

# Deliverable report

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# DOCUMENT HISTORY AND CONTRIBUTION OF THE PARTNERS

VERSION NR	REVISER	CONTENT
V0	ITB	Deliverable template
V1	ITB	First draft
V2	ICT	Review
V3	ITB	Review
V4	ICT	Submission

PARTNER	SHORT NAME	ROLE IN THE WP	CONTRIBUTION TO THE DELIVERABLE
ITRB Group	ITB	Leader WP8 (task 8.6)	Author of deliverable 8.9

# 1 INTRODUCTION AND DELIVERABLE'S OBJECTIVE

The CREAToR project<sup>1</sup> is focused on process and material development and demonstration to sort and remove hazardous, already banned bromine-containing flame retardants from waste streams using continuous sorting and purification technologies: LIBS technology for sorting and supercritical CO<sub>2</sub> and natural deep eutectic solvents (NADES) for continuous extraction in twin-screw extruders.

CREAToR will cover the whole value chain, starting with the collection of thermoplastic waste streams from building and construction and from waste electrical and electronic equipment. The project will implement ways to identify the presence of hazardous flame retardants and to sort the polymer material accordingly, to remove these contaminants from the materials and finally to reuse the materials in new applications.

Brominated flame retardants (BFRs) are a large group of substances used in several products to prevent fire hazards. Due to the abundance, low cost and high performance of bromine, BFRs have had a significant share of the market for years. Some BFRs are toxic and pose a risk of causing adverse effects to human health and the environment. They are capable of long-range transport, persist in the environment and in foods, and bioaccumulate in human and animal tissue.

As case studies, the purified polymeric materials will be reused as valuable secondary raw materials for new B&C insulation panels (generating a circular economy), for automotive interior applications, and for producing 3D-printed parts for aerospace applications.

To further increase the economic feasibility of the approach, an optimised logistic concept and a harmonised material quality classification scheme will be developed and applied. CREAToR will develop a circular economy solution, transforming waste streams that are currently incinerated into value-bringing secondary raw materials. The economic viability of CREAToR will be validated through material benchmarking and the assessment of the whole value chain and its costs, resulting in next generation products.

The objective of this deliverable is to present the final stakeholder workshop carried out in the CREAToR project, which fulfilled the objectives in two tasks:

- *Task 8.6 Stakeholder engagement and social license to operate:* increase consumer acceptance of recycled products with a "social license to operate" methodology developed in CREAToR and hold a stakeholder event with industrial stakeholders interested in directly implementing the CREAToR technologies.
- *Task 6.6 Framework, industry- and policy recommendation:* hold a dedicated workshop with the relevant stakeholders to speak about legislative obstacles and issues relating to the implementation of recycled plastics and their recycling technologies.

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<sup>1</sup> <https://creatorproject.eu/>

## 2 WORKSHOP

### 2.1 INTRODUCTION

The stakeholder event took place in the "3<sup>rd</sup> Way of Innovation" Hub, in Madrid, on 5<sup>th</sup> of May 2023. This event was presential and online.

The event aimed to discuss and address various challenges and opportunities related to recycling. However, in compliance with confidentiality requirements, especially European legislation concerning data protection (GDPR), the names of the participating companies cannot be disclosed in this publicly available deliverable.

The purpose of the event was to foster collaboration and knowledge sharing among industrial stakeholders, including manufacturers, recyclers, policymakers, and researchers.

The positions of the stakeholders that participated in the event are:

1. Director of Innovation of one the largest European organizations in charge of plastic waste recycling and policy
2. CEO of Spanish aerospace tier 2 supplier of Airbus and Boeing delivering integrated assemblies and sub-components
3. Head of Programs of one of the top ten worldwide aerospace tier 1 manufacturers delivering integrated components to Boeing, Airbus, Embraer and Dassault
4. CEO of one of the leading UK engineering firms in automotive
5. Director of Innovation of one of the Formula 1 manufacturers
6. CEO of startup in plastic recycling
7. CEO of one of the top ten EU firms in policy making and business intelligence, and advisor to the EU institutions.
8. CEO of one of the leading engineering firms in aerospace

The objectives of the stakeholder event were:

- To compile information about the legislative obstacles and issues existing at national and/or European levels, which may impede the implementation of new recycling technologies (including CREAToR's solutions) and the increase of recycled plastics in new products.
- To present CREAToR's SLO (social licence to operate) to industrial stakeholders interested in directly implementing the CREAToR technologies, and to help increase consumer acceptance of new recycling technologies

In planning the stakeholder event, the organisers drew on information from three previous tasks carried out in CREAToR:

- Innovation Forum 4 Plastics: This event was held on March 15<sup>th</sup>, 2023, in Brussels. The stakeholders there highlighted some goals and areas of concern, and these were discussed at the final stakeholder event to verify whether the industrial sector was in accordance with them
- CREAToR policy brief: This policy brief was developed in task 8.7 of CREAToR. As it was not yet complete at the time the event was held, the document was not shown to the participants. However, the recommendations it contained were discussed in order to find out the stakeholders' position on the various topics.
- SLO methodology for CREAToR: This methodology, which was implemented and validated in CREAToR, was presented to the industrial sector. Feedback and recommendations were obtained, and the industrial stakeholders also provided further insights into the social problems that could arise from recycling.

## 2.2 AGENDA

SESSIONS	TIME	COMMENTS
Introduction to plastics market	16:00-16:15	Short introduction to the plastic market and importance of different sectors
Recycling sector status	16:15-16:30	Status of recycling in different sectors
<b>Problems of recycling sector:</b>		
1. Legislative barriers and recommendations	16:30-17:00	What are the main barriers that European legislation creates for recycled plastic, and what developments will require new legislation?
2. Other obstacles and recommendations	17:00-17:30	What other obstacles prevent new recycling technologies from entering the market? What issues do different sectors face when increasing the use of recycled plastics? Changes needed
<b>BREAK</b>		
3. Social vision and SLO	17:45-18:15	What is the social vision for recycled plastic? Is action needed to improve the vision of the recycling sector?
Workshop results	18:15-18:30	Final resume
Cocktail	18:30-19:00	

## 2.3 MINUTES OF THE MEETING

### Introduction of the plastics market

Beside the sectors presented by the CREAToR consortium, it was noted that the use of plastics in agriculture is widespread in Spain, playing a significant role in enhancing crop productivity, water conservation, and pest control.

### Recycling sector status

The status of plastics used in agriculture and their recycling in Spain is a complex issue. The recycling rate remains relatively low compared to other types of plastic waste. Lack of standardisation makes it more challenging to develop recycling processes that can handle all types of agricultural plastics effectively.

Investing in dedicated collection systems and recycling facilities specifically designed for agricultural plastics would improve the recycling rates. There is also a need to establish collection points at farms.

### Legislative barriers and recommendations

- Lack implementation of waste hierarchy
- REACH legislation barriers
- Regulatory aspects affecting processing concern either lack of policies or policies that do not work optimally for recycling for building & construction waste
- Differences in national regulations, permits and registrations can halt the transfer of best practice or best available technology between Member States for municipal solid waste
- Addressing illegal exports for WEEE

Recommendations:

- Harmonised quality and safety standards for recycled plastics to ensure clarity and consistency for recyclers
- Food contact regulations, streamlining and simplifying the approval processes for recycled plastics
- Revisiting waste classification regulations to recognise recycled plastics as valuable products
- EPR schemes to enhance transparency and efficiency in managing plastic waste
- Encouraging greater harmonisation of waste management and recycling regulations across EU Member States would facilitate the free movement of recycled plastics
- Promoting market demand for recycled plastics through public procurement policies and incentives
- Streamlining administrative procedures: Simplifying administrative procedures related to waste shipments

### Other obstacles and recommendations

#### 1. Infrastructure development for collection system

- Different waste collection systems collect the same packaging products and materials with highly fragmented value chains
- Most of the WEEE generated in Europe doesn't reach the treatment routes

Solutions:

- This could be solved with the harmonisation of sorting guidelines at national level
- The separation of WEEE with more consistent sorting systems and communications campaigns often supported by EPR systems to be established

#### 2. Economic viability of recycled plastics

- Manufacturers of recycled plastics operate in the same market as virgin plastics producers

- The cost structure of recycled plastics production is different from that of virgin production
- The price of secondary plastic materials depends on the supply and demand of secondary plastic material and the crude oil price, which strongly influences the price of the virgin material

Recommendations:

- Invest in new plastic recycling capacity to increase demand for recycled plastics
- Establish clear growth perspectives for the market for recycled and innovative plastics
- Reduce dependency on raw materials, boost the market for recycled plastics, and ensure that recycled plastics are a valuable raw material

### 3. Quality and constant quantity of recycled materials

- Although virgin plastics are generally reliable in terms of quality, performance, and short-term availability, there might be uncertainties surrounding these aspects when it comes to recycled plastics
- Lack of transparency regarding hazardous chemicals is thus a major barrier to increased recycling

Recommendations:

- Improve collection systems to minimise contamination and maximise collection of recyclable materials
- Reduce contamination in the recycled materials stream to improve the quality of the recycled material
- Develop and enforce quality standards to ensure consistent quality across the recycling industry
- Implement policies and incentives to stimulate market demand for recycled materials

### 4. Free transportation of waste

- The complex rules governing waste transportation within the EU create significant challenges and delays. It sometime takes up to four years for companies to obtain approval for shipments.

Recommendations:

- Revise the EU Waste Shipment Regulation

### Social vision and SLO

- Recycling can create jobs and reduce solid waste collection, transportation, and disposal costs
- It saves landfill space, preserves resources, conserves energy, reduces air pollution, and saves water
- There are multiple plans to increase the recycling rates, but not to explain the technology of the sector
- Some individuals question the integrity of recycling systems and doubt whether their recycled materials are genuinely being processed and reused
- Many people are not fully aware of the importance and benefits of plastic recycling
- There is a common perception that plastic recycling is inefficient and ineffective
- Plan and implement a program kick-off to generate interest in and enthusiasm for the program

### Workshop results

- The conclusion of the workshop is described in detail in the public deliverable 6.7 Report about the industry recommendations, which will shortly be upload to CREAToR's website<sup>2</sup>.
- Certain partners agreed to send ITRB further elaboration on the content, which will be introduced into the final public deliverable D6.7 "Report about the industry recommendations".

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<sup>2</sup> <https://creatorproject.eu/publications/>



### **3 CONCLUSIONS**

The recommendations given by the stakeholders of this workshop will be included in the deliverable D6.7 "Report about the industry recommendations", which is publicly available.

More information can also be found in the deliverable D8.10 "CREAToR policy brief".