



A circular economy approach for lifecycles of products and services

Report on Communication Tools

Deliverable 9.3

PROJECT INFORMATION	
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Project Coordinator	Nottingham Trent University (NTU)
Project Partners	Enviro Data (ENV), Jonathan Michael Smith (JS), Kosnic Lighting Limited (KOS), Centre of Research for Energy Resources and Consumption (CIR), European EPC Competence Center GmbH (EECC), The Institute for Ecology of Industrial Areas (IETU), RISE IVF AB (RISE), Make Mothers Matter (MMM), ONA PRODUCT (ONA), INDUMETAL Recycling (IND), GS1 Germany GMBH (GS1G), Laurea University of Applied Science (LAU), Center for European Policy Studies (CEPS), Institute of Communication and Computer Systems (ICCS), Recyclia (REC), S.A.T. Alia (ALIA)

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Summary

According to the detailed CIRC4Life Communication Plan (D9.1) a set of communication tools have been developed and a range of actions have been performed all along the CIRC4Life project lifetime to communicate about the project activities and outcomes. All communication activities and results carried out from M1 to M42 are going to be extensively presented in the present report. This includes insights on the audience which was reached following the quadruple helix approach (see section 1: “Audience”), the tools and communications materials that were developed (see section 2: “Communications Tools”), the communication support to all DEMOs (see section 3: “Communication Support to DEMOs”), and the project events (see section 4: “Events”).

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1. Audience

As described in the Communication Plan, the objective of the communication was to reach a wide and diverse audience following the quadruple helix approach. Therefore, we reached out to the following actors:

- Citizens, Civil Society Organisations and Consumer Organisations

The involvement of end-users in CIRC4Life was crucial for the development of the 3 CEBMs. For this reason, CIRC4Life developed a communication style fitting for a non-expert audience using engaging visuals and a layman language. This can also be seen in the use of social media channels such as Instagram, Facebook and YouTube. End-users were engaged during the entire project duration and actively participated in the project activities (in particular DEMOs activities) and events.

Actors who represent end-users, such as consumer organisations, were contacted and invited to projects events (open innovation camps, webinars, showcase events, final conference). This was notably the case of BEUC (The European Consumer Organisation), WHICH in the UK and OCU in Spain.

Civil society organisations such as Zero Waste France, the Ellen McArthur Foundation, the Social Platform and SDG Watch Europe, were also engaged in the project. Alongside these organisations, local actors, such as Zero-Carabistouille (a Belgian Zero-Waste activist) were involved in project events (such as the “Seminar on the Role of Families in achieving the Circular Economy” organised by MMM in May 2019) and interviewed for the project’s newsletter.

- Policy Makers

Policy makers at the EU level working on the circular economy but also national and local decision makers, represent another target group for communication activities. These contacts were invited to CIRC4Life events, received our newsletters and participated in DEMO activities (see below).



Figure 1: The Councillor for the Environment in Gexto, Spain, inaugurated the intelligent bin

- Academic Community

Communication activities also targeted the research community. The academic community was notably invited to CIRC4Life events and mentioned on social media when relevant (for example to communicate about a research publication from the project).

- Industry

Businesses represent one of the main categories of stakeholders to which the project and its outcomes need to be communicated to. These business stakeholders operate in the 4 sectors addressed by this project. For this purpose, the networks of our industry project partners such as ALIA (which has over 900 members of Spanish agrarian transformation society, REC (with a network of more than 1,300 companies requesting coverage of recycling WEEE), and others were used.

These partners regularly engaged industries in their sectors in the project, such as during DEMOs activities and showcase events. Each industry partner incorporated a CIRC4Life chapter into their website and communicated CIRC4Life news through their own communication channels: newsletters, presentations in trade fairs, etc.



Figure 2: A tweet on ALIA's presentation of CIRC4Life @Sepor Trade Fair in Lorca

Through these outreach efforts, a list of over 900 stakeholders from these diverse backgrounds was compiled. We engaged with these stakeholders on numerous occasions, including to:

- Invite them to the project events: The two Open Innovation Camps, Project Webinars, Seminar on the Role of Families, Showcase Events, Final Conference etc.
- Ask for participation in the project's surveys
- Communicate about the project activities and outcomes through the newsletters
- Connect with them on social media channels when relevant

Reaching out to the press was also an important aspect of the project communication. 99 press and magazine articles were published during the project duration. Media coverage included general press articles (for example *Cinco días*, one of the main business journals in Spain), local newspapers (such as *La Opinión De Murcia*), local radio (such as *Radio Abarán*), specialised media on waste/ recycling/ sector specific (such as *E&E*), and online newspapers. Several press releases were also prepared at the launch of the project and the launch of demos activities. Outreach to EU media such as the *EU Observer*, *Politico* and *Euractiv* was also undertaken. Some of the journalists we reached out to are included in the CIRC4Life contact database.

Synergies with other EU funded projects were also initiated. These contacts were included in our stakeholders list and received the newsletters and invitations to CIRC4Life events. Some examples of synergies included:

- Representatives of CIRC4Life participated in the EASME side event 'New Services for a Circular Economy' held on 24th October 2018 in the frame of the World Circular Economy Forum (WCEF), Yokohama, Japan. During the side event, CIRC4Life together with other new H2020 innovation projects granted under the topics CIRC-01-2017 and CIRC-02-2017 were presented. The aim was to create synergies among the newly granted projects and increase international visibility to the innovative solutions that would be demonstrated in the coming years. During this event CIRC4Life was presented to the audience.
- Partners of CIRC4Life participated in the Workshop on 11th February 2020 organised by the EU for about 10 H2020 projects to share project outcomes with each other. During the workshop, CIRC4Life project hosted an exhibition station, gave an oral presentation, and displayed three videos about our project results.
- A group of CIRC4Life consortium members participated in the online meeting held on 21st May 2021 to share knowledge and synergies between Plasticircle <https://plasticircle.eu/home/> and CIRC4Life, both sponsored by H2020 grants. The meeting was initiated and organised by the Project Advisor. Both projects use smart bins. During the meeting, CIRC4Life partners presented how the project uses intelligent bins for recycling WEEE and bio-waste supported by the tools/methods developed, including eco-credit method, mobile technique for eco-accounting, ICT platform and traceability. This gave the CIRC4Life partners a better knowledge on the way the Plasticircle project uses their smart bin to recycle plastics. This enabled synergies in further research and development in this area.
- ALIA collaborated with H2020 project LIVERUR to demonstrate the bio-waste recycling. As such, CIRC4Life oversaw the biowaste collection and LIVERUR was responsible for obtaining valuable resources from it. The biowaste collected in the demonstration was provided to the LIVERUR project to perform the pilot activities planned in the same territory. Both projects included in their pilot tasks several workshops with stakeholders (as part of Living Lab methodology) which also established a good scenario for their collaboration. ALIA presented the project in the kick-off meeting of Interreg Med Re-Live Waste project (<https://re-livewaste.interreg-med.eu/>) in July 2018. In addition, last April started a PRIMA Foundation project (SUSTAVIANFEED) coordinated by ALIA. ALIA also presented some key results of CIRC4Life project on its kick-off meeting and CIRC4Life results will be useful for it.
- RISE collaborated with the EU project Enterprise Europe Network (EEN) about the training material about CEBMs and tools developed in Task 8.5 by CIRC4Life partners.

2. Communication tools

According to the overall communication strategy of CIRC4Life outlined in D9.1, a set of activities and actions were implemented to maximise the impact of the project and boost awareness of the activities conducted and results achieved during the 42 months of the project.

2.1. Project Website

The dedicated CIRC4Life project website – www.CIRC4Life.eu – is the project’s main gateway providing information on the project objectives, partners, results, publications, events and news. All the published project deliverables, publications, newsletters, posters and videos, can be found on the website. It has been regularly updated and promoted to inform the target audience of the project’s progress, results, and news. The website is attractive, easy to navigate and mobile friendly. It has also functioned as central tool for dissemination: any stakeholder could access necessary information or contact relevant partners.

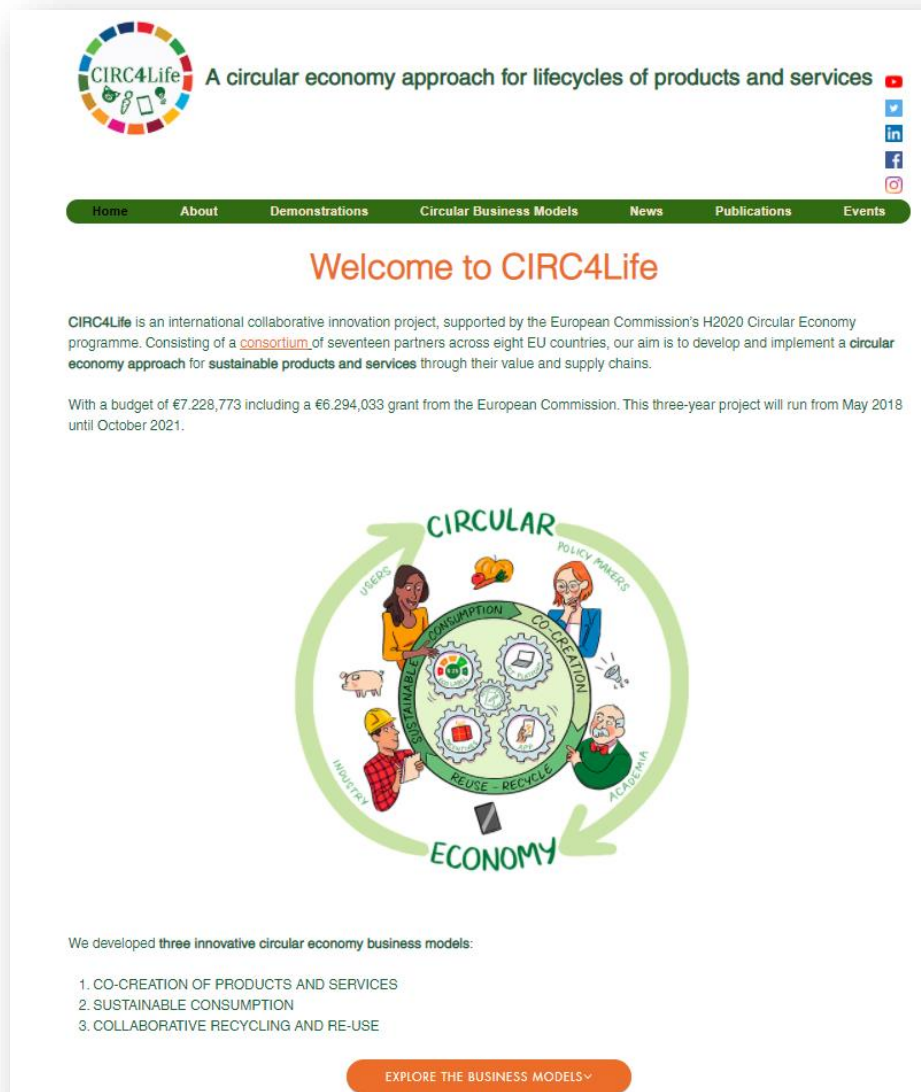


Figure 3: CIRC4Life Website

Since the beginning of the project, the website had a total of 26.222 site sessions, with 15.722 visitors. The total number of page view is 72.385.

	Number of visitors	Number of Site Sessions	Number of Page Views
Year 1	4468	7904	19789
Year 2	3877	5862	24755
Year 3	5065	8482	20334
Year 4	2312	3974	7507
Total	15722	26222	72385

Figure 4: website statistics (visits)

The analytics contained in Figure 5 show the countries with the highest number of visits to the CIRC4Life website. The first country is the UK, followed by Spain, Belgium, and Finland. All the countries of residency of the CIRC4Life partners are represented in the list, indicating an effective communication performed at national and local level.

The below table covers the period of May 2018 to August 2021.

Country	Page Views	Site Sessions	Unique Visitors
United Kingdom	11,371	2,076	891
Spain	10,620	4,858	3,404
Belgium	8,141	2,323	920
Finland	7,909	2,826	1,168
Germany	4,045	1,444	949
Greece	2,428	951	427
Russia	2,348	1,182	748
Sweden	2,027	892	573
Italy	1,933	696	478
Poland	1,326	492	364
Netherlands	1,090	417	327
Uzbekistan	989	385	283
France	946	357	282
Turkey	764	274	191
Ukraine	761	429	298
United States	703	339	290
Portugal	675	315	234
India	591	238	175
Armenia	522	216	162
Austria	487	206	158

Figure 5: website statistics (countries)

MMM also provided support to partners, especially DEMOs owners, in the design of a dedicated CIRC4Life website page.

2.2. Social Media

Nowadays the use of social media is fundamental to communicate and raise awareness of the work carried out by a European consortium.

The CIRC4Life project has made use of different platforms to broadcast the latest news and enhance visibility of the CIRC4Life activities and outcomes, using visually attractive images, relevant hashtags and ensuring at the same time to steer traffic to our website.

In addition to CIRC4Life social media channels all project partners used their own social media accounts to post project activities and outcomes.

The CIRC4Life social media channels include Twitter, LinkedIn, Facebook, Instagram and YouTube.



TWITTER

Account handle: @Circ4L



Figure 6: Twitter Profile page

The **CIRC4Life's Twitter** account has been used to provide the project's latest news, activities and outcomes and to live tweet or communicate on meetings, workshops and other events. In order to increase engagement and highlight its own work and that of partner projects, CIRC4Life has strategically retweeted from related twitter accounts and other relevant followers.

Since the beginning of the project 505 tweets have been published.

YEAR	Total number of Followers	Impressions (nr of times tweets appear in someone's feed)
2018	151	693
2019	373	74.980
2020	567	115.911
2021 (until August)	680	61.456

Figure 7: Twitter Analytics

Top Follower followed by 142K people



Horizon EuropeEU
@HorizonEU FOLLOWS YOU

Official DG Research & Innovation account for EU's #HorizonEU research & innovation prog. Follow @EUScienceInnov @GabrielMariya @JEPaquetEU

Top Follower followed by 109K people



ecointeligencia
@ecointeligencia FOLLOWS YOU

Capacidad de desarrollar productos y servicios diseñados para que desde su creación hasta el final de su vida útil sean beneficiosos para el Medio Ambiente

Top Follower followed by 19.4K people



COP cooperazione
@ONGplemonte FOLLOWS YOU

Association of 33 Italian Civil Society Organisations working in 70 countries. #InternationalCooperation, #GlobalCitizenshipEducation, #Solidarity, #SDGs

Top Follower followed by 13.5K people



Ecomondo
@Ecomondo FOLLOWS YOU

#Ecomondo is the benchmark event in Europe for technological and industrial innovation for circular economy. 26-29 October 2021 - Italy #CircularEconomy

Top Follower followed by 102K people



EU Climate Action
@EUClimateAction FOLLOWS YOU

The Directorate-General for #ClimateAction (DG CLIMA) is responsible for the @EU_Commission's international & domestic activities fighting #climatechange

Top Follower followed by 107K people



Iñaki Lázaro
@ilazaro FOLLOWS YOU

Profesional digital y profesor Tecnología Internet Marketing digital #SEO #SEM @Infolagun + @OnlyOneymas Socio Arbigl, Dircom, Elkargi, @iEuskadi https://t.co/ACIPWgNPMm

Top Follower followed by 23.5K people

**FOOD, BIOECONOMY, NATURAL RESOURCES,
AGRICULTURE & ENVIRONMENT**

#HorizonEU

Investing in
OUR FUTURE
together

Horizon
European Union
Quarter 5

EU green research

@EUgreenresearch FOLLOWING YOU

Managing #H2020 and #HorizonEU research & innovation projects for a greener Europe and a healthy planet for all **#EUGreenDeal** Account by @REA research

Figure 8: Example of Top Followers

Top media Tweet earned 1,697 impressions

"We, politicians have treated people as consumers". The **#EUClimatePact** calls us, not as consumers, but as CITIZENS to shape solutions to the climate crisis 🧑🌍

says @TimmermansEU at the Climate Pact Launch event pic.twitter.com/P8i38XcWab



Top Tweet earned 2,769 impressions

Things are happening in Getxo, Spain!
Today, their Councillor for the Environment inaugurated the new intelligent bin for the collection of small electrical & electronic **#ewaste**, developed & proudly installed by our partners **@IndumetalIN** & **@recyclia!**
#incentives #circulareconomy
pic.twitter.com/DhWN2LsCIW



7 25

Top Tweet earned 2,228 impressions

Nuestro Piloto en **#Murcia** implementa practicas sostenibles y de reciclaje en el sector cárnico informando a los consumidores sobre el impacto ecológico directo de sus compras **@interporc @Regmurcialimpia @AliaPiensos @RegMurciaBrux #economiacircular**
pic.twitter.com/c6jQGnc1tO



7 19

Top Tweet earned 1,918 impressions

#Circ4life showroom starts tomorrow until the 25th! Showcasing project products & collecting feedback from end-users at **@laureauas** campus Vantaa. Follow us online! pic.twitter.com/KxMskMnQIB



7 22

Top Tweet earned 5,584 impressions

Would the CIRC4Life eco-account help you adopt eco-friendly shopping habits and recycle more frequently?
Answer the survey and contribute to its development: bit.ly/2RLz3lj

#circulareconomy #consumers #sustainable #information #recycling
pic.twitter.com/nyKHfTW5Ot



11 16

Top Tweet earned 3,942 impressions

Interested in finding ways to encourage consumers and businesses to engage in **#circulareconomy**?
!! Do not miss **@CEPS_thinktank** workshop which will use the results of **#CIRC4Life** to discuss barriers & enablers

bit.ly/2tA96fR
#EUGreenDeal #netzero
pic.twitter.com/qa5VlrKtj4



Top mention earned 73 engagements

Carmen Mena Abela
@menaabelas 14 Feb 2020

The team of **@Circ4L** - A **#circulareconomy** approach for lifecycles of products and services

circ4life.eu pic.twitter.com/MJQfJDUqDR



Figure 9: Examples of Top Tweets (tweets that attracted highest number of impressions)



LinkedIn is the world's largest professional network and has been used by the CIRC4Life project to create a community of experts in Circular Economy and other related stakeholders. The LinkedIn platform has mainly served to broadcast CIRC4Life events and to highlight the project activities.

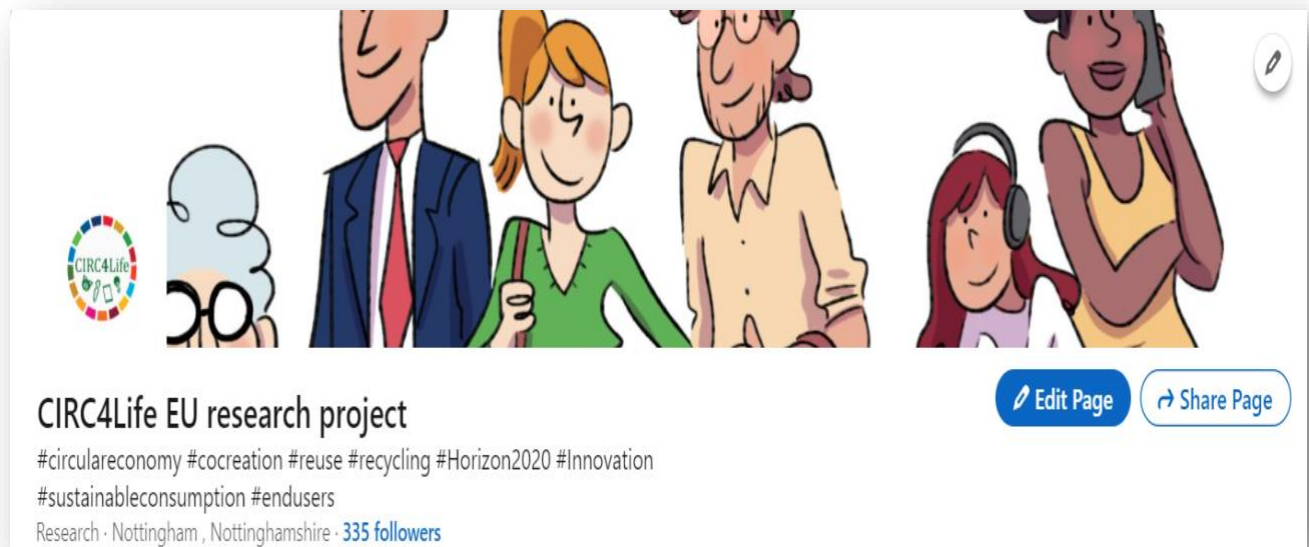
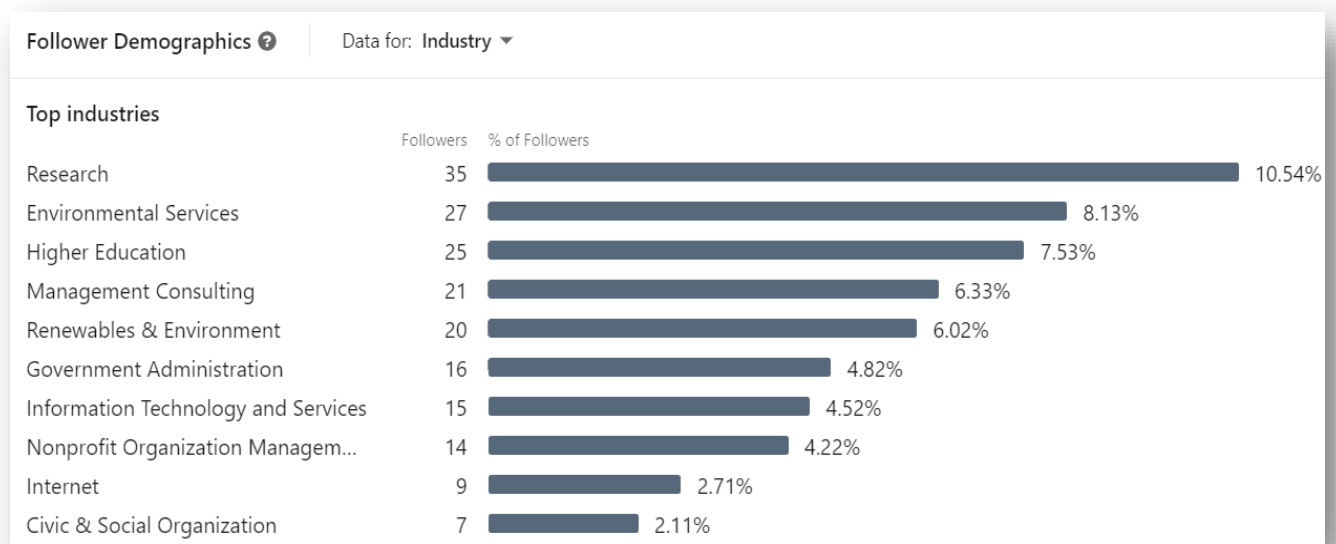


Figure 10: LinkedIn Profile Page

LinkedIn analytics only go back one year. In the last 12 months (August 2020 to August 2021) CIRC4Life has had 9.679 impressions and 468 engagements. In the last 12 months the homepage also had a total of 295 unique visitors and 982 page views.

The CIRC4Life LinkedIn page currently has 335 followers representing different industry sectors distributed as below:



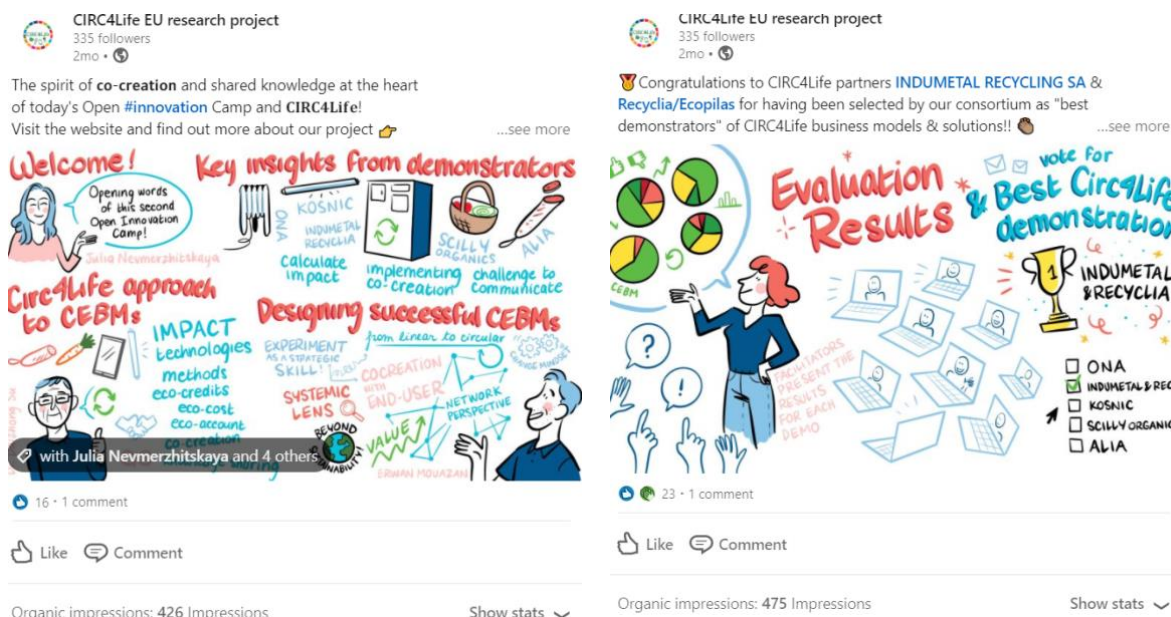


Figure 11: Example of Top LinkedIn Posts



In 2019 we opened **CIRC4Life Facebook & Instagram accounts** in order to further engage end-users and citizens in the project and get a larger response to our consumer surveys (see Deliverable 3.4).

Facebook and Instagram are two linked platforms that work well for posting visuals and were used to promote our videos, publish surveys and pictures of demonstrations and other activities. These accounts have 182 and 164 followers respectively.

From the beginning of the project until August 2021, the number of reach, meaning the number of people who saw the content from the **CIRC4Life Facebook Page** or about the CIRC4Life Page, including posts, stories, social information from people who interact with CIRC4Life Page and more, amounted to **5.407**. Reach is different from **impressions**, which may include multiple views of posts by the same people.

Social media engagement measures the public shares, likes and comments for social media efforts. On Facebook, this number amounted to **653**.



Figure 12: Facebook Profile Page

YEAR	Number of posts	Number of reach	Number of engagements
2019	24	2.743	405
2020	9	1.395	113
2021 (until August)	17	1.269	135

Figure 13: Facebook Analytics



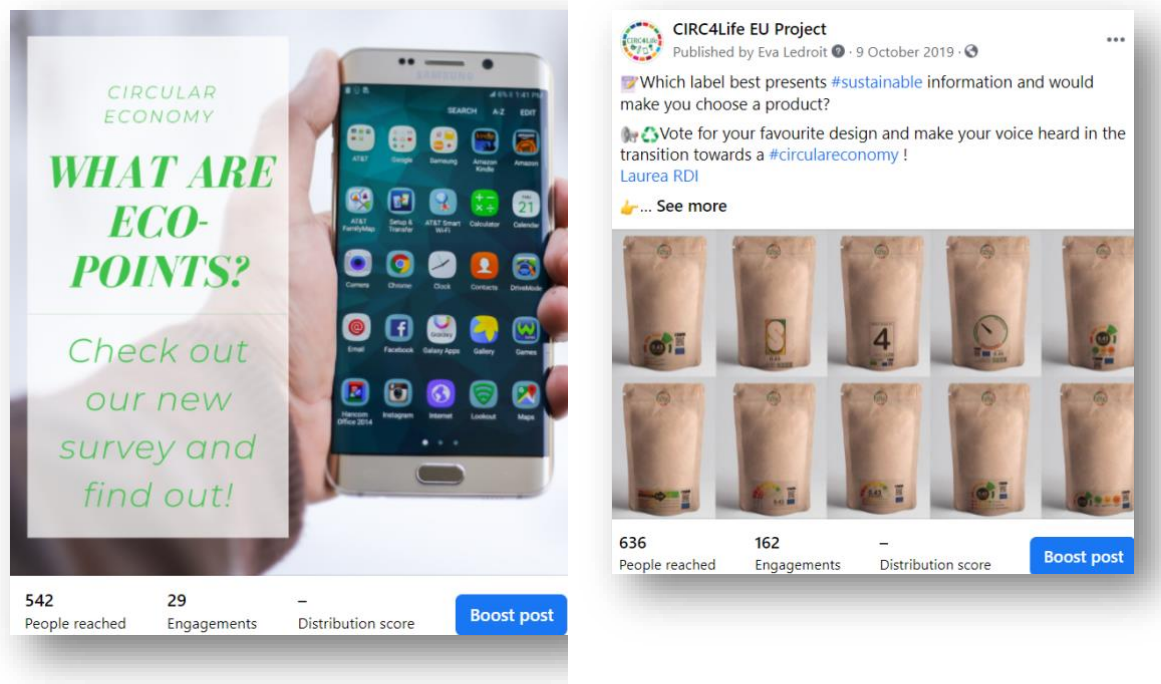


Figure 14: Example of Facebook Posts

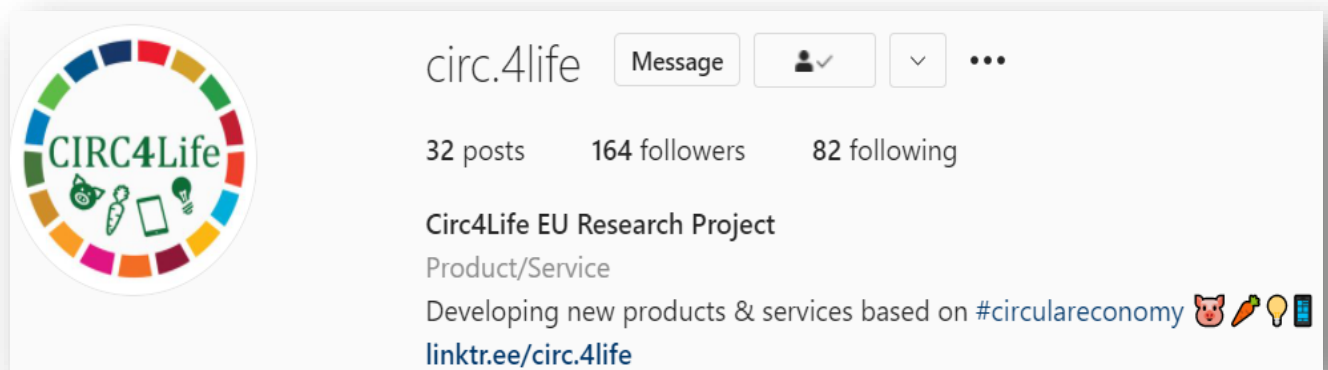


Figure 15: Instagram Profile Page

From the beginning of the project until August 2021, the number of reach, meaning the number of people who saw the content from the **CIRC4Life Instagram Page** or about the CIRC4Life Page, including posts, stories, social information from people who interact with CIRC4Life Page and more, amounted to **1.551**.

YEAR	Number of posts	Number of reach	Number of impressions
2019	10	315	123
2020	9	747	112
2021 (until the 3rd of August)	10	489	67

Figure 16: Instagram Analytics



As several videos were created to present the project and its outcomes, a CIRC4Life YouTube channel was set up. The videos were designed by MMM and project partners to support the awareness campaigns of the DEMOs and the digital second Open Innovation Camp (OIC). They also aim to engage the public in the project activities and to promote the project and its results to the targeted audience.

The videos were displayed during different events and conferences, among others, during the DEMOs activities and showcases and the second Open Innovation Camp.

The YouTube channel displays 24 videos developed by MMM and project partners. The videos were viewed over 1.566 times on YouTube and the CIRC4Life presentation [video](#) was viewed 1.074 times. The videos were also displayed using other platforms (during the OIC for example) and those views are not accounted for here.

YEAR	Total number of videos	Number of views of videos	Number of impressions
2019	2	122	41
2020	6	837	732
2021 (until the 3rd of August)	25	607	1401

Figure 17: Youtube Analytics

2.3. Flyer

The **CIRC4Life flyer** is a two-sided A5 which includes the project's main objectives, a list of consortium members, and a short description of the business models and demonstrations. The flyer has been designed in English and Spanish and distributed during the project's events and activities with stakeholders (conferences, DEMOs activities, etc.)

PROJECT PARTNERS
17 partners across 8 EU countries integrating academia, industry, a think tank and civil society

1. The Nottingham Trent University, United Kingdom (Coordinator)
2. Enviro Data, Sweden
3. Scilly Organics, United Kingdom
4. Kosnic Lighting Ltd, United Kingdom
5. CIRCE Foundation (Centre of Research for Energy Resources and Consumption), Spain
6. European EPC Competence Center GmbH, Germany
7. The Institute for Ecology of Industrial Areas, Poland
8. RISE IVF, Research Institutes of Sweden
9. Make Mothers Matter EU Delegation, Belgium
10. ONA Products, Spain
11. Indumetal Recycling, Spain
12. GSI Germany, Germany
13. Laurea University of Applied Sciences, Finland
14. CEPS (Centre for European Policy Studies), Belgium
15. Institute of Communication and Computer Systems, Greece
16. Recyclia, Spain
17. ALIA, Spain

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A CIRCULAR ECONOMY APPROACH FOR LIFECYCLES OF PRODUCTS AND SERVICES

WWW.CIRC4LIFE.EU

THE PROJECT

An innovative 3-year research EU funded project under the H2020 programme started on the 1st of May 2018. It aims to develop and implement a circular economy approach by creating new sustainable products and services through their value and supply chains.

This project will focus on **Electrical and Electronic products (E&E)** and **Farming/ agri-food** sectors with four large scale demonstration cases.

LED LIGHTING **TABLETS** **VEGETABLES** **MEAT**

The demonstrations will be held in the UK (Cornwall and Berkshire Counties) and Spain (Regions of Murcia, Basque Country and Valencia).

IMPACT POTENTIAL AND RELEVANCE

Meat, vegetables, electronics or lighting are everyday products used by all European citizens. This is why the four demonstrations of this project can have a positive impact in society and on the environment.

MEAT PRODUCTION
Average EU meat consumption 35 billion kilos per year (OECD 2018 Meat indicator).

VEGETABLE CONSUMPTION
Average EU vegetable consumption is 408 billion kilos per year (EFSA Comprehensive European Food Consumption Database).

Transitioning to a circular economy is essential if we want to achieve a more sustainable society. The current Food System is one of the main contributors to climate change, soil erosion or water pollution.

IT AND TELECOM EQUIPMENT
E&E is the fastest growing waste stream in the EU at 3-5 % per year. It is a new waste stream with the possibility of recovering precious metals and rare earths.

LIGHTING EQUIPMENT
493 tonnes of Lighting equipment are put on the European market every year (Eurostat).

In this sense, creating new business models reducing, reusing and recycling electric and electronic waste is the way forward.

BUSINESS MODELS AND THE CIRCULAR ECONOMY

Three new circular economy business models will be developed.

1. CO-CREATION OF PRODUCTS AND SERVICES WITH END-USERS

This model will bring end-users closer to the design and product development by identifying their preferences via online data mining product reviews, product specifications and prototypes via Living Labs to customise products and services.

2. COLLABORATIVE RECYCLING/REUSE

This model will develop a system so stakeholders can interact with each other in order to facilitate the use or reuse of end-of-life products, reduce waste, and implement the eco-credits awarding scheme encouraging end-users to recycle or reuse.

3. SUSTAINABLE CONSUMPTION

This model will develop a method to calculate the eco-points of products based on the outcome of the EU funded project myEcoCost by:

- Assessing Product Environmental Footprints
- Providing a traceability solution to monitor value chains' products sustainability
- Supporting end-users and stakeholders to actively implement the circular economy via awareness raising and knowledge sharing activities

Figure 18: CIRC4Life Flyer

2.4. Roll-up

The CIRC4Life roll-up was designed and used by partners to promote and present the project at different events and conferences.

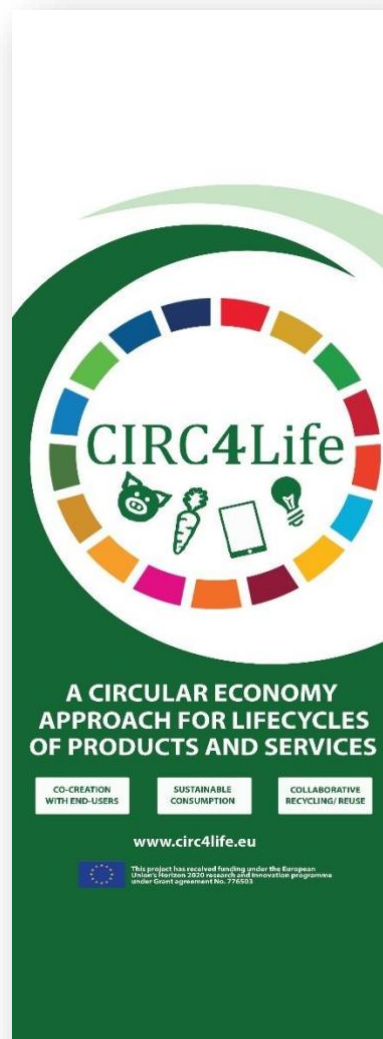


Figure 19: CIRC4Life Roll-up

2.5. General Visualisation

After discussions with the CEBMs owners and exploitation partners, it was agreed there was a need for a common standard diagram of the value chain for all CIRC4Life products that could also present how CEBM help closing the loops. At the first innovation camp in Krakow, diagrams on the value chains were developed. CIRC4Life partners built on these diagrams to create a “Four Layers Approach of Results” to cover all relevant perspectives:

- Technology (e.g. IT-Platform; Traceability; Apps; Brokerage) for Lifecycle Management of Goods and Services
- CEBMs in the lifecycle – three sections in different colours with titles
- DEMOs in the lifecycle – represented by small icons (food, LED, tablets ...)
- Policy Recommendations

This visual representation of the project was crucial in order to reach out to our target audiences.

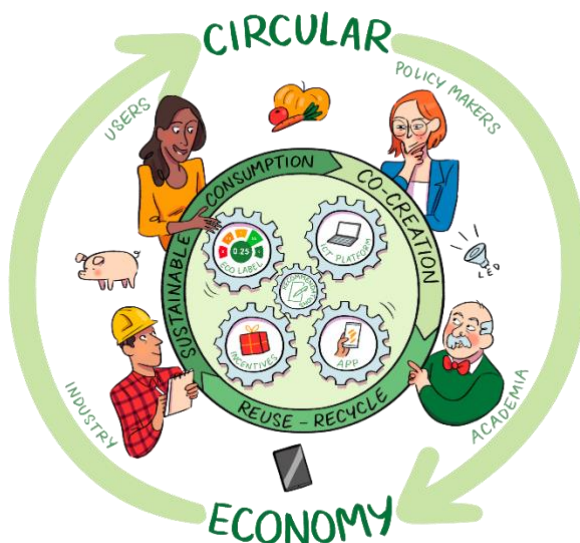


Figure 20: CIRC4Life General Visualisation

2.6. Videos

A **short video** presenting CIRC4Life and its key objectives was produced and is available on the project's website and on YouTube. It was displayed at different events and conferences, among others, during the DEMOs showcases and activities. The CIRC4Life introductory video was available in [English](#) and [Spanish](#) and has been viewed **1095 times** from the beginning of the project until August 2021. This video was also showcased during the policy [event](#) organised by CEPS on October 14 aiming to showcase to a wide polci audience the preliminary results of the project.



Figure 21: CIRC4Life Introductory Video

To support the DEMOs owners (see section 3) and their awareness raising campaigns and showcase events, MMM coordinated the production of several videos and other materials (see posters-section 2.7). This included drafting the script and coordinating with the communication agency, who produced the videos, and

with the relevant partners. The aim was to engage the public in the project's activities, raise awareness on

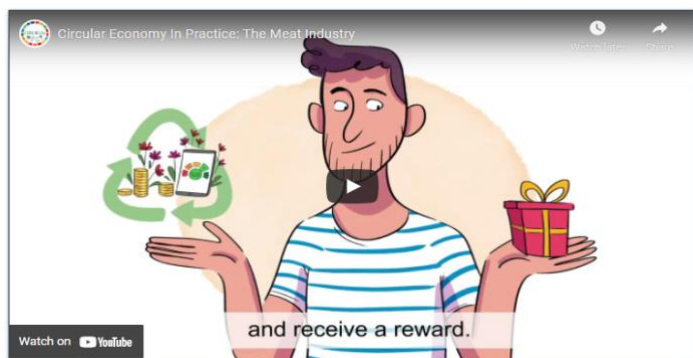


Figure 22: DEMO 4 Video “Circular Economy In Practice: The Meat Industry”



Figure 23: DEMO 2 Video “Circular Economy In Practice: Electrical & Electronic Equipment”

circular economy and promote the project and its results to the targeted audience.

In the context of the second Open Innovation Camp (see section 4) and continuous support to DEMOs owners, MMM provided assistance and feedback in the production of videos for the remaining DEMOs:

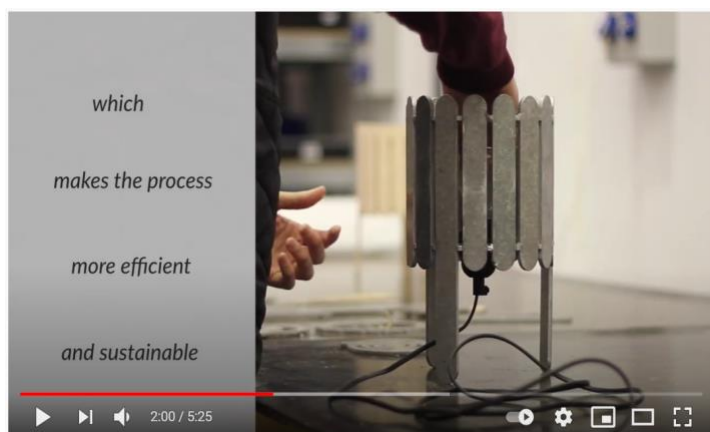


Figure 24: DEMO 1A Video: ONA



Figure 25: DEMO 1B Video: KOSNIC



[Figure 26: DEMO 3 Video: SCILLY ORGANICS](#)

MMM supported LAU in the context of the second Open Innovation Camp with input and tools to support effective communication. This included the coordination of communication materials (see section 4). Videos on each CEBM and on the solutions developed by CIRC4Life (eco-credits and eco-costs scheme, CIRC4Life App, ICT Platform) were produced.



[Figure 27: CEBM 1: Co-Creation](#)



[Figure 28: CEBM: Sustainable Consumption Video](#)



[Figure 29: CEBM: Collaborative Recycling and Reuse Video](#)



[Figure 30: CIRC4Life APP](#)

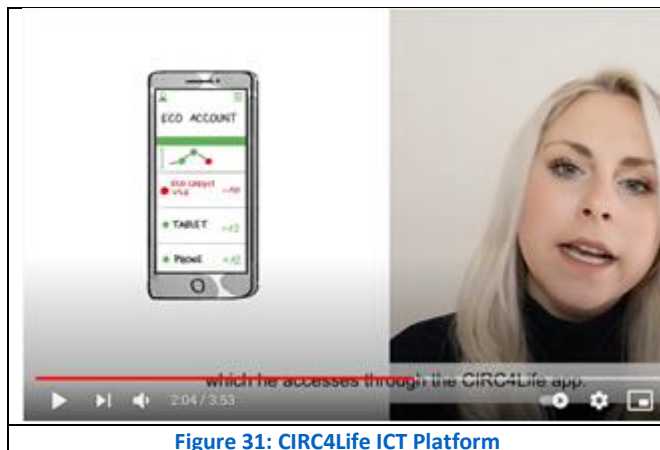


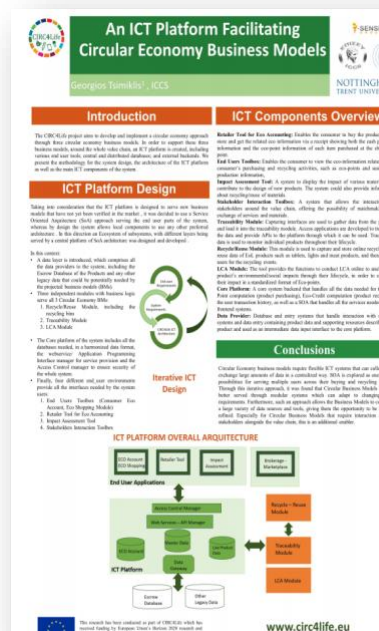
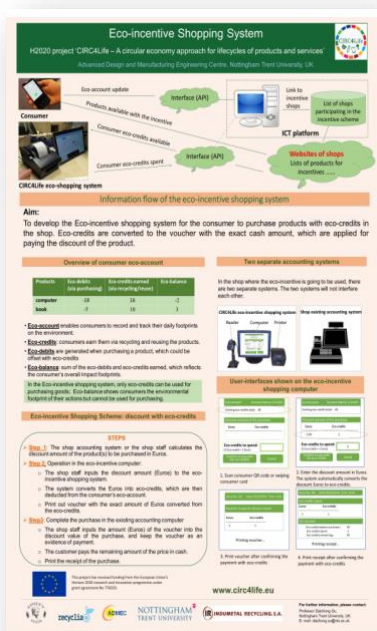
Figure 31: CIRC4Life ICT Platform



Figure 32: DEMO 4 Video for the second OIC

2.7. Posters

To engage the public and communicate about the project activities and outcomes, several CIRC4Life posters were designed. They were also created to support DEMOs owners in their awareness raising campaigns and activities. There were displayed at project events such as DEMOs activities, showcase events, EASME workshop on “services and products for a circular economy” and the second OIC. The posters were used to promote CIRC4Life on social media and are available for download on the [CIRC4Life website](https://www.circ4life.eu).



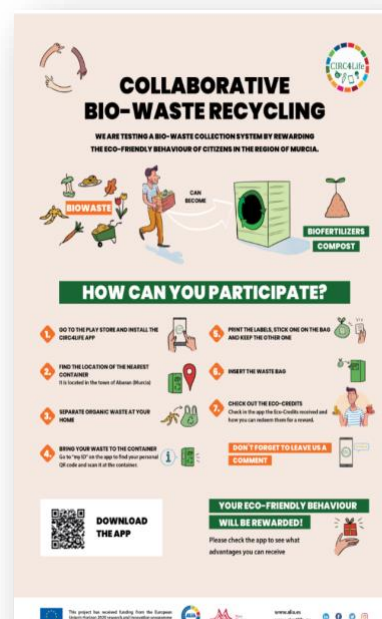
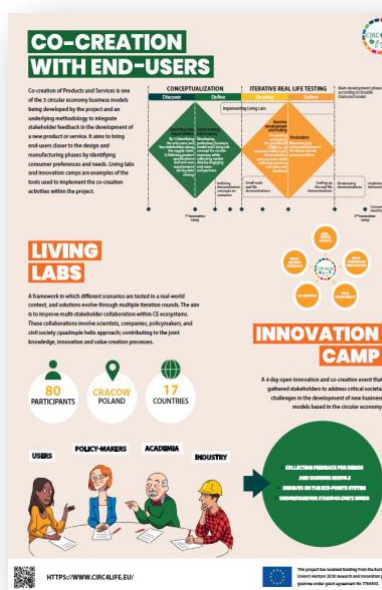




Figure 33: Example of Posters

2.8. Infographics

Infographics were developed to make the project more visual and attractive to the target audience. They were used for social media posts, the CIRC4Life website, for the CIRC4Life PowerPoint template and for project activities and events.





Figure 34: Example of Infographics

2.9. Newsletters

Nine newsletters were distributed electronically to inform the CIRC4Life community on the latest activities, outcomes, events and workshops. At the end of the project, the CIRC4Life distribution list comprises of over **900 subscribers**:

- **Newsletter n°1** released on 31 June 2019 to the CIRC4Life community at large (467 recipients): 186 unique opens (**open rate: 38%**) and 31 clicks.
 - **Newsletter n°2** released on 10 February 2020 to the CIRC4Life community at large (746 recipients): 217 unique opens (**open rate: 29%**) and 33 clicks.
 - **Newsletter n°3** released on 16 June 2020 to the CIRC4Life community at large (761 recipients): 163 unique opens (**open rate: 24%**) and 24 clicks.
 - **Newsletter n°4** released on 13 October 2020 to the CIRC4Life community at large (760 recipients): 173 unique opens (**open rate: 24%**) and 37 clicks.
 - **Newsletter n°5** released on 17 March 2021 to the CIRC4Life community at large (715 recipients): 276 unique opens (**open rate: 39%**) and 78 clicks.
 - **Newsletter n°6** released on 29 March 2021 to the CIRC4Life community at large (710 recipients): 237 unique opens (**open rate: 33%**).
 - **Newsletter n°7** released on 15 April 2021 to the CIRC4Life community at large (866 recipients): 280 unique opens (**open rate: 32%**) and 76 clicks.
 - **Newsletter n°8** released on 6 July 2021 to the CIRC4Life community at large (897 recipients): 157 unique opens (**open rate: 17,5%**) and 35 clicks.
 - **Newsletter n°9** released on 7 September to the CIRC4Life community at large (893 recipients): 218 unique opens (**open rate: 29.4%**) and 64 clicks.
 - **Newsletter n°10**: which will be released at the end of the project (October 2021)
- CIRC4Life newsletters were also shared on social media and can be viewed on the [website](#).



PROJECT NEWSLETTER JULY 2019
Horizon 2020 research project aimed at developing new products and services based in the circular economy



How can end-users be better involved in the development of business models?

The concept of a Circular Economy (CE) is based on interconnected companies that form infrastructure and economy, coming together and sustaining the operating system itself. In this sense CE forms an ecosystem to solve complex problems, which cannot be solved by individual companies and organisations.

What does end-user engagement mean in the CIRC4Life project? It is an integral part of the development of these new business models based on sustainability and end-user's engagement.

[Read more](#)



Reuse & Recycle survey finally launched

On the 9th of July we launched our consumer's survey on attitudes to reuse and recycling concerning electronic and food products. The main objectives are to involve end-users in the creation and design of the new business models and raise awareness about the importance of reuse and recycling.

Deadline 16th September 2019.

[Read more](#)



How can we encourage end-users to maximise products' lifetime?



Rewarding consumers for their eco-friendly behaviours



PROJECT NEWSLETTER FEBRUARY 2020
Horizon 2020 research project aimed at developing new products and services based in the circular economy

Dear Readers,

The new year has started and the new Commission has made the Circular Economy the number one priority of the upcoming European Green Deal. As such, circularity will represent 'half' of the EU's effort to achieve net-zero carbon emissions by 2050.

At CIRC4Life we have been working in engaging end-users in the Circular Economy. Even though the latest European Commission's report for 2019, 44% of EU citizens and that 87% want to play a role in it. It is a pity that the Commission has shown that only a limited share of consumers is actually engaged in circular economy practices.

Below you will find updates on our latest activities aiming at engaging end-users in the creation and design of new products and services, raising awareness about reuse and recycling and empowering them in making sustainable choices.

[Enjoy the reading!](#)

Chela Miravet and Eva Lealhot
Make Mothers Matter EU Delegation

New Project Video



...a collaborative project that aims to develop new products integrating consumers' needs


Project Demonstrators about to be launched!



We are developing three new circular economy business models that aim to engage consumers in the transition towards a circular economy. The new business models are the following:

- Co-Creation of products and services with end-users
- Sustainable Consumption
- Collaborative Recycling/Reuse

These new business models will be demonstrated and tested in 8 sectors by mid-2020.



PROJECT NEWSLETTER N.3 JUNE 2020
Horizon 2020 research project aimed at developing new products and services based in the circular economy

Dear readers,

We hope you and your family are doing well despite these challenging times.

As consumers have started to be asked, more than ever, digital tools have proven to be crucial. Indeed, as more people are working from home, many of their daily habits have changed in the digital world.

At CIRC4Life we have been working in building tools on how to best engage end-users in the Circular Economy today by developing more digital tools. In particular, our project coordinator NTU has developed a new web shopping tool linked to an innovative system to ensure which encourages end-users to adopt eco-friendly behaviour and allows them to make informed sustainable consumption choices.

In order to enable this ICT tool to work, our partner CCU has developed a new flexible platform to manage the eco-points and eco-accounting to assist can evaluate the environmental impact of the purchasing and recycling activities. We also developed another platform allowing us to input complete product data necessary for recycling, use and environmental impact analysis by companies.


In addition, our partner in Murcia (Spain) has been launched and a new sustainable system (selective imperative) has been brought to two shops in order to collect consumer performance and their eco-shopping. This has been donated to the healthcare professionals dealing with COVID-19 in the nearby hospital who have also helped the project.

Finally, our partner in Spain (BAS) has launched a new survey on the web about the need to be able to access.

[Enjoy the reading!](#)

Chela Miravet and Eva Lealhot
Make Mothers Matter EU Delegation

A new tool for Eco-Shopping




The CIRC4Life project has created a new tool linked to an innovative flexible platform which will encourage end-users to adopt eco-friendly behaviours and allow them to make informed sustainable consumption choices.

This is done via the eco-points system. Eco-points show the direct consequences on the environment of buying a product (eco credits), but also of reusing or recycling a product (eco credits).

The eco-point value is displayed on the product label and indicates the environmental contribution of a product in a simpler way. The value also allows to compare the environmental impact of different products.

[Read More](#)

A new flexible ICT platform for circular economy business models




PROJECT NEWSLETTER N.4 OCTOBER 2020
Horizon 2020 research project aimed at developing new circular products and services

Dear readers,

We hope you and your family are doing well despite the unusual circumstances.

We have launched the first press (demonstration) of this project this autumn. The newsletter is mainly focused on giving you more insights about them.

We also collected staff, electronic and goods to visit CIRC4Life showroom installation at Leuven University of Applied Sciences in Belgium showcasing project products & collecting feedback from end-users.

Finally, we've got a glimpse of the new book edited by our Coordinator, Professor Guadalupe S. from the Nottingham Trent University, "Sustainable Product Development: Tools, Methods and Examples" which includes contributions from our project partners.

[Enjoy the reading!](#)

Chela Miravet and Eva Lealhot
Make Mothers Matter EU Delegation

A new Demo on industrial and domestic lamps to be launched shortly



In the next weeks and starting until July 2021, our partner Kinesis, an industrial luminaire producer, will be launching a demonstration in the country of Barcelona (Spain).

Our partner OBA will also launch a domestic lighting demonstration in the same period in Valencia (Spain).

Due to COVID-19 some demo activities have been postponed or cancelled.

[Read More](#)

Demo on tablets to be launched shortly in the Basque Country



Our partners Innoventia, a HFTI innovation ecosystem, and CIRC4Life



Figure 35: CIRC4Life Newsletters

3. Communication support to DEMOs

To demonstrate the feasibility of the new CEBMs the effective engagement of stakeholders was crucial. End-user engagement has been vital in demonstrations and showcases. As such, MMM provided targeted communication support throughout the project for each DEMO, to engage all the necessary stakeholders, not only end-users but also industries, policy makers and academics. For this, MMM used the CIRC4Life contact database (almost 900 stakeholders) that was developed during the project (see section 1), its own network (affiliated associations in more than 30 countries and representing more than 10 million mothers), and the network of project partners, such as Alia consisting of almost 900 members or Recyclia (REC) with their network of more than 1,300 companies.

This support proved even more crucial as the pandemic hit and DEMOs owners had to adapt most of their activities. As physical demonstrations were being impacted by the pandemic, additional communication actions were needed to promote project activities and outcomes and engage end-users, industries, and other stakeholders.

MMM supported the demonstrators in their awareness raising campaigns and activities to engage stakeholders. This included the design of communication materials such as posters and videos which were developed and coordinated by MMM as well as the review of the communication materials that were developed by DEMOs owners.



Figure 36: Example of Communication Materials developed for DEMO 4



Figure 37: Example of Communication Materials developed for DEMO 2

Communication support was also crucial for the showcase events of all DEMOs, which were supposed to be physical events but had to take place virtually due to the Covid-19 pandemic. MMM therefore developed and supported the DEMOs owners with the design of videos that could be streamed during the online events. These videos were also used for the second Open Innovation Camp.

Regular communication on social media was also provided to communicate about the DEMOs activities and events and engage stakeholders in the project. Lastly, website and newsletter articles were also drafted.

4. Events

4.1. Seminar on the Role of Families in Achieving Circular Economy

On 14th May, on the eve of the International Day of Families, Make Mothers Matter organised in partnership with the European Economic and Social Committee (EESC) a seminar on “the Role of Families in achieving the Circular Economy”. It took place during the annual edition of the 2019 EU Green Week. The objective was to highlight the importance of engaging mothers and families as changemakers for transitioning to a circular economy. Around 60 policy makers, researchers, civil society representatives and other circular economy actors gathered in Brussels to discuss the role of families in achieving the circular economy. The event was opened by the EESC President.

As the Behavioural Study on Consumers’ Engagement in the Circular Economy published by the European Commission in 2018¹ pointed out, consumer participation on the Circular Economy has received little attention until now. However, consumers play a pivotal role in transitioning to a circular economy. The discussions explored how families could be better integrated in the circular economy transition. Experts and stakeholders from various backgrounds, from policy makers to community-led initiatives, exchanged on how we can achieve economic progress by including measures of social inclusion, equal opportunities and justice, and how families can be supported in order to contribute in the transition to a more circular economy.

Speakers included:

- 1) Luca Jahier : EESC President
- 2) Hugo Schally : Head of Unit, DG Environment, European Commission,
- 3) Anne Claire de Liedekerke: President, Make Mothers Matter
- 4) Eline Boon : Senior Policy analyst, Ellen McArthur Foundation,
- 5) Olalla Michelena : Director, Make Mothers Matter, EU Delegation
- 6) Jörg Adamczewski : Board member Zero Waste France
- 7) Silvie Droulans: Founder Zero carabistouille (zero waste initiative for families)
- 8) Aurelien Marino: Co-founder Happy hours market

The event was web streamed and around 100 participants followed the event through the Facebook live.

For more information: [Seminars | CIRC4Life](#)

¹ European Commission, Behavioural Study on Consumers’ Engagement in the Circular Economy. Final Report, October 2018.



Figure 38: Poster for the Seminar on the Role of Families in Achieving Circular Economy

4.2. Open Innovation Camps

A. First Open Innovation Camp (November 2018)

To promote the first OIC and recruit participants, potential participants were identified and contacted. This included mainly European and national NGOs, trade associations and researchers from similar H2020 projects. Participants were included in our contact database and are regularly informed about the project activities via the project newsletters. Communications activities were also conducted to support the promotion of the camp on social media (Twitter, Facebook and LinkedIn) and on the project website. Communication guidelines were drafted for partners to allow them to promote the innovation camp in a uniformed manner.

B. Second Open Innovation Camp (May 2021)

The second Open Innovation Camp on 27th and 28th May 2021, organized by Laurea University of Applied Sciences, was held to co-validate the developed Circular Economy Business Models and solutions and to identify future research and market opportunities in circular transition. Due to Covid-19 restrictions, the Camp was arranged virtually using Zoom and Howspace as collaboration platforms.

During the event, the CIRC4Life demonstrations and business models were showcased through a combination of displaying videos and presentations by partners, followed by interactive workshops where the results were discussed, and solutions were evaluated further.

Taking into consideration the goals and framework of the Open Innovation Camp, the validation of demonstrators and their implementation of the three CEBMs was done internally, with only consortium

partners taking part in the validation. In contrast, the validation and evaluation of CEBMs involved 27 external experts, in addition to the consortium partners.

Since external validation experts did not have the possibility to physically take part in the demonstrators, MMM was tasked with coordinating the production of digital materials. This included the following:

- 3 CEBMs videos
- 5 DEMOs videos
- 4 SOLUTIONS videos

The videos were presented during the camp and allowed external experts to validate the project outcomes.

MMM worked together with CEBMs, DEMOs and solutions owners and provided support with:

- the drafting of scripts
- shooting of videos
- the editing of videos, working together with a creative agency in order to have standardised videos containing visual designs.

MMM was also responsible for the promotion of the event itself and actively made use of the newly designed general visualisation to broadcast the event via newsletters and social media posts.

- Live drawings

In order to facilitate the flow of ideas, heighten the interest and participation during this virtual event, MMM hired a visual artist to “live draw” the exchanges. The live drawings added a nice touch and helped to communicate more creatively despite the restrictions of an online conference. The drawings were actively used on social media during and after the camp and attracted a good engagement.



4.3. Webinar: Traceability across circular value chains



Figure 23: CIRC4Life #EUGREENWEEK Partner Event

On the 10th of June 2021, over 120 participants took part in CIRC4Life EU Green Week 2021 Partner Event entitled: 'Traceability across circular value chains: How to unlock its potential and mitigate challenges?'

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

The event was moderated by Vasileios Rizos, from CEPS, organiser of this event.

Speakers included Maria Teresa Pisani from the United Nations Economic Commission for Europe and Karolin Langfeldt from Circular, as well as CIRC4Life partners, Maider Arieta-Araunabeña from Indumetal Recycling, and Sebastian Schmittner, from European EPC Competence Center GmbH (EECC).

Please find the event summary and the presentations [here](#).

4.4. Final Conference

Two online final events were organised and hosted by CEPS in collaboration with **Make Mothers Matter** on 22nd and 23rd of September 2021 under the heading **"Closing the Loop: Circular Economy Business Models in the Electronics and Agri-food sectors"**.

The events discussed lessons learnt from the implementation of circular economy business models in CIRC4Life project and discussed existing challenges and policies needed to further boost circular solutions. The events focused on two different value chains. Day 1 was dedicated to the electrical and electronic equipment (EEE) value chain, while day 2 was focused on the agri-food value chain. Each event lasted around two hours and involved several presentations with a panel discussion at the end. The presentations can be found [here](#).

Day 1 of the final conference events, entitled “Circular economy business models in the electrical and electronic equipment value chain”. The keynote speech was delivered by Arnoldas Milukas (European Commission), who focused on funding opportunities for circular initiatives, specifically H2020 and the successive Horizon Europe programme. From CIRC4Life, the conference chair Vasileios Rizos (CEPS) and the project coordinator Daizhong Su (NTU) delivered the welcome and introductory remarks. Karin Wilson and Hanna Lindén from RISE provided an overview of the implementation of CEBMs in the EEE value chain within CIRC4Life, as well as lessons learned, while Evaristo García (Recyclia) presented further lessons learned from the WEEE value chain. External perspectives were presented by Ronja Scholz (Fraunhofer IZM), focusing on circular design, and Garam Marc Bel (International Telecommunication Union), who focused on policy and regulatory developments. The presentations were followed by a moderated discussion with questions from the audience. Around 105 participants took part in the day 1 event. A summary providing further details of the event proceedings can be found in the Appendix 1.

Day 2 of the final conference was focused on the agri-food value chain and was titled “Circular economy business models in the agri-food value chain”. Welcome remarks were given by Vasileios Rizos (CEPS), who introduced the speakers and the topic of the event. Lahila De Sola Carrón (ALIA) and Jonathan Smith (Scilly Organics) presented lessons learned from implementing CEBMs in CIRC4Life, specifically in the meat and organic farming sectors. Additionally, two external experts provided presentations. Camelia Adriana Bucatariu (FAO) focused her presentation on the SDG 12.3 target on food loss and waste prevention and reduction, with a particular focus on data. Maria Chiara Femiano (Ellen MacArthur Foundation) focused on the idea of redesigning the food systems, presenting results from a recent Ellen MacArthur [study](#). Following the presentations, there was a moderated discussion with the speakers. Around 95 people participated in the event. A summary providing further details of the event proceedings can be found in the Appendix 2.

In order to promote these final conferences MMM undertook the following steps:

- A trailer video was developed to heighten the interest of our audience, together with an appointed creative agency. The video was broadcast on all the different social media channels, included in the CIRC4Life newsletter and uploaded on to the homepage of our project’s website.
- The event was actively promoted via social media inviting our audience to register for our final events and several CIRC4Life newsletters were sent out to our subscribers.
- In order to make these short virtual events more engaging and livelier for the panellists and the viewers, a visual artist was hired to “live draw” the exchanges. The drawings were actively used in the meeting itself and on social media and attracted a good engagement

With regards to the final conference events, CEPS conducted the following work:

- Developed agendas and identified and contacted speakers.
- Promoted the events through (emailing, social media, uploading the event to the EU Circular Economy Stakeholder Platform.)
- Hosted and moderated the events
- Drafted summaries from both events, which are included in the Appendixes of this document.

Appendixes

Appendix 1. Summary of CIRC4Life Final Conference Day 1: Circular economy business models in the electrical and electronic equipment value chain

Welcome by the conference chair Vasileios Rizos, Head of Sustainable Resources and Circular Economy, CEPS and the CIRC4Life project coordinator Daizhong Su, Professor, Nottingham Trent University

Welcome remarks were given by Vasileios Rizos, who gave an introduction of the speakers and an overview of the focus of the event, noting both the challenge of WEEE and positive growth in circular activities and business models. Professor Daizhong Su gave a brief introduction of the CIRC4Life project, highlighting that the project covered three circular business models, which were demonstrated in four different areas within the EEE and agri-food sectors.

Keynote introduction by Arnoldas Milukas, Head of Unit, European Research Executive Agency – European Commission

Mr Arnoldas Milukas delivered a keynote introductory presentation of Horizon Europe and H2020 programmes supporting the transition to a Circular Economy. In 2016-2017, Horizon 2020 provided €650 million for a dedicated focus area "Industry 2020 in the circular economy" in 2016-2017. This funding supported research and innovation projects demonstrating the economic and environmental feasibility of the circular economy approach. Among the projects that received funding as part of the Horizon2020 call of 2017 was CIRC4Life which was successful in engaging customers and enhancing the transition to a circular economy.

Mr Arnoldas Milukas acknowledged that the circular economy policy landscape has positively changed in the last few years, due to a number of initiatives and policy actions in this period. As part of the future research and innovation funding, the European Commission put forward the Horizon Europe Programme, a direct successor of Horizon2020. With a budget of 95.5 billion for 2021-2027, Horizon Europe will aim to address climate change challenges as well as support achieving the UN's Sustainable Development Goals and the EU's competitiveness and growth objectives. The circular economy will be one of the key focus areas of this programme with various relevant topics in its cluster 6 and 4. He furthermore emphasised the topic of "Digital tools to support the Circular Economy", that will support research and innovation actions for boosting the twin green and digital transition.

Key issues raised during the discussion:

Question: Research conducted in the context of CIRC4Life indicated that for many companies EU funding has been a key enabler for the implementation of circularity business models in the circularity business chain. However, for several smaller companies it is still challenging to access such funding due to the lack of capacity and sources to meet the criteria of EU funding programmes. Would the new format of Horizon Europe address this?

Arnoldas Milukas: A lot has been done to encourage the participation of "newcomers" in the programmes; however, there are specific requirements of the programme that need to be met by applicants and participants. Results of the programme can be used as an indicator of the success of its implementation.

Hans-Christian Eberl (Directorate-general for Research and innovation), who hosted the first meeting for the co-creation of the Horizon programme for 2023-2024 for the circular economy sector, agreed that accessing EU funds can be sometimes challenging for smaller companies. This is also attributed to the fact that the

Horizon Europe focuses on the large initiatives and projects targeting large-scale deployment of innovative solutions. Still, there is potential for smaller initiatives and actors to join other funding initiatives by cities and regions. Mr Hans-Christian Eberl also anticipated that interventions in the product value chain, including electronics, will become even more important due to the policy context. A package that focuses on sustainable product policy, consumer empowerment and verification of green claims is expected at the end of 2021 or in early 2022. This new package will supplement the Circular Economy Action Plan, furthering the momentum of research and innovation of these materials streams.

Question: Should there be funding opportunities for functional processes and structures in the area of large-scale waste management demand?

Answer by Mr Hans-Christian Eberl: The programmes contain several cross-references between cluster 4 and cluster 6, with digitalisation particularly emphasised within cluster 4. Achieving digitalisation in alignment with circularity transitions is considered among the primary targets, especially in the processing industry, construction, and manufacturing.

Question: Regarding the metrics and indicators for measuring the circular economy transition: Will the EU Commission develop new indicators on resource use as part of Horizon Europe, and what should we expect from these metrics?

Answer by Mr Hans-Christian Eberl: He sees the work to be conducted as part of cluster 6 of Horizon Europe more as consolidation and strengthening of existing knowledge. Outcomes from this work, which will take the form of dedicated studies, will feed in other relevant streams of work of the European Commission such as the circular economy monitoring framework.

Discussion on existing challenges and policy instruments for increasing circularity across the electrical and electronic equipment circular value chain:

Karin Wilson, Researcher and Project Manager and **Hanna Lindén**, Researcher and Project Manager, RISE Research Institutes of Sweden

Karin Wilson gave an overview of the circular economy business models in the CIRC4Life project, as well as ICT tools and incentives developed. The CIRC4Life App was designed to encourage customers to reuse and recycle their small electronics and register their sustainable actions in their eco-account. The eco-account includes the balance of eco-cost, representing the environmental impact of purchases and eco-credits, which represent the sustainability benefits of circular activities such as reuse or recycling of devices. Another tool to encourage sustainable behaviour is incentives, which were given as discounts or tree planting. Ms Karin Wilson also provided a quick overview of the circular business models implemented by the three companies in the electrical and electronic sector within the project, namely Ona, Kosnic and Indumetal/Recyclia.

Hanna Lindén further elaborated on the key lessons learned and takeaways from the project. Co-creation and collaboration with stakeholders through workshops, interviews or other testing activities was perceived as valuable in the project. These activities helped to form an understanding of customer preferences, which were used to inform product development, as well as build relationships within the supply chain. One example of co-creation activities in the project was the recycling and reuse model implemented by Indumetal and Recyclia which helped discover that users also appreciate non-financial incentives. Based on this feedback it was decided to add tree planting to the incentive scheme for disposing old devices. The need to adapt to the specific stakeholder setting was also seen as an important lesson learned, as illustrated by Kosnic, which due to a corporate customer base found life cycle assessment (LCA) information sheets to be more useful.

With regards to LCA, Ms Hanna Lindén pointed out that identifying the "hotspots" of environmental impact can be used to indicate where improvements are needed the most. Beyond making improvements to product development and processes, this information was also useful for communication and creating a better understanding of environmental impacts. Another lesson learnt from this project was the importance of modularity to facilitate easy repair, remanufacturing, and reducing resources being used. Ms Hanna Lindén further emphasised the continued dialogue as a prerequisite for receiving information regarding the assessment of devices. Communication and awareness raising also remains key to engaging customers, and to help encourage sustainable behaviour.

Ronja Scholz, Service Designer and Research Fellow at Fraunhofer IZM, started her presentation with highlighting that the growing amounts of e-waste create environmental challenges but also to a loss of significant economic opportunities. From the design point of view, Ms Ronja Scholz added that to extend the lifetime of a product, circular design is needed. She provided the example of Fairphone, which is designed in a modular way. It should be kept in mind though that in order to achieve emissions reduction benefits through modularity, the user will need to repair the device and keep it for a longer period. In this sense, circular design is all about reusing resources more effectively. Ms Ronja Scholz provided an example of the Kaer centralised unit providing air conditioning in a tower building. By doing so, the associated emissions were reduced by 70%.

Moreover, improved service design allows for data and digital optimisation within the business model itself. Looking into the components of a product and the whole ecosystem proved to be beneficial in the example of the router producer British Telecom. Changing the router's design to ensure its delivery through the mailbox increased customer satisfaction and reduced emissions from delivery, which was identified as the biggest emitter in the process. Another new business model that helped society was the citizen sensing emissions which allow anyone to participate in data collection.

Garam Marc Bel, E-waste Officer, International Telecommunication Union (ITU), gave a presentation on WEEE policy and regulatory development, with a focus on extended producer responsibility (EPR). Only around 40% of the countries in the world have policy or legislation on the management of e-waste. In addition, some of the countries that have some policies in place have not necessarily placed legal obligations on different stakeholders to manage e-waste. Mr Garam Marc Bel further elaborated on the Policy Toolkit for policymakers at the national and local level, which provides a step-by-step approach to implementing EPR schemes. From the perspective of the toolkit, economies of scale and recycling hubs are possible to facilitate e-waste management and retain valuable materials. He also presented the ITU programme on e-waste policy that aims to enhance the development of national policies and regulations for e-waste in the participating countries.

Mr Garam Marc Bel further emphasised that simplicity and clarity are essential for EPR regulations. Clear definitions of producers, consumers and e-waste categories are key, as well as clear roles, clarity around financing and stipulations for enforcement. There are three main options for organisation of EPR schemes: state led models funded by levies, industry led monopoly models, and compliance service models.

Evaristo García, Project Manager, Recyclia, elaborated on the lessons learnt from their implementation of collaborative recycling and reuse business model for tablets as part of the CIRC4Life project. He expressed appreciation of the chance to co-create and collaborate with end-users, which enabled Recyclia to obtain feedback that they used to adapt their work. Specifically, they added a new incentive (tree planting), as they discovered that people wanted also non-financial incentives for sustainable behaviour. Moreover, public support was identified as vital to the success of such circular initiatives. They also experienced that not only hardware, but also software, could create challenges for the reuse of devices. This was due to both software restrictions and obsolescence.

Issues related to traceability and privacy were also raised by Mr Evaristo García linked to a large extent to a lack of trust among end-users. He furthermore identified four main categories of barriers: economic (lack of

finance), technical (software issues and need to adapt collection), policy and social (lack of trust and awareness). However, he also highlighted opportunities of the circular economy, as green jobs and new business models, as well as funding programmes.

Discussion and Q&A with audience – moderated by Vasileios Rizos, CEPS

Question: Were within the project where the companies encountered difficulties obtaining specific life cycle assessment data? If yes, how can these gaps be filled in the future? How the companies reacted to the results of the life cycle assessment?

Answer by Ms Karin Wilson: A lot of companies are reluctant to share data because they considered it their private property but if there becomes a more general tool used on a large scale, it could be easier to get companies onboard. The ability to compare products would be key in this regard.

Answer by Ms Hanna Lindén: There are different ways to communicate the LCA data to users, as seen through CIRC4Life. This could be in the form of product labelling, web page containing the LCA data or as part of their information sheets in the project proposals to the wholesaler, which is in line with the lessons learnt to adapt to specific stakeholder settings. However, standardization is crucial to facilitate a meaningful comparison of different products, which implies that the sustainability value communicated need to be comparable.

Question: There is a variety of different national EPR frameworks in Europe and beyond. Which would be the key principles of a successful EPR policy framework?

Answer by Mr Garam Marc Bel: One of the biggest questions is who is putting the equipment on the market because identifying the producers could be very challenging, especially in less advanced economies. Some countries in Africa prefer to have a government-led scheme, however, if the funds are accrued from levies and administered by the Ministry of Finance, it is often not considered as an environmental issue but as a taxation issue. The result is that funds are accrued and put into a general point for taxation for another economic spending. Economies of scale should be considered from a recycling perspective, but there is a need to set up an incentive or compliance scheme. In the case of regional harmonization, cross-border compliance schemes could potentially deal with lower economies of scale providing feedstock to recyclers. It should be taken into account however there are countries that do not produce significant amounts of e-waste and need to identify that EPR solutions as well.

Question: What should be done to encourage different partners to share the data that they are using?

Answer by Ms Ronja Scholz: While understanding the desire of companies to protect their intellectual property, the open-source movement can be seen as an example of people seeing also the advantage of collaboration. Opportunity cost is essential in this regard. Companies can receive user feedback without cost, and save money on marketing. However, people are more likely to interact with you and provide you with information if you are also open. Standardization could be a valuable tool in alleviating companies' reluctance to participate in data exchange. Policies, or the use of blockchain, could be instrumental in providing industries or sectors with assurance in standards that their intellectual property would be protected.

Question: CIRC4Life developed an incentive scheme for the collection of e-waste based on 'intelligent bins' and a consumer app. Could this experience be replicated in other countries and regions? If yes under what condition can it be successful?

Answer by Mr. Evaristo Garcia: The experience can be replicated in other regions, though it would require support of the public administration, collaboration between actors in the value chain and financing of

collection. In their case they used intelligent bins, which are costly. Moreover, an IT platform together with an app that supports the system in managing the data would be needed.

Question: As shown in the presentations, the environmental benefits of modular mobile phone devices depend to a large extent on how and for how long the consumers will use the devices. Given that there are several similar trade-offs in the area of circularity, what should be the focus of future ecodesign requirements?

Answer by Ms Ronja Scholz: Implementing strict regulations may not necessarily best achieve the goals. The most important fact is to understand on the one hand how much technical innovation is going to happen in the next decade and on the other hand what would be the objective of the policy, i.e. repairability, upgradeability, etc. What is key would be to understand the full life cycle of product, e.g. production may not be the most important stage from a life-cycle perspective, as well as to help people make informed decisions.

Appendix 2. Summary of CIRC4Life Final Conference Day 2: Circular economy business models in the agri-food value chain

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

Welcome remarks were given by Vasileios Rizos, who gave a brief overview of the focus of the event and introduced the speakers, including two from the CIRC4Life project. He noted the challenge around food waste and loss in Europe, and the associated environmental and economic impact, as well as the potential for improvement through implementing circular practices, reducing waste, designing more circular products and recycling.

Discussion on existing challenges and policy instruments for increasing circularity across the agri-food value chain

Camelia Adriana Bucatariu, International Consultant - Food Losses and Waste Analyst, FAO focused on the SDG 12.3 target on food loss and waste prevention and reduction, specifically looking at Europe and Central Asia. She first highlighted the interconnectedness of SDG 12.3 with other SDGs and targets. The following part of the presentation focused describing the work areas of the 'Food loss and Waste Prevention and Reduction Programme' in Europe and Central Asia. Among the various work areas, Ms Camelia Adriana Bucatariu highlighted the work around improving the statistical capacities of countries and reporting data on food lost waste which currently represent a significant gap. The work on target 12.3 has been divided into food losses from production up to wholesale excluding retail, and then from retail up to households for food waste. Around 30% of food is lost or wasted globally. Although causes vary between countries, leading causes of food loss were lack of accurate data, unfavourable investment climate, trade and taxation policies, lack of awareness, coordination and logistics issues, safety concerns and fragmentation of productions. On the basis of the work on the food loss and waste indexes, FAO is capable of tracking progress on data. Nevertheless, data gaps create particular challenges, as without accurate data it is impossible to identify ongoing trends and assess whether there has been any tangible progress. While this needs to be addressed at the country level, cooperation with the private sector is crucial. At the EU level, the Directive 2018/851/EC that covers food waste from production up to consumption will address some of these gaps. At the global level, FAO provides information and training on data collection strategies and instruments. On the local level, FAO has worked with the private sector and civil society organisations to track the food supply chain and identify critical loss points the same time.

The importance of collaboration and knowledge transfer on food loss and waste was highlighted. Collaboration with the EU enables FAO to transfer some of the knowledge from the wider region and from a global perspective to discussions on the EU level. The exchange of information allowed the institutions, member states and local authorities, together with the private sector and civil society, to be informed in real-time around the topic on how the work is done on a global level. She highlighted the importance of platforms of dialogue that need to be facilitated in a non-competitive manner to allow the sharing of information on solutions that are already available. The communication side has been identified as crucial because solutions to prevent and reduce food loss and waste must be clearly communicated. Moreover, return on investments needs to be better communicated to the private sector. At the same time, traceability solutions have a notable and untapped potential to help prevent and reduce food loss and waste.

Maria Chiara Femiano (Senior Policy Officer, Ellen MacArthur Foundation) focused her presentation on redesigning the food system through regenerating nature with the circular economy. She emphasised that the opportunity for introducing circularity in food systems lies in the design stage. The principles of elimination, circulation, and regeneration can be introduced by designing them into the system. While businesses can be part of the problem, Ms Maria Chiara Femiano pointed out that they can also be part of the solution if

implementing circularity. The concept of food design can be split in three stages: from idea to ingredient selection, ingredient sourcing (and production), and packaging. Thus, the principles of circular economy can be applied to different dimensions of food design. Focusing on the two first, four opportunities can unlock substantial environmental and economic benefits. These are diverse ingredients, lower impact (ingredients), upcycling and regenerative production. By using more diverse species as ingredients, it could create more diverse cultivation, and have positive impacts on biodiversity, resilience of food systems and food security. Selecting ingredients with lower environmental impacts is also important, e.g. substituting wheat with peas as an ingredient can reduce GHG emissions and improve biodiversity. Upcycling refers to using by-products or reusing materials to the highest level, which can create many business opportunities. Economic and environmental opportunities can also be created through regenerative production, though complex and varying across regions and crops. The greatest opportunity lies in circular design and combining several of the above areas. Ambitious and well-researched action plans can furthermore help facilitate new cooperative dynamics with farmers. Moreover, iconic products could help showcase the potential of circular design for food, and common metrics and definitions should be implemented to measure the outcomes. Last but not least, Ms Maria Chiara Femiano pointed out that policies that support a nature-positive and circular food system should be promoted.

Lahila De Sola Carrón (ALIA) briefly presented the ALIA company, their aim in the CIRC4Life project and provided lessons learnt from implementing circular business models in the meat sector. As the value chain was already efficient in use of resources and waste management, they focused their efforts on the end-use. Using the tools provided by the CIRC4Life project, they made efforts to raise awareness among the consumers, and address the recycling of bio-waste. While bio-waste is consolidated in many countries in Europe, this is not yet the case in Spain. The goal was to enhance citizen participation in waste management by providing incentives to use regular and intelligent bins. ALIA also produced two new products with lower environmental impact (according to their estimates they were 30% more sustainable than the average product of the same category). A key lesson they learned in this regard was the crucial role of presenting information regarding the products comprehensively and understandably to the customers. The eco-label developed as part of CIRC4Life was a useful tool to do this. Another lesson learnt was that comparable information for all products would be important to influence customer behaviour. To enable this, a larger range of products need to apply and communicate in a consolidated way sustainability information in Europe. The goal was to enhance citizen participation in waste management by providing incentives to use regular and intelligent bins.

Jonathan Smith (Scilly Organics) focused on how a circular economy can be implemented in the setting of small-scale organic vegetable farming. As part of the CIRC4Life project's sustainable consumption business model, Scilly Organics calculated environmental and social impacts, including a life cycle analysis and a carbon footprint assessment, formed an action plan to reduce those impacts and communicated to potential customers the sustainability profile through an eco-label. In that regard, he noted that simplicity of the label and integrity of the calculation are key. Additionally, he highlighted that soil plays a crucial role in improving fertility, carbon sequestration, crop health, and biodiversity. Regarding co-creation, Scilly Organics had an ongoing dialogue with businesses and individual customers, created new products such as apple juice from excess apples, and provided consultancy services assisting farmers and growers to reach their net-zero 2030 goals. While the co-creation process could be challenging, it offers considerable benefits in terms of facilitating greater engagement with customers and creating business opportunities.

With regards to the collaborative recycling and reuse model, Scilly Organics made compost of bio-waste, improved recycling of other wastes, and trialled new plant-based packaging. Based on feedback, he found that packaging appears to be important to customers. Key lessons moreover included that recycling can be an issue particularly in rural areas, working with suppliers up and down the supply chain is crucial, and customer engagement is vital. According to Mr Jonathan Smith, there is room for improving policy support for sustainable food production, as externalities are not represented in the cost of food. In his opinion, policymakers should ensure that farmers are paid to produce quality food and protect the environment. For

this purpose, agricultural, food and health policies should work together. While carbon markets can provide a better incentive towards a circular economy, fruit and vegetable production should be granted higher subsidies.

Discussion and Q&A with audience – moderated by Vasileios Rizos, CEPS

Question: What are some specific data gaps with regard to food waste and how can they be filled in the upcoming years?

Answer by **Camelia Adriana Bucatariu**: In the process of gathering all the available data on food waste in the EU sector, several gaps were uncovered in the methodology as well as the availability and quality of food waste data. One gap came from the fact that food waste was included until recently in the same category as biowaste. However, with Directive 2018/851/EC, food waste was introduced as a separate category while requirements on implementing a methodology that enables reporting and data collection were introduced as well. The EU Platform on Food Losses and Food Waste came up with a method that food business operators can adhere to. This method set up a clear structure for processing data from the food business operators to Eurostat and FAO.

Question: Have you encountered a lack of collaboration on behalf of companies you worked with? How can collaboration be increased?

Answer by **Maria Chiara Femiano**: From experience, collaboration requires time and adaptation. More co-creation should happen, bringing the producer, the farmers and customers together. The introduction of extended contracts can be helpful in terms of allowing for sufficient time for the circular transition and provide longer term investment. With regards to policy measures, the support to such transition needs to be fully mainstreamed. Learning from each other can also be to facilitate the transition.

Question: With regards to traceability and transparency of the supply chain: What solutions can be implemented that would apply to both smaller and bigger companies?

Answer by **Jonathan Smith**: While digital solutions such as traceability and QR codes work well for large companies, it can be difficult to implement for smaller companies and may not be the right solution for them. However, product labels can be beneficial if backed up by reliable information so the consumer can understand the sustainability of different products. He noted that solutions and policies need to take into account the companies' different size.

Question: What technical barriers exist in relation to eco shopping?

Answer by **Lahila De Sola Carrón**: In order to influence customer behaviour, integrating comparable sustainability information in all products of large companies/supermarkets is key.

Question: What do you consider as the most significant source of food losses? What policy action can address those losses?

Answer by **Camelia Adriana Bucatariu**: From the available data, perishables i.e fruits and vegetables, and bakery products, are among the main sources of food loss. With regards to bakery products, the food literacy of the consumer is essential. The EU Platform on Food Losses and Food Waste has identified some of the critical areas and solutions. With regards to policy, instruments, clarifications on what solutions can be implemented and information on how to scale up can be important.

Question: What are the existing legal barriers from other domains that circularity faces?

Answer by **Maria Chiara Femiano**: While health policy will remain central to how food is managed, better aligning existing policy domains such as health, food and bioeconomy policies represents an untapped opportunity. From a policy perspective, alignment of priorities could be beneficial. There is also a need to highlight opportunities for upcycling. Research and innovation can help showcase circular solutions, which could potentially help speed up approval of reuse of by-products.

Question: What are the lessons learnt from the carbon calculator as part of the project? Where do you see significant gaps in collecting data, and what can be further done?

Answer by **Jonathan Smith**: Regarding the upsides of capturing data, it is possible to see overall trends through anonymous aggregation of data. The three biggest sources of emissions from farming are: artificial fertilizers, livestock and fuels. Carbon sequestration, on the other hand, provides opportunities for farms and growers. Particularly soil carbon sequestration is a win-win method that according to Mr Jonathan Smith it can also improve soil quality.