



CircLean Open Innovation Workshop

1 June 2022 - Budapest, Hungary

The workshop was held on the 1 June 2022 at the Parisi Passage Hotel, Budapest.

The workshop provided the opportunity to share experiences and knowledge regarding industrial symbiosis (IS) transactions to ensure that the work of the CircLean network remains relevant to its members. The workshops also provided an opportunity to share views and suggestions for the European Commission to increase the uptake of IS in the EU.

A follow-up email was sent to the participants as “food for thoughts” to further discussions as well as information about the CircLean membership application process.

The workshop was a Partner Event of the EU Green Week.



Highlights

EU Strategic Landscape and CircLean Benefits

- The European Green Deal and the EU Industrial Strategy emphasise the potential of industrial symbiosis (IS) as an innovative business model. At the EU level, industrial symbiosis is being pursued through the CircLean project which pushes further the development of a European industry-led monitoring and reporting system for IS transactions. The initiative contributes to the European Commission's goal of reducing greenhouse gas emissions by 55% compared to 1990 levels. About 1.3 trillion EUR will be mobilised to this objective, while EUR180million is dedicated by the EU to support industrial symbiosis initiatives.
- The EU Industrial Strategy aims to make the EU strategically more autonomous while reducing emissions. Circular economy in all sectors is estimated to create 700,000 new jobs, many of them in SMEs. This includes activities related to industrial symbiosis. This is an ongoing process, but the widespread use of industrial symbiosis is highlighted as a necessary contribution to EU's emission reductions. Current EC policies are contributing to this change.
- Policies through the European Green Deal, REPowerEU¹ among others, are supporting to improve the investment for climate and economic resilience while fostering the green economic transition. We need to exploit and use energy and raw materials more efficiently in times after the pandemic and especially in light of the current war in Ukraine.
- IS brings 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).
- The EU-funded initiative CircLean is a network of businesses and SMEs for IS, providing opportunities to seize IS business opportunities. CircLean is especially suitable for industry actors; as well as business associations; public authorities; and R&I stakeholders. CircLean is EU-wide, flexible, industry-led, sustainable, voluntary, and needs-centred.

Industrial Symbiosis: opportunities and challenges

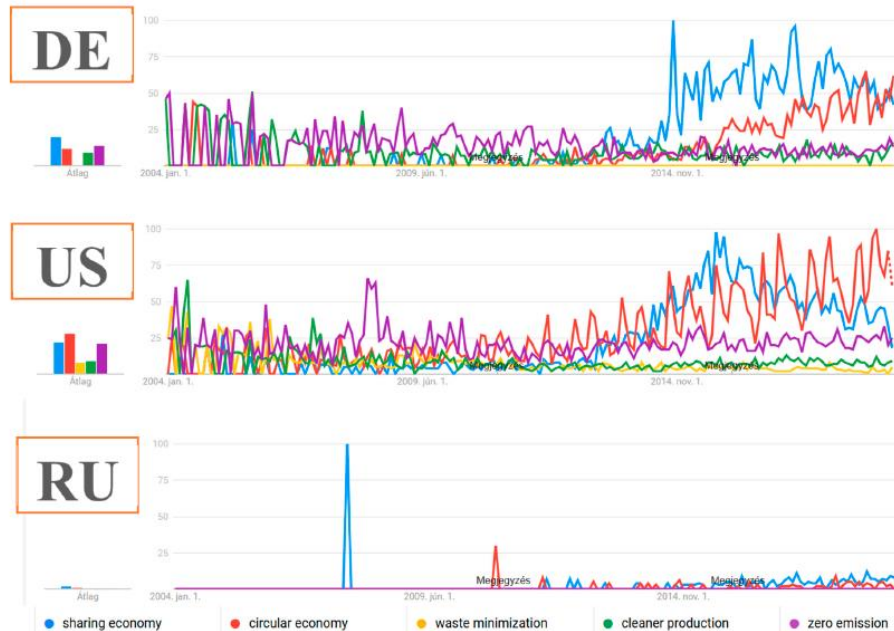
Prof. Toth Gergely (KOVET), dr. Wegner Krisztina (KSZGYSZ / individual expert), Chrabak Peter (Bay Zoltan)

There have been many plans and strategies on how to address sustainability (from EU, national, local authorities or even companies), but there is a too low number of actual implementations. Since the 70's, we have been trying to widen the perspective on sustainability, also in relation to profit to ensure that we do not only consider the actual financial income but also to take into consideration other factors.

There is a wide spectrum on how sustainability is defined and portrayed (e.g. visualizations, promotion by agencies, national legislation and action plans, popular books, super-optimistic studies, scientific journals, EU strategies). Also, according to the trend of internet searches, peaks in the interest online about topics related to sustainability can be seen, as exemplified with the USA and Germany in Figure 1 below.

¹ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/repowerEU-affordable-secure-and-sustainable-energy-europe_en.

Figure 1 Frequency of normal Google searches for the terms circular economy, sharing economy, waste minimization, cleaner production, and zero emission in Germany, the US, and Russia



Bay Zoltan Research Institute is involved in an industrial symbiosis project in Hungary in Tatabánya that showed how important it is **to quantify and measure impacts and improvements of different symbiosis practices**. They used different softwares to analyse the lifecycle of materials and showed that industrial symbiosis may at times have a reduced environmental impact. This goes to show the importance of prior analysis for IS planning to not only build a working structure but also to minimize environmental harm.

They learned that industrial symbiosis should be strategic, well-planned, and with a holistic view. However, they also saw various challenges:

- **National policymakers, decision makers, and the legal framework are fragmented** and do not have a comprehensive approach to tackle circularity and IS related issues.
- There is **no clear definition of sustainability** making it harder to have a common approach. Moreover, policies and legal frameworks do not yet support industrial symbiosis adequately, neither on the national nor EU levels.
- It is **problematic legally to handle waste as a material**. EU policies introduced the legal term: 'by-product', but these 'waste materials' need to be qualified and further administrative burdens may occur. This causes that some stakeholders may lose their motivation after a legal, administrative and economic analysis of the by-product.
- There is a **relatively low number of best practices** (that are identified as such). Some best practices appear from actors that do not know about the concept of industrial symbiosis. You also find them in Hungary, but they are not always recognised at the EU level.

Roundtable discussion on benefits and challenges of industrial symbiosis

The roundtable discussion focused on the following key points:

Benefits

- Something tagged as 'green' usually has positive impact verified by statistics which tells us that about 40% of youth chooses green and sustainability labels.
- The corporate sector is already participating in industrial symbiosis and circularity. However, there is a need to make businesses more aware about how to act at ecosystem level.
- The speakers agreed that industrial symbiosis is of crucial importance and needs more public awareness.

Challenges

- There is no legal term as 'industrial symbiosis' while it should be introduced and used coherently.
- There is a lack of incentives (legal, or economic) that motivate economic actors to engage in industrial symbiosis transactions.
- No special forum for related communication (national or EU).
- No willingness from companies to share any data due to lack of trust.
- No local dedicated communication initiative to raise public awareness about industrial symbiosis and therefore the demand from consumers is limited.

Potential solutions

- Data on by-products from producers would contribute to raise awareness about the benefits in terms of reduced environmental harm and could contribute to lower the quantity of waste.
- Sustainable production and design should be enhanced: maintenance, reusability, recyclability, durability should underpin the production processes throughout every step of a product's lifecycle.
- Environmental and economic/financial points of view should be harmonized. New sustainable business models and corporate structures are needed.
- From the legal point of view, the policy framework should support businesses further to engage in IS.
- 'Trigger point analysis' is needed in Hungary to trigger businesses to be more proactive and engaged. Currently stakeholders are generally skeptical and aiming at meeting obligations (the required minimum).

CircLean – European network of businesses and SMEs for industrial symbiosis

CircLean Toolbox

The CircLean Toolbox comprises a **Self-assessment module** and a **Matching tool**. The **Self-assessment module** is useful to prepare businesses for engaging in industrial symbiosis, with a

three-stage assessment process of their site, resources, and potential match opportunities. The user is guided through identifying suitable waste streams and other under-utilised resources that can be repurposed by companies in different sectors. In addition, the module provides directions as to how gather evidence and data for these resources. Ideas are presented to help users identify substitutes for inputs leading to a diversified, robust, and competitive supply chain.

More information on the Self-assessment module are available [here](#). Companies that feel confident in these areas can move straight to the online [Matching tool](#) which is available [here](#), which will offer them the opportunity to engage into regional or cross-border IS transactions.

Key take-aways from the Q&A session regarding the relevance of CircLean in Hungary

Benefits and constraints

- CircLean is excellent for matchmaking. Moreover, it is positive that the European Commission endorses the project.
- CircLean could also play a role in contributing to harmonise certain resource standards.
- Constraints to the value of CircLean for Hungarian SMEs may be language barriers, regulatory and administrative barriers not favouring IS, lack of resources for local businesses, lack of expertise, and resistance to change. These regional factors should be taken into account in the future promotion of the initiative.
- Concerns were also expressed regarding the administrative part of running the network, especially on sharing workloads/free HR capacity (so the involved parties could gain working hours), and also e.g. waste auditing, compliance check, resource management. The problem is that industrial symbiosis is human-resource intensive (administrative), such as to upload each individual resource/waste type to the platform one by one. The integration of an Excel integration feature on the Matching tool could be useful for quickly uploading existing lists.

Needs and local factors to consider

- CircLean should take into consideration both international and national regulations, and proper coordination and harmonisation is needed for the initiative to be successful. Moreover, incentives and/or obligations might be needed to raise local interest.
- National and International reoccurring events and roundtables were suggested as a means for discussing adjustments and policy recommendations, to ensure that the platform always addresses major concerns and local needs.
- Local cooperation is needed. The question is how to address the lack of trust between stakeholders.
- To include a national platform is crucial to address proximity, local policy focus and to have local endorsement (working API to integrate national platforms or existing databases is needed).
- There is a great need to raise public awareness on recycling, upcycling, lifecycle expansion and on what consumers can expect and do.
- There is a need for national support for further action.
- Cohesion and harmonisation will be needed between administrative obligations across EU borders (e.g. waste standards) for CircLean to unlock its potential fully.
- In general, more incentives are needed to motivate companies, including making the tools available in the local language, which was considered a must – especially for SMEs.

Local best practices on circularity and industrial symbiosis

Hanko Gergely (KSZGYSZ), Herner Katalin (KOVET), Harmat Mate (Coloplast Hungary)

Hungary is under EU average in circular material use, even though it is progressing. There is a clear trust crisis in Hungary, especially in relation to data-sharing. As such, there is an 'apathy' towards innovation, and only short-term planning is generally observed.

Best practices that were mentioned were as follows:

- Plastic recycling PE-PP-PUR,
- ReGlass (recycling solar panels)
- Biofilter (Aldi and Mol) – Mol as the national oil company, collects and transfers cooking oil into bioethanol and other products.
- Mol and Saubermacher (CSR programme, employees included), sugar factory biogas,
- Hungarocell Green Program
- PET Kupa recycling (river durby recycling and microplastic research), agricultural plastic recycling,
- Cleanway (database 200 users, 10,000 tons could be integrated – communicational matter: ministries could be included)

The Kovet Association has 47 member companies and created an initiative called 'Ablakon bedobott pénz' / 'money thrown through the window' by creating approximately EUR110.million saving to the included companies. In this initiative, they do sustainability investments based on its immediate, short (within 3 years) or long-term (more than 3 years) returns.

Examples given were as follows:

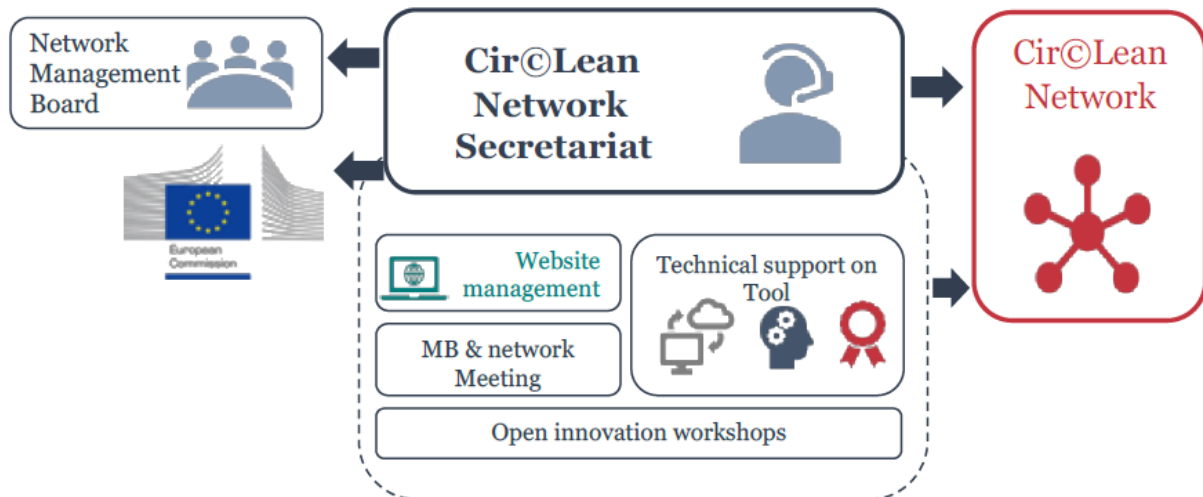
- **AUDI, Buchl Hungaria:** wastewater management and use of biogas (toxic waste is treated). Audi's toxic wastewater is treated by Buchl Hungaria in a way that the wastewater can be used in the biogas plant.
- **EGIS** pharmaceutical company that uses vinegar acid as a resource. An external partner that operates in the company's industrial site, treats vinegar acid as a side-product of the production into biogas and then to electricity. The ROI of EGIS is under 5 years.
- **MOL:** Contaminated groundwater treatment of a contaminated area (4.5 km²) for reuse

Other examples were provided by Coloplast:

- Yearly 11,000 tons of waste is created by Coloplast Hungary. There is an ongoing listing of the materials that are contained in waste. An analysis of potential resources would be needed.
- Several steps have been done to meet the Sustainable Development Goals but low human resource allocation is the norm.
- There is an ongoing effort to redefine waste to side products, but Coloplast is looking for relevant recycling partners that cannot easily be found, for more complex products that contain multiple types of plastics and/or different materials that were used in potentially contagious or toxic procedures (like surgeries).
- They do not have exact list of industrial symbiosis actions, however there are certain internal practices that meet the criteria.
- They would like to build more of the successful and long-term cooperation with suppliers.

- There is a need for platforms like CircLean with a qualification company which rates the side products and feasibility from the hosting side. They also need attached services that would not create more work to the company but would reduce that.
- We need to know what potential resources there are as by-products within the waste produced by a company. Related service would be useful.

CircLean Governance

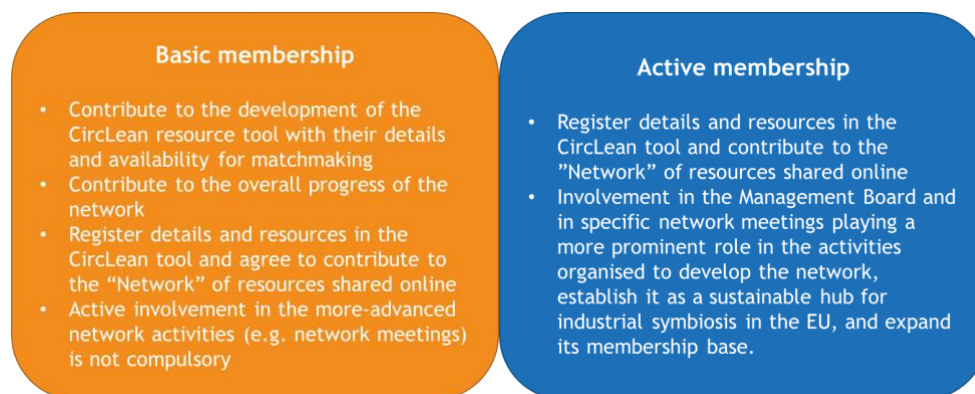


How to join CircLean in 3 easy steps

Step 1: Express your interest by sending a **signed Letter of Intent** to the CircLean Secretariat at circlean.project@technopolis-group.com

Step 2: Fill in the **Membership Application Form** including information on industrial symbiosis activities; experience with industrial symbiosis, etc. There is a basic and an active membership.

Figure 2 Type of CircLean membership



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

Policy recommendations

For local (national) industrial symbiosis:

- There is a perceived need for administrative easing and for a more coherent use of the term 'by-product' in the Hungarian legal framework.
- To have a space/platform to learn from international best practices (eg.: Denmark, Finland) on how to plan industrial parks with circularity in mind would be useful.
- Legal incentives (for example to reduce administrative burden), financial ones (tax incentives), as well as physical incentives, like constructions and developments that enable industrial symbiosis are needed.
- Inclusive and open-minded national/local policy consultations should be organised, that involve the public and private sectors as well as the civil sector, especially to raise public awareness about the opportunities potentially brought by IS.
- Create a national market environment should be an objective with the aim to engage stakeholders in recycling/upcycling and in IS.

For international (EU level) industrial symbiosis:

- International harmonisation and coordination of IS and circularity related subjects is needed.
- A European body like CircLean is the correct entity to gather related information, formulate recommendations, provide guidance and support.
- Platforms should always be available in national languages with a guidance to help define the right materials.
- Internationally agreed standard specifications for by-products and their treatments at least on the level of the EU should be issued in all Member States.
- Existing infrastructure, harmonised trading and transporting policies regarding secondary raw materials and by-products are of crucial importance.
- Dedicated efforts are needed for national and international (EU level) coordination of stakeholders and policies in the area of IS.
- Dedicated EU incentives (funds) can trigger IS and circularity and participation by stakeholders.

Frequently Asked Questions (FAQ)

- ✓ **What will happen to the CircLean network after the end of the funded coming from the European Commission in November 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.

Other resources on IS

- [European Resource Efficiency Knowledge Centre](#)
- EC, [Cooperation fostering industrial symbiosis: market potential, good practice and policy actions, 2018](#)
- 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
- [KOVET Association's official website for more information on](#)
- [Visualising sustainability, 2009](#)
- [Coloplast related document](#)

- [Circular Economy and its Comparison with 14 Other Business Sustainability Movements](#), 2019
- [Presentation](#) during the event

Agenda from the event

Time	Title	Further information	Presenter(s)
10:00 - 10:10	Introduction	<i>Introducing the agenda</i>	BENE Csinszka, consultant, Trinomics
10:10 - 10:30	Opening Speech: the standing of the Hungarian government on IS	Keynote + Q&A	HIZÓ Ferenc, deputy state secretary on circular economy, Ministry for Technology and Industry
10:30 - 10:45	Speech from the representative of the European Commission/Secretariat about the ambition underpinning CircLean	<i>In English</i>	Anestis Filopoulos, Policy Officer – Sustainable Industrial Policy, Circular economy and Construction Unit, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, DG GROW, European Commission
10:45 - 11:00	<i>Coffee break</i>		
11:00 - 11:50	Roundtable discussion on the opportunities and challenges of the introduction of industrial symbiosis	<i>In Hungarian</i> <i>Debate on: Regulatory, financial, incentives and burdens</i>	Prof. TÓTH Gergely, secretary in chief, KÖVET Association (7' bevezető) CHRABÁK Péter, head of Circular Economy research department, Bay Zoltán Applied Research Institute (7' bevezető) Dr. WÉGNER Krisztina, circular economy expert, KSZGYSZ (7' bevezető) Q&A and debate (30')
11:50 - 12:50	<i>Lunch</i>		
12:50 - 13:00	Introduction	<i>In Hungarian</i>	KÁRÁSZ István, consultant, Technopolis Group
13:00 - 13:40	CircLean toolbox presentation (Self-assessment module and Matching tool) and Q&A	<ul style="list-style-type: none"> • <i>On live (online) presentation, in English</i> • <i>Q&A in Hungarian and English translation</i> 	James WOODCOCK, international divisions manager International Synergies Ltd.
13:40 - 13:50	The communicational toolkit for ambassadors - introduction	<i>In English</i>	Laura EMPL, consultant, Arctik
13:50 - 14:00	How to join the CircLean network	<i>In Hungarian</i>	KÁRÁSZ István, consultant, Technopolis Group
14:00 - 14:10	<i>Coffeebreak</i>		
14:10 - 15:10	Roundtable Discussion and presentations on IS best practices in Hungary	<i>In Hungarian</i> <i>Local stakeholders: from the public and private sectors, RTOs' and authorities' suggestions</i>	HANKÓ Gergely, CEO, KSZGYSZ (7') HERNER Katalin, CEO, KÖVET (7') HARMAT Máté, KEB engineer, Coloplast Magyarország Kft. (7') Q&A (30')

15:10 - 15:15	Summary and conclusions	<i>In Hungarian Conclusions and next steps</i>	BENE Csinszka, consultant, Trinomics
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