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**TBMCE 2022**  
International Conference  
Technologies & Business Models for Circular Economy



The workshop was organised by International Synergies Limited (part of the consortium led by Technopolis Group who is running the CircLean Secretariat on behalf of the European Commission) The workshop (in person and virtual) was held on 14 September 2022 and supported by the Technologies & Business Models for Circular Economy (TBMCE) 2022 International Conference held in Portorož, Slovenia 12-14 September, and SRIP Circular Economy, Strategic Research and Innovation Partnership - Networks for the transition into circular economy. The event served as an opportunity to highlight the innovative industrial symbiosis businesses being developed by entrepreneurs in Slovenia, and to share experiences and knowledge regarding the opportunities and challenges to increasing the uptake of industrial symbiosis (IS) transactions in Slovenia and the EU.

## Highlights

### EU Strategic Landscape and CircLean Benefits

- The European Union's policy objective on industrial symbiosis (IS), as pursued through the CircLean project, are to facilitate IS transactions, to develop a reporting system, and to set up initiatives and infrastructures enabling the expansion of IS. The **European Green Deal** and the **EU Industrial Strategy** have emphasised the potential of industrial symbiosis as an innovative business model.
- IS brings **multiple benefits** in terms of environmental protection and climate mitigation (decreased use of primary materials; decreased landfilling; reduction of GHG emissions; reduction of energy use, etc.) but also in terms of competitiveness and industrial innovation (decreased costs for primary raw materials; fostering innovation and R&D; improved sustainability image of the companies). **Drivers are getting more pressing: climate crisis, scope 3 emissions.**
- **CircLean** is a network of businesses and SMEs for IS. The purpose is to set up a network of businesses to seize IS business opportunities. CircLean is suitable for industry actors; business associations; public authorities; and R&I stakeholders. CircLean is EU-wide, flexible, industry-led, sustainable, voluntary, and needs-centred.

## CircLean Toolbox

- The CircLean Toolbox comprises a Self-assessment module and a Matching tool. The Self-assessment module prepares businesses for engaging in industrial symbiosis, walking users through a three-stage assessment to quantify resources, and prioritise potential match opportunities. The user is guided through identifying waste streams and other under-utilised resources that can be repurposed by companies in different sectors, and how to gather evidence and data for these resources. Ideas are presented to help the user identify substitutes for inputs leading to a diversified and more robust supply chain. More information on the Self-assessment module is available [here](#). Companies that feel confident in these areas can move straight to the online Matching tool, which enables them to identify and pursue regional or cross-border IS transactions.

Innovative industrial symbiosis businesses being developed by entrepreneurs in Slovenia were presented on the day (moderated by Nina Kovačič, SRIP - Circular Economy):

- Marko Vrdoljak, Reusable technologies - creating new products from 'scrapped' lithium-ion batteries
- Vesna Mujaković, Fonaterm - taking textile wastes to create new products for construction and households
- Jure Naglič, Ekstera - parallel processing alloy rods creating pellets used in metallurgy processes
- Dr. Uroš Novak, National Institute of Chemistry (Scientists against plastics) - setting up several start ups companies principally concerned with designing 'from beginning to end' and applying innovation to reduce packaging

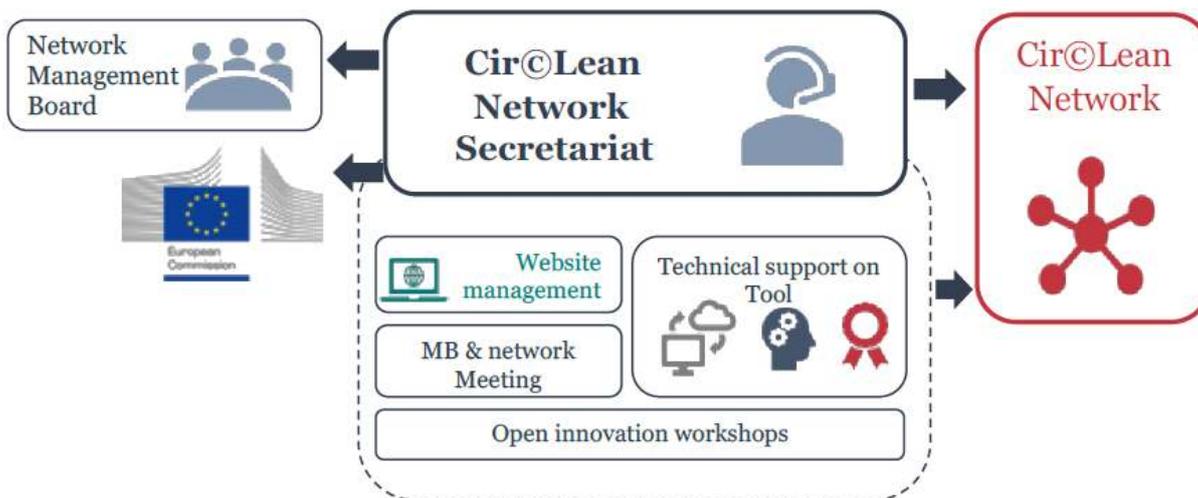
Notable was the shared concerns about our pressing need to enable these types of solutions - Earth is a closed system, **no throwing 'out' as there is no 'out'**

### Hindering factors for IS development

- Regulatory frameworks are a key challenge. Regulatory uncertainty related to the status of secondary materials (waste versus product) and requirements for regulatory compliance (e.g. environmental permitting) has been one of the major issues discouraging companies from engaging in IS. 'End of Waste' (EoW) criteria specify when a given waste ceases to be considered waste and obtains the status of a secondary raw material. Permitting is problematic as in the absence of clear EoW criteria companies do not have the certainty that they would receive a permit for reusing wastes.
- Low prices of primary raw materials compared to secondary materials deter further use of secondary material.
- Lack of familiarity with industrial symbiosis and its benefits, further complicated by the knowledge and data about resources and waste streams generated by others, hinder industrial symbiosis uptake. Further, as most opportunities are outside one's own sector, time poverty to explore potential opportunities and how to obtain materials also hinders IS activity.
- Any change of input requires innovation, testing, and certification of new processes/products. Entrepreneurs face challenges getting investment in early stages of innovation to support this development.

### Success factors and enablers for stimulating IS

- Working cross-sector: Developing IS depends on building the right partnership i.e., bringing the right partners on board, sometimes even competitors. Diversifying inputs builds resilience into supply chains, enabling greater efficiency. Although not a requirement for IS, building local partnerships can strengthen local economies and reduce the carbon impact of transport.
- Economic and regulatory instruments can drive IS indirectly, through EU directives favourable to reuse and public procurement to drive the market for products incorporating recovered materials. Design standards that set minimum requirements for use of secondary materials can drive IS; good design is an enabler for IS, highlighting the value inherent in many waste streams.
- There is a need to harmonise interpretation of waste regulation and the application of the concepts of By-Product and 'End of Waste' across Member States. 'End of Waste' criteria specify when certain waste ceases to be considered waste and obtains the status of a product (or a secondary raw material).
- To foster the participation in IS it is important to raise awareness of the potential benefits such as increased competitiveness, productivity and resource efficiency, enhanced innovation capacity and knowledge about alternative business models. If waste would be known and well characterised (for instance, published on a platform such as CircLean), traceable and sorted, it would be easier to explore reuse potential.
- It often comes down to a single committed person willing to work hard.



### How to join CirClean in 3 easy steps

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**Step 1:** Express your interest by sending a **signed Letter of Intent** to the CirClean Secretariat at [circlean.project@technopolis-group.com](mailto:circlean.project@technopolis-group.com)

**Step 2:** Fill in the **Membership Application Form** including information on experience with industrial symbiosis and related activities.

**Step 3:** Sign the **Network Charter/Code of Conduct** which includes mutual respect, integrity-based relationships among members, etc. More information is available [here](#).

# Frequently Asked Questions (FAQ)

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- ✓ **What will happen to the CircLean network after the end of the funded coming from the European Commission in October 2022?**

The CircLean network was designed with the ambition to become self-sustainable after the three years of EU funding. There are ongoing discussions with the members of the network that will be intensified in the coming months regarding this aspect, as the continuation of the network depends on the engagement of its members. The European Commission and the consortium implementing the CircLean project are supporting this process. The CircLean website and toolbox will remain online for one year after project end.

- ✓ **What are the benefits for my company/organisation in joining the CircLean network?**

Getting free access to an EU endorsed industry-led community of peers equipped with robust tools to discover, engage in, monitor and report about industrial symbiosis transactions across the EU, i.e., a self-assessment module, a matching tool to identify suitable opportunities for IS transactions, a common reporting methodology, and a EU label.

Opportunity to share views and suggestions for the Commission to increase the uptake of industrial symbiosis in the EU.

- ✓ **What are the benefits for my company/organisation to engage in industrial symbiosis?**

Reducing cost: Decreasing costs associated with inputs to production and waste disposal improves profitability and competitiveness.

Fostering innovation: Industrial symbiosis produces a demand-pull on innovation as industry identifies novel uses for underutilised resources. The OECD and UNEP identify industrial symbiosis as supporting eco-innovation.

Increasing revenue and competitiveness through diversification: Creating new business opportunities to sell what used to be a 'waste', thus converting the cost of waste management and disposal into a revenue opportunity.

Mitigating resource risk: Finding alternatives to traditional inputs, often outside the usual sector boundaries, decreases reliance on critical materials.

Creating jobs and encouraging entrepreneurs and new business start-ups.

Reducing emissions and contributing to climate neutrality targets.

- ✓ **To what do I commit by agreeing to become a member of the CircLean network?**

CircLean is a voluntary network and by joining it you only commit to respecting the CircLean Charter/Code of Conduct. Your active participation and contribution will be appreciated. Membership is free of charges.

- ✓ **Will I have any benefit if I follow the CircLean voluntary reporting methodology? When will it be developed?**

The protocol for the voluntary reporting methodology is ready. The main benefit associated to its implementation is the award of the EU CircLean label. The label will not only help businesses to participate in communicating their sustainability efforts, but will also signal that they are trustworthy partners to other operators.

- ✓ **Who holds the copyright of the Self-assessment module and the Online matching tool?**

The European Commission holds those rights.

- [European Resource Efficiency Knowledge Centre](#)
- EC, [Cooperation fostering industrial symbiosis: market potential, good practice and policy actions, 2018](#)
- [Industrial Symbiosis in the Baltic Sea Region, Nordregio Policy Brief](#)
- [FISSAC Project](#)
- [Guidelines on how to capitalise GPP as an enabler of industrial symbiosis](#), SYMBI project
- Interreg Europe Policy Learning Platform, [Policy brief on industrial symbiosis](#)
- Interreg Europe Policy Learning Platform, [Policy brief on circular economy business models](#)
- Interreg Europe Policy Learning Platform's [webinar](#) on circular economy business models

## Agenda from the event

Time	Sessions	Speaker
14.00-14.10	Introduction	Nina Meglič, Coordinator of SRIP – Circular Economy
14.10-14.25	Speech from the representative of the European Commission	Anestis Filopoulos, Project Officer DG GROW, European Commission
14.25-14.45	Presentation of the CircLean toolbox (i.e. Self-assessment module and Matching tool)	James Woodcock, International Synergies Ltd
14.45-15.45	Good examples of local industrial symbiosis initiatives and projects (including successes and challenges)	<b>Moderator : Nina Kovačič (SRIP – Circular Economy)</b> <ul style="list-style-type: none"> <li>• Marko Vrdoljak, Reusable technologies</li> <li>• Vesna Mujaković, Fonaterm</li> <li>• Jure Naglič, Ekstera</li> <li>• Dr. Uroš Novak, National Institute of Chemistry / Scientists against plastics</li> </ul>
15.45-16.00	<b>Coffee break</b>	
16.00-17.00	Roundtable about the opportunities and challenges for the uptake of industrial symbiosis (including reporting)	<b>Moderator : Marjana Dermelj, SVRK</b> <ul style="list-style-type: none"> <li>• Irena Koželj, Ministry of Environment and Spatial Planning</li> <li>• Mag. Petra Kandus, CER</li> <li>• Peter Laybourn, International Synergies Ltd</li> <li>• Mag. Darja Figelj, Interzero</li> <li>• Mojca Žganec Metelko, KNOF</li> </ul>
17.00-17.10	Presentation of the communication toolbox for CircLean Ambassadors	Anya Gregory, Arctik
17.10-17.20	Presentation on how to join the CircLean network	Dr. Rachel Lombardi, International Synergies Ltd
17.20-17.30	Wrap up and conclusions	Dr. Rachel Lombardi, International Synergies Ltd
<b>Networking</b>		