to plastic packaging waste. The Fitness Check concluded the Directive was a meaningful piece of EU legislation and made a number of suggestions for further improvements in its design and implementation. A large number of these suggestions (e.g. as regards alignment of definitions, more ambitious recycling targets, reporting and calculation rules, the functioning of extended producer responsibility schemes) have been taken on board in the Commission December 2015 legislative proposals on the waste targets review.

A study from April 2011 on: "Plastic Waste in the Environment"⁹ is available and is still a pertinent source of information to address fundamental questions about the plastics economy.

Abundant further information, generated after 2010, is available from several sources such as industry, international organisations, NGOs and academic institutions.

The Commission will launch additional studies targeting on some the specific problems identified in this roadmap, with a view to gather additional information or assess potential solutions.

⁸ <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52014SC0209>

⁹ <http://ec.europa.eu/environment/waste/studies/pdf/plastics.pdf>