STOPP PRACTICE ABSTRACT

UNDERSTANDING PLASTIC PACKAGING RECYCLING: CHALLENGES AND STRATEGIES

PROBLEM ENCOUNTERED AND OBJECTIVE

The recycling of plastic packaging presents significant challenges due to material degradation, complex multi-material designs, and economic constraints. While mechanical recycling remains the dominant method, its limitations in quality and contamination hinder its effectiveness. Chemical recycling, although promising, remains costly and resource-intensive. Additional barriers, such as inadequate consumer awareness, logistical inefficiencies, and regulatory uncertainties, further complicate the transition towards a circular economy. The objective of this practice abstract is to identify key challenges in plastic packaging recycling and provide viable solutions to improve material recovery rates, increase recyclability, and align industry practices with sustainability goals.

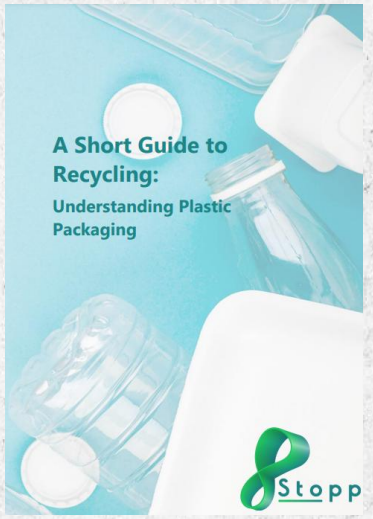
MAIN RESULTS / OUTCOMES

Plastic packaging recycling faces challenges such as material degradation, inefficient sorting, and economic barriers. Mechanical recycling dominates but produces low-quality recyclates, while chemical recycling remains costly. Multi-material packaging complicates processing, and regulatory uncertainties slow progress. However, innovations like NIR sorting, digital tracking, and deposit-return schemes show promise in improving efficiency and consumer engagement.

PRACTICAL RECOMMENDATIONS

A shift towards eco-design principles can significantly improve recyclability by promoting mono-material packaging, minimising additives, and using water-soluble adhesives. Companies should invest in material tracking systems to enhance traceability and ensure higher-quality recyclates.

Consumer engagement strategies, such as clear labelling and incentive-based recycling schemes, can increase participation and reduce contamination. Policymakers must provide consistent regulations that support infrastructure development and incentivise sustainable practices. Collaborative efforts among manufacturers, recyclers, and policymakers will be essential to drive innovation and ensure a scalable, circular approach to plastic packaging recycling.



Further information

The full report can be found on https://stopp-project.eu/readiness-tools-resources/

About this abstract

Authors: University of Vaasa and Sustainable Innovations
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STOPP is a Horizon Europe project aiming to transform food plastic packaging through the "5 Rs": Refuse, Reduce, Redesign, Reuse, and Recycle. Aligned with the EU's Packaging Directive, it develops training materials and strategies to promote circular economy solutions. Engaging stakeholders, STOPP advances recycling, reusable packaging, and consumer awareness for sustainable food packaging.

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