

LIFE CYCLE ASSESSMENT SCIENTISTS URGE EU POLICY MAKERS TO TREAT SOME PACKAGING ENVIRONMENTAL IMPACT ASSESSMENTS WITH CAUTION

To European policy makers,

We are writing to urge the Members of the European Parliament (MEPs) that are presently debating the European Union (EU) Packaging and Packaging Waste Regulation (PPWR) to treat the results of some Environmental Impact Assessments with caution.

We are particularly worried about some recently published reports on the benefits of single-use packaging which contain methodological flaws meaning that they do not account for the full complexity of environmental impacts. As MEPs enter final negotiations on the PPWR, and as the European Council continues to negotiate the text, we are keen that their decisions be based on scientifically robust assessments.

Life Cycle Assessments (LCAs) are snapshots of a products' environmental impacts. Because they are snapshots, their results depend on how they are framed. Small variations in assumptions (rate of return, breakage rate, weight) and incomparable functional units can completely change results and undermine the applicability of an LCA. Particularly important assumptions include the number of reuses; the weight of reusable products; washing; and transport logistics. These variables are not fixed in time and will change as systems of packaging evolve. As a result, the impact of different packaging options will evolve with time.

We have seen LCA studies comparing single-use packaging and reuse packaging to demonstrate that single-use is invariably better. Yet while it is straightforward to compare two single-use products which go from cradle to grave in one go, it is more complex for products used multiple times, where it is the business model - not the product - which is evaluated. In such cases, rather than evaluating one scenario (e.g., 20 reuses or 50 km distance for the reuse phase), sensitivity analyses and scenario analyses must be used to determine the break-even point. This is the minimum number of times that a reusable product must be used to be environmentally better (if at all) than an equivalent number of uses of a single-use product. Only these recursive analyses can provide a systemic and comprehensive view. Studies which compare single-use products with reusable options and do not include sensitivity analyses or break-even points are simply inaccurate.

We would like to point you to the European Commission [Impact Assessment for the PPWR](#) and the [UN report on single-use](#) which are comprehensive starting points to assess the environmental impacts of different packaging options.

If other LCAs are used to make policy decisions, their methodology must be checked before looking at their results. To guarantee that an LCA is robust, we advise you to check that it:

1. **Is a peer-reviewed, independent study conducted using the ISO 14040 and 14044 frameworks.** The study should be reviewed by an independent third party or by an independent chaired review panel.
2. **Respects steps laid out in ISO standards, starting with clear scope definition and comprehensive description of inventory data.** First, *the goal and scope definition* stage must precisely describe the product studied, the functional unit, the scope of the study, the assumptions made for each life cycle stage, and the methodology used to calculate impacts. Second, *the inventory* stage must describe and quantify the inputs and outputs involved in the life cycle of the system studied. Third, the *LCA impact* stage assesses the potential environmental impacts by converting the inventory data into specific impact indicators. It can involve different methods which must be specified. Fourth, *the interpretation* stage has as final aim the formulation of recommendations to improve the environmental performance of the system under study. We would like to emphasize that access to the goal and scope definition and the inventory data (stages 1 and 2) is a non-negotiable prerequisite to validity. This is because even a small variation in the methodological parameters or the inventory can significantly alter results.
3. **Assesses the highest possible number of environmental indicators.** The Product Environmental Footprint (PEF 3.1) method includes 16 mid-point impact categories (e.g. climate change, water resource depletion, land use transformation, human toxicity...). The ReCiPe LCA model includes 18 midpoint impact categories. Any exclusion of an indicator must be thoroughly justified.
4. **Includes the full life-cycle of the product reviewed,** from cradle to grave. Both upstream impacts (e.g. material production) and downstream impacts (e.g. recycling or incineration) must be assessed.
5. **Includes clear hypotheses and assumptions on breakage rate, return (trip) rate, weight and end of life strategies** (including recycling performance, quality of the recyclate, waste-to-energy, and repurpose) both for single-use and reusable packaging.
6. **If assumptions or lower quality data on parameters have been used, performs a sensitivity analysis** and discloses the source of such data. The conclusion of this sensitivity analysis should be included in the study, to ensure that the implications of using poor quality data are transparent.
7. **Considers different business model configurations for the use and end of life phases,** alongside clear sensitivity analyses.
8. **Integrates static comparisons with dynamic ones such as the evaluation of the environmental break-even points.**

Any report which assesses environmental impacts without transparency of data, a peer-review process or respect for established frameworks cannot be considered a good environmental impact assessment and so caution should be exercised when considering the results and recommendations.

If you have any questions or concerns please do not hesitate to get in touch.

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