

# D5.4 - Report on stakeholder analysis (including clustering activities)

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## CIRCPLASTX

A DATA SPACE TO INCREASE CIRCULARITY THROUGH DATA FOR THE PLASTICS INDUSTRY

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**CircPlastX**



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## Abbreviations

| ABBREVIATION | MEANING                                                              |
|--------------|----------------------------------------------------------------------|
| CA           | Consortium Agreement                                                 |
| D            | Deliverable                                                          |
| DoA          | Description of Action                                                |
| EC           | European Commission                                                  |
| PC           | Project Coordinator                                                  |
| TL           | Task Leader                                                          |
| WP           | Work Package                                                         |
| WPL          | Work Package Leaders                                                 |
| CPX          | CircPlastX                                                           |
| DPP          | Digital Product Passports                                            |
| CSRD         | Corporate Sustainability Reporting Directive                         |
| DGA          | Data Governance Act                                                  |
| EDIH         | European Digital Innovation Hub                                      |
| SMEs         | Small and Medium Enterprises                                         |
| REACH        | Registration, Evaluation, Authorisation and Restriction of Chemicals |
| LCA          | Life Cycle Assessment                                                |

# 1.Introduction

## 1.1 Brief background on CircPlastX

The CircPlastX project – ‘a data space to increase circularity through data for the plastics industry’ - is part of Digital Europe Programme (DIGITAL). It officially launched on March 1<sup>st</sup>,2025, and will run for 36 months.

This project aims to unlock the value of data sharing across the plastics value chain to accelerate circular economy practices, to support regulatory compliance (for example: Digital Product Passports, Corporate Sustainability Reporting Directive and REACH), to enable trusted, interoperable data exchange, to promote reuse, recycling, and design-for-circularity and to foster innovation and new data-driven services.

CircPlastX gather a multidisciplinary consortium of partners from across Europe from 5 different EU-countries. The consortium is composed of technical centres, industrial players, digital solution providers, Research and Technology Organisations (RTOs), Standards bodies and regulatory experts and regional and innovation agencies, in order to ensure both technical feasibility and industry relevance in developing the data space.

Data sharing plays a vital role in driving both circularity and regulatory compliance in the plastics sector. By enabling traceability, organisations can track the origin, composition, and life cycle of materials and products, laying the groundwork for recyclability and eco-design. Access to detailed information on material properties and performance allows stakeholders to design products that are easier to reuse, recycle, or recover. Furthermore, data sharing fosters collaboration across the value chain, helping different actors work together to close the loop and reduce waste. On the regulatory side, structured and trustworthy data enables the implementation of Digital Product Passports (DPP), supports Environmental, social and governance (ESG) reporting under frameworks such as CSRD and the EU Taxonomy, and ensures compliance with safety regulations like REACH guidelines. Crucially, the Data Governance Act (DGA) framework ensures that data is exchanged securely, transparently, and in full respect of data sovereignty principles. To support this ecosystem, CircPlastX adopts trusted mechanisms such as Compliance-as-Code, Gaia-X-compatible connectors, and robust consent and identity management, underpinned by common standards for metadata, formats, and access control—ensuring interoperability, scalability, and user trust.

In a whole, data sharing is central to achieving circularity and compliance in the plastics sector. Here's how: CircPlastX first supports circularity by enabling traceability across the plastics value chain, allowing stakeholders to identify the origin, composition, and life cycle of materials and products. It improves recyclability by making information on reuse, recycling processes, and material compatibility accessible and shareable among actors. The project promotes eco-design by integrating data on Life Cycle Assessment (LCA), emissions, and product usage to foster the creation of more sustainable and circular products. Finally, it enhances collaboration by facilitating data exchange between manufacturers, recyclers, and suppliers to support end-to-end circular processes within the value chain.

The CircPlastX data space then contributes to regulatory compliance through the implementation of a Digital Product Passport (DPP), which provides structured, machine-readable data on product content, environmental performance, and end-of-life options. It supports compliance with CSRD (Corporate Sustainability Reporting Directive) and EU Taxonomy by enabling access to reliable, traceable ESG-related data. The platform also facilitates compliance with REACH guidelines by ensuring that accurate material and substance information is available for safe handling and reporting. By aligning with the Data Governance Act (DGA), CircPlastX ensures that all data sharing is conducted in a secure, sovereign, and compliant manner.

To ensure trust and interoperability, CircPlastX adopts a set of cutting-edge mechanisms. These include the use of compliance rules ("Compliance-as-Code"), and the integration of Gaia-X-compatible connectors to ensure interoperability across European data spaces. The project also embeds consent and identity management tools, reinforcing user trust and control over shared data. Additionally, CircPlastX adheres to established standards for metadata, formats, and access control, which are essential for scalable and secure data exchange across organisations and regions.

## 1.2 Scope and objectives of the report

In the framework of the CircPlastX project, Deliverable D5.4, part of the Work Package 5, aims to gather all stakeholder's analysis (including clustering activities). The objective is to report the description of the plan regarding stakeholder mapping and actions to engage them, and liaison with other projects, initiatives, and EDIHs.

Within this Project's broader context mentioned above, the scope of this report is to document the stakeholder analysis conducted throughout the project, with an emphasis on identifying, mapping, and clustering key actors relevant to the data space, based on their position in the value chain, level of influence and interest, and the type of data they handle (e.g. product, material, or process data). The report provides a comprehensive overview of the strategy and methodology applied to engage stakeholders—from high-level policymakers to SMEs and technology providers assuring that the needs, expectations, and contributions of diverse players are well understood and integrated into the development of the data space. The objectives of the report are threefold:

1. To present a systematic mapping of stakeholders using established criteria (e.g. interest/influence matrix, data typology, role in the ecosystem);
2. To describe clustering activities aimed at grouping stakeholders by relevance, influence, and data interaction potential, in order to facilitate targeted engagement and co-creation approaches;
3. To outline the plan for ongoing engagement, including communication channels, involvement in pilots or workshops, and liaison with complementary European initiatives, data spaces, European Digital Innovation Hubs (EDIHs), and Smart Specialisation partnerships (S3Ps).

Ultimately, this deliverable D.5.4 contributes to the creation of a dynamic and inclusive data-sharing ecosystem. It ensures that the CircPlastX data space reflects the real-world needs of the plastics industry and remains open to external collaboration, innovation, and long-term sustainability beyond the project's lifecycle.

## 1.3 Importance of Stakeholders' engagements, mapping and clustering

Stakeholder engagement is a cornerstone of the CircPlastX project, as the development of a functional, trusted, and widely adopted data space depends on the active involvement of all relevant actors across the plastics and composites value chain. Engaging stakeholders ensures that the data space addresses real industry needs, encourages adoption of interoperable standards, and supports effective data governance mechanisms. Mapping stakeholders enables the project to identify who holds influence and interest, where key knowledge and data reside, and what roles different players can take—whether as data providers, users, intermediaries, or regulators. Clustering stakeholders according to criteria such as their position in the value chain, the type of data they handle (product, material, or process), and their level of interest and influence allows the project to tailor its outreach, co-creation, and communication strategies. It also helps to build synergies, identify gaps, and foster collaboration between industry, academia, policy, and civil society. By strategically engaging and grouping stakeholders, CircPlastX can ensure inclusiveness, responsiveness, and alignment with the ecosystem's priorities—creating a robust foundation for scaling up the data space and accelerating circularity and compliance within the sector.

## 2. From Mapping to Mobilisation: Stakeholder Engagement Approach

### 1.4 Description of the approach

In the framework of the CircPlastX project, the stakeholder mapping strategy is built on a three-pronged approach that combines desk research, targeted surveys and interviews, and participatory expert workshops. This mixed-method design ensures a comprehensive, inclusive, and validated understanding of the actors relevant to circularity and data sharing in the plastics and composites sector.

The process began with extensive desk research, involving a systematic review of scientific literature, public databases, industry reports, and documentation from previous and ongoing EU-funded initiatives. This initial phase aimed to identify a broad range of stakeholders across the plastics value chain, including producers, recyclers, technology providers, regulators, research organisations, and advocacy groups. The research also helped identify existing collaborations, regulatory frameworks, and digital infrastructure relevant to data sharing and circular economy goals. The insights gathered served as a foundation for the development of more targeted engagement tools.

Building on this foundation, semi-structured surveys and interviews are being conducted with key representatives from diverse stakeholder groups, including SMEs, large industrial players, industry associations, standardisation bodies, policymakers, digital solution providers, and academic experts. These dialogues aim to gather qualitative and quantitative data on stakeholders' interests, influence, expectations, current practices, and perceived barriers and enablers in the context of data sharing for circularity. They also allow the consortium to refine the stakeholder typology and identify areas where stakeholder contributions could be most impactful.

The third layer of the approach consists of expert workshops to exchange with partners, which will be organised during the course of the project. These workshops will bring together selected stakeholders in an interactive setting to validate preliminary findings, discuss use cases, identify common needs, and co-design solutions for future data services and governance mechanisms. The participatory nature of these workshops will help deepen mutual understanding among different stakeholder groups, foster trust, and catalyse collaboration around shared goals. Ultimately, the triangulated methodology ensures that the stakeholder engagement plan is evidence-based, representative, and strategically aligned with the project's objectives.

## 1.5 Criteria used for identification

The stakeholders' position in the value chain is one of the main criteria for identifying their role in this project. As in the CircPlastX, all actors in the plastic value chain are admitted and identified, categories were made. We can list: raw material suppliers, converters or processors, product manufacturers, distributors or retailers, collectors, recyclers or waste managers, end-users and consumers, technology and data providers and regulators and standardisation providers.

To do so, making an Interest/ Impact matrix is a good criterion to identify CircPlastX Stakeholders

CircPlastX stakeholders are assessed based on their level of influence on data sharing, circular economy and regulatory compliance.

- **Influence:** actor's power to shape outcomes, decisions, or implementation.
- **Interest:** their willingness or motivation to be involved in the CircPlastX projects?

This matrix helps to prioritise engagement and tailor communication:

- **Key players** (*high influence + high interest*) are the most important stakeholders by their ability to have both power and motivation, and they can enable or block CircPlastX's project success. They also be closely engaged or involved in co-creation. (E.g.: Large industrial partners in the value chain; or standardisation or regulatory organisations and bodies.)
- **Supporters** (*low influence + high interest*) are described as being supportive and motivated, but they lack power to enforce change. They only keep informed and they can get involved when possible. (E.g.: SMEs interested in digital or data innovation; Researchers working on circularity topics; or Sustainability-focused NGOs).
- **Gatekeepers** (*high influence + low interest*) are actors who hold power but may be reluctant or disengaged to plastic circularity or digital and data innovation. They monitor carefully and try to increase their interest. (E.g.: Public authorities who are not

directly involved but with decision power; or large associations or federations who are hesitant about digital changes.

- **Observers** (*low influence + Low interest*) are only peripheral actors who are not currently invested or influential. They keep minimally informed and don't feel the need for intensive engagement. (E.g.: general public; or companies outside the plasturgy sector or with no circular economy or digital strategy.)

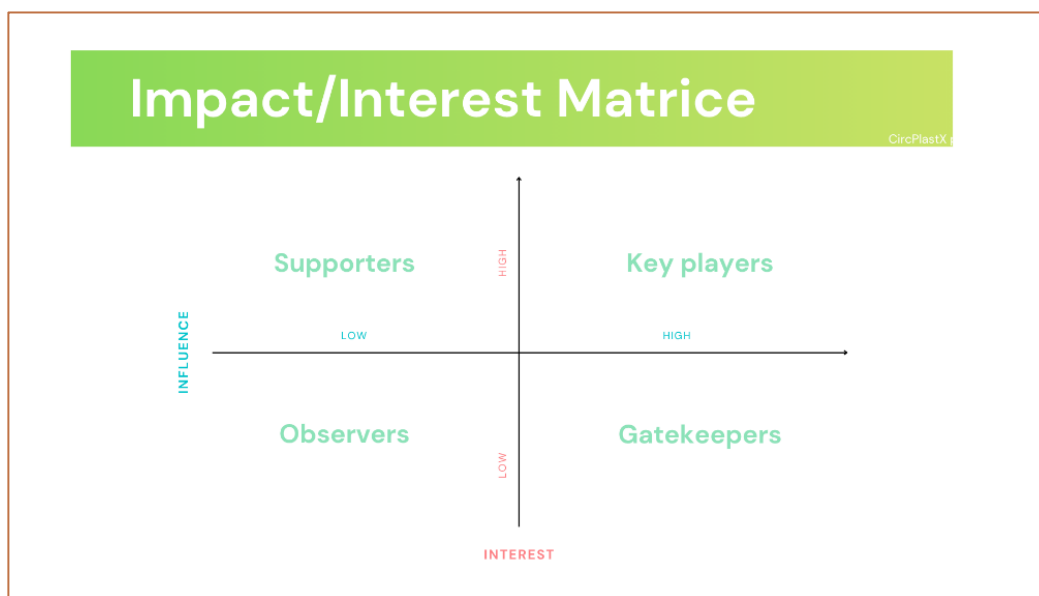


Figure 1: Impact and Interest Matrice – CircPlastX

The type of data handled by the stakeholders is a criterion that aims to understanding what kind of data a stakeholder manages and key to defining their role, their data-sharing needs, and how they contribute do circularity goals. We can categorize in 3:

- **Product data** are related to the characteristics, performance, and lifecycle of the final product. In this case, this data helps to ensure traceability, compliance and supports eco-design or product-as-a-service business models (E.g.: Product design files (such as CAD models); technical certifications or eco-labels and other information on product usage, durability, or reparability.)
- **Material data** is information on all the materials used in the product, either their properties or sustainability profile. This data is essential for substance tracking, recycling process optimisation, and sustainable sourcing. For example, we can outline the chemical composition or additives, the products' recyclability and biodegradability, the material origins (e.g., virgin or recycled, and their geographical source).
- **Process data** is about the industrial processes used in making or transforming the product or materials. To do so, Life Cycle Assessment (LCA) helps to measure carbon footprint, and improving resource efficiency.

Mapping stakeholders by types of data highlights the will of the project to build a trusted and interoperable data pace for the plastics value chain. To do this effectively, we must understand who holds what types of data (providers or consumers or both supporting clear governance and trust-based collaboration), how it's used and where the gaps (spotting missing data sources and revealing circularity blind spots) are. In the end, this mapping

enables strategic planning for data space architecture, practical decisions on tools and standards and the alignment with regulatory and market demands.

## 1.6 Timeline of activities and their types

The communication and dissemination activities within the CIRCPLASTX project are strategically designed to maximize the project's impact by raising awareness, fostering co-development, and encouraging adoption among key stakeholders. The primary objectives are to increase visibility of CIRCPLASTX's activities, actively engage stakeholders—particularly members of the stakeholder database and advisory board—and disseminate project results effectively. To attract SMEs and promote their integration into the data space, specific efforts will focus on promoting the scaling program (T5.5) and ensuring strong links with European Digital Innovation Hubs (EDIH). Additionally, the project aims to build and grow a vibrant community around the data space, facilitating interactions with other initiatives to share technical expertise and maximize European-level impact.

The methodology includes launching a cohesive visual identity and developing communication materials early in the project, as outlined in the initial strategic Communication and Dissemination Plan (Deliverable 5.1). This will be complemented by the creation of dedicated social media channels and a project website to distribute timely and impactful updates. Promotional artifacts such as flyers, slide decks, templates, and roll-ups will be provided to consortium partners to support outreach efforts. To maintain ongoing engagement, a periodic newsletter and press releases will be regularly published throughout the project duration.

A comprehensive dissemination strategy will ensure wide sharing of project results, with consortium partners participating in exhibitions, conferences, webinars, and workshops targeting industry and policy stakeholders. Focused communication towards industrial associations and clusters will help onboard new companies to the data space. The Communication and Dissemination Plan will be updated mid-term (M18) and at project completion (M36) to monitor progress and assess key performance indicators (KPIs), including website traffic, newsletter mentions, event participation, social media followers, video content, press coverage, stakeholder mapping, and webinar and workshop organisation.

## 1.7 Tools used

To support a robust and inclusive stakeholder mapping and engagement process, the CircPlastX project combines methodological tools—such as desk research, surveys, and workshops—with practical tools like **Excel** for stakeholder databases and analysis. The list is shared in a secure manner via the project sharepoint hosted by CT-IPC.

Enregistrement automatique v2\_StakeholderList.xlsx - Mode protégé - Enregistré dans ce PC

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MODE PROTÉGÉ Attention aux fichiers provenant d'un emplacement Internet, car ils peuvent contenir des virus. Il est recommandé de rester en mode protégé sauf si vous devez effectuer des modifications.

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|    | A                                                                     | B                               | C                      | D          | E                           | F | G | H | I |
|----|-----------------------------------------------------------------------|---------------------------------|------------------------|------------|-----------------------------|---|---|---|---|
|    | Raison sociale                                                        | Catégorie collée                | Type                   | Thématique |                             |   |   |   |   |
| 1  | 1.98 RECYCLAGE                                                        | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 2  | 21eR                                                                  | Industriels                     | TPE                    | France     | Recyclage                   |   |   |   |   |
| 3  | AAMS Advanced Assisted Manufacturing Solutions                        | Industriels                     | TPE                    | France     | Recyclage & Usine numérique |   |   |   |   |
| 4  | ACZ                                                                   | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 5  | ADN GROUP                                                             | Industriels                     | Start-up               | France     | Recyclage                   |   |   |   |   |
| 6  | AIDES & FINANCEMENTS                                                  | Autres membres                  | Consultants & Cabinets | France     | Recyclage & Usine numérique |   |   |   |   |
| 7  | AIN FIBRES                                                            | Industriels                     | TPE                    | France     | Recyclage                   |   |   |   |   |
| 8  | ALAPUR                                                                | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 9  | ALPHA RECYCLAGE                                                       | Industriels                     | PME                    | France     | Recyclage & Usine numérique |   |   |   |   |
| 10 | COMPOSITES                                                            | Industriels                     | Start-up               | France     | Recyclage                   |   |   |   |   |
| 11 | ALTERKRAFT                                                            | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 12 | APPLUS + RESCOLL                                                      | Autres membres                  | Fournisseurs           | France     | Recyclage & Usine numérique |   |   |   |   |
| 13 | ATALTANT                                                              | Autres membres                  | Consultants & Cabinets | France     | Recyclage & Usine numérique |   |   |   |   |
| 14 | AUVALIE INNOVATION                                                    | Industriels                     | Start-up               | France     | Recyclage                   |   |   |   |   |
| 15 | ADIMOT CONTROL                                                        | Industriels                     | ETI                    | France     | Recyclage                   |   |   |   |   |
| 16 | BARBER GROUPE                                                         | Industriels                     | Grand Groupe           | France     | Recyclage                   |   |   |   |   |
| 17 | BIOMERIEUX SA                                                         | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 18 | BIOWRAP                                                               | Industriels                     | Start-up               | France     | Recyclage                   |   |   |   |   |
| 19 | BOBINE SAS                                                            | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 20 | BOBINO PLASTIQUE                                                      | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 21 | CABANIX                                                               | Centres de Recherche et de Form | Centre technique       | France     | Recyclage                   |   |   |   |   |
| 22 | CANOE                                                                 | Industriels                     | PME                    | France     | Recyclage & Usine numérique |   |   |   |   |
| 23 | CBS CHANTIER BRETAGNE SUD - ETELUM                                    | Industriels                     | PME                    | France     | Recyclage & Usine numérique |   |   |   |   |
| 24 | CENTRA                                                                | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 25 | CEP CIRCULAR ECONOMY PACKAGING                                        | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 26 | CERME - CENTRE D'ETUDES ET DE RECHERCHE SUR LES MATERIAUX ELASTOMERES | Centres de Recherche et de Form | CR                     | France     | Recyclage & Usine numérique |   |   |   |   |
| 27 | COLMANT CUIVELIER RPS                                                 | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 28 | COVERIS FLEXIBLES FRANCE                                              | Industriels                     | ETI                    | France     | Recyclage                   |   |   |   |   |
| 29 | CRITT Polymères                                                       | Centres de Recherche et de Form | CR                     | France     | Recyclage                   |   |   |   |   |
| 30 | DECOUVERTES                                                           | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 31 | DPH INTERNATIONAL                                                     | Industriels                     | PME                    | France     | Recyclage                   |   |   |   |   |
| 32 | ENVIRONNEMENT MASSIF CENTRAL                                          | Industriels                     | PME                    | France     | Recyclage & Usine numérique |   |   |   |   |
| 33 | RECYCLING                                                             | Industriels                     | PME                    | France     | Recyclage & Usine numérique |   |   |   |   |

v uniformisée Stakeholders list Stakeholders recyclage Stakeholders usine numérique

Figure 2: List of Stakeholders who can be interesting for the project CircPlastX

Enregistrement automatique CPX Interview Follow-up.xlsx

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F11

|    | A                            | B        | C         | D                         | E                |
|----|------------------------------|----------|-----------|---------------------------|------------------|
|    | Raison sociale               | Type     | Countries | Themes                    | Interview Status |
| 1  | ENVIRONNEMENT RECYCLING      | SME      | France    | Recycling&Digital factory | Interview done   |
| 2  | PLASTRI SAS                  | Start-up | France    | Recycling factory         | Interview done   |
| 3  | VACHER                       | SME      | France    | Recycling factory         | Interview done   |
| 4  | BARBIER                      | SME      | France    | Recycling factory         | Contacted        |
| 5  | ENVIRONNEMENT MASSIF CENTRAL | SME      | France    | Recycling&Digital factory | Contacted        |
| 6  | IDELAM                       | Start-up | France    | Recycling factory         | Interview done   |
| 7  | ASPEN/ SEDEM                 | SME      | France    | Recycling factory         | Contacted        |
| 8  | GENERAL INDUSTRIES           | SME      | France    | Recycling factory         | Contacted        |
| 9  |                              |          |           |                           |                  |
| 10 |                              |          |           |                           |                  |
| 11 |                              |          |           |                           |                  |
| 12 |                              |          |           |                           |                  |

Figure 3: A follow-up list of Stakeholders contacted for the interviews

## 1.8 Value chain segmentation

To effectively categorize the stakeholders in the plasturgy sector, it is essential to understand their roles throughout the entire value chain, as well as their connection to the project and their strategic objectives.

Four key stakeholder categories have been identified: upstream, midstream, downstream, and strategic actors.

### 1.8.1 Upstream stakeholders

This group lays the groundwork for the quality, recyclability, and sustainability of plastics by influencing polymer composition, additives, and overall material performance. Their activities are crucial in the extraction, refining, and synthesis of raw materials. This category includes producers of primary plastic resins or compounds, as well as suppliers of feedstocks and essential chemicals that ultimately determine the properties of the final plastic products.

### 1.8.2 Midstream stakeholders

Comprising product manufacturers, designers, compounders, and converters, midstream stakeholders play a pivotal role in enabling circularity by optimizing the manufacturing processes to ensure plastics can be recovered and reused, rather than ending up in landfills or incinerators. They transform raw or recycled plastics into finished or semi-finished products, balancing quality, cost-efficiency, and sustainability.

This group includes:

- Product manufacturers, who produce plastic components, packaging, consumer goods, automotive or industrial parts, and other plastic-based items.
- Designers, including professionals and design offices focused on developing new plastic products, parts, or systems that emphasize functionality, aesthetics, and sustainability.
- Compounders and converters, who modify or process plastic materials into specific formulations or shapes tailored for downstream applications.

### 1.8.3 Downstream stakeholders

This group is primarily involved in recycling, waste management, and the recovery of post-industrial and post-consumer plastic waste. Their role includes collecting, sorting, processing, and reintegrating recycled materials back into plastics manufacturing, transforming waste into secondary raw materials or energy. By minimizing environmental impact and complying with regulations, they contribute to reducing reliance on virgin materials.

This category encompasses:

- Recyclers, facilities specializing in mechanical, chemical, or biological recycling processes that convert plastic waste into reusable materials.

- Waste management companies, operators responsible for the collection, transportation, and disposal of plastic waste, including sorting centres and landfill management.
- Circular economy facilitators, organisations that promote sustainable waste handling and recycling practices across the plastics sector.

## 1.8.4 Strategic stakeholders

This association includes policy makers, regulatory bodies, industry associations, research institutions, and standardisation organisations. They influence the overall direction, regulation, and innovation within the plastics value chain. Their involvement is critical to aligning sector initiatives with broader sustainability goals, ensuring compliance with evolving legislation, and fostering collaboration across regions and industries.

## 1.9 Functional clustering

The CIRCPLASTX data space is designed to connect key stakeholders in the plastics and composites value chain through a functional clustering approach. These clusters not only describe roles and needs but also help measure the deployment and uptake of the data space, particularly among SMEs and manufacturing companies.

### 1.9.1 Data Providers

Data providers primarily include plastics and composites manufacturing companies that connect their manufacturing assets—such as instrumented molds or injection molding lines—to the data space infrastructure. A critical deployment metric is the number of manufacturing assets connected to the data space. Since around 90% of the plastics industry consists of SMEs (with fewer than 30 full-time employees on average), ensuring their participation is a key objective. This cluster must be supported with easy-to-use connectors and standards to facilitate the onboarding of SME providers and to encourage automation in supplier/customer data exchanges.

Deployment focus:

- Increase in connected manufacturing assets as a direct indicator of data space adoption.
- Share of SMEs among data providers to ensure broad inclusivity.
- Automation level of supplier-customer interactions facilitated by the data space.

### 1.9.2 Data Users

Data users are companies within the plastics and composites sector who seek to leverage manufacturing data to improve processes, ensure compliance, or optimize circularity strategies. Services based on data—such as LCA analysis, compliance monitoring, or product lifecycle tracking—are provided through the CIRCPLASTX platform. Monitoring the growth in connected companies exploiting manufacturing data is vital to evaluate data space impact.

Deployment focus:

- Increase in companies actively using data space services.
- Share of SMEs adopting data-driven services.
- Volume and variety of manufacturing, product, and material data consumed.

### 1.9.3 Regulators and Auditors

While regulators and auditors do not directly drive deployment metrics, their involvement is essential for ensuring that data shared within the space complies with standards and regulations. The platform supports regulatory compliance by enabling traceable and auditable data exchanges.

### 1.9.4 Technical Enablers

Technical enablers provide the data infrastructure and connectors essential for data sharing. The minimal viable data space, as defined by IDSA, requires at least two connectors—a data provider and a data consumer—to enable secure and interoperable data exchange. CIRCPLASTX focuses on connecting multiple such pairs, scaling up manufacturing asset connections over time.

#### Deployment focus:

- Number of active connectors deployed.
- Validation and interoperability mechanisms supporting data sovereignty.
- Bridging data providers and consumers seamlessly.

## 3. Liaison with relevant Projects, Initiatives and (E-) DIHs

The transition to a circular economy within the plastics and manufacturing sectors hinges significantly on effective data sharing, governance, and integration of innovations across multiple projects and stakeholders. As part of this broader transformation, establishing strong liaisons with relevant EU-funded projects and Digital Innovation Hubs (DIHs), including European Digital Innovation Hubs (EDIHs), is essential. This assessment explores two major areas: the mapping of related projects and the formation of partnerships with (E-)DIHs.

### 1.10 Mapping of related projects

Mapping ongoing and completed projects that focus on circular economy, plastics recycling, data spaces, and data governance is a foundational step toward identifying complementarities, avoiding duplication of effort, and maximizing the reuse of existing knowledge and tools. This process enables strategic alignment with technical developments and policy innovations.

### 1.10.1 Identified Relevant Projects

A preliminary list of ongoing projects has been compiled, based on relevance to key thematic areas:

**Plastice:** Focused on reducing plastic waste through enhanced circularity models. Potential alignment in terms of LCA data, policy interfaces, and SME engagement strategies.

- **AI REDGIO 5.0:** Builds on H2020 AI REGIO to boost AI adoption in manufacturing SMEs by strengthening EU-wide collaboration and enhancing tools with Industry 5.0 principles, secure edge-to-cloud solutions, and open-source tech, aligned with EDIH, AI TEFs, and Data Space initiatives.
- **PRIMUS:** Addresses digital product passports and data flows for materials tracking. High relevance for technical alignment and data space architecture.
- **Data4Circ:** is developing an innovative data-sharing framework to help European manufacturing prepare for a more sustainable future. The mission is to improve access to the information factories need to efficiently and safely recover, recycle, and reuse materials, and move towards a circular economy.
- **Data4Industry-X,** aims to build a trusted data exchange solution to improve competitiveness and reduce the carbon footprint of large global industrial organisations operating in multiple countries.
- See also <https://data4circ.eu/related-projects/> for related projects to be contacted.

We can also reference a completed project with similarities to CircPlastX, which can serve as a useful example to guide and inspire our future processes (*noting that collaboration will differ from that with an ongoing project*):

- **DigiPrime:** (H2020): Establishes a digital platform for circular economy applications in manufacturing. Strong alignment on data sharing tools and governance

### 1.10.2 Creation and Maintenance of a Project Database

A structured database has been created, capturing key elements such as:

- Project title and acronym
- Duration and funding source
- Objectives and thematic focus
- Lead and partner organisations
- Main outputs and tools developed
- Contact information
- Relevance to ongoing work (technical, dissemination, stakeholder engagement)

This database is continuously updated through:

- Partner contributions and insights
- Monitoring platforms such as CORDIS, the Digital Europe Programme (DEP) dashboard, and Horizon Europe (HEU) project listings
- Attending relevant events and participating in EU-wide community forums (e.g., data space alliances, circularity initiatives)

### 1.10.3 Use of Mapping Results

The mapped projects serve three main purposes:

- **Technical alignment:** Identify reusable tools, frameworks, or architectures.
- **Dissemination:** Coordinate communication campaigns and events.
- **Stakeholder engagement:** Leverage existing networks to enhance outreach to SMEs, policymakers, and technical communities.

## 1.11 Partnerships with European Digital Innovation Hubs

### 1.11.1 Role of EDIHs in Supporting Circular Data Spaces

DIHs and EDIHs act as regional enablers for digital transformation, especially for SMEs. They offer access to testing environments, expert support, and training services. In the context of data spaces for circularity, DIHs can:

- Support technology adoption (e.g., data sharing platforms)
- Train SMEs in data governance, interoperability, and compliance
- Provide technical infrastructures for pilot deployment

### 1.11.2 Identification of Relevant EDIHs

A comprehensive mapping exercise has been conducted to identify and analyse European Digital Innovation Hubs (EDIHs) that demonstrate thematic and technological relevance in key areas such as advanced manufacturing, plastics and polymers, and the circular economy. The aim of this exercise is to better understand the current landscape of DIHs that can support digital and sustainable transformation within the plastics and composites industry. Special attention has been given to identifying DIHs that offer expertise, services, or infrastructures directly aligned with these domains. This targeted focus helps to ensure that the most relevant innovation actors are captured in relation to industrial digitalisation and circularity objectives. In particular, the analysis has centred on the following entities:

- **EDIH4MANU** which supports manufacturing SMEs in digital adoption. Relevant for pilot site support.

- **EDIH on Circular Economy:** Directly aligned with the thematic focus on sustainability and circularity.
- **EasyHPC:** This Greek EDIH offers access to high-performance computing resources for data processing in industrial settings.
- **GreenPulse5.0:** Supports green digital innovation, especially in waste valorization.
- **Polytronics:** Specializes in materials innovation, valuable for polymer tracking and analytics.
- **Addsmart:** Focuses on smart manufacturing processes and data integration.

### 1.11.3 Engagement Strategy

To initiate collaboration with EDIHs:

- Establish initial contacts via email, LinkedIn, and direct outreach at relevant events.
- Organize meetings to present the project and explore common interests.
- Share use cases and data space service concepts to identify collaboration points.

### 1.11.4 Leveraging EDIH Services for SME Engagement

EDIHs provide key services that can be leveraged to assist SMEs:

- Training modules on data space tools and best practices
- Infrastructure for test-before-invest pilots
- Matchmaking with technology providers
- Support in applying EU and national funding schemes for digital innovation

## 1.12 Synergies identified and leveraged

### 1.12.1 Technical synergies:

To avoid duplication and ensure coherence, technical alignment is prioritized with projects and initiatives developing data space building blocks and governance frameworks. For instance:

1. CircPlastX collaborates with the Data Spaces Support Centre (DSSC), which supports the development of sector-specific data spaces and reinforces European digital sovereignty.
2. Additional alignment is pursued through engagement with the Data Spaces Business Alliance (DSBA), providing guidelines, architecture blueprints, and industry use cases that support interoperable data space deployment.

3. Architectural components and data models from DigiPrime, PRIMUS, and C-SERVEES are reused to ensure technical coherence.

### 1.12.2 Dissemination synergies:

Joint outreach activities have been initiated or planned, leveraging common stakeholder bases:

1. Co-organized webinars and workshops with DIHs and EU projects to increase visibility and attract SMEs, clusters, and policymakers.
2. Joint presentations at thematic conferences and exhibitions (e.g., S3 or K fair).

### 1.12.3 Training synergies:

Training synergies have been activated through integration of educational content:

1. Modules developed are being integrated into EDIH training offers to reach wider SME audiences.
2. Contribute to DSSC with expertise on vocabulary development, data standards in manufacturing, legal requirements and their impacts on data spaces, and business models and organisational challenges
3. Leverage consortium networks and expertise to deliver targeted, multilingual training

### 1.12.4 Standardisation synergies:

Coordinate with projects and associations involved in standards (e.g., through TC261, TC249) to align project outputs with evolving standards for circular plastics data.

#### 1. ISO/TC 61 - Plastics

This standardisation covers the terminology, test methods, and specifications for plastics materials and related products, including assembly processes → polymer adhesives, sealing, joining and welding.

#### 2. CEN/TC 261 – Packaging

This Standard focuses on packaging standards, including design-for-recycling, material recovery, and biodegradability of plastic packaging.

#### 3. CEN/TC 411 – Bio-based Products

This Standard addresses LCA and sustainability criteria for bio-based plastics and materials, strongly aligned with circularity and data-driven evaluation

#### 4. CEN/TC 473 – Circular Economy

This Standard operates more broadly on circularity frameworks, including topics such as Extended Producer Responsibility (EPR), which can intersect with data space governance.

## 1.13 Summary of ongoing discussions or planned joint actions

A number of promising collaborations are ongoing or in development. These joint actions aim to strengthen the overall impact and alignment of the project:

### 1.13.1 Standardisation Workshops

- Coordination is being explored with members of **CEN/TC 261** and **TC 473** to organize workshops that collect multi-stakeholder inputs on future standardisation needs. These events aim to align emerging data space solutions with industry consensus and regulatory expectations.

### 1.13.2 Webinars

- A joint webinar series is being developed in partnership with other actors. The series will cover topics including regulatory compliance, SME onboarding, and the reuse of data-driven tools across projects. These events aim to foster knowledge exchange and peer learning.

### 1.13.3 Dissemination Task Force

- CircPlastX has proposed the creation of a joint dissemination working group with selected projects. The task force will coordinate event calendars, synchronize messaging strategies, and pool outreach efforts to maximize visibility and impact.

## 4. Conclusions and future work

The CircPlastX project is founded on the conviction that data is a strategic asset for accelerating circularity and compliance within the plastics sector. By creating a trusted and interoperable data space, the project does not only address pressing environmental and regulatory challenges but also opens new opportunities for innovation, competitiveness, and sustainable growth. The introduction of mechanisms such as Digital Product Passports, Compliance-as-Code, Gaia-X compatibility, and robust consent and identity management illustrates that the technical framework is solid. Yet, the long-term success of CircPlastX depends equally on how effectively it engages the ecosystem of stakeholders who will ultimately shape, use, and sustain the data space.

Deliverable D5.4 plays a crucial role in this process. By mapping, clustering, and engaging European plasturgy stakeholders, the deliverable ensures that the project is firmly anchored in the needs, priorities, and capacities of diverse actors across the plastics value chain. Mapping identifies influence, expertise, and data ownership. Clustering helps to create coherent groups of actors, whether policymakers, SMEs, providers, recyclers, industrial players, or technology providers—so that engagement strategies can be targeted, efficient, and mutually beneficial. Engagement turns this analysis into action through workshops, webinars, communication and dissemination, pilot projects, and partnerships with European initiatives, Digital Innovation Hubs, and Smart Specialisation networks.

The deliverable highlights that stakeholder activities are central to CircPlastX's mission. Systematically mapping actors, which describes clustering activities and outlines an engagement plan, is essential for building a dynamic ecosystem. This clarifies roles, establishes early feedback loops, delivers tangible value, anticipates barriers, bridges knowledge gaps, and fosters trust among actors who might otherwise work separately. The stakeholder strategy also strengthens alignment with European priorities. Reliable data is vital for compliance with CSRD, REACH, and the EU Taxonomy, and for implementing the Digital Product Passport. Stakeholders are crucial in supplying, verifying, and using this data. The Data Governance Act also requires clear and reliable ways to share data, which can only happen if stakeholders are involved from the start. Through clustering and collaboration, CircPlastX turns these frameworks into practical and industry-grounded realities.

As a conclusion, stakeholder mapping, clustering, and engagement are strategic enablers of the CircPlastX project. They guarantee that the data space is not developed in isolation but in close cooperation with those who will benefit from it and contribute to it. This inclusive, collaborative approach ensures that the European project CircPlastx remains relevant, scalable, and resilient beyond its three-year lifetime. It creates the foundation for a trusted data ecosystem that supports circularity, drives compliance, and enhances innovation across the European plastics industry. By embedding stakeholder input throughout its development, CircPlastX sets the stage for long-term adoption, external collaboration, and sustainability assuring that the project's impact extends well beyond its formal completion.