Position paper

Response to the roadmap for an EU Policy framework for bio-based, biodegradable and compostable plastics.

Brussels, 27 October 2021

ECOS welcomes the European Commission's ambition to apply the waste hierarchy principles to all types of plastics regardless of the feedstock, thus ensuring that material use is first and foremost reduced to what is necessary, that products are then reusable and recyclable. Our contribution to this consultation focuses on the issues with existing standards. It is essential that standards are developed that are comprehensive in addressing environmental impacts of all forms of plastics, and which support overarching EU objectives. A policy framework based on current voluntary standards will facilitate greenwashing of bio-based, biodegradable and compostable plastics (BBP/BDCP) and will not contribute to better environmental and human health protection from plastic pollution, including the toxic substances they contain. Instead, we support the development of mandatory European minimum requirements for BBP and BDCP to comply with, ensuring that circularity principles prevail over false solutions, and request appropriate review of existing standards.

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As they stand, current standards on compostable and biodegradable plastics provide insufficient environmental safeguards.

ECOS fully supports the development of stringent criteria specifying which applications where biodegradable or industrially compostable plastics can be used. We recognise and support that this will necessarily lead to a very limited number of use cases as they should not blindly substitute fossil-based single-use plastics. The objective of EU policy-makers must be the replacement of single-use plastics with reusable alternatives that are also recyclable, sustainably sourced, and which demonstrate clear environmental benefits relative to conventional product designs. Encouraging biodegradable and compostable plastics will only lead to continued improper disposal of plastic products.

Biodegradability is simply not a promising characteristic for most applications in which it is used due to the chemicals in plastic products as found today. Evidence suggests that biodegradable plastics contain additives which do not biodegrade and contribute to the toxicity of plastics for humans and other species.[1] Unless the use of hazardous substances in BDCP is banned, the use of such plastics will continue to pose risks to human and environmental health, contaminating composting streams and vital societal support systems such as agricultural land.

Furthermore, a careful analysis of current standards on BDCP such as EN 13432 on packaging industrial compostability and EN 17033 on biodegradable mulch films shows that current standards bear significant shortcomings:[2]

- They do not provide sufficiently robust criteria and protocols to test the biodegradability of a final product in its entirety as well as of its separate components. Non-biodegradable constituents remain in the environment after the polymer has degraded and current standard specifications do not prevent this from happening. Non-biodegradable constituents can include hazardous chemicals or heavy metals which negatively impact environmental quality and can contaminate composts for example.
- The associated test methods do not reflect the real-life conditions for biodegradation, including the time needed and the diversity of conditions in which the biodegradation process will be completed.
- They do not include information or evaluation criteria for substances hazardous to the environment and most SVHCs.
- EN 13432 does not include a reference test method and associated criteria for biodegradation under anaerobic conditions.

As a result of the above, attempts to label BDCP on the basis of inaccurate test methods and standard specifications are at risk of misguiding product users and consumers about the product's actual biodegradability. It is for instance worrying that international standards are being developed for industrial compostable drinking straws and biodegradable plastic shopping bags for industrial composting.

[1] Zimmermann, L., Dombrowski, A., Völker, C., & Wagner, M. (2020). *Are bioplastics and plant-based materials safer than conventional plastics? In vitro toxicity and chemical composition.* Environment International, 145, 106066. https://doi.org/10.1016/j.envint.2020.106066

[2] Please read ECOS' list of detailed recommendations for standardisers on pages 40-41, Annex II of the following report: *Too Good to be True? A study of green claims on plastic products.* https://ecostandard.org/wp-content/uploads/2021/07/ECOS-RPa-REPORT-Too-Good-To-Be-True.pdf

What's more, marine biodegradability continues to be a significant challenge due to the absence of micro-organisms in the sea able to digest plastics and diversity of marine environments found in Europe alone. **The Commission and competent authorities should refrain from developing an EU-wide standard on marine biodegradability** when designing products and packaging for full "marine biodegradability" is not feasible. It is also not desirable in light of the EU Green Deal objectives. Resources allocated to marine biodegradable plastic products development, marine biodegradation testing and standardisation developments are an inadequate use of resources when the focus should be on increasing circularity and preventing pollution. Designing products that can be thrown into the sea is merely creating a license to litter. We consider that no plastic should be designed to be thrown into nature to degrade.

Consequently, it cannot be assumed that standardisation will solve the issue. In particular, it should not be allowed for BDCP to be freely placed on the market on the basis that they comply with current standards as the standards do not provide sufficient safeguards. Hence, the European Chemicals Agency should not exempt biodegradable polymers if they fulfil biodegradability criteria until said criteria are proven to ensure full biodegradability of all components of products under industrial composting and anaerobic digestion conditions, tested for soil biodegradation if the compost or digestate is used as fertiliser.

The European Commission should thus develop and set minimum legal requirements for full product biodegradability which go beyond existing standards, as well as requirements on the material composition of products found to be eligible to use BDCP (where product elimination, or product reusability and recyclability is not feasible). In particular, criteria for material and chemical composition should ensure that plastic-containing products are free from hazardous substances, including paper and plastic composites found in food service and packaging which have been found to be coated with highly persistent substances like those of the PFAS group.[3]

Biodegradation should be tested and determined for the separate constituents of a product and for the final product as a whole. For the limited industrially compostable plastics that should be allowed, it remains important to ensure their full and harmless biodegradation in industrial composting processing sites. It is also important to consider that colorants, additives, printing inks and glues can influence the results of biodegradation, disintegration and ecotoxicity tests.

The aerobic biodegradation and disintegration test durations should be shortened (e.g. to 6-8 weeks) to reflect usual industrial composting practices in the EU, in line with the conclusions from the report by Eunomia[4].

In the absence of realistic and environmentally robust testing and verification methodologies to assess biodegradation in the open environment, we deem that efforts should be focused on the upper levels of the waste hierarchy where plastic items are captured, separately collected and reused or recycled, when prevention is not possible.

[3] International Pollutants Elimination Network. (2021). *Fast Food Packaging Shown to Contain PFAS*. https://ipen.org/news/fast-food-packaging-shown-contain-pfas

[4] DG Environment, Eunomia. (2020). *Relevance of biodegradable and compostable consumer plastic products and packaging in a circular economy*. https://op.europa.eu/en/publication-detail/-/publication/3fde3279-77af-11ea-a07e-01aa75ed71a1/language-en?WT.mc_id=Searchresult&WT.ria_c=41957&WT.ria_f=5702&WT.ria_ev=search

The industry's preferred standards on plastic bio-based content calculation leave too much room for greenwashing.

It is crucial to adopt a robust accounting methodology in order to ensure reliable and accountable certification. ECOS supports the use of standards based on the use of a radiocarbon method, such as ASTM DM 6866, EN 16785-1, EN 16640, due to this method's accuracy. While it is feasible to test the presence of biogenic carbon vs. fossil in a product using radiocarbon methods, it is currently too easy to make claims of 100% bio-based content while selling a 100% fossil-based product when using 'attributed bio-based content' methodologies, such as the mass balance approach contained in EN 16785-2 on determination of the bio-based content using the material balance method. [5] This standard contradicts the definition of bio-based products by describing them as products "wholly or partially made from biomass", thus allowing to virtually attribute bio-based content to products with zero bio-based content. More specifically, larger firms usually opt to use a mass balance approach to report bio-based content because it allows them to account for bio-based content used across multiple sites in a production line and therefore aggregate the data in their accounting method. This makes it difficult to verify the actual bio-based content in any given product.

Labelling of bio-based plastics must reflect true sustainability value-added. As noted in the roadmap, there exist no EU sustainability criteria for bio-based plastics. Such criteria are also completely absent from standards on bio-based content, which consequently fail to give any qualitative assessment on the raw materials used in the product. In spite of this shortcoming, bio-based content continues to be used as marketing to signify environmental added-value of bio-based plastics. ECOS and Rethink Plastic already commented on these issues in a July 2021 position paper[6] and further elaborated on this issue as part of the Rethink Plastic response to the present roadmap consultation. **Our recommendation is to restrict the communicated bio-based share to biomass produced according to minimum sustainability requirements, with a focus on and preference for biowaste content.**

The EU should promote the most robust existing lifecycle analysis (LCA) methods, such as the Product Environmental Footprint (PEF).

LCA standards from CEN and ISO, including ISO 22526-4 and EN 16760, still overlook important impacts from both conventional and bio-based, biodegradable and compostable plastics, such as environmental and health risks from manufacturing and waste, GHG emissions from indirect land use change, and the depletion of biotic resources due to high and competing demand for biomass.

Consequently, we offer the following recommendations to improve LCA methods:[7]

- **Mainstream the assessment of long-lived products**, to be compared with short-lived (e.g. single-use) product designs. Ecodesign of products must be systematically assessed when considering alternative product/system designs. Methods have been developed and proposed for instance to compare the impacts of single-use products with reusable alternatives, such as

[5] For more detail on this standard, please read: ECOS. (2015). *Standardisation developments on bio-based products: the risk of green washing*. https://ecostandard.org/wp-content/uploads/ECOS-position-paper-on-biobased-products_2015_final_11062015.pdf
[6] ECOS and Rethink Plastic. (2021). Position paper on bio-based plastics. https://rethinkplasticalliance.eu/wp-content/uploads/2021/07/Rethink-Plastic-ECOS-position-paper-bio-based-plastics-July-2021-plastics.pdf
[7] Also in line with: ECOS. (2018). 5 main recommendations to improve JRC reports on LCA for plastics. **https://ecostandard.org/wp-content/uploads/2018/12/ECOS-2018-POS-011-ECOS-for-Rethink-Plastink-Alliance-LCA4Plastics_19.12.2018.**pdf

in the JRC's recent report on Life Cycle Assessment (LCA) of alternative feedstocks for plastics production.[8] The EU should support research and initiatives which comparatively assess single-use with reusable products, for instance in Horizon Europe projects.

- **Do not assume carbon neutrality**. The time lapse between CO_2 absorption from the atmosphere by the biomass feedstock for the production of plastics and its release at end-of-life is a crucial aspect of plastics' lifecycle impacts in the current linear economy, where the lifetime of single-use products is a mere few minutes. What is more, bio-based plastics made using fossil-fuelled production methods (such as agriculture) guarantee that their impact is not climate neutral.
- **Address pollution risks from production to end of life phases**, taking in consideration material and chemical inputs as well as all waste outputs.
- **Estimate impacts from ILUC risks**, as proposed by the JRC report.[9] Although difficult to assess, ILUC risks are significant and attempts to account for them must be supported.
- **Address biotic resource depletion effects**, as it cannot be assumed that renewable resources cannot be depleted in a context of economic growth and growth in interest for biomass in many sectors (beyond bio-based plastics). Citing Crenna et al., page 3670: "[the supply of biotic resources] could be considered critical as well, if the carrying capacity of the ecosystems responsible for their provision is overcome, namely when resources are extracted at a rate higher than their regeneration capability. In fact, renewable resources do not continue to grow indefinitely and they can be depleted beyond the point of renewability [...]".[10]

The Commission should continue to develop and promote the Product Environmental Footprint methodology, and develop a verification and accreditation system to ensure trustworthy third-party verification. The PEF approach is the most prescriptive and should be favoured and improved over methods proposed by CEN and ISO standards.

Relevant positions cited in this paper:

- ECOS and Rethink Plastic. (2021). *Position paper on bio-based plastics*. https://rethinkplasticalliance.eu/wp-content/uploads/2021/07/Rethink-Plastic-ECOS-position-paper-bio-based-plastics-July-2021-plastics.pdf
- ECOS' list of detailed recommendations for standardisers on pages 40-41, Annex II of the following report: *Too Good to be True? A study of green claims on plastic products*. https://ecostandard.org/wp-content/uploads/2021/07/ECOS-RPa-REPORT-Too-Good-To-Be-True.pdf
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- Rethink Plastic. (2021). *Response to the roadmap for an EU Policy framework for bio-based, biodegradable and compostable plastics*.
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[8] See in particular section 4.4.11 *Extended product lifetime* https://op.europa.eu/en/publication-detail/-/publication/673ee8ef-cfdd-11eb-ac72-01aa75ed71a1/language-en.

[9] See in particular section 4.4.15.3 *Sub-category 3: Climate Change – land use and land use change (LULUC)*. https://op.europa.eu/en/publication-detail/-/publication/673ee8ef-cfdd-11eb-ac72-01aa75ed71a1/language-en

[10] Crenna, E., Sozzo, S., & Sala, S. (2018). *Natural biotic resources in LCA: Towards an impact assessment model for sustainable supply chain management*. Journal of Cleaner Production, 172, 3669–3684.