Interreg CENTRAL EUROPE

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CURIOST

Circular design and development of sustainable products in 4 key sectors in Central Europe

Version 1

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STATE OF THE ART IN SUSTAINABLE AND CIRCULAR PRODUCT DEVELOPMENT

RESULT D 1.1.1

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1. INTRODUCTION

This report for deliverable D 1.1.1 for the CURIOST project analyzes the status quo regarding the implementation of the sustainability strategy in the partner countries. The following procedure was used for this purpose:

For this purpose, a discussion amongst the group has taken place at the Kick-off meeting. In this discussion it was decided to gather the knowledge by conducting interviews with companies, separated for the 4 sectors packaging, mechanics, plastics and building construction according to the contract. In case an interview turned out to go over these sectors, we decided not to ignore the information, but to gather them under a "general" sector. The questions in the interview should be categorized according to the SWOT-Analysis. S = Strength (what is good, inside view), W = Weaknesses (what is bad, inside view), O = Opportunities (what is positive, outside view) and T = Threats (what is bad, outside view).
The second view angle was defined with the PESTLE model. Whereas the SWOT served the quality categorization of the answers, the PESTLE was taken to get a view into the different aspects of sustainability. PESTLE stands for P = Politics, E = Economy, S = Social, T = Technology, L = Legal and E = Environment.
In order to give the interviews a framework, a guideline for the interviews was established.

Interviews were conducted with relevant companies in each of the partner countries and their statements were classified according to the SWOT-analysis. This data from the partners formed the basis for the analysis.

2. PLANNED WORK

In order to achieve the best project's goals based on the procedure. As described in Chapter 1, we decided to focus on company interviews instead of relying on desk research, questionnaires and brochures.
Through face-to-face or virtual conversations, interviews provide rich, qualitative insights that other methods may miss. The ability to ask follow-up questions enables interviewers to delve deeper into topics, uncovering motivations, emotions, and contextual factors behind responses. Interviews can be tailored in real-time to explore specific areas of interest based on the participant's expertise or perspective.
Unlike questionnaires or surveys, which are fixed, interviews offer the flexibility to adjust the direction of the conversation based on the flow of information. This adaptability ensures more relevant and comprehensive data collection. Misunderstandings or ambiguous responses can be clarified instantly, reducing the likelihood of misinterpreted data.
Interviews foster a personal connection, encouraging participants to share more openly. This is particularly valuable for sensitive or complex topics that may not be

effectively addressed through impersonal methods. Tone of voice, and facial expressions can provide additional layers of meaning and help interpret responses more accurately.
Interviews allow to gain insight into the participant's specific context or environment, which is often absent in desk research or standardized surveys. This contextual understanding can lead to more actionable and relevant insights. In contrast to broad statistical patterns from questionnaires, interviews often yield case-specific details that can inform deeper analysis or highlight unique scenarios.
Interviews often produce detailed, open-ended responses, capturing complex thoughts that are hard to articulate in predefined survey options.
While desk research is limited to existing information and questionnaires to predefined questions, interviews can uncover new themes and ideas not previously considered.
Participants in interviews are more likely to stay engaged as the conversation is interactive and dynamic, whereas respondents to questionnaires might provide rushed or incomplete answers. Especially in qualitative research, interviews can have a higher success rate in obtaining meaningful data compared to written or desk-based approaches, where drop-off rates or incomplete responses can be common.
While interviews are time-intensive and resource-heavy, these challenges are often offset by the depth and richness of the data obtained. Desk research might be less expensive and quicker but lacks specificity, while questionnaires might reach a larger audience but often sacrifice depth for breadth.
Conducting interviews excels in scenarios requiring detailed, personalized, and contextual information. It is particularly advantageous for exploratory research, understanding complex behaviors, or gaining insights into sensitive topics. While other methods like desk research or questionnaires have their own merits—such as scalability or cost-efficiency—they cannot match the depth, adaptability, and human connection offered by interviews. For researchers prioritizing quality over quantity, interviews are a superior choice.
In order to gain best result and make them comparable amongst the different partners and countries an Interview Guideline was developed.

2. IMPLEMENTATION OF WORK

In order to gain best result and make them comparable amongst the different partners and countries an Interview Guideline was developed.

Objectives of the interview guide
The aim of the interviews is to gain an overview of the status of the circular economy in the partner countries on the focus topics: (1) mechanics and mechatronics, (2) packaging, (3) plastics and (4) construction, in order to plan further activities from this baseline.

- The guideline acts as the "common thread" for the survey. It therefore fulfills the following functions:
- Thematic framing and focus
- List of all relevant topics that must be addressed in the interview

- Better comparability of data through thematic framing
- Structuring the entire communication process

Basic assumptions on which the creation of the guide is based.
The motivation to promote the circular economy is based on the fact that society and companies are currently undergoing (or have to undergo) a transformation towards more environmentally friendly use of raw materials and a drastic reduction in emissions. This is uncharted territory for many. There is currently no universally valid blueprint for a transformation towards sustainability, which is being driven decisively by the circular economy. Individual approaches and procedures are being tested in order to gradually arrive at an overall strategy, like a large jigsaw puzzle. Within CURIOST, the first step is to record the status quo of the circular economy, which can be quite different in the partner countries, in order to establish a sound basis for further action in the project. The overall aim of the project is to accelerate the transformation towards sustainability.
For this reason, the interviews are an interplay: finding out what the interviewees think the current status is, what is needed, what the customers have in mind and introducing possibilities on the part of the interviewer to see whether these ideas are accepted. These points of view need to be brought together (voice of the customer and voice of the product).

Structuring the interviews
In order to conduct a successful interview campaign, the focus topics are used as a guide:

(1) Mechanics and mechatronics
(2) Packaging
(3) Plastics
(4) Construction

Mechanics and mechatronics
The following teams work for the circular economy "Mechanics and Mechatronics":
AT, IT, HR, HU, PL, DE

Packaging
The following teams work for the circular economy "Packaging":
AT, IT, HU, PL, SK

Plastics
The following teams work for the circular economy "Plastics":
AT, IT, HR, HU, PL, DE, SK

Construction
The following teams work for the circular economy "Construction":
HR, HU, DE

Category of the interviewee

	Microenterprises (<20)	SME (<250)	Middle (<2000)
The Company			
Research Institution			
Association / Intermediary			

	C-level	Division management	Group management
Expert witness			
Senior Expert			
Junior Expert			

Transformation status levels for SMEs
0: no activities in the circular economy
1: First partial ideas / experiments on the circular economy
2: Circular economy topics introduced in the industry (technical, organizational)
3: Fully integrated circular economy established.

Orientation of the questions:
The questions should be based on the PESTLE model.
PESTLE is an acronym for:



1. Political
2. Economic
3. Social
4. Technological
5. Legal
6. Environmental

Political

Political factors play an important role in the transformation.
The political influencing factors include:

- Legislation
- Foreign policy
- Trade policy
- Tax regulations
- Subsidies
- Stability of the political system

Economic

Economic factors include the economic situation of a country and other information that a company needs to know about its sales market. This is where an assessment is made as to whether and how a circular economy will be "worthwhile".
The economic influencing factors include

- Economic growth
- Population size
- Interest rate level
- Inflation rate
- Educational level
- Exchange rates
- Trade
- Tax system
- Income and purchasing power
- Unemployment
- Import and export transactions

Social

Socio-cultural influencing factors refer to the structure of society and to special features that a company should take into account when introducing a circular economy.
Socio-cultural influencing factors include:

- Social class
- Language skills
- Educational level
- Values
- Religion
- Understanding of roles
- Demographic development
- Lifestyle
- Mobility
- Purchasing behavior

Technological

Technological factors for a circular economy are also important for a company's strategic decisions, as technological developments can influence both business processes and business models.
Technical developments can take place in the following areas:

- Information technology
- Communication technology
- Logistics
- Infrastructure
- Energy supply
- Digitization
- Research funds
- Public and private research and development expenditure (R&D)

Legal
Legal factors play a major role in a company's scope for action, as different legal systems and the legal awareness of the population influence decisions.
The legal factors include:

- Legislation
- Competition law
- Environmental law
- Antitrust law
- Tax law
- Labor law
- Legal system
- Legal awareness
- Product liability

Environmental
The ecological-geographical factors describe the environment of a company as well as the conditions and available resources for a circular economy.
The ecological-geographical influencing factors include:

- Environmental requirements
- emissions
- Climate
- Infrastructure
- Availability of raw material sources
- Conscious consumer behavior
- Energy sources
- Consumption
- Recycling
- Waste disposal

Interview process - Organization
An Excel spreadsheet is made available on the shared drive. Each partner enters the experts they have identified in this table. These should consist of different company categories, sizes and expertise. The broader the spectrum covered, the better the overview of the state of the art.
The interview is conducted according to the guidelines presented in the next chapter. The date of the interview and the interviewee's contact details are recorded in the table. After the interview, a two-stage analysis of the information obtained is carried out:

- SWOT analysis in which the strengths and weaknesses as well as untapped potential and obstacles are summarized. It may be helpful to use the interview recording for this purpose.
- From the SWOT analysis, the gaps and challenges are filtered out again specifically and in a concentrated manner (can also be identical to the opportunities and threads)

The SWOT analysis and the gaps and challenges information is recorded in an Excel spreadsheet. The naming convention is as follows:

XX-ZZZZ-YY-company-name-interviewer....
XX: Number of the contact from the expert list
ZZZZ: SWOT or GaCh
YY: Country (AT, GE, HU, HR, SK, IT, PL)
then free text

Timeline
The Excel table with the expert contacts should be filled in by all partners by the end of June 24.
The interviews will start in July. They will be organized, conducted and documented by the partners. Once an interview has been completed, the files will be uploaded to the shared drive. BI as work package leader will evaluate the status of the interviews conducted (number) every two weeks and inform all partners accordingly. The interviews should be completed by the end of August. It is clear that this activity will take place during the vacation period and it may be difficult to conduct the interviews. Nevertheless, work must be done on this. At the end of August, an inventory will be taken and a decision made on how to proceed.

Guidelines for conducting the interview
These guidelines are intended to help conduct a structured interview lasting approx. 1 hour.

1. **Preparation & introduction**

- Greeting & small talk with the aim of loosening up the conversation mood at the start
- Thank you for your participation

2. Information phase

	Contents
Voluntariness:	If you don't want to do something, you don't have to, of course. You can stop the interview at any time if you do not feel comfortable with it. Important: This will of course have no disadvantages or consequences!
Data protection:	Explain and obtain consent verbally. For personal interviews by form, for online interviews by video recording
Confidentiality:	The interview will be recorded so that it can be written down and analyzed afterwards. Your details are of course confidential.
Organizational matters:	Time frame of the interview and objective

3. Warm-up phase

	Contents
Access:	Brief presentation of the CURIOST project based on the project presentation (slides)
Introduction round:	Brief introduction of all participants
Questions about the interview partner:	What position do you hold? (if not already learned in the introductory round and not clear from question 1, then ask: What activities are you specifically responsible for? How long have you been with the company?)
Questions about the company (association):	What products does your company manufacture / what services does your company offer? Where do you stand in terms of technology experience (laboratory, pilot, scaling, industrialized)? Who do you sell your products / services to? How many employees does the company have? When interviewing associations, relate these questions to the sector (how many companies are represented, how many SMEs are involved? Which markets are served?)

4. Classification Company:

	Contents
Focus topic:	In which focus sector(s) are you active (mechanics and mechatronics, packaging, plastics or building and construction)?

Transformation level:	Where is the company currently in the transformation process (0; 1; 2; 3)?
transformation level one step further:	What factors prevent a step further in the transformation level (PESTLE)? 1. Political 2. Economic 3. Social 4. Technological 5. Legal 6. Environmental
Future prospects:	What steps are you planning to take in the future to further develop sustainability?
Needs:	What is needed so that you can take the next step?
Offers:	We offer: (first only ideas - to be discussed!!!) - Networking - Training courses - Webinars - Best practice events - Networking with science and research - Transformational coaching - ... What would interest you?

5. Conclusion & final phase

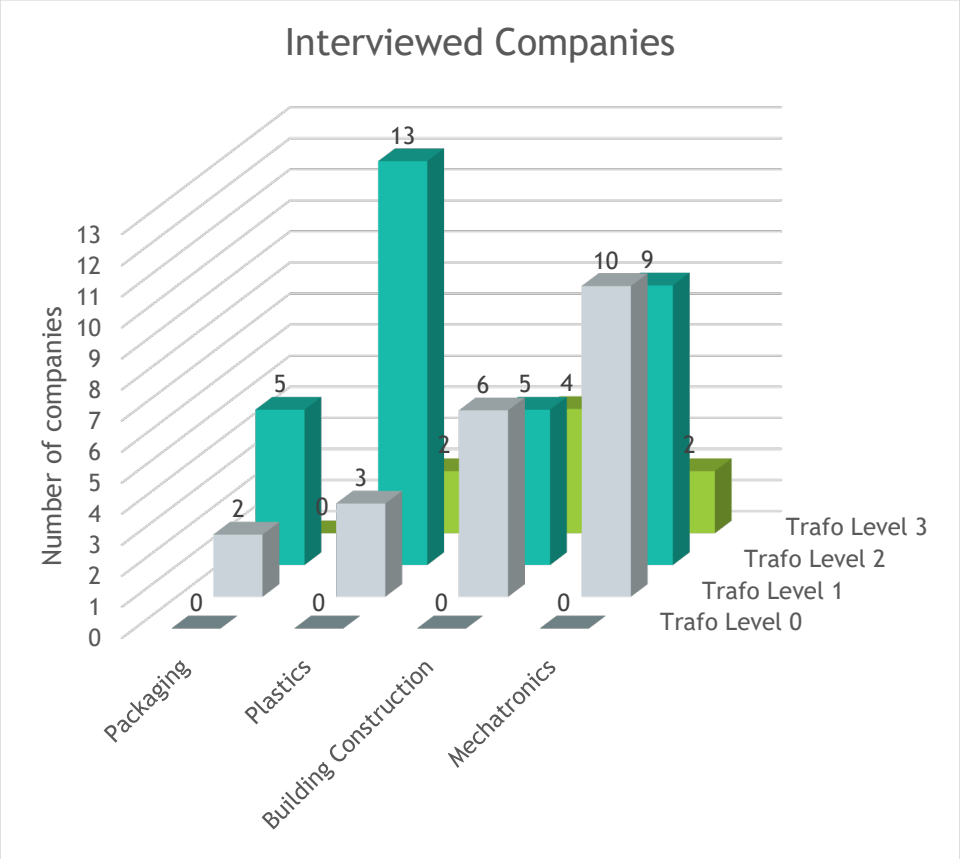
	Contents
General question	Are there any other things from your side that we didn't cover in the interview but that you would like to add?
Summary	I would like to reiterate that we have discussed ..... Are there anything else you would like to add that we didn't cover in the interview?
Outlook	The project aims to.../in the future... developed.../We will be happy to keep you up to date on this.

6. Follow-up

- Record personal impression of the interview situation & interview partner (in writing, audio track, ...)
- Contact the interview partner promptly by e-mail. Content should be limited to an acknowledgement, a brief summary of the interview and consent to further contact.

4. RESULTS

The final result of the analyses of the interviews was a set of SWOT analysis tables for different companies in the 4 sectors, in all PP countries. These tables form the database for further analysis within subsequent tasks like D.1.1.2.
In order to find out what is the transformation maturity of different companies for the different sectors we compiled the following graphic. The maturity level (0 – 3: see definition in the interview guideline) for the different sectors (plastics, packaging, building & construction and mechanics & mechatronics) and the number of companies that are operating in this range are displayed.
One can clearly see everybody is on the way to transformation. The awareness that something has to be done is overall present (Trafo Level 0). Looking at the packaging sector, we see that most of the companies are on transformation level 1 and 2, with the majority on level 2. For plastics, we see a clear majority on transformation level 2 and some even on level 3. Building & construction is widespread over levels 1 to 3. So here is the most diversity. In mechanics & mechatronics the focus is on level 1 and 2. Concluding, there is room left for improvement and for going to level 3.



5. CONCLUSION

This first task forms the baseline for further analysis in order to understand where companies are standing, what are common strengths and weaknesses, opportunities and threats in the different countries and what are the best practices that are widely displayed amongst the partner countries.

The performed interviews show that there is a general awareness of the need for transformation in all 4 target sectors, in detail:

- **Plastics**: A majority are at level 2, with some reaching level 3.
- **Packaging**: Most companies are at levels 1 and 2, with the majority at level 2.
- **Building & Construction**: Companies are spread across levels 1 to 3, showing the greatest diversity.
- **Mechanics & Mechatronics**: Most companies are at levels 1 and 2.

The plastics and packaging sectors show higher transformation levels than the other sectors. The sector of mechanics & mechatronics is lagging behind the other sectors, as it has started to consider the transformation to a more circular economy later than the others.

While progress is evident in all sectors, there remains potential for all companies to advance to level 3.

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