

Transnational peer-level capacity building: challenges & opportunities

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Introduction

As the movement toward a circular **economy** accelerates across Europe, both EU and EU-candidate countries are increasingly prioritizing sustainable practices in their plastics industries. Countries such as Hungary, Austria, Slovakia, the Czech Republic, and Germany, as well as neighboring EU-candidate countries, are aligning their policies and initiatives to address shared challenges in waste management and resource efficiency. While EU member states benefit from unified regulations, such as the recently introduced Ecodesign for Sustainable Products Regulation (ESPR), non-EU countries are voluntarily implementing similar standards, demonstrating a collective commitment to reducing environmental impact and fostering a circular economy.

The alignment of challenges and opportunities across these nations highlights the broader European struggle and ambition in transitioning to a sustainable and circular economy. The introduction of the ESPR marks a pivotal step towards creating a more responsible plastics industry by addressing legal, technical, economic, and societal challenges through a unified regulatory approach. The ESPR not only facilitates compliance but also encourages innovation and collaboration. As these countries continue to navigate the complexities of sustainable practices, the ESPR serves as a beacon for driving the much-needed transformation towards a more circular and environmentally friendly economy.

The aim of the peer capacity building was that the high-developed regions would share their know-how and lessons-learned from the piloting and beyond with less developed regions, reflecting on the challenges and opportunities brought forward by their peers. Of course, innovation and keen observation goes both way, and representatives of the less developed regions could also reflect on the practices and plans of the more developed ones – regarding legislative, technical, or societal-sectorial phenomena and necessities. The initial plan for the peer capacity building session was that there would be three thematically grouped teams, formed based on the outcome of the piloting, and relevance in the regions. Thus, the teams were envisioned as consisting of

1. Austria, Bosnia and Herzegovina, and Moldova
2. Germany, Hungary, and Slovakia
3. Czechia, Slovakia, and Romania

However, due to changing scopes, work plans, and conflicting project processes, teams 1. and 2. were restructured, and ended up as

1. Austria, Bosnia and Herzegovina
2. and Germany, Hungary, Moldova and Serbia.

Austria, Bosnia and Hercegovina

Legal/policy:

- **Challenges:** Compliance with existing legislation (BiH), and newly introduced laws (Austria) is demanding.
- **Opportunities:** Anticipated political and regulatory pressures are expected to draw more attention towards circular products/business models in Bosnia, this can be expedited with awareness-raising campaigns such as Plan-C. In Austria it appears that while regulatory compliance is an important factor, the crucial turning point for companies was to understand that CE presents significant opportunities for new business and revenue generation. Upon learning about the opportunities feedback from companies was positive.

Peer acquisition:

- **Challenges:** In Bosnia, despite efforts, acquiring participants was challenging, resulting in a small group, particularly from the machine industry. Likewise, inviting Austrian companies from the plastic sector was easier compared to the machine sector. Nevertheless, the workshop had a broad audience, including automation experts and students, contributing diverse perspectives. Although initially focused on food packaging, the team chose to explore automation in the industry. An Austrian company highlighted issues with third-party repairs that did not meet expectations, leading to a loss of customer trust. They decided to handle repairs internally, protecting their brand and generating revenue.
- **Opportunities:** The Austrian and Bosnian companies that did participate showed significant interest. They perceive that there is real economic advantage to be had from economic, customer demand, and environmental perspectives.

Technical:

- **Challenges:** The materials for propositions (1) and (2) need to be lightweight and durable, which requires adaptation of the input material and simplification of material processes. The insight from Austria was that the primary challenge is the difficulty of recycling materials. Although there is no solid prototype yet, the group is actively developing these ideas and has presented them within the company, with plans to pursue one of the concepts further.
- **Opportunities:** Bosnia proposed (1) *Using Bioplastics for Car Parts*, where the idea is to replace traditional heavier materials like metal with biocomposites, such as natural fibers, which can be used in 3D printing to produce car panels, handles, and other small parts; and (2) *Automation with Microcontrollers*: developing a

sorting robotic hand using microcontrollers like Arduino. This prototype could lead to automation solutions for sorting waste. Bioplastics would also be used to make parts for the robotic hand, ensuring they are lightweight and durable.

Austria replied to opportunity (2) proposition (3) *Remote control for B2B applications*. One idea is centered around creating a sustainable business model for remote controls in the B2B sector, specifically for hotels and hospitals. The idea was to offer remote controls as a service, relieving buyers from maintenance tasks like battery replacement. The remote controls would feature a bacteria-resistant surface for easier cleaning and be designed modularly for easy recycling. After a certain period, the remotes would be returned to the producer for refurbishment or recycling, ensuring a continuous cycle of use and reducing waste. The energy source for the remotes was still undecided. Another idea was in response to opportunity (1), namely (4) *Reusing of scrap or punching grids*: reusing internal scrap or punching grids from vehicle interior production, for example, Custom Car Keys or Enclosures and Customizable Plastic Films.

Lessons Learned

- *Diverse Perspectives*: Having a diverse group of participants brought different ideas, fostering out-of-the-box thinking.
- *Customer Perspective*: Companies gained valuable insights by considering the customer's perspective, which is crucial for future product development.
- *New Business Opportunities*: Companies realized the potential for new business opportunities through CE, which was not clear before.

Germany, Hungary, Serbia, Moldova

Meeting summary:

The meeting focused on advancing circular economy initiatives in Moldova, emphasizing the need for collaboration between academia and industry to enhance sustainability practices. Daniel Coșniță highlighted the importance of sharing best practices and fostering cluster development through training and technological investments. He pointed out the challenges Moldova faces in waste management, particularly in processing textile and plastic waste, as it aims for EU membership by 2025. The discussion also addressed the need for educational institutions to adapt their curricula to include sustainability topics, with Coșniță noting the introduction of new degree programs at his university aimed at integrating sustainability concepts into plastics studies.

Participants shared insights on the societal and behavioral challenges related to sustainability, with Assia Buchmann discussing the need for a shift in consumer mindsets in Germany. The conversation underscored the importance of engaging local enterprises and governmental bodies to share resources and knowledge, particularly through exchange visits to successful companies. Kristina from ICMF emphasized the inadequacies in Serbia's existing strategies for aligning with EU legislation on circularity, advocating for design thinking workshops to foster innovative solutions. The meeting concluded with a call for increased government support and the potential of clusters to drive change, as well as an announcement of an upcoming design thinking workshop in Budapest to further explore these themes.

Legal/policy:

- **Challenges:** Daniel Coșniță discussed the potential for innovation in Moldova, urging the implementation of best practices compatible with EU legislation. He stressed the significance of education and interdisciplinary approaches, particularly in evaluating carbon footprints for competitiveness in the EU market. Coșniță also noted the importance of adapting recommendations to Moldova's specific capacities and challenges. Kristina from ICMF discussed the difficulties in adapting to EU legislation on circularity, noting that Serbia's current strategies and laws are not sufficiently rigorous. She mentioned the importance of engaging with companies through design thinking workshops to explore innovative solutions. Additionally, she pointed out the lack of comprehensive curricula in Serbian universities on sustainability topics, with the University of Kragujevac being a notable exception.
- **Opportunities:** The importance of technology and infrastructure investment for achieving circularity. Adapting best practices for circular economy in less

developed regions. Legislative frameworks and their impact on the transition to circular economy in various countries.

Societal:

- **Challenges:** Assia Buchmann discussed the societal barriers in Germany that hinder the acceptance of sustainable products, particularly biodegradable options. She pointed out that despite technological advancements, consumers are often reluctant to pay higher prices, and companies face challenges in adjusting profit margins. Daniel Coșniță added that the project aims to accelerate the adoption of circular economy practices in less developed regions by sharing experiences and guidelines. Eva Breuer discussed the significant drop in student numbers in plastics studies, leading her university to launch a bachelor's degree in sustainable polymer engineering and a master's in plastics management and sustainability. Daniel Coșniță pointed out the dual challenge of altering customer and entrepreneur mindsets regarding green and circular economies, advocating for the inclusion of sustainability topics in their educational programs to foster a sense of social responsibility among students.
- **Opportunities:** The role of academia in shaping sustainable practices and curricula related to circular economy. Societal attitudes towards sustainability and circular economy, including the perception of plastics

Technical:

- **Challenges:** Daniel Coșniță discussed the pressing challenges faced by Moldova in waste management as the country aims for EU integration by 2025. He pointed out the necessity for local companies to collaborate and share resources to implement effective recycling technologies, rather than each company investing in expensive equipment individually. Coșniță also mentioned the importance of learning from successful practices in neighboring countries like Romania.
- **Opportunities:** The conversation focused on the necessity for government support in advancing circular economy practices. Daniel Coșniță discussed the role of clusters in facilitating change and influencing policy, while Toth Edina provided details about a design thinking workshop planned for November in Budapest. Attila Gurabi also contributed by updating the preparations for the workshop.

Key questions

1. *What strategies can be employed to shift societal perceptions regarding the use of plastics?*

2. *How can academia better prepare students for careers in sustainability and circular economy?*
3. *How can we better facilitate the exchange of experiences between more developed and less developed regions?*

Policy context:

The Ecodesign for Sustainable Products Regulation (ESPR) recently entered into force as Regulation (EU) 2024/1781 with the aim of creating a strong and coherent policy framework to make sustainable products the norm in the EU. This JRC report assesses a number of product groups and horizontal requirements that may be suitable priorities under ESPR. Together with other elements – such as the requirements and priority list of products set out in the ESPR, considerations relating to availability of resources and the political priorities of the new GreenDeal Plan.

Technical:

- **Opportunities:** Romania identified the expansion of the Deposit-Return System as as the most promising solution for reducing the high amount of plastic waste. The proposal aims to extend it to all types of plastic packaging, currently limited to beverage containers. This would involve packaging for detergents, dairy products, canned goods, and other consumer products that use plastic. The aim is to create a broader system that involves both consumers and retailers more actively in the recycling process. Serbia proposed that natural composite materials created by processing natural resin and natural fibers of industrial hemp can potentially replace plastic parts and plastic products, primarily in the automotive and packaging industries. Czechia recounted that during the processing and recycling of waste plastics, a large amount of waste sludge is generated, which contains plastic parts and various contaminants. Currently, these sludges are specified as hazardous waste, and disposal represents a cost for recycling line operators. This sludge would be dewatered in the project on a sludge dewatering line, which would have to be optimized in terms of drainage treatment and due to the high content of various paper labels, adhesives and other impurities that cannot be dewatered on commonly available equipment. Another necessary optimization is the chemical management for sludge dewatering so that it does not affect the recycled material and its subsequent transformation into a raw material for the production of components from recycled plastic.
- **Challenges:** Serbia: Durability is essential for the proposed solution. The targeted industries, such as automotive and packaging, require materials that can withstand mechanical stress and environmental factors.

Lessons Learned

- *The conceptual evaluation of the approach of individual PPs to defining and proposing a solution shows us that the approach may differ in terms of systemicity or, conversely, specificity. Both variants of the approach to the solution are correct and their combination is appropriate: a specific solution must always meet industry assumptions and requirements - on the contrary, a systemic solution must respect the technical and design possibilities of specific applications and products.*
- *All the proposals defined and investigated by PPs in participating countries were used well and under the principles of Circular Design Thinking – it means the results of the reworking of various design tools and techniques, combining strategic design and regenerative design into a unique, flexible, and holistic methodology aimed at identifying new opportunities for circularity and creating sustainable outcomes.*