



TREASoURcE

D5.1 Digital marketplace

Creating digital marketplace for biobased side streams

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Excutive summary

This deliverable outlines the development stages of the digital marketplace KiertoaSuomesta / CircularFinland which contributes to secondary biobased material market creation in Finland. Starting with the introduction to the digital marketplace foundation and its development goals, the structure is followed by the background research on the market and user experience for the website development. The current development update of the digital marketplace is presented subsequently. Finally, the next steps for future development is concluded.

KiertoaSuomesta, also known as CircularFinland, is an online platform developed by The Central Union of Agricultural Producers and Forest Owners (MTK) that connects sellers and buyers of materials. It is primarily focused on biobased side streams like manure, grass, and crop residues. By promoting regional nutrient and material cycles, the platform contributes to the circular economy. The target audience includes companies involved in agriculture, forestry, and food processing, as well as industries requiring raw materials and the public sector. The primary objective of KiertoaSuomesta is to generate new circular business opportunities for all stakeholders through an user-friendly digital platform.

As background research for the platform development a workshop, several questionnaires, interviews, and discussions have been conducted since January 2023. The key findings from the market and user studies are the lack of understanding about side streams, their potential uses and market value, the concerns of cybercrime and user digital incompetence hindering the adoption of new e-market solutions. Collaboration with other complementary platforms is important for user convenience, as integrating multiple services would be beneficial. In addition, confidence in the future is lacking as farmers already face resource constraints, making it difficult to introduce new measures that require time for learning and adaptation. Profitability and logistical challenges inhibit the efficient utilization of side streams. Facilitated support from the public sector is necessary across the value chain.

The digital marketplace functionalities and user interface keep improving through the background research and user feedbacks. KiertoaSuomesta / CircularFinland was introduced in a hybrid seminar “Yritystoiminnan kehittäminen kiertotalouden ja datan avulla” / “Developing business activities with the help of circular economy and data” in Tampere on 30th May 2023 and was officially launched on the same day. The platform development will continue as its operation progresses.

Next steps, the digital marketplace and its usage needs to be promoted among the target groups. Further research should be conducted to understand the needs and features required for support tools such as transactions and environmental calculators within the platform. In addition, exploring cooperation possibilities with other platforms like Materiaalitori.fi, eMuovi-project, and kiertonet.fi is crucial. Logistics support for platform users should be investigated. More efforts should be made to enhance knowledge and provide education on the circular economy of biobased side streams.



1. Introduction to the digital marketplace

KiertoaSuomesta / CircularFinland

KiertoaSuomesta / CircularFinland¹ is a digital marketplace that connects sellers and buyers of materials. The site mainly serves as a marketplace for biobased side streams (e.g., manure, grass, crop residues) and helps sellers and buyers to find each other. The site will help to develop regional nutrient and material cycles and thus contribute to circular economy. The main target groups are companies producing biobased side streams from agriculture, forestry, and food processing, as well as industries using raw materials and the public sector. The aim of the KiertoaSuomesta service is to create new business opportunities for all stakeholders as easily as possible (The Central Union of Agricultural Producers and Forest Owners (MTK), 2023).

MTK has created the first beta version of the website in 2019 (The Central Union of Agricultural Producers and Forest Owners (MTK), 2019; The Finnish Environment Institute (SYKE), 2019), and in the TREASoURcE project the marketplace is developed to be more user-friendly. Development work has been carried out through a workshop, online surveys, and interviews with different user groups. The updated website was launched on 31st of May 2023 and it will be further developed as the project progresses. The marketplace will initially focus on biobased side streams, but later on it can also be used for other circular economy activities, such as plastic recycling or machinery sales. The aim of this development work is that the site can be used in the future as a supporting tool for reporting, for example, for sustainability reports. Users could easily use the documented material trading, which took place through the site, to verify their recycling efforts.

The digital marketplace will help to promote circular bioeconomy as it reduces waste and emissions, keeps resources in use for as long as possible and adds value to materials. The site can create local, optimized symbioses that link agriculture, industry, public bodies, and consumers. It will also improve cooperation between rural and urban areas.

In the beginning of launching the KiertoaSuomesta / CircularFinland platform, it is open nationally in Finland. Actors committed to development work and the use of the platform have already been contacted before the opening of the platform, in particular in the region of Pirkanmaa and Southern Finland. The service is open to all, but registration with a business ID is required to be able to post a listing or contact sellers. In the future, the site will be opened to consumers.

This deliverable D5.1 CE marketplace and value chain models focuses on the work done for planning and launching of the digital marketplace for biobased side streams.

¹ KiertoaSuomesta is the Finnish name of the platform and CircularFinland is the English version of the name.



2. Background research

To facilitate the development of the KiertoaSuomesta / CircularFinland service, background research was carried out through questionnaires and interviews. They were used to identify and study the needs and preferences of possible future users. Focus in this first stage was on sellers and buyers of biobased side streams, particularly on farmers and industry representatives in Finland. The background research was also used to investigate target groups' knowledge of biobased side streams, actual amounts of generated biobased side streams, and utilization possibilities regarding them. The background studies included three questionnaires: for farms, industry and separately one about platform characteristics. Interviews were also carried out for farms and industry. In addition, a workshop on user needs for the platform was conducted.

2.1. Questionnaire for primary producers

In January 2023, an online questionnaire was sent out to primary producers, such as farmers and forest owners, via email and circulated in different media channels. In total, the questionnaire received 28 responses. The main purpose of the questionnaire was to evaluate the volume of potential side streams from agriculture and forestry, to identify the challenges in handling these streams and study the practitioners preferences in using digital marketplace. The results revealed, that low quality and quantity of the side streams may be an obstacle that make the recovery process economically unattractive. This is because of the high logistic costs related to such materials and varying quality of feedstock for industrial uptake. This necessitates the development of new solutions, such as the digital marketplace, to connect stakeholders and facilitate the gathering and processing of side streams within rural-urban symbiosis. The questionnaire was carried out as a part of Task 1.4 *State-of-the-art for technologies, best practices, and circular business models in Europe* and MSc² Tran Ngo's thesis work (Ngo, 2023).

2.2. Workshop - Utilizing biobased side streams more efficiently

A workshop was held 17.01.2023 in Tampere regarding more efficient utilization of biobased side streams (TREASoURcE project, 2023) for farms, industry and public sector representatives. There were 55 participants at the event. In the event, the development work of the KiertoaSuomesta / CircularFinland marketplace was introduced and a related workshop was organised to gather the ideas and needs of potential users. For example, the discussion included topics, such as what would be necessary features for the marketplace specifically regarding the biobased side streams. At the end of the event, a field visit was arranged for the participants at the ECO3 circular economy area, in Pirkanmaa, Finland which is also a part of the important co-operation stakeholders in the TREASoURcE project. Below is a picture from the workshop and visit to ECO3 (ECO3, 2022). In ECO3 we were having a introduction to ECO3 on history, plans and operations. We saw for example Biomyllly biogas plant that is part of Tampere Regional Solid Waste Management Ltd., WasteWise Ltd., Revisol Ltd. and Yara Eco Ltd. (Figure 2).

² Master of Science



Figure 1. Workshop day (Pictures by Riina Kärki and Heidi Nordman)

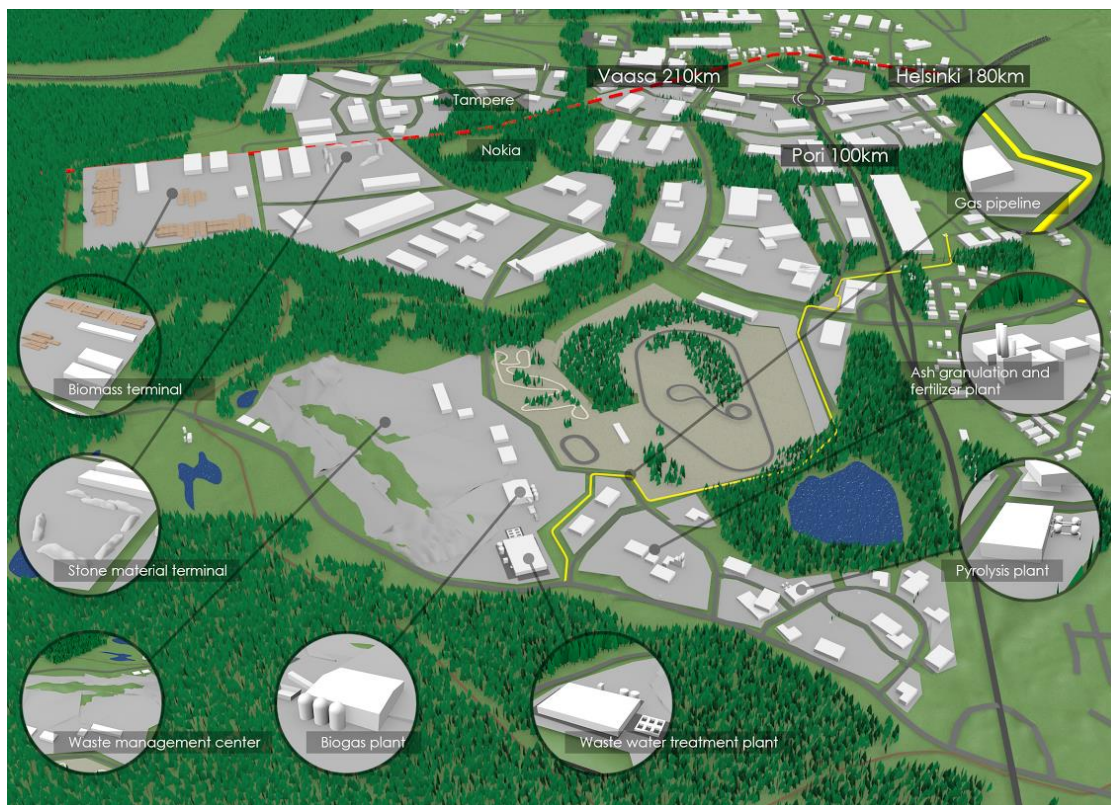


Figure 2. A map of the ECO3 business area. An illustration of the ECO3 business area. ECO3 is part of the Kolmenkulma Eco-Industrial Park in Nokia. The area is expanding (ECO3, 2022)



2.3. Questionnaire for industry

In February 2023, a similar questionnaire as the one sent to the primary producers, was sent out to industry representatives for food processing, forestry companies, waste management companies and other utilizers of biobased side streams. In total, 23 responses were received. The answers revealed what kind of different biobased side streams these companies generate, the types of streams they would be interested in to buy and/or sell, and what are their expectations for a digital marketplace.

2.4. Interviews

During April and May 2023, five interviews were held with farmers to find out their expectations and preferences regarding this digital marketplace. The interviews gave a deeper insight into farmers' understanding of biobased side streams and of the factors they found important regarding the marketplace from their perspective.

When recruiting interviewees, we noticed that Covid-19 and other changes in the world made it more difficult to get interviewees than previously. It would have been ideal for our research to have a large number of on-site interviews to make sure that the interview situation is relaxed. In on-site interviews, the interviewer can use examples from the environment to illustrate what is meant by terminus or what kind of side streams the farm in question could have, for example straws and contaminated feed. We will continue reaching out for further interviews throughout the project, to achieve a better representation of user expectations and preferences for the platform.

2.5. Questionnaire about the marketplace functionalities

The third questionnaire was a user experience questionnaire to assess the development needs for the KiertoaSuomesta / CircularFinland digital marketplace. This questionnaire was focused on the technical and visual solutions and functionalities regarding the application.

2.6. Discussion with industry and partners

Several confidential discussions have been held with the industry and project partners. On aim of the discussions has been to increase awareness of biobased side streams in general, help build a new side stream market, increase information about the digital platform, look out for partners and search for the partners' needs.

2.7. Important findings of the background research

One key finding of the research has been that circular economy in itself is not yet well recognized among practitioners, such as farmers for example. In addition, understanding of the definition 'side streams', is low, similarly as understanding of the market value of the side streams. Low profitability of agriculture,



inflation and energy crisis were brought up in the background research and were seen to affect farmers views towards new topics, such as the digital marketplace or circularity in general.

For the digital marketplace, the development hinderance has been fear and scepticism towards new technologies and digital solutions. Some respondents also talked about an exhaustion towards new platforms, which function differently, and all need to be learned to use. This highlights the need for good functionality of new platforms, which will be a focus in future work in the project. Logistics, transportation and storage for biobased materials were found to be crucial aspects in order to get the marketplace functioning properly. Some contradicting expectations for the digital marketplace were primary producers would like to make as simple listings as possible and industry representatives on the other hand wish to have as detailed postings as possible.

Cooperation with several stakeholders was found to be important in the future. Cooperation with public sector is important, municipalities for example have a big role in enabling the use of biobased side streams in rural areas. Similarly, cooperation with other digital marketplaces and platforms is important, to be able to better serve the users.



3. Digital marketplace KiertoaSuomesta / CircularFinland

3.1. Website of the digital marketplace KiertoaSuomesta / CircularFinland

Link to the digital marketplace for biobased side streams KiertoaSuomesta / CircularFinland (The Central Union of Agricultural Producers and Forest Owners (MTK), 2023): <https://kiertoasuomesta.fi/fi-FI>



Figure 3. Visual logo for KiertoaSuomesta / CircularFinland marketplace

3.2. Functionalities of the digital marketplace

Please note that the visual identity may still change.

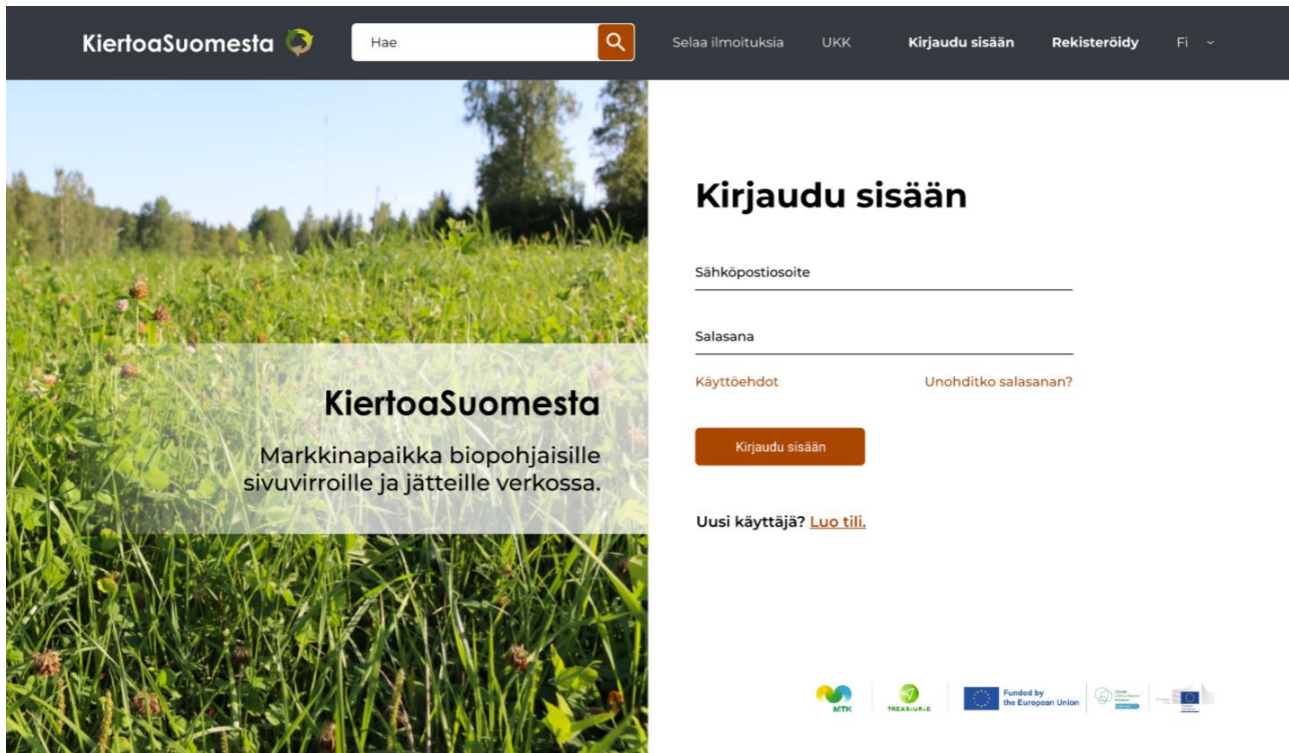



Figure 4. Login page. Possibility to sign in.



KiertoaSuomesta Selaa ilmoituksia UKK Luo uusi ilmoitus



KiertoaSuomesta
Markkinapaikka biopohjaisille sivuvirroille ja jätteille verkossa.

Yritysprofili

Yritys _____

Y-tunnus _____

Alue _____

Paikkakunta _____

Osoite _____




Figure 5. Registration page

KiertoaSuomesta Selaa ilmoituksia UKK Luo uusi ilmoitus

Luo uusi ilmoitus

Ilmoituksen kategoria Ilmoituksen tiedot

tuotteen nimi	Toimitustapa ostaja noutaa	Kertaluontoinen / Jatkuva kuukausi
Määrä*	mittayksikkö	Valitse viimeinen voimassaolopäivä* toistaiseksi
Hinta (alv 0 %)*	Hintayksikkö	Lataa valokuva

Toimituksen lisätiedot _____

Materiaalin kuvaus ja lisätiedot _____




Figure 6. Create an announcement of sale or purchase with details.



Omat ilmoitukset

Profiili **Omat ilmoitukset** Yhteydenotot Jätä ilmoitus

Myydään **Lantaa**
1 tonni / kuukausi
XX € / t
Tampere
Jatkuva

Myydään **Sahanpurua**
1000 kuutiota / vuosi
XX € / m³
Tampere
Jatkuva

Ostetaan **Olkea**
25 tonnia / vuosi
XX € / t
Tampere
Jatkuva

Myydään **Hävikkireh..**
5 tonnia
XX € / t
Tampere
2026

Figure 7. Submitted listings page where users can find their own sale and purchase announcements

Myydään **Lantaa**

50 kuutiota Kuukaudessa

XX € / m³

Arkistoi Muokkaa Kopioi Poista

Kuivaa turvekuivittua lantaa katetusta lantalasta.
Kuormaamisessa voidaan sovittaessa avustaa kurottajalla. Vain nouto.

Ilmoitus vanhenee	Jatkuva
Toistuu	Kuukausittain

Alue	Pirkanmaa
Paikkakunta	Tampere
Osoite	Pirkanmaantie 1

Figure 8. Edit an announcement page where users can archive, edit, copy and delete their listings

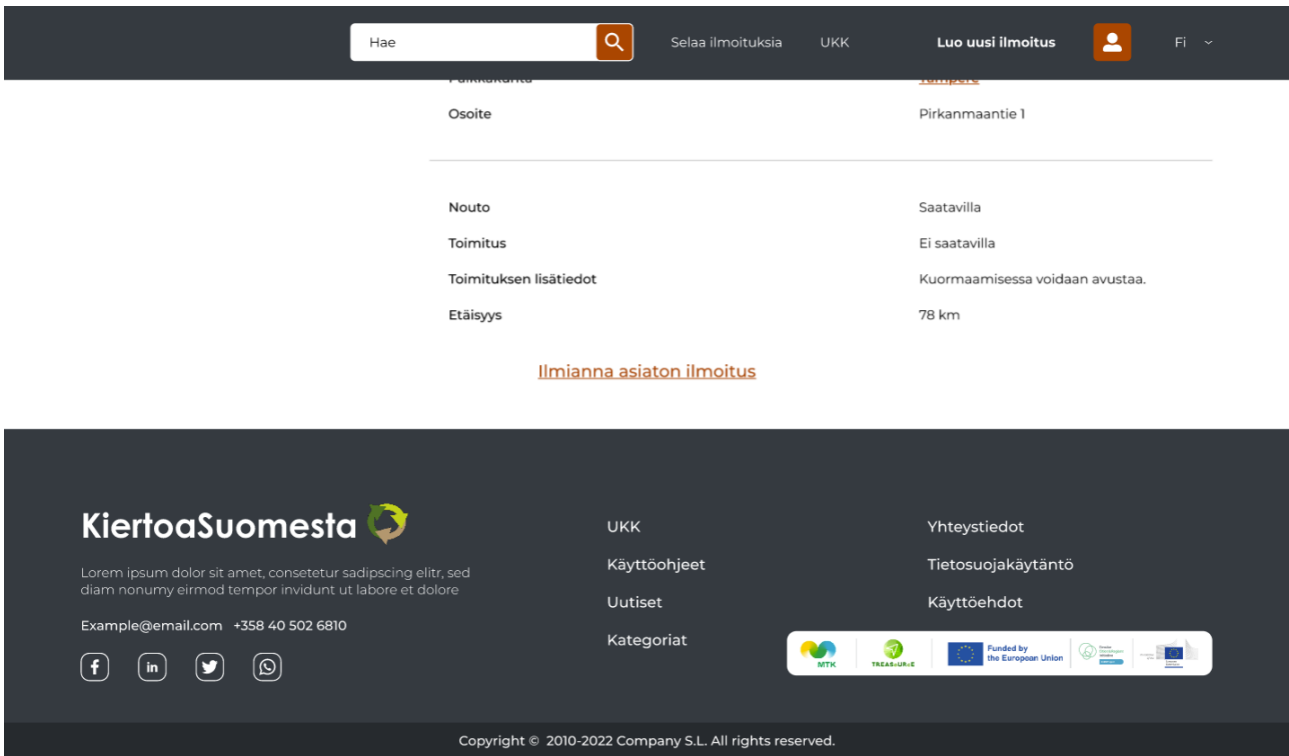


Figure 9. Webpage footer

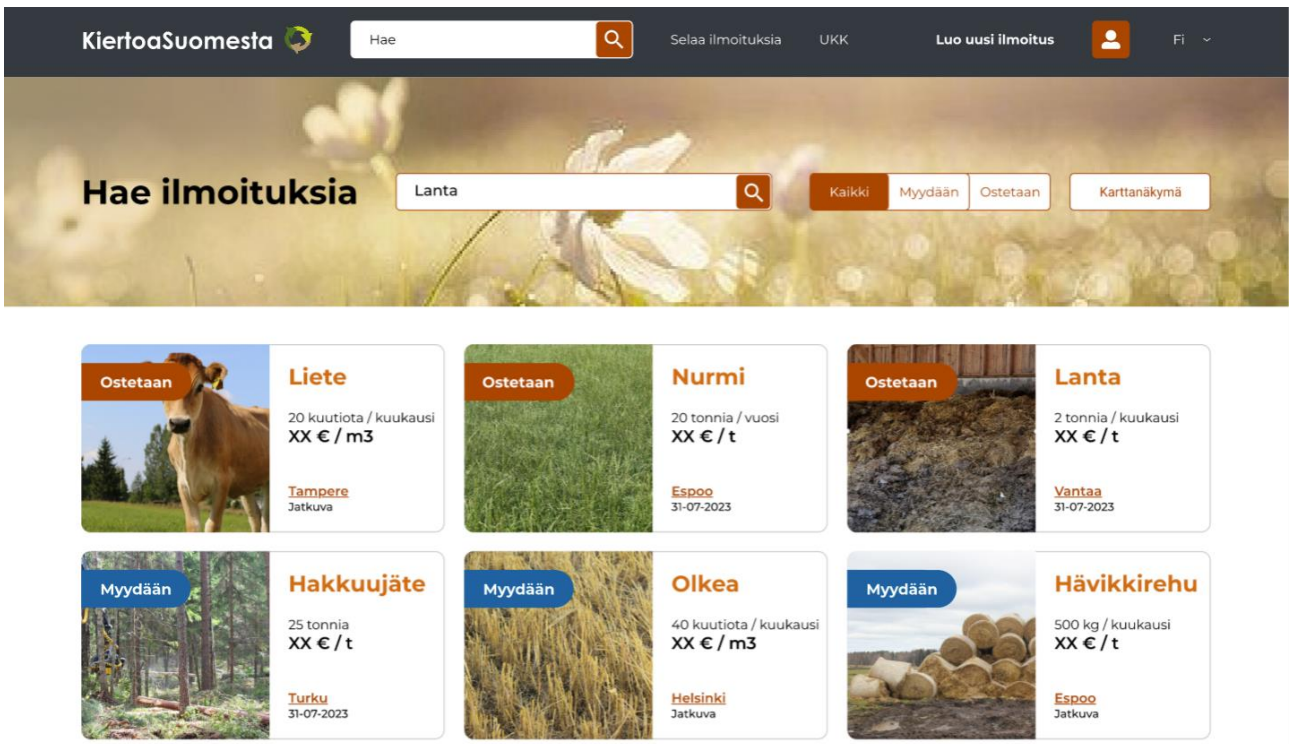


Figure 10. Search function where users can find listings



3.3. Launch event for the KiertoaSuomesta / CircularFinland digital platform

A hybrid seminar “Yritystoiminnan kehittäminen kiertotalouden ja datan avulla” / “Developing business activities with the help of circular economy and data” was held in Tampere on 30th of May 2023 (The Central Union of Agricultural Producers and Forest Owners (MTK), 2023). The marketplace was launched during the event. The aim and agenda of the seminar was to support the launch of the marketplace and other related topics of the field. There were two panel discussions concerning the following topics: 1. Agricultural circular economy and 2. Security and the possibilities of the data economy. In addition, presentations about bioeconomy opportunities and responsibility in reporting were given. The introduction video of the digital marketplace was also published at the seminar. A recording of the seminar will be available afterwards and both of the videos will be later shared in several channels, such as news letters, podcasts, blog posts and social media networks.



Figure 11. Seminar day (Pictures by Riina Kärki and Joel Pesonen)

4. Next Steps

The next steps for future will be marketing of the digital marketplace and promoting its usage among the target groups. Simultaneously, information related to biobased side streams, their utilization possibilities, and circular economy in larger extent as well will be shared. This will also be important in order to attract users to the digital marketplace.

More background research for the marketplace will be done in the future. Similar background research, such has been conducted in Finland, will also be done in Norway and Estonia. Replication possibilities for the marketplace will be investigated in these countries later in the project. Research on the needs and features of support tools, e.g. transactions and their contents, CO₂ or environmental calculators, will be done as well.

For the future development of the marketplace, enhancing user-friendliness will be a key aspect. In addition, new features, such as a functionality to provide a possibility for logistics will be added. A possibility of using the marketplace for other materials besides biobased side streams will also be investigated, for plastics or machinery as examples.

Several meetings with stakeholders will be arranged to discuss co-operation possibilities. Discussions will, for example, be continued with other digital marketplaces, such as Materiaalitori.fi (Ministry of the Environment, Finland and Motiva, 2023), eMuovi -project (Jamk University of Applied Sciences, 2023), and kiertonet.fi (Kiertoa Oy, 2023) in Finland. Similarly, discussions will be continued with Materjalivoog (Materjalivoog OÜ, 2023) in Estonia.



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