

Definition of relevant plastics application fields for prototyping

Deliverable D.1.2.1

Responsible Partner: Plastr+Omnipack

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1. Introduction

Activity 1.2.

Title Solution Space: From design thinking of innovative plastics solutions to the development of plastics prototypes designed for circularity

Start period: Period 1, 1 - 6

End period: Period 3, 13 - 18

Description: 393.000€, Lead Plastr + Omnipack

In accordance with the Application Form, the aim of the task is the following:

"Relevant plastic application fields will be defined to set the starting point of the prototyping phase including the regional plastics ecosystem. To start the prototyping, design thinking workshops will be conducted focusing on the transformation of the regional industry into creating innovative plastics solutions designed for circularity in all partner regions. For this experts, stakeholders, and policymakers including will be involved. In a sense, peer learning coaching from high-developed regions for developing regions by 3 core teams (selected PPs + ASPs + experts) will be provided to further strengthen transnational exchange and capacity building between PPs. For the circular plastics solution prototyping at least one concept will be selected in each partner region, resulting in the development of a prototype concept and demonstration case in each partner region."

**D.1.2.1 Definition of relevant plastics application fields for prototyping
Period1**

**D.1.2.2 Piloting to create innovative, circular plastics solutions.
Period2**

D.1.2.3 Transnational peer-level capacity building

Period2

**D.1.2.4 Development of a prototype concept and demonstration case in each partner
region**

Period3

D.1.2.5 Guideline for circularity in plastics industry, incl. dissemination

Period3

2. Problem

In order to complete the Activity 1.2, the first task was

D.1.2.1 Definition of relevant plastics application fields for prototyping PPs evaluate and define relevant fields of plastics applications to be considered for the upcoming prototyping process in the following deliverables. Fields will be chosen together in the partnership according to their relevance to the DR for all partners.

In accordance with the Application Form Plastr and Omnipack has conducted a workshop within the frame of the consortium meeting in Horb (24th-25th June, 2024). The aim of the presenters was to develop an interactive workshop for the consortium members and therefor decided for the following agenda:

TIME	TOPIC	PRESENTER	COMMENT
10:30-10:40	Design Thinking for Circularity	Lenka Mynarova	Connected on Teams
10:40-10:50	Presentation of Activity 1.2 Solution Space: From design thinking of innovative plastics solutions to the development of plastics prototypes designed for circularity	Klára Tóth-Maródi (OMNIPACK/DBH)	
10:50-11:05	Warmup and demo session	András Ugrin (OMNIPACK/DBH)	demo materials sent to TZ Horb in advance
11:05-11:30	Brainstorming session on D.1.2.1 Definition of relevant plastics application fields for prototyping	András Ugrin (OMNIPACK/DBH) Klára Tóth-Maródi (OMNIPACK/DBH) David Hausner (PLASTR)	With AhaSlides
11:30-11:45	Introduction to next steps D.1.2.2 Piloting to create innovative, circular plastics solutions (Co-creative design thinking workshops)	David Hausner (PLASTR)	
11:45-12:15	Q&A	András Ugrin (OMNIPACK/DBH) Klára Tóth-Maródi (OMNIPACK/DBH) David Hausner (PLASTR)	



3. Analysis

Plastr and Omnipack aimed to give the consortium members first an insight into the plastic sector's regulation challenges with involving an external expert and the prepared a hands-on session where several practical examples, where demonstrated for the participants. After these, small groups were created to boost discussion on the topic and as an outcome, the named application fields were collected: Omnipack introduced several innovative products and materials designed to provide alternatives to various types of plastics. The presentation highlighted several application areas:

Mycelium Fungal Threads for Cushioning: Omnipack showcased mycelium fungal threads that can be used for cushioning purposes. These threads have the potential to replace polystyrene products commonly used for protecting large, fragile technological equipment during transportation. The mycelium provides effective shock absorption and protection, making it an eco-friendly alternative to traditional polystyrene foam.

Cellulose Nanocrystal-Coated Meat Packaging Sheets: Another innovative product presented was meat packaging sheets made from paper coated with cellulose nanocrystals. This advanced material can serve as a replacement for plastic-coated or laminated meat packaging paper sheets. The cellulose nanocrystal coating offers the necessary barrier properties to keep the meat fresh while being more environmentally sustainable compared to plastic-based alternatives.

Acetic Acid Processed Films from Sewage Sludge: Omnipack also introduced a film made from sewage sludge that has been transformed through an acetic acid process. This film is suitable for replacing conventional water-soluble films. The innovative process not only provides a practical use for sewage sludge but also results in a biodegradable and environmentally friendly film that can be used in various applications.

Dispersion Lacquer Layer on Cardboard Surfaces: Lastly, Omnipack showcased a dispersion lacquer layer that can be applied to cardboard surfaces. This lacquer serves as a substitute for plastic coatings on single-use items. The dispersion lacquer provides the necessary protective properties while being a more sustainable option compared to traditional plastic coatings. This innovation supports the reduction of plastic waste and promotes the use of more eco-friendly materials in the production of disposable items.

Overall, Omnipack's innovative products and materials demonstrate significant potential in reducing plastic usage and promoting sustainable alternatives across various industries.

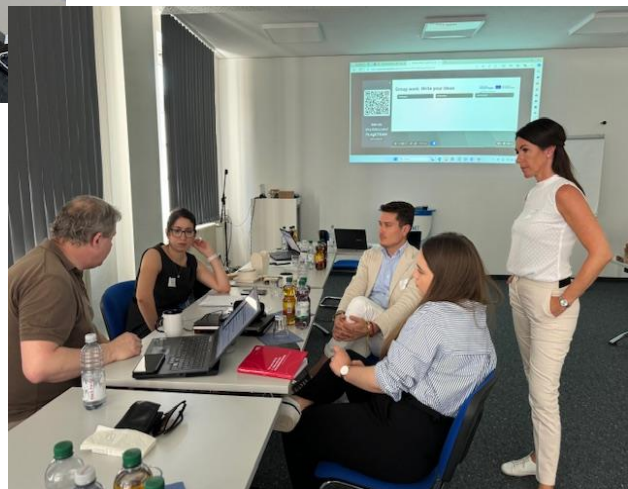
The use of PCR-PP materials for the production of consumer goods (Plastr-SPUR-IKEA project): samples of products from the zero series were presented; declared production procedure, used plastic waste and principles necessary to ensure a sustainable process. this project is in the phase of starting production.

Use of PVC post-consumer waste (originating from old cables from buildings and cars): project implemented in the Czech Republic by the company FORTEMIX; the most suitable method for sorting, cleaning and compounding these heterogeneous mixtures of plastics was gradually found. The result is know-how and working technology, which is used to process 3,500 tons per year. The products are roofing and technical floor coverings.

Building boards from post-consumer Tetrapak packaging: company Lisatech together and with Plastr support has successfully developed and handed over another ECO-line for the production of boards from separated municipal waste to a satisfied customer in Sweden, USA, Australia and other countries. The real satisfaction is also evidenced by his interest in the supply of other technologies by our company, which is manifested by a contractual option for the further expansion of his production capacities.

In its R&D activities, Plastr prefers projects focused mainly on the efficient (meaning sustainable) use of post-consumer recycled plastics into final products; we focus on projects with a high volume of processed materials. Individual projects are and must be consulted/confronted in terms of the requirements of EU legislation, the sustainable economy of their production and, above all, they must have wide application within existing applications.





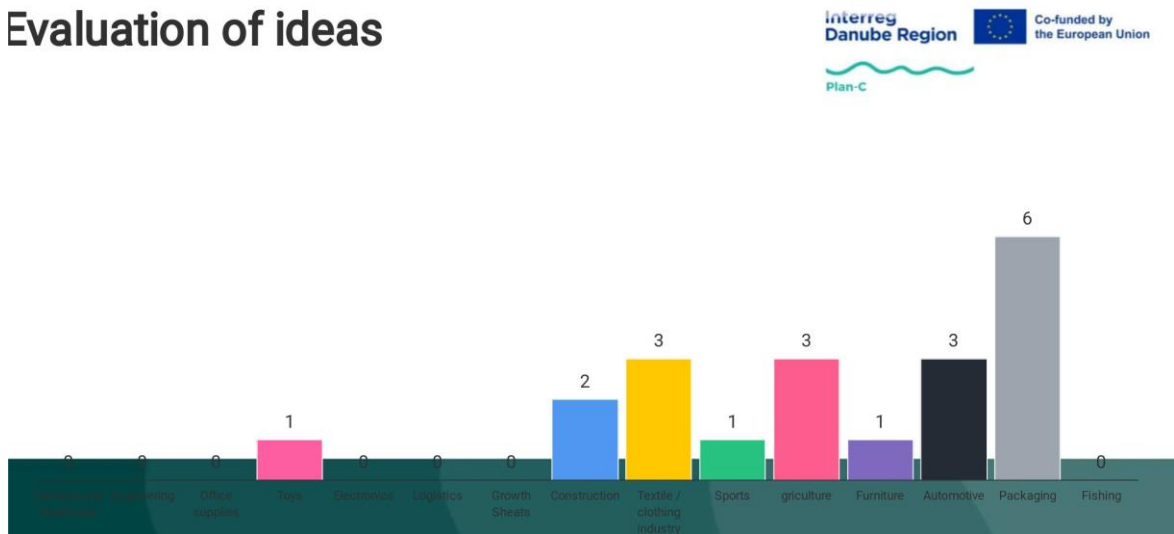
Group work: Write your ideas

Packaging	Automotive	Construction
Medical and healthcare	Furniture	agriculture
sports / fishing	textile / clothing industry	construction
Growth Sheats	logistics	Electronics
Toys	office supplies	engineering
health care		

4. Solution&conclusion

After the collection of the ideas, the consortium partners were asked to rank and evaluate the different fields individually, also taking into consideration that the prioritized fields will serve as the starting point for the national design thinking workshops to be organized on national level in the second period of the project.

Evaluation of ideas



After expressing the individual priorities, the consortium decided for five relevant plastic application fields:

- Packaging industry
- Agriculture
- Automotive industry
- Textile and clothing industry
- Construction industry

At this point the next task of the partners is to choose a topic from these and start contacting stakeholders and experts, whom they can involve in the workshops and as well try to engage them in the further implementation of the project.