



HOW TO SUPPORT AN INCREASED USE OF RE-CYCLED PLASTIC MATERIAL

Introduction:

Plastics are widely used in many industries and are a valuable raw material. However, transitioning towards a sustainable and circular economy requires increased uptake of recycled plastic material (rPM).

In this document, we address implications for improved rPM uptake and innovation policy and measures.

Problem Statement

The plastics industry is a key player in many industries, but its reliance on virgin plastic and lack of sustainable practices poses a significant challenge to the transition towards a circular economy.

Three barriers to increased uptake of rPM are considered and recommendations are given for these aspects in this document:

- 1) *Finding suitable recycled plastic material:* One of the main challenges faced by companies in the plastic industry is finding suitable recycled plastic material to replace virgin plastic. The current process of finding suitable material that meets the necessary product/process requirements is time-consuming, costly, and complicated. To increase the uptake of recycled plastic material and promote the transition towards a circular economy, there is a need for a platform that simplifies and streamlines the process of finding suitable recycled plastic material.
- 2) *The lack of data analytics knowledge in the plastics industry* among employees can limit the effective use of digital tools to support the adoption of recycled plastic material in production processes. This can lead to missed opportunities to reduce waste, increase efficiency, and improve sustainability. Without adequate training and support, employees may not understand how to use data analytics to identify opportunities for using recycled material, monitor progress, and make informed decisions.
- 3) *Not considering the entire product life phase* is another crucial barrier to closing loops. Companies tend to focus on the previous and next tier in the value chain but do not consider the entire life phase of a product, which can hamper closing resource loops and keeping resources in the system for as long as possible at the highest utility level. Not thinking



across the entire value chain and product life phase can also lead to inconsistencies between different processes and missed opportunities.

Recommendation

Selected main recommendations are proposed to help overcome the barriers in the three areas. For each of these areas, a separate policy brief has been published on the Di-Plast website: www.nweurope.eu/di-plast

Finding suitable recycled plastic material grades for specific products:

To overcome this first barrier, a platform for recycled plastic material information and substitution that facilitates the matching of suitable recycled plastic material with specific product requirements could help mitigate the challenges in finding suitable rPM. The Interreg NWE-funded project Di-Plast has developed such a platform: the Matrix tool. Its source code is publicly available and provides a good basis for further development.

To make such an approach work, several steps are recommended. The main recommendations are:

- *Encouraging regional governments* to support the development and rollout of such a platform in their respective regions. This can be done through regional programs, project funding or financial and legislative support of sectoral agencies or plastics associations. The Matrix tool or its openly available source code could form the basis.
- *Funding of a regional project or initiative*, in which 100-200 suitable companies are encouraged and supported to participate actively in this initiative and the further development of the platform and tool.
- *Promoting collaboration* between different regions, industries, and stakeholders such as waste management companies, recyclers, plastics manufacturers, and other industry players to share best practices, knowledge, and experiences on the use of recycled plastic material.

The lack of data analytics knowledge in the plastics industry:

To overcome this second barrier, it is necessary for the training of employees to ensure that the right problems are targeted, so that companies can move up the different stages without pursuing unfeasible goals in terms of data science or missing out on data opportunities due to a lack of know-how.

This development can be supported by policymakers and company decisions in several aspects. To increase data analytics knowledge among employees and support the uptake of recycled plastic material in production processes, the following recommendations are proposed:



- Embed data analytics training in education programs:
 - Schools and universities should provide education programs that include data analytics training to equip future employees with the necessary skills and knowledge.
- Provide on-the-job training:
 - Companies should provide on-the-job training to their employees to ensure they have the necessary skills and knowledge to effectively use data analytics tools to support the adoption of recycled plastic material in production processes.
 - Through this, a scientific approach should be taught in which companies learn how to develop adequate and meaningful experiments and experiment settings. This is especially important since data science approaches mainly consist of data gathering and cleaning, and insufficient data quality and preparation hinder data analytics.
- Create incentives:
 - Companies should create incentives to encourage employees to adopt data analytics tools and use them to support the adoption of recycled plastic material in production processes.

Not considering the entire product life phase:

To overcome this third barrier, companies need to overcome individual (uncoordinated) process components, so-called bottlenecks which prevent entire process chains from becoming circular. Value Stream Mapping (VSM) is an effective and easy-to-use method that collects, evaluates, and continuously improves product and information flows within companies or interrelated supply chains. VSM, thus, aims to help with the adoption of circularity principles alongside the value stream.

The Di-Plast project adapted the VSM method with new indicators and visualizations and created a tool to enable a circular perspective on resource flows within companies and throughout supply chains. The tool consists of two levels: the macro-level and micro-level VSM. The macro-level VSM provides a better understanding of the resource flow throughout a supply chain, while the micro-level VSM analyses internal resource and information flows. By applying the VSM method, companies can identify and eliminate bottlenecks, which leads to more circular and sustainable decisions in their production processes

Policymakers may support and encourage the use of this method through different approaches:

- Incorporation of the adapted method into ESG certifications
- Encouraging collaboration and information sharing: The VSM method is most effective when it is used collaboratively, with all stakeholders in the supply chain working together to identify areas for improvement. Policymakers can encourage this kind of collaboration by providing forums for



information sharing and encouraging companies to work together to address common sustainability challenges

- Promoting the use of VSM through policy measures: Policymakers can promote the use of the VSM method by providing incentives for companies that adopt it. This could be done through tax credits or other financial incentives that encourage companies to invest in sustainable production processes. Policymakers could also require companies to use the VSM method as part of their ESG certification process, as discussed above.

Conclusion

In conclusion, a platform or tool like the Matrix tool has the potential to significantly contribute to the uptake of recycled plastic material and the transformation of the plastics industry towards a more circular state. By supporting the above-mentioned recommendations, policymakers can promote a more sustainable future, increasing the visibility of supply and demand for recycled plastic material. They can facilitate the sourcing of recycled plastic material and the phasing out of inconsistencies between processes. They can encourage practices that lead to higher quantities and qualities in recycled plastic materials and closed material loops and help to equip employees from the plastic industry with the necessary skills to make informed decisions towards increased usage of recycled plastic material.