POLICY BRIEF: ADAPTED VALUE STREAM MANAGEMENT FOR INCREASED CIRCULARITY IN THE PLASTICS INDUSTRY

Introduction

The circular economy (CE) has become a significant goal for many European companies and policymakers, as a convenient solution to move away from the linear economy concept, without neglecting the goals of sustainable development. As main goals, the closing of resource loops and the keeping of resources in the system for as long as possible at the highest utility level, are mentioned as main goals of CE. Nevertheless, most companies still adopt a linear approach or just focus on providing information to the end-user to maximize their satisfaction during the use phase, while only a small amount have approached CE in a holistic way.
The European Interreg NWE project "Di-Plast – Digital Circular Economy for the Plastics Industry" adapted the existing value stream management (VSM) tool, which helps companies get a clearer and more holistic view of their internal processes and supply chain interdependencies. This policy brief will argue that the adapted VSM method is a valuable resource to support the transition to a circular plastics industry.

Background

Closing the Loop in the Plastics Industry

There is still a huge gap between the goals of the European Union for plastic recycling in 2030 and the status quo today. One key chance for closing this gap is the application of digital technologies like data science to improve processes and information flows throughout the entire recyclate supply chain.

Therefore, the Di-Plast project developed and applied digital tools to enable high value plastics recycling, i.e. bring recycled plastics to its highest application possible. Supported by Interreg North-West Europe, the project aimed to close the knowledge and information gaps which inhibits plastics recycling. We enable companies to achieve access to highly relevant yet mostly hidden data, parameters and analytics from and for their own production processes. To realise this, our toolkit combines a distinct set of tools:

The Adapted Value Stream Management Method

Often, individual (uncoordinated) process components, so-called bottlenecks, prevent entire process chains from becoming circular. Value Stream Mapping

(VSM) consists of the analysis and visualization of value chains or internal company processes. This helps to identify and eliminate bottlenecks. The idea is to deliver value from the customer's perspective and to continuously improve the process chain by collecting and evaluating the value chain and information flow. VSM aims to help with the adoption of circularity principles alongside the value stream.

The VSM tool is, hence, an effective and easy-to-use tool that collects, evaluates, and continuously improves product and information flows within companies or interrelated supply chains. Its aim is to deliver value from the customer's perspective and improve processes continuously.

The Di-Plast project adapted the VSM method with new indicators and visualizations 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 (Mangers et al., 2022; Mangers, Minoufekr, & Plapper, 2021).

The next review and update of the ISO standard 22468 is scheduled for 2025 (ISO, 2023), and it will be important to incorporate lessons learned from circular economy aspects of the Di-Plast project. This need to include circular economy aspects in already existing standards can and should be supported by policymakers in all domains.

The Importance of a Holistic Approach

Many companies tend focus on the previous and next tier in the value chain, but do not consider the entire life phase of a product (Mangers, Minoufekr, Plapper, et al., 2021). The circular economy aims to close resource loops and keep resources in the system for as long as possible at the highest utility level. The VSM tool provides a holistic approach to analysing the entire life cycle of a product, from the beginning-of-life to end-of-life. This enables companies to make better and more circular decisions regarding their production processes, as they gain a more comprehensive understanding of their internal and external information and material flows. The VSM tool can also help companies identify inconsistencies between different processes and enable them to consider a design for recyclability already through an early attention to the local sorting and recycling processes (Mangers et al., 2023).

Benefits of ESG Certifications for the Plastics Industry

The transition to a circular economy is not only beneficial for the environment but also for businesses. Circular Economy activities can be considered as an aspect of environmental, social, and governance (ESG) efforts of companies. Companies can achieve ESG certifications, which can improve a company's reputation and attract environmentally conscious consumers and investors. This is also true for companies of the plastics industry. The adapted VSM method provided by the Di-Plast project can support the achievement of ESG certifications by providing companies with a clearer and more comprehensive understanding of their internal processes and supply chain interdependencies. This enables companies to make more sustainable decisions.

This adapted VSM method can be a valuable tool for promoting sustainability and resource efficiency in the plastics industry. Policy makers 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. Policy makers 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: Policy makers 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. Policy makers could also require companies to use the VSM method as part of their ESG certification process, as discussed above.

Conclusion

The transition to a circular economy is a significant goal for many European companies and policymakers. The adapted VSM method, provided through the VSM tool by the Interreg NWE Di-Plast project, can support companies in making more circular decisions by providing a comprehensive understanding of their internal processes and supply chain interdependencies. By applying the adapted VSM method, companies can identify and eliminate bottlenecks, which leads to more sustainable production processes. The holistic approach of the VSM tool enables companies to achieve ESG certifications and attract environmentally conscious consumers and investors. We recommend that policymakers promote the use of the VSM tool through the above-mentioned options to support the transition to a circular economy.

References

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