Concept Note

A Circular Economy to End Plastic Pollution – A Decision Tree for Problematic High-Leakage Plastic Applications

Overview

The *Global Partners for Plastics Circularity* support governments' efforts to craft an international legally binding instrument to end plastic pollution.

Our goal is to eliminate plastic pollution by 2040. We need a global agreement that unlocks innovation and global investment in plastics circularity. This will help reduce mismanaged plastic waste in the environment and ensure its use as a valuable raw material for new plastics, thus decreasing the use of fossil-based feedstock and thereby enabling a lower greenhouse gas emissions economy.

While the broad instrument may cover all plastics, governments should prioritize actions to reduce plastic pollution of high leakage applications[1] into the environment.

As countries around the world face different realities and needs, we recommend the development of a global methodology to identify and determine how to address problematic, high-leakage plastic applications. Based on harmonised scientific criteria (e.g., in the form of a decision tree), we believe that such a tool can be used to address the inherent complexity and diversity of final goods and components made with plastics across different industries and applications[1]. Therefore, we strongly call for a plastic application-based approach that helps identify and address problematic and avoidable plastic applications while ensuring exemptions for those deemed essential, such as (but not limited to) medical applications and those enabling the net zero energy transition, water, and food safety.

The approach, as currently proposed in the zero draft, relies on negative lists and the subsequent global bans or restrictions of certain plastics in all jurisdictions. It focuses solely on specific polymers or substances considered problematic, without considering the application and potential alternatives, nor the pivotal role of innovation in developing more sustainable and innovative plastic materials, processes, and technologies. Such approach is unlikely to yield the desired environmental and social benefits. Quite on the contrary, it risks unintentionally increasing

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[1] Plastics application are final goods or components fully or partially made of plastics used in different industries and for various purposes. Plastic materials are versatile, and the same material can have a wide range of applications in different industry sectors such as packaging, building & construction, automotive, electrical & electronics, agricultural, gardening & farming as well as household, leisure and sports.

environmental damage, with potential alternatives proving problematic when considering all socio-economic factors and life cycle assessments.

Instead of phasing out or reducing the supply, demand, and use of primary plastic polymers listed in Part I and Part II of Annex A (including Options 1 and 2 of Part 1 and 2) of the current zero draft, we believe that a more efficient approach for achieving the goals of the Global Plastics Pollution Instrument is to focus on sustainable consumption at the application level, taking into account local circumstances.

Detailed Description of the Decision Tree Tool

The decision tree assessment tool is a science-based approach consisting of a hierarchical flow of questions based upon the waste hierarchy (applying a priority order of prevention, minimisation, reuse, recycling, recovery including energy recovery, landfill and controlled disposal in waste prevention and management legislation)[2] supporting the transition towards a circular economy and reaching net zero by 2050. At the end of each series of questions, the user will reach a potential scenario that would require a set of actions or an assessment of national and local conditions. This assessment can lead to the redesign of the application or product or to exploring alternative options, which can also be evaluated using the same tool.

The tool consists of two separate branches to help identify and address either problematic and/or avoidable plastic applications, especially those with high leakage into the environment. It can be applied to any type of plastic applications and considers the unique national and regional challenges faced by developing countries or those with limited available waste management and recycling infrastructure.

The following (non-exhaustive) criteria may be considered as part of this methodology:

- an application's likelihood of contributing to plastic pollution during production, use or after use;
- risks for human or animal health;

[2] The waste hierarchy was first introduced in the 1970s by the European Union as part of its waste management policies. However, with the revised Waste Framework Directive (Directive 2008/98/EC) that set out the waste hierarchy at Article, it became a legal requirement for businesses and public bodies that produce and handle waste. The hierarchy ranks waste management strategies from most to least environmentally preferred, and includes five stages: prevention, preparation for reuse, recycling, other recovery, and disposal: https://eur-lex.europa.eu/EN/legal-content/glossary/waste-hierarchy.html However, it has become a concept and framework commonly used by the United Nations and many other international organisations, as well as by individual countries, to guide waste management and resource conservation efforts: https://www.unep.org/resources/report/global-waste-management-outlook#:~:text=The%20Global%20Waste%20Management%20Outlook%2C%20a%20collective%20effort,a%20call%20for%20action%20to%20the%20international%20community.

- the capacity to extend shelf life and ensure food and water safety while meeting sector-specific safety requirements:
- environmental and climate benefits of the application;
- socio-economic benefits of the application;
- compliance with minimum chemical safety requirements and good manufacturing practices (as laid out in the internationally recognised regulations such as REACH, GHS, CSA, TSCA, ISO and others);
- the capacity to optimize plastic content;
- availability of recycling and waste management infrastructure and/ or feasibility to set up such within a reasonable timeframe;
- potential for behavioural changes (at local/regional/national level);
- potential for redesigning the application in line with a life-cycle assessment including evaluation of the material usage to facilitate sorting of waste and the value of materials at their end of life;
- safe, responsible, and environmentally sound end-of-life treatment.

First Branch

The first branch of the tree evaluates the essentiality and socio-economic impacts of the application, including questions about its societal and sector-specific value. To evaluate the socio-economic benefits, the approach foresees carrying out an in-depth multicriteria analysis at national or regional level to weigh qualitative and quantitative impacts of the plastics application. Furthermore, the assessment of alternatives will be based on a multi-criteria analysis on a national/ regional level. When evaluating each scenario, the following criteria should be taken into consideration: societal costs and societal value, innovation potential, environmental and climate impact of the alternative (GHG emissions footprint, impact on biodiversity, air quality, water quality, soil and the marine environment), implementation costs, economic costs, the capacity of the alternative to maintain the same necessary functionality and performance level of the plastics application and be available at commercial scale, and security of supply implications in critical applications.

Second Branch

The second branch of the tree identifies problematic plastic applications with a focus on high-leakage applications contributing to plastic pollution. The flowchart looks first at the chemical safety compliance of the product and its use based on the chemical safety requirements laid out in the internationally recognized chemical safety standards established by regulations such as REACH, GHS, CSA, TSCA, ISO. It then and goes through further questions that aim to identify problematic plastic applications based on the risk of leakage of the product.

In a next step, the tree includes questions along the waste hierarchy, focusing on resource efficiency, repair, repurpose, reuse, recycling, as well as the possibility to redesign the application in line with a life-cycle assessment. This part focuses on the principles of plastics circularity and aims to promote the adoption of Design for Circularity standards and guidelines at the global level.

The final part of the tree addresses questions related to waste management, including the availability of local waste infrastructure and the feasibility to improve, or set it up within a reasonable timeline to deal with the application, the end-of-life treatment of the application, as well as landfilling and incineration options as some of the possible scenarios. Incineration with energy recovery shall remain a viable end-of-life option only in those instances in which plastic waste cannot be recycled by any technology due to high levels of contamination and/or the presence of different components that render the recycling process technically or economically unfeasible. In a global context, it may be necessary to keep landfilling and incineration as possible options for developing countries where waste infrastructure may not yet be fully developed. These should be accepted only as a temporary option only when better recycling alternatives are unavailable or cannot be implemented due to current national or local circumstances, until improved waste management solutions become viable. Such scenarios should consider potential lock-in effects from the establishment of newly built assets intended for long-term usage (e.g. waste incinerators). Furthermore, they should evaluate the potential impact on air pollution and greenhouse gas emissions before making a final assessment whether the product is problematic or not.

Such a methodological approach should be applicable to products made from all materials and could help to eliminate the production of problematic or avoidable (plastic) products and support the replacement of short-lived or single use applications with durable applications or other alternatives (if reduced environmental impact can be demonstrated) while also considering health and safety information and other socio-economic aspects. This approach will enable us to dedicate our efforts on items with the highest likelihood of leaking into the environment, paving the way for a swift and efficient pathway to effectively combat plastics pollution by 2040 while supporting the targets laid down in the Paris agreement.

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