

Output Factsheet

Output title:

O.3.1 Joint Vision for transnational collaboration of plastics processors and machine producers

Summary of the output (max. 2500 characters)

The future of the circular plastics value chain is crucial for sustainability, especially in the context of European and global environmental goals. Plastic processors see their future role as catalysts of industrial transformation, where their activities will not only consist of the technical recovery of plastic waste, but mainly in the provision of high-quality secondary material for high-value applications - including mechanical engineering, the automotive industry, and electrical engineering. Looking at it from two different perspectives – plastics processors and machinery manufacturers – it becomes clear that each of these players plays a key but different role in enabling the entire system. The plastics industry is undergoing changes driven by increasing demands for innovation, digitalisation, efficiency and sustainability. In this context, there is a need to create a common transnational vision for cooperation between plastics processors and machine manufacturers, which will serve as the basis for synergistic partnerships across borders, strengthen the sector's competitiveness, and determine the direction of future development on a global scale.

One main objective of O.3.1 was reaching a transnational vision of where the plastics processing value chain of the Danube Region will be in 2030+ based on scenario analysis conducted by project partners together with external experts and all relevant stakeholders. Therefore O.3.1 comprises

- Creating of scenarios of the future of the plastics value chain (D.3.1.1)
- Creating a joint picture of the future of plastics value chain (D3.1.2) and
- Creation of a Vision for Transnational Collaboration of Plastics Processors and Machine Producers (D3.1.3).

The main objective of the vision is strategic and long-term cooperation between actors in the plastics value chain. This cooperation is to ensure:

- Increasing technological compatibility and innovation
- Connecting knowledge between the production target and plastics processors to create smarter, more efficient and more flexible production solutions
- Joint research in areas such as automation, digitalization and additive manufacturing
- Promoting sustainability and the circular economy
- Collaborating on the development and deployment of recycling technologies, biodegradable materials and energy-efficient machines
- Sharing know-how in the field of environmental innovation and reducing the carbon footprint.

The joint vision serves as further input for forthcoming development of the Transnational Action Plan to anchor the strategic transformation roadmap for a circular plastics value chain.

Contribution to the programme and project objectives, output and result indicator, as well as to the targets set for the Priority Area concerned (max. 2000 characters)

This output contributes to Programme Output Indicator 1.1.2 Organisations cooperating across borders. Given the complexity of the challenges facing the historic industry, it is necessary to create a systemic, transnational vision that would coordinate joint efforts across borders. The joint effort was to develop a vision of a transformed plastics value chain designed for the circular economy and to demonstrate the benefits of plastics reuse/recycling and maintenance, redistribution, refurbishment/remanufacturing and recycling of machinery.

For creation of scenarios of the future of the value chain Plan-C decided to lean on methods that are used for foresight exercises. The approach was to start with a SWOT analysis to be followed by defining the central issue, identifying and analysing key factors and driving forces. These regional results were merged and prepared for the transnational workshop held during the Mid-term conference in frame of the 10th International Conference on Polymeric Materials in Automotive (PMA 2025) in Smolenice/SK. About 33 representatives of clusters, BSO, SMEs, and RDI organisations cooperated to create a joint picture of the future of plastics value chain the "Batmobile on a bumpy road" and finally the vision of the Plan-C regions for the transnational collaboration of plastic processors and machine producers were merged.

Moreover, it aligns with Priority Area 8 of the EUSDR, particularly with goals related to competitiveness of enterprises and promotion of circular transformation by transregional know-how transfer and cooperation.

How can the output be used and by whom (target group), what is the benefit and the impact for these target groups and the target area / Danube Region? (max. 1500 characters)

The joint scenario-building process within the Plan-C project has demonstrated the strategic importance of aligning the plastics and machinery industries to enable a circular economy in the Danube region. Key factors such as RDI & Technology, Policy & Regulations, and Market dynamics were identified as critical drivers and barriers. While research and innovation show promising development, policy frameworks and market acceptance of recycled materials remain challenging. The analysis shows strong potential to integrate plastics processors and machinery makers into circular value chains, turning plastics from burden to resource through good practices, new technologies, and regulations. Development of transnational collaboration between plastics processors and machine producers within the Danube Region will require a strategic, coordinated, and evidence-based approach to ensure the long-term sustainability, competitiveness, and circularity of the plastics value chain. Future efforts should focus on deepening cross-border collaboration between plastics processors, machinery manufacturers, research institutions, and public authorities. Entrepreneurs incl. The target group benefits from the shared regional and joint key factors and the vision for transnational cooperation between plastics processors and machine producers by gaining insights that can be used for their own

strategic development at company and regional policy level, as well as from the applied methodology, which can be modified and implemented.

How can the sustainability of the output be ensured and where and to whom is it going to be transferred? (max. 1500 characters)

For creating a joint Vision for transnational collaboration of plastics processors and machine producers Plan-C involved project partners and external experts. The Joint scenario and picture present how plastics processors and producers can actively contribute to a circular machine industry by creating a closed-loop system. The jointly developed scenario titled “Batmobile on a bumpy road” reflects the current imbalance. Technological innovation is advancing rapidly, while regulatory clarity and market readiness is lagging. This scenario highlights the need for stronger alignment between technological advancements, supportive regulation, and market demand. The outlined future directions represent steps for a strategic roadmap for fostering a resilient, innovative, and circular plastics ecosystem within the Danube Region. By reinforcing transnational cooperation, harmonising regulatory frameworks, investing in innovation, and developing human capital, the partnership between plastics processors and machine producers can serve as a model of sustainable industrial transformation in Europe. Continuous collaboration, supported by coherent policy and financial instruments, will be essential for maintaining momentum and achieving a truly circular and competitive plastics value chain.

In frame of Plan-C implementation this output is to be transferred and to be integrated into the Transnational Action Plan to anchor the strategic transformation roadmap for a circular plastics value chain.