Traceability across circular value chains: How to unlock its potential and mitigate challenges?

10 June, 11:00AM (CEST) | Webinar

EU GREEN WEEK 2021 PARTNER EVENT – EVENT SUMMARY

Lack of visibility regarding flows of materials and their sustainability impact can limit opportunities for a circular economy. The objective of this event is to discuss available traceability solutions that can be used by companies and customers to have a better picture of products and materials. The discussion will also focus on the existing challenges and policies that are needed to further boost such solutions for circular business models.

11:00 Welcome
Vasileios Rizos, Research Fellow & Head of Sustainable Resources and Circular Economy, CEPS.

11:05 Unlocking the potential of traceability across circular value chains and mitigating challenges
Maria Teresa Pisani, Economic Affairs Officer, Economic Cooperation and Trade Division, United Nations Economic Commission for Europe

Karolin Langfeldt, Client Partner/ Strategic Development, Circulor

Sebastian Schmittner, Senior Specialist New Technologies, European EPC Competence Center GmbH (EECC)

Maider Arieta-Araunabeña, R&D expert, Indumetal Recycling

12:00 Discussion and Q&A with audience
moderated by Vasileios Rizos, Research Fellow & Head of Sustainable Resources and Circular Economy, CEPS

12:30 Conclusions

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Welcome by Vasileios Rizos, Research Fellow & Head of Sustainable Resources and Circular Economy, CEPS

Welcome remarks were given by Vasileios Rizos who gave an introduction of the speakers and an overview of the focus of the event.

Presentation by Maria Teresa Pisani, Economic Affairs Officer, Economic Cooperation and Trade Division, United Nations Economic Commission for Europe

Maria Teresa Pisani focused her presentation on the main highlights of an ongoing UNECE project aimed at providing solutions to enhance traceability and transparency in the garment and footwear industry. This industry features complex and fragmented global value chains and has high environmental and social impacts which cannot be easily traced along the supply chain. Traceability and transparency are therefore emerging as key priorities and enablers to advance sustainability and circularity. As a first key driver in improving traceability and transparency, Ms Pisani underlined the important role of consumers. Consumers are increasing their demand for sustainable products and are ready to pay more for them, but they still lack trust on the information they get on “who, where and how” the clothes are made. Secondly, she highlighted the importance of civil society, investors and regulators in raising attention on the credibility of sustainability claims put forward by the industry, whose voluntary initiatives have proved insufficient so far. There is an increasing body of legislation at global, EU and national level that puts emphasis on the importance of transparency and traceability in the industry. Such examples include legal requirements on due diligence which are currently being discussed in the context of the Batter Regulation proposal, rules on non-financial reporting and the EU Circular Economy Action Plan. As a third important aspect, she emphasised that although information to support responsible choices is often available along the value chain, it can be segregated and coded in such a way. This makes the flow of information among different actors a difficult task. The industry is well aware of the high reputational risk at stake and of the need to have a harmonized and standardized system for the exchange of data and information. This system should also allow accessing the upstream level and improving the connection between the manufacturing process and the sourcing of raw materials, where the main bottlenecks are at the moment.

Ms Pisani then presented a toolbox produced as part of the UNECE project, which contains policy recommendations, implementation guidelines and information exchange standards. Since the whole projects is being piloted in a blockchain environment, she underlined the important role of blockchain in supporting exchange of data and information and the trusted verification of their reliability. Among the policy recommendations presented, recommendation No. 46 includes five sets of measures that should be taken at a governmental level. First, policy coherence is needed at international, regional and national level, to establish the level playing field and the legal certainty demanded by industry. It was raised that we need to get a clear understanding of the minimum set of information needed to trace and make transparent sustainability performances of products, processes and facilities along the entire value chain. This minimum set of data is defined in a toolbox that provides a business and data model. This model defines how companies should formulate their claims, identify the assets to be traced and the information that needs to be exchanged with the main actors of the value chain. The second element is the importance of financial and non-financial incentives (e.g., sustainable procurements, technology transfer, non-financial reporting requirements). The third point concerns the importance of research and development for innovation, for instance in sustainable materials, recycling and tracing solutions. The fourth concerns awareness and education which are particularly important in covering the skill and
digital gap at the level of SMEs. Finally, given the afore mentioned importance of a coordinated approach, she emphasised the importance of multi-stakeholder collaborative initiatives in establishing PPPs. To conclude her introductory remark, Ms. Pisani recalled the importance of commitment and collaboration among all stakeholders along the value chain and underlined the need to ensure that any solution and tool should be opensource, inclusive and have a strong capacity building component. She also remarked the important role of policy makers and regulators, who have to create the necessary ecosystem to allow the engagement of all stakeholders, facilitate the interoperability of the various solutions, develop the necessary supporting framework for data privacy and security and adopt a common data model for standardised information exchange.

Presentation by Sebastian Schmittner, Senior Specialist New Technologies, European EPC Competence Center GmbH (EECC)

The presentation delivered by Sebastian Schmittner focused on the achievements and the lessons learnt from CIRC4Life and other projects involving the application of traceability solutions. As part of CIRC4Life, Mr Schmittner and the EECC developed and implemented a traceability system that allowed to track not only what happens to products throughout the value chains, but also the impacts associated with all the process steps involved. He explained that this dynamic impact assessment tool turned particularly useful not only for producers, who could monitor all production processes, but also for end consumers. Specifically, it helped enriching traceability information with impacts associated with various products steps and enabled end-users to make more informed buying decisions. This system represents a step forward in comparison to the more static analysis of, for instance, the carbon footprint of products. In fact, this dynamic system takes measured, product-specific data into account, thereby providing a much more accurate and trustworthy figure.

Mr. Schmittner continued his presentation by highlighting the importance of traceability solutions for the recycling of products. He reminded that the flow of information from the production processes is essential for the proper recycling of products, but most of this information are currently lost at the point of sale. He therefore explained how the transmission of information can enhance not only the recycling, but also the repair and refurbishment of products, including complex ones such as electronic devices. Within CIRC4Life, a system to track electronics beyond the end-of-life stage was developed. Given that return rates for electronics are low, it was important to create transparency and convince end users that the product was going to be repaired/refurbished or properly recycled. Moreover, a reward system was developed to incentivize people to dispose their broken electronics. In the context of the application of traceability solutions to enhance recycling of products, he also mentioned another ongoing project, named R - Cycle, which is developing a marking technology to record and transmit information on the materials included in plastic packaging and ease the sorting of secondary raw materials at the recycling stage. Finally, Mr Schmittner concluded his speech by recalling the essential role of regulations in incentivising the implementation of traceability solutions, boosting recycling rates and increasing circularity in several supply chains.
Maider Arieta-Araunabeña provided a presentation on the results achieved by Indumetal Recycling, a company specialized in the integrated management of Waste Electrical and Electronic Equipment (WEEE) that took part in the CIRC4Life project. After a short presentation of the company, Ms. Arieta-Araunabeña briefly set out the main challenges and opportunities related to the management of WEEE, namely the increasing amount of waste generated and the low recycling rates. She then presented the business model developed by Indumetal Recycling in Getxo (Basque Country, Spain) in the context of CIRC4Life. The demonstration consisted of a new collection system based on a) two intelligent bins specifically conceived for electronic waste and b) a mobile app that allowed end users to interact with the intelligent bins, check the route of their disposed products and redeem the rewards obtained through their recycling actions. In this framework, CIRC4Life developed the following traceability tools: a QR code for operating with the intelligent bin, which identified the end users at the moment of disposal of the waste; a bar code generated by the bin, which was stuck to the WEEE and allowed linking the disposed equipment with the end user; a traceability module used by the recycling company for scanning the bar code and check the waste quality; and finally, a QR code used by end users to get the incentives.

Ms. Arieta-Araunabeña then listed the lessons learnt during the project, its main limitations as well as the challenges that will need to be faced in the future. Among the preliminary conclusions that can be drawn from the project, she underlined the great interest gathered from local stakeholders, including public administrations, schools and citizens. Nonetheless, she mentioned that consumers awareness of the challenges related to the WEEE stream still needs to be increased. Regarding the technical issues emerged during the project, she explained that both the location and the accessibility of bins may have posed some limitation, and that the system presented high labour costs, due to the required frequency of bin emptying and the need to scan each individual device one by one. Despite the above limitations, however, she remarked the important progresses achieved thanks to the new collection system, specifically in the sorting of WEEE. In terms of challenges that will need to be faced in the future, she grouped them under three main categories: economic challenges, such as the need to finance these new collection systems and the need to reduce labour costs in the recycling plants; technological challenges, comprising issues such as the need to improve the design of bins and simplifying the process for end users; finally, social challenges, encompassing the need to include end-users in the process and scale up these solutions to other regions.

Karolin Langfeldt offered a presentation on the activities of Circulor, a technology company which provides software solutions that enable the tracking of the flow of goods and materials through supply chains, thereby allowing its customers to demonstrate responsible sourcing and monitor their impacts. After a brief presentation of the history of the company and of its main customers and partners, Ms. Langfeldt described the traceability solutions provided by Circulor. The company applies a system that enables the tracking of materials such as cobalt which are often difficult to trace because they undergo different changes of physical and chemical composition along the value chain. This is done by creating “digital twins” of the commodity extracted directly at the mine site, which then follows the resource all the way until the final product. The whole process is backed by the use of blockchain and other advanced technologies, such as facial recognition and GPS fencing. In addition to this, she explained that the use of machine learning allows Circulor to encode business rules into the solution, and therefore detect suspect activities at each stage of the value chain.
Ms. Langfeldt then focused her presentation on the specific solutions offered by Circulor in the EV battery value chain. Within this sector, Circulor has been mostly focusing on the provenance of materials, but in view of the coming Battery Regulation, expected in 2022, they aim to provide a battery transparency solution to cover the full life cycle of batteries, including the recycling process of materials. To this end, Circulor developed a Battery Passport Management system to collect all the data that will be required by the regulation, namely: battery’s general information, data on carbon footprint and responsible sourcing, technical parameters, dismantling and safety data and regulatory compliance. The data will then be shared with the European Electronic Exchange System.

Q&A section moderated by Vasileios Rizos

**Question to Maria Teresa Pisani**

*A number of initiatives on traceability and transparency are being implemented in several supply chains. How can we ensure consistency among these initiatives? And who should take a coordinating role?*

**Answer:** There is indeed a need for coherence and coordination of the various ongoing policy initiatives. At the EU level, this issue has been already put forward by the industry and various member states. There are multiple DGs involved in legislative work on traceability and transparency and the European Commission has established an internal mechanism to ensure coordination, synergies and complementarities and avoid contradictory provisions. It is important to have neutral platforms in order to lead and push coordination. In addition to this, it is also essential to involve the producing countries who are active in the upstream segments of value chains. In this regard, development & cooperation tools or trade agreements are important instruments that can be used to ensure alignment and coordination outside the EU. In terms of the applicability of UNECE approach and standards to other sectors, even though there will be inevitable differences related to sector-specific environmental, social or health & safety hotspots and risks, most of the general traceability and transparency principles are relevant and can be applied across all sectors. There are in fact common requirements when it comes to, for instance, the definition of sustainability claims, the identification of assets or the identification of key actors involved.

**Question**

*Data privacy concerns: how do you ensure that all the actors along the supply chain agree to share their data? Is it necessary to have an agreement for every step of the value chain? How do you act in those cases where there is not an underlying regulatory framework on the subject?*

**Answer by Sebastian Schmittner:** Companies are sensitive about data on business processes, thus cross-company traceability solutions are often delicate to manage. In those sectors sharing a certain minimum set of information is legally required and there is no competitive advantage in not sharing it. But when there is no enforcement, a strong economic case is needed to incentivise companies to share their data.

**Answer by Karolin Langfeldt:** Looking at the European EV batteries sector, for instance, there are several newly established giga factories that are willing to implement traceability solutions at a very early stage and be transparent from the very beginning on. But transparency does not mean that all data is shared publicly or available to all supply chain participants. The good thing about blockchain is
that it lets you define access and writing rights very precisely and also enables you to share data “off” and “on” chain and also encrypted.

Answer by Maria Teresa Pisani: The issue of data privacy and security has been very challenging also in the implementation of the UNECE project on the garment and footwear industry. In general, having a minimum set of information legally required to be shared for traceability and transparency is essential to create a level playing field and support leading companies who are ready to disclose their information.

Question to Maider Arieta-Araunabeña
What does Indumetal Recycling do to address data privacy concerns?

Answer: As a recycling company, Indumetal Recycling guarantees that all collected devices that are going to be recycled are dismantled and that data is destroyed. In case the devices are intended to be remanufactured, Indumetal Recycling has a specific procedure that involves several steps; one of them is the formatting of the devices to ensure that data is no longer accessible.

Question to Maria Teresa Pisani
There were a number of initiatives led by UNECE that turned into European laws. Can you share some of these examples?

Answer: Some of the principles and standards on information exchange developed by UNECE have indeed been reflected in EU regulations. Some of them have been picked up by the industry as the main reference standards. As a few examples, the UN/EDIFACT is now widely used in the transport and logistic industry, while the standards on information exchange for the fishing industry have been made mandatory by the new regulation issued by DG MARE and have been included in bilateral trade agreements between the EU and fish exporting countries.

Question to Sebastian Schmittner
Did the labels developed within CiRC4Life risk to be confusing for consumers? And did you learn any specific lesson on the standards that were applied in CiRC4Life?

Answer: Transparency to the end consumer is extremely important, but there is indeed a risk to overload them with various pieces of similar information. There is no doubt, however, that creating more transparency can encourage more sustainable buying decisions from consumers. As regards the traceability standards applied in CiRC4life, they were already in use in logistics and for FMCGs. Their extension to include also the track and trace of impacts will inevitably include more efforts and higher costs, so it is about making a business case. In the short term, making the business more transparent will be beneficial for the business itself, but it can also eventually benefit all supply chain actors.

Question to Sebastian Schmittner
The European Commission will be in the process of assessing the possibility to develop a digital passport for different product groups. Do you have any views on the sectors where it could be easier to integrate a life cycle traceability tools?

Answer: In CiRC4life the focus was on the electronic sector, which is a very complex one. The plastic and agri-food sectors, for instance, are much simpler. In general, the number of companies involved in a supply chain is a good proxy of how difficult it will be to apply traceability solutions.
Questions to Karolin Langfeldt

*Does the “mass balance approach” mean that Circulor accepts working with companies that do not guarantee that all their input is responsibly sourced?*

*In a context of cross-supply chain data support, are you evaluating other approaches than HyperLedger?*

It is not Circulor responsibility to define which companies are on the supply chain. Circulor works with the supply chain participants of their clients, so it is up to the client to comply with the regulation and to achieve their own sustainability objective. What Circulor provides is a transparency solution, but the company does not issue any standard itself. As regards the possibility to work with other blockchains, the company is tech agnostic making sure that they always stay interoperable and up to date, especially as we are at a very early stage of the blockchain technology.

Question to Maider Arieta-Araunabeña

*How did consumers react to all the new information available for them through mobile phone? Did you see an increasing interest in using these applications?*

The initiative has been very well accepted by the public. The best results have been achieved in primary schools, where training sessions with students were also held. Students and parents were really interested in the project, and this was an important achievement because raising awareness on these topics is key.