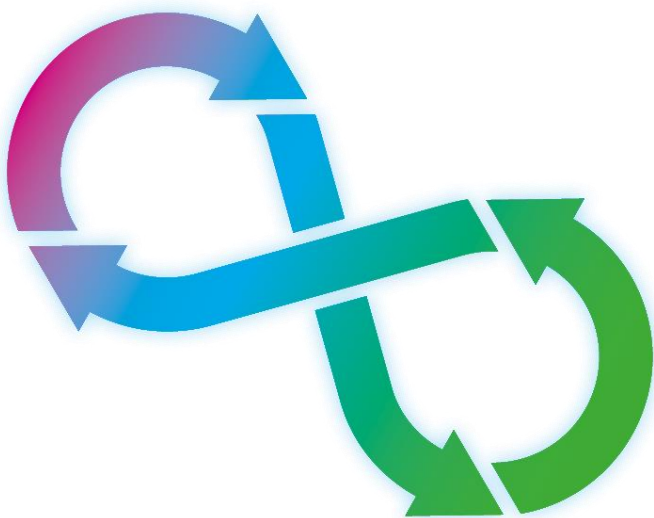


Challenges of industrial circular economy

VIEWPOINTS AND PROPOSALS FOR
THE PROMOTION OF INDUSTRIAL
CIRCULAR ECONOMY IN FINLAND



Circular- and Bioeconomy Centre
Kemin Digipolis Oy
January 2019

Promotion of industrial circular economy in Finland and the Circular Economy Centre

Finland is a pioneer in circular economy. The world quickly needs solutions from pioneers on how the future growth of economy and well-being will no longer be based on wasteful use of natural resources. By developing the best carbon neutral solutions for circular economy, Finland can generate sustainable well-being and success in a new manner and be among the first to do so during the coming 5-10 years.

In 2016, the Finnish Innovation Fund Sitra led the preparation of the world's first national circular economy road map for Finland with the goal of generating a shared will to promote circular economy and determining the most efficient ways to do it (<https://www.sitra.fi/en/publications/leading-cycle/>). Sitra named the innovation platform for industrial circular economy managed by Kemin Digipolis as one of the key projects of the road map. The next step was to establish the Circular and Bioeconomy Centre in Kemi-Tornio in 2018 (*Centre for Circular economy*, <http://circulareconomycentre.com>).

The centre aims to render the operating environment of companies practicing circular economy more competitive. A key part of the operations of the Circular Economy Centre is collecting technical data essential to companies and interest groups (especially on potential side-flows and the related challenges and possibilities), sharing information on industrial circular economy particularly from the business perspective and presenting it to national and international decision-makers and actors. The Circular Economy Centre manages a network in Finland comprising eco-industrial parks and development companies operating in them and other key actors.

Challenges of industrial circular economy from the viewpoint of Finnish industry Feedback from the 2018 Industrial Workshop

Circular economy has a strong presence in the discussions of industrial and innovation policies in Finland. However, the key challenges of industrial circular economy have not been systematically assembled across lines of business to support decision-making. Therefore, in summer of 2018, the Circular Economy Centre invited industry representatives to participate in a process with the objective of identifying the most significant challenges that the development of industrial circular economy faces in Finland. The process was restricted to the fields of processing, mining, energy and the chemical industry. Service-sector companies from the fields of industrial circular economy, recycling and the environment were also included.

In the first phase of the industrial circular economy challenges process, challenges in developing circular economy were identified across lines of business. Company-specific challenges were assembled with the help of a mapping form. The survey was responded to by 16 companies and 46 challenges in total were accumulated. On 14 September 2018, the survey responses were reviewed in the Industrial Circular Economy Challenges workshop in Kemi with 28 company experts attending, for example, from the metal, forest, mining, energy and technology industry and service-sector companies of circular economy. This summary of the report presents the most essential results of the workshop. The comprehensive report of the Industrial Circular Economy Challenges process and workshop will be published in spring 2019.

The Kemi Workshop identified six (6) shared themes that are present across industrial lines of business. The first theme was **the challenge of specifying by-products and waste and the**

confusion of practices. The workshop highlighted the need to apply solubility instead of overall content as an assessment criterion on material suitability. The observance of the exposure level and not just the percentage of weight was also discussed.

The second important shared workshop theme was **the opening of the by-product market as well as the concrete opening largely by the actors' own and shared measures.** A clear message from the Kemi Workshop was that the utilisation of by-products must move on from discussions and contemplation to concrete and shared actions. One potential measure was seen in getting by-products to be a wider part of the general quality requirements of infrastructure construction (InfraRYL). A system-level change in order to increase the utilisation of by-products must be built starting from design. All major projects should prepare an assessment on the use of by-products and emphasise the use of materials available in the near-by areas to minimise logistics. One viable angle to improving the utilisation of by-product flows could be the user's angle where the wider picture is considered from a product-oriented perspective.

Branding by-products as carbon dioxide neutral was suggested as a potential driver for increasing the utilisation of by-products, which would also enable the use of an ecolabel as a positive procurement criterion. The general view was that carbon dioxide neutrality has not been sufficiently utilised. According to the workshop discussions, the EU Ecolabel products cannot contain any harmful substances and, in this respect, we are moving out of the frying pan into the fire from the perspective of circular economy. With the introduction of the new Act on Public Procurement, a public purchaser can require an ecolabel that considers the content and not the risk.

The industrial circular economy terminology, especially from the perspective of SMEs, was considered to be extremely complex. Challenges are also still posed by the REACH Regulation that takes effect on a fraction after its productisation and crossings or actual overlaps of different areas of legislation in terms of circular economy.

With regard to legislation and/or its application, it was emphasised that there should be an alternative functional method for waste wherein it could be assigned by-product status through a notification procedure including the obligation to be aware of impacts and right of appeal without launching the environmental permit process. If during the environmental permit application process, it is required to know what the circular economy business will comprise 10 years from now, the situation is challenging from the viewpoint of the permit applicant. It was considered essential, how the matter will be resolved in the future implementation of the Waste Framework Directive.

The workshop also highlighted differences between companies in industrial circular economy experiences. It was considered that the waste status had prevented the implementation of quick pilots but, on the other hand, the pilot operation notification process was considered a functional tool in the experimentation. Then again, getting support funding for quick pilots and larger demos is challenging. In some cases, it was also seen that the authority had specified the productised fraction as waste, because the aim was to follow the flow and its use. Getting new waste fractions through successful pilots into by-product testing was identified as one potential enablement method.

Another shared theme was **the heavy and labour-intensive bureaucracy of international waste transport, which was considered to cause undesired optimisation from the perspective of circular economy and pointless work.** In the case of some actors, this can be seen in the optimisation of routes and not of recycling, and some have started to productise flows, which has transformed the operations to the import of a dangerous chemical. According to the experience of one actor, the by-product status of the fractions did not help when a shipment of over 25 kg was heading to Europe. The same goods move as by-products at factories in Central Europe. The current model is not considered to be supportive of circular economy and changing the model in cooperation with the actors was desired. The 25 kg permit limit for RD purposes was also considered to be too small across industrial lines. The transport of green waste was seen as an enabling tool in this, but a clear

practice is missing. The overall feel of the workshop discussion was that this is not just a question of danger but politics, since some products are on the green list and some are not.

Yet another shared theme was **the time limit of three (3) years for the utilisation of waste, which was considered to be artificial**. One justification for this line of thinking was that in many cases the accumulation of a sufficient utilisation amount in a specified location takes longer and would be the most ecological option when realised. It was stated in the workshop that the objectives can also be contradictory. For example, in terms of the waste recycling objective, the flows should not be turned into by-products but recycled as waste.

The fifth and very integral shared theme was **the need to jointly process matters across organisation and business lines**, since there are different views inside government agencies, ministries and Directorates-General of the European Commission and regionally and by countries on the matters that all apply to industrial operations. The aim is to respond to this need on a national level with the jointly agreed Industrial Circular Economy Challenges continuation process and, once the process is in operation, the operations could be extended to the EU level towards the decision-makers as a joint effort.

The sixth shared theme comprised **matters related to the ownership of waste**, which have clear interfaces with waste product testing and responsibilities, waste transport, applicable legislation and possible compensation. For example, the manufacturer has no say in the matter, if the end use of a product is as waste by some third party. Another example raised was the refinement of material quarried elsewhere, which turns the extractive waste into industrial waste. In the future, there may be a financial challenge from the perspective of circular economy in the fact that, according to Section 101 of the mining permit, 10% compensation from the sale of a by-product belongs to the landowner on top of the quarrying compensation.

In the metal industry, the price of energy and the final price of electricity in particular are crucially important in recycling metal and in business operations in general. For example, over one million tonnes of recycled steel are used in Tornio annually. A competitive electricity price enables the development of circular economy and ensuring the resource effectiveness of production in a global comparison.

At the beginning of summer 2018, a clause was ratified in the new Waste Framework Directive, according to which manufacturers and importers are obliged to provide to the database being prepared by the European Chemicals Agency (ECHA) operating under the instructions of the European Commission information on substances causing concern on the object level. With regard to the database, it was estimated at the Industrial Workshop that it does not work as planned, because there are several of the same fractions under different headings. In addition, different fractions are under the same heading, when humidity and content differ from one another, for example. The concrete availability differences are huge depending, for example, on the piece size, hardness and content of organic matter. Another cause for concern was the fact that, in the worst-case scenario, the database is just used for listing materials with emphasis on detrimental elements, which will then turn into an obstacle of circular economy.

According to the workshop discussions, a systematic and established process should first be implemented with regard to the database, indicating how flows need to be approached: recognising potential, identifying raw materials and correctly assessing their harmfulness. The assessment was seen as completely unestablished on the EU level, so the creation of the database misses the common thread. However, product safety is a goal shared by all parties, so it is not contradictory to the operations of any party. As mentioned in the chapter above, a mere listing of the harmful substances the material contains takes the matter in a wrong direction from the viewpoint of circular economy.

Six themes shared across industry business lines

- 1. Specification challenge of by-products and waste and confusion of practices**
- 2. Need to open the by-product market widely by the actors' shared measures**
- 3. Heavy bureaucracy of international waste transports**
- 4. Time limit of three years for the utilisation of waste**
- 5. Need to jointly process waste matters across organisation and business lines**
- 6. Need to clarify matters related to the ownership of waste**

In the workshop, industrial service-sector companies also challenged the industrial actors to be more open towards development suggestions and discussions, and to make longer contracts so that service-sector companies are able to make investments.

Other enablers of circular economy highlighted in the workshop:

1. An approach to the challenges of circular economy based on arguments founded on technical or other facts without excessive focus on the interpretation of legal terms
2. Significance of parties building circular economy business and other networks and that of door openers
3. A generic database operating from the perspective of its utilisers
4. Better activation of cities, municipalities and government administration in joint development projects
5. Building new cooperation and development networks

Further measures

The second phase of the process will be launched in February 2019 with the broad-based Status Description workshop crossing ministry and organisation lines to be held in Helsinki. The workshop will review the results and experiences of the first phase and agree on joint continuation processes between companies and the authorities. Experts and decision-makers of the ministries, ELY Centres, Regional State Administrative Agencies, the Finnish Safety and Chemicals Agency, the Finnish Food Authority, the Finnish Environment Institute, the Finnish Innovation Fund Sitra, the Finnish Transport Infrastructure Agency, the Association of Finnish Local and Regional Authorities, Motiva and representatives of companies that participated in the Industrial Circular Economy Challenges identification process of the first phase will be invited to the Status Description workshop. Based on the results of the workshop to be held in February 2019, a procedure memorandum will be prepared to form a foundation for shared communications and joint building of a continuation process.

The continuation process will make use of this summary, the Industrial Circular Economy Challenges report with its background documents and the procedure memorandum of the February 2019 workshop to generate concrete, practical examples and to build joint continuation workshop processes as broad-based cooperation between companies and the authorities. A key goal is to develop the operating environment in Finland with the ultimate goal of joint EU-level influence in order to develop the circular economy operating environment.

This summary will be distributed as widely as possible to circular economy decision-makers in Finland in January 2019. The summary will also be translated into English to be distributed widely to EU-level decision-makers in early 2019.

The process for promoting industrial circular economy has been planned and documented such that the tools, experiences and development opportunities generated by the process can also be utilised in other lines of business and elsewhere in the world. Already at this point of the process, we have seen interest in this work from the other Nordic countries.

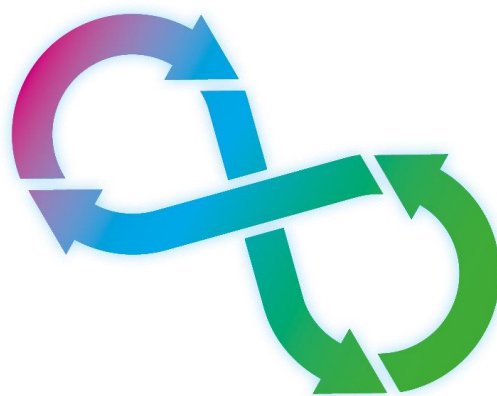


CENTRE FOR CIRCULAR ECONOMY

www.circulareconomycentre.com

Kari Poikela
Project Director, Circular- and Bioeconomy Centre
+358 50 435 8283
kari.poikela@digipolis.fi

DIGIPOLIS



**CENTRE FOR CIRCULAR ECONOMY
2019**