



ELECTRONICS
CLUB



PROJECT FINAL REPORT

April 2022



SITRA



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Cover: Screen post on Unsplash

Page 6: Eirik Solheim on Unsplash

Layout

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April 2022

Acknowledgements

The CIAP Electronics team wish to thank those who have been involved throughout the project: Electronics Club Members, those who were interviewed for the social impact discussion paper, and those who attended workshops and events. They wish to thank the project funders – Sitra and DBU – for making the project a reality and for their support throughout the process.

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The **Consumer Insight Action Panel** (CIAP) is a European multi-stakeholder initiative designed to support the transition to the circular economy by generating, applying and testing consumer behavioural insights in circular strategies in areas such as textiles, plastics and electronics. The overall vision is to enable circular behaviours, by exploring how innovations can enable consumers to reuse, repair, share, recycle, lease and otherwise support circularity and sustainability.

This report has been produced within the framework of the Electronics Club, a stakeholder group forming part of the project alongside the Plastics Club. It covers the activities of the Electronics Club.

The Collaborating Centre on Sustainable Consumption and Production (CSCP) is an international nonprofit Think and Do Tank that works with businesses, policy makers, partner organisations and civil society towards a good life. www.cscp.org

The Finnish Innovation Fund Sitra collaborates with partners from different sectors to research, trial and implement bold new ideas that shape the future.¹ Together with DBU, Sitra funded the CIAP project, mainly the Electronics Club. www.sitra.fi

The **Deutsche Bundesstiftung Umwelt (DBU)** funds innovative, exemplary and solution-oriented projects for the protection of the environment, with special consideration of small and medium-sized enterprises. The funding activities focus on environmental technology and research, nature conservation, environmental communication and protection of cultural assets.² Together with Sitra, DBU funded the CIAP project, mainly the Plastics Club. www.dbu.de

This project has been run in partnership with the **European Circular Economy Stakeholder Platform** – a joint initiative by the European Commission and the European Economic and Social Committee. The European Circular Economy Stakeholder Platform brings together stakeholders active in the broad field of the circular economy in Europe.³ <https://circularconomy.europa.eu/platform/>

¹ Description from <https://www.sitra.fi/en/themes/about-sitra/>

² Description from <https://www.dbu.de/2535.html>

³ Description from <https://circularconomy.europa.eu/platform/en/about-platform>

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FOREWORD

→ Circular Economy solutions are needed to safeguard biodiversity and solve the climate crisis. The current way in which products and materials are used is not on a sustainable level and we need to change it. Transition to a circular economy requires both smarter economic solutions and practices and people who change their behaviour. The best way to create these solutions is to bring together the views of different members in an insightful way. The Consumer Insight Action Panel (CIAP) is one method to develop smarter circular solutions.

The solution to the sustainability crisis – climate change, biodiversity loss and the depletion of natural resources – requires a transition to a circular economy. We need products that are long-lasting, made from recycled materials and at the end of their lifecycle the materials can be recycled. We also need smarter economic models that will not stop all consumption but transform it, making it more sustainable. Circular economy solutions are important to businesses, people, cities, municipalities and countries. Always someone is consuming and someone is producing and this is the sweet spot that isn't always discussed when we talk about the circular economy. So, the key question is how to create sustainable products and how to create circular solutions that integrate into people's daily lives. On EU level decision-makers have already clearly recognised the importance of understanding and integrating consumer knowledge and behavioural insights into the circular economy transition. Despite the importance of consumer insights, there is little research or action on behaviour change with specific regard to the circular economy. In the circular strategies the behavioural and consumption aspects are still largely overlooked.

To address this gap, CSCP, Sitra and DBU set up the **Consumer Insight Action Panel (CIAP)**. To showcase that decisions of Circular Economy cannot be taken without human elements, without thinking why someone would make circular economy actions. And on the other hand, none of us can really make circular economy actions without the support of business or political decision makers. From this idea Sitra and CSCP started in 2018 planning together the idea of a working group that would experiment circular economy solutions with consumers/people and share those experiences with decision makers from public and private sectors.

CIAP Clubs have been organized for textiles, plastic and electronics. Sitra took part in the Electronics Club in which the focus was to solve two challenges: how to increase the recycling rate of mobile phones and tablets and how to promote their



repairing. In addition to Central Europe, Members were also sought from Finland for the Electronics Club. The theme is topical in Finland because Finland published, as the first country in the world, the national Climate and Environmental Strategy for the ICT sector⁴ in March 2021. CIAP's work also well supports Sitra's goal of increasing understanding and means of the environmental impact of digitalization.

The Electronics Club was created because electronics and various devices have become an integral part of our lives. Devices make life easier, but they also bring challenges. One of the challenges is the enormous growth of e-waste. It is estimated that in 2021 the annually generated amount of e-waste in the world will outweigh the Great Wall of China (approximately 57,4 million tons)⁵. The European consumer produces an average of 16,6 kg of e-waste per year. Only just over 40 percent of this ends up in a proper recycling. This means we are wasting valuable and rare metals which are the same that are needed for the green transition, i.e. for renewable energy production and e-mobility⁶. The increase in e-waste is due to the growing consumption of electronics, smaller periods between new product releases, continuously shortening service life, limited options for repairing broken items and low return rates for recycling.

The work that has been done in the CIAP Electronics Club has provided important insights of circular economy solutions and needed behaviour change. The discussions and presentations in Club meetings have really sparked the need for networks, where industry representatives can openly discuss challenges and exchange experiences together. The experiments which have been implemented and executed during the Electronics Club have given good insight of the real issues that "real people" have with electronics recycling, repairing and reusing.

⁴ Finland announces climate strategy for ICT sector: harnessing data bits to combat climate change (valtioneuvosto.fi)

⁵ International E-Waste Day: 57.4M Tonnes Expected in 2021 | WEEE Forum (weee-forum.org)

⁶ Study: Recycling the Metals and Minerals of Smartphones and Televisions is Difficult, Design is Key | GTK

Interestingly the big findings of consumer behaviour usually are really the small ones. We already can guess the bigger issues that consumers might have when thinking of circular economy business models. But the small things are usually ignored or not known and these are the things that change the culture or the behaviour, so called tipping point things. For example, interesting small finding from this Club's experiments is that people would like to hear the story of their phones after they have given it back. What happens to it? Can it be refurbished? Maybe it will be someone else's phone now? How can we provide that to consumers in a fun and meaningful way?

In addition to the circular behaviour experiments carried out during the project, attention has also been paid to the social impact of the circular economy transition. Incorporating a social impact perspective into the Electronics Club has been important to Sitra, as there has been only little public discussion on the subject. However, the discussion e.g. on the skills related to the circularity of materials, from product design to recycling and reuse has started to emerge. In electronic sector, jobs are likely to be created in design, repair and material recovery⁷. This requires upskilling and reskilling of workers to ensure a fair transition. The work done in the Club related to the social impacts will hopefully encourage an increasing debate on the future development of the social side of the circular economy and the electronics sector.

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⁷ *How does the circular economy change jobs in Europe? - Sitra*

EXECUTIVE SUMMARY

This report sets out the background to the Circular Electronics project of the Consumer Insights Action Panel (CIAP), shares information on the multi-stakeholder circular Electronics Club at the heart of the work, provides an overview of the methodology followed in gathering insights, designing and running interventions, and evaluating results and sustainability of the pilots. It is a report designed not only to provide an overview of the project's activities, but also to share learnings, findings and models that could support potential future initiatives in the field of circular electronics and beyond.

The opening chapters share the story behind the creation of the CIAP Electronics project, with: a foreword by Sitra; a discussion of the need for consumer action on the Circular Economy; an introduction to the Consumer Insight Action Panel; and the set-up of the CIAP Electronics Club itself.

The middle chapters of the report share the main content developed through the project: an overview of the key initial insights on consumer behaviour from the literature; the step-by-step methodology for the circular electronics interventions; the key results and findings of the interventions; and the highlights of the social impact exploration.

The final section provides an overview of the project's stakeholder engagement activities (beyond the Electronics Club itself), followed by concluding remarks including contributions of the project to the field and areas of future potential.

THE NEED FOR CONSUMER ACTION ON THE CIRCULAR ECONOMY

The move from a linear to a circular economy is one of the major imperatives of our times, a transition that requires a fundamental change in the ways we produce and consume. It means moving away from a linear economic model in which products are manufactured, consumed and disposed, to a circular model, where products and materials are kept in use for as long as possible, including maintenance, reuse and repair services.⁸ The Circular Economy holds great potential to reduce the pressure on the environment, decouple economic growth from resource use, increase competitiveness, and boost innovation – in short, there is great hope in the ability of the Circular Economy to make our economies and societies more sustainable and resilient for the future.

This global trend is also reflected in EU regulations, and above all in the EU Green Deal that sets an important strategic framework to guide, promote, and push society towards a **Circular Economy**.⁹ The **Circular Economy Action Plan** – a building block of the EU Green Deal – entails initiatives along the entire lifecycle of products in order to ensure that resources are kept in the EU economy for as long as possible.¹⁰ Along with making sustainable products a norm in the EU, empowering customers, ensuring less waste, focusing on resource-intensive sectors, and making circularity work for people, regions, and cities, the new action plan aims at fostering **sustainable consumption**.¹¹

In this line, EU decision-makers have already clearly recognized the importance of understanding and integrating consumer knowledge and behavioural insights into the context of the transition to a circular economy: “The choices made by millions of consumers can support or hamper the circular economy. These choices are shaped by the information to which consumers have access, the range and prices of existing products, and the regulatory framework.”¹²

Despite the importance of consumer insights, there is little research on behaviour change with specific regard to the circular economy, and the need to consider behavioural and consumption aspects is still largely overlooked within the circular economy transition.¹³ Strategies, actual efforts and expected benefits are largely focused on the production side of a circular economy. Misconceptions and assumptions about consumers still prevail, without a sound evidence base about what consumers are really thinking and doing when it comes to circular economy strategies, and what role behavioural knowledge and consumers themselves can have.

⁸ Ellen MacArthur Foundation (2018)

⁹ A European Green Deal. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

¹⁰ Circular Economy Action Plan. https://ec.europa.eu/environment/strategy/circular-economy-action-plan_en

¹¹ Circular Economy Action Plan. https://ec.europa.eu/environment/strategy/circular-economy-action-plan_en

¹² European Environment Agency (2015)

¹³ Muranko, Žaneta et al. (2019)

THE CONSUMER INSIGHT ACTION PANEL

To address this gap, the CSCP, Sitra and the German Federal Environmental Foundation (DBU) launched in 2019 the [Consumer Insight Action Panel](#), in partnership with the European Circular Economy Stakeholder Platform. The goal of the Consumer Insight Action Panel is to translate consumer needs and behavioural knowledge with specific regard to the circular economy in Europe into impact-oriented and consumer-relevant policy recommendations, business innovations and civil society actions towards the circular economy. In other words, the main objective is to enable change towards the circular behaviours that really matter.

The work has been organised in Clubs, which are groups of high-level stakeholders committed to leading the work of generating and integrating consumer behavioural insights into successful circular economy strategies. This includes business, start-ups, NGOs, researchers and European policy makers. There are three Clubs and each Club focuses on one sector – electronics, plastics and textiles – and is composed of about 10 members, dedicated to exchange knowledge, benchmark existing solutions, prototype and test innovations, and lead the sector when it comes to fostering circular behaviours. This report focuses on the work of the Electronics Club, supported primarily by Sitra. You can find more details about all three Clubs [here](#).

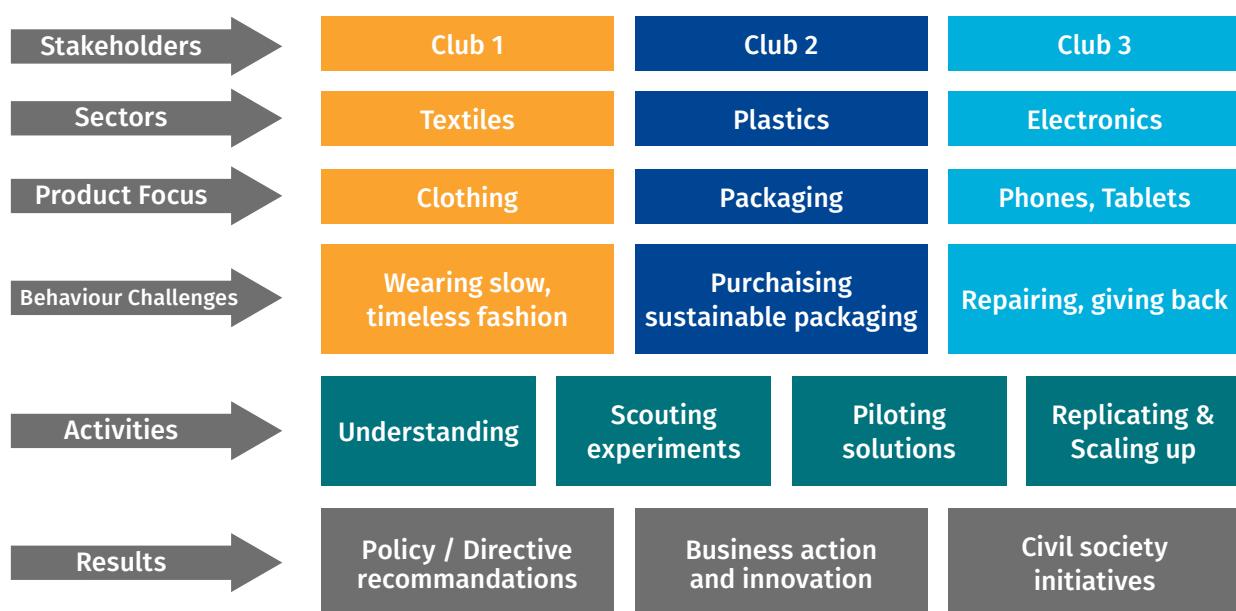


Figure 1: Consumer Insight Action Panel structure

The CIAP Electronics Club

Electronics is one of the major target sectors of the European Circular Economy Action Plan¹⁴. The reasons are manifold: Each European generates 16.6 kg e-waste per year. E-waste reached 50 million tons in 2018 globally, a figure that grows 3–4% every year¹⁵ and makes e-waste one of the fastest growing waste streams in the world. This is partly because the useful lifetime of most electronic products is decreasing, and an increasing number of appliances are replaced before they reach their average useful service life of 5 years.¹⁶ In the meantime, it is estimated that less than 40 % of electronic waste is recycled in the EU¹⁷, while over one third of European consumers have never repaired an electronic product.¹⁸ These are some of the challenges faced in the electronics sector in Europe, not to mention the critical resource, carbon and water footprints that result from this. If Europe is to change these unsustainable developments, consumers need to be involved as key players. They are the ones who need to use electrical appliances longer, repair them.

For example, a 1-year lifetime extension of all smartphones in Europe would save 2.1 million tons of carbon dioxide per year by 2030: in other words, a reduction of the overall carbon footprint from smartphones of 31%, the equivalent of taking more than 1 million cars off the road for a year.¹⁹ Therefore, we were particularly keen to explore how to foster greater consumer uptake of behaviours that support the lifetime extension of electronics, particularly giving back and repairing smartphones and tablets. However, there are hurdles to overcome regarding changing consumer behaviour.

With regards to ‘giving back’ behaviour, it is known that millions of smart phones and tablets are stored and forgotten in Europeans’ drawers.²⁰ A 2018 survey conducted by Bitkom in Germany²¹ showed that 59 % of the respondents keep two or more unused mobile phones in their homes; 53 % of respondents have given away a mobile phone at least once; 58 % of them have sold their old device; 26 % of them brought it to a collection point for electronic waste; 25 % gave it to someone they know, 13 % gave it to charity, 11 % brought it to a retailer. Overall, there are more devices stored than further used or returned, and the reasons for it vary, according to existing research, from lack of awareness about the possibility to return or sell back such devices, through to nostalgic results, lack of trust and lack

¹⁴ Circular Economy Action Plan, European Commission.
https://ec.europa.eu/environment/strategy/circular-economy-action-plan_en

¹⁵ ITU, (2017)

¹⁶ Prakash, Chandra et al. (2016)

¹⁷ eurostat (2017)

¹⁸ European Commission (2018)

¹⁹ European Environmental Bureau (EEB) (2019)

²⁰ Eerola et al. (2021)

²¹ Bitcom e.V. (2018)

of social and financial incentives. This is one of the reasons why boosting take-back schemes of electronics is one of the key priorities of the Circular Economy Action Plan. As part of the Consumer Insight Action Panel, we have further investigated the reasons why certain consumer groups avoid returning smartphones and tablets, and tested interventions to overcome it.

Regarding ‘repairing’ behaviour, the Consumer Insight Action Panel focused on supporting the EU’s implementation of the right to repair. For example, we have tested the impact of a product repairability label in purchase decisions, especially if such labels are applied across the full product range.

Overall, the Electronics Club mission was to connect circular production to the use of electronics by consumers, to go deep into understanding the consumer behavioural elements of the circular electronics transition, and to unlock the practical applications of behavioural insights. This way we wanted to help enabling a more circular behaviour in the sector. In this context, the Electronics Club has come together to explore ways to engage consumers more effectively in this transition and test behaviourally informed approaches in retail stores, neighborhoods and households to foster circular electronic goals such as boosting take-back schemes, enabling the fulfilment of the right to repair, and supporting product maintenance.

MEMBERSHIP

We are a multi-stakeholder group dedicated to support the transition to circular electronics by generating, applying, and testing consumer behavioural insights in circular strategies:

Member organisation	Stakeholder type
Refurbed	Start-up company
Global Enabling Sustainability Initiative (GeSI)	Organisation of ICT and manufacturing companies
European Environment Bureau (EEB)	NGO, advocacy
Stop Planned Obsolescence (HOP)	Not-for-profit organization (lobbying, awareness raising, research, company members)
International Association of Electronic Waste Producer Responsibility Orgs (WEEE Forum)	Not-for-profit group of national producer responsibility organisations
Chair of Corporate Management, Technical University of Munich (TUM)	University
Consumers' Union of Finland	NGO consumer rights organisation
Closing the Loop	Start-up company
Piceasoft	Software company
International sparring partners	
China Association of Circular Economy	Multi-stakeholder association
NYC Department of Sanitation	Public authority, city administration
Bell Canada	Telecommunications company



TUM
Technische Universität München



INREGO



Bell

METHODOLOGY, ACTIVITIES AND OUTCOMES

For each of the Clubs, we were following certain work streams that were designed to deliver insights about consumer behaviour change, but also benefits to the Club Members for their work. In the context of the Electronics Club, these were:

- 1** Collection and discussion of existing behavioural insights about how consumers relate to electronics in general;
- 2** Specific collection and development of insights and pilot testing of behavioural experiments with regards to selected electronics-related circular behaviours such as giving back and repairing devices;
- 3** Engagement of external experts to discuss the social impacts of circular economy solutions;
- 4** Advocacy and dialogue with the Commission.

The guiding question underlying all project activities was:

How might we improve take-back schemes to motivate consumers to return obsolete electronics, such as smartphones, to the right collection points? What are effective ways to enable consumers to choose more durable products? Can behaviour change play a role in engaging consumers to exercise their right to repair?

The following sections of this report share an overview of methods, key content, outputs and learnings from each of the work streams.

INSIGHTS ON CONSUMER BEHAVIOUR

The process of recycling and remanufacturing small electronic devices starts with the consumer. At the end of their lifespan, these devices need to be passed on to the appropriate experts to be professionally processed, but many people do not return their no longer needed devices at all. In order to address the problem of insufficient recycling and reprocessing, the first step is to identify the obstacles to the return of these devices. Only when existing behaviours in this context are identified and, above all, better understood, can effective interventions and measures be developed to improve the situation. For this reason, the initial step in the project was to conduct comprehensive desk research into the behaviour of end users and the underlying causes. Various scientific studies were analysed that specifically deal with the recycling and repairing behaviour of people with regard to small electronic devices. The aim was to clarify two central questions:

Why DO people NOT return/recycle/repair old electronic devices?

Why DO people return/recycle/repair old electronic devices?

As is often the problem with studies that investigate human behaviour and its motives, it must also be considered here that the results from surveys in particular may be influenced by the artificial interview situation or social norms. Nevertheless, the research was able to generate valuable insights. Regarding the question of why people do not return, recycle or repair obsolete or broken electronic devices, various studies revealed significant motives. One reason seems to be that people are not aware that their obsolete equipment can actually be recycled properly.²² Some do not trust the recycling process and fear that third parties might enrich themselves with their old devices and misuse of their personal data stored on them. This lack of transparency also leads people to fear that their old equipment could be handled illegally in developing countries, causing harm to both people and the environment.²³ In many cases, however, obsolete small electronics are simply stored as potential spare devices or due to nostalgic reasons.²⁴ In addition to insufficient knowledge or information on recycling processes and the storage of old equipment, the accessibility of the necessary infrastructure generally carries an important role.²⁵ When it comes to repairing broken equipment or using repair services, infrastructure also plays an important part. Even if repairing is being supported in terms of sustainability, it is often perceived as too complicated, high priced and time-consuming. Additionally, some people are not even aware of the possibility of repairing their equipment.²⁶

²² Tansaken (2013)

²³ Welfens et al. (2016)

²⁴ Tansaken (2013); Martinho et al. (2017), Gurauskienė (2008)

²⁵ Welfens et al. (2016), Magalini et al. (2016), Gurauskienė (2008), Welfens et al. (2013)

²⁶ López Dávila (2021), Wieser et al. (2018)

These findings concerning the primary reasons for not recycling, refurbishing, or repairing old appliances served as a basis for the interventions developed in the later course of the project (see box below). In particular, the problem of barriers to returning old devices was addressed.

Points of intervention that address the main barriers to the return of obsolete devices:

Consumers are not aware that their obsolete equipment can actually be recycled, reused or repaired properly

→ Consumer needs to **become aware** of the opportunity

Insufficient knowledge or information

→ Easily **accessible** and **understandable information** needs to be provided

People do not trust the provider of the bring back solution

→ **Trust-creating and transparency measures** need to be implemented

People store devices at home as potential spare devices or for nostalgic reasons

→ **Incentives that motivate** to bring back the device are needed

Accessibility of the necessary infrastructures

→ **Infrastructures that make it easy** for the consumers to bring back their devices need to be implemented

For the development of suitable interventions, however, the findings about existing motives for recycling and repairing that had already been implemented were just as important. From these, it was possible to derive which aspects should be particularly emphasised in collection processes or appeals. One significant reason for people to return, recycle or repair their old equipment is the contribution to protecting the environment.²⁷ Also, the specific contribution to more resource efficiency was frequently reported.²⁸ Another reason to return obsolete equipment is to support certain fundraising activities²⁹ as well as profit through the remaining economic value of the obsolete devices³⁰. Economic motives also play an important role when it comes to repairing broken equipment, as it is often cheaper than buying a new device.³¹ In general, economic considerations should not be disregarded, especially in the case of appliances that still have a significant economic value – as is the case with appliances that are being refurbished or repaired. These results were shared with the Club Members and as a short overview on the project website to contribute to a better understanding of the behaviour behind the known problems and to jointly develop and discuss interventions in the further course of the project.

²⁷ Kumar (2017)

²⁸ Ylä-Mella et al. (2015)

²⁹ Litchfield (2018), Panambunan-Ferse and Breite (2013)

³⁰ Welfens et al. (2016)

³¹ López Dávila (2021)

CIRCULAR ELECTRONICS INTERVENTIONS

In the CIAP Electronics Club, the aim was not merely to research and discuss possible solutions to increase circularity, but to test new initiatives and innovations in practice. Therefore, a main proportion of the project centred around collection and development of insights regarding particular aspects of consumer interaction with electronic devices and the pilot testing of behavioural experiments in relation to these specific circular behaviours.

In order to do this, the Club set out on a process to establish three intervention areas in which Club Members, together with CSCP, would test innovative circular electronics solutions. The next section sets out the methodology followed in designing, implementing and evaluating the interventions. A case study style review of the three interventions completes the section.

METHODOLOGY

EXPERIMENT AIMS

There were several aims of the experiment process. From a project perspective, the overall aims were:

- **Specific collection/development of insights on circular electronics, in order to contribute to the development of the field, followed by**
- **Pilot testing of behavioural experiments with regards to selected electronics-related circular behaviours: e.g. giving back and repairing devices**

For Club Members, this was an opportunity to:

- **Learn from hands-on / real-life based insights for innovation for the Club Members directly involved;**
- **Discussion of general insights and opportunity to follow circular behavioural experiments for all Members**

Club Members were able to volunteer to host a pilot intervention. Practically, this consisted of the Club Member organisation putting (mainly time) resources towards developing, running and evaluating the pilot intervention, in collaboration with CSCP. The three pilot host organisations were: the start-up company Refurbed, Renas (Member of International Association of Electronic Waste Producer Responsibility Orgs [WEEE Forum]), and Stop Planned Obsolescence (HOP). The pilots with Refurbed and Renas were additionally supported by Christoph Ratay, PhD candidate at Technical University of Munich (TUM), in particular regarding study design and statistical analyses.

THREE-STEP PROCESS

The process for developing the specific interventions followed a model used in the Academy of Change – a capacity-building programme co-led by CSCP which is aimed at civil society organisations looking to use behavioural insights for sustainability work in their organisations³². The process methodology comprises of three stages: gathering insight, then using behaviour change tools, followed by testing and learning from the interventions. The diagram below shows the three steps in the context of the CIAP Electronics interventions.

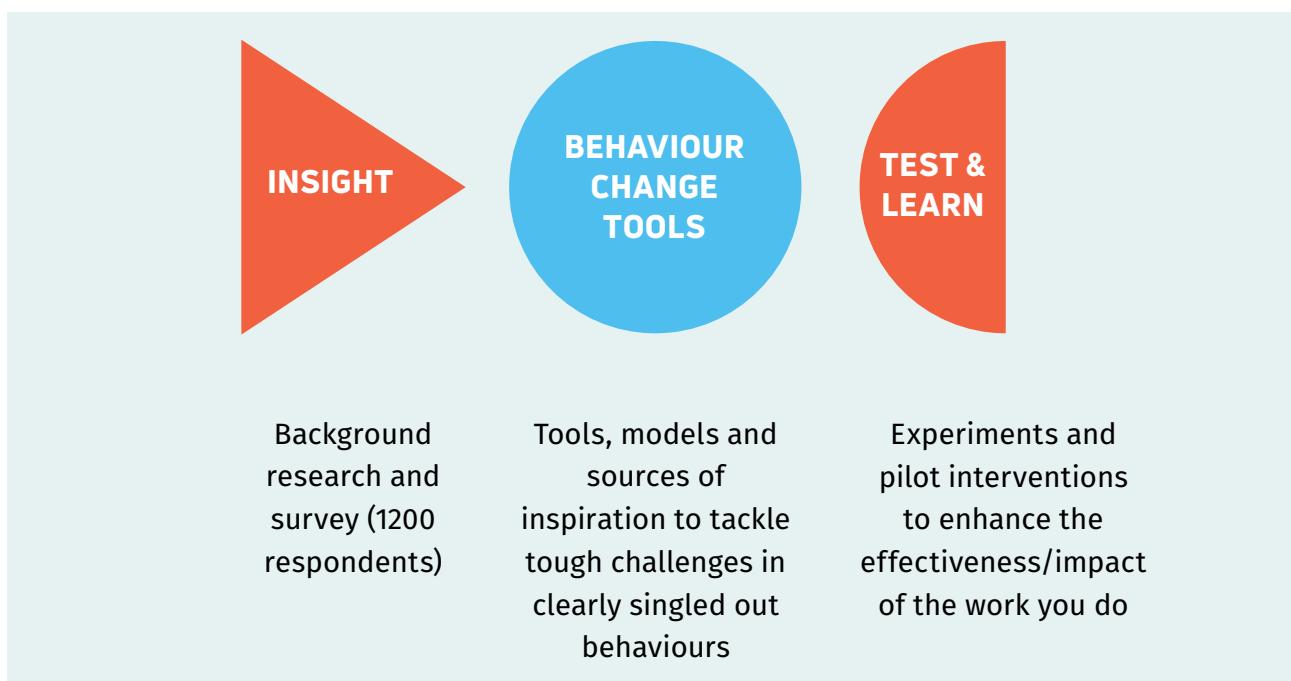


Figure 2: Academy of Change behaviour change process methodology applied to the CIAP Electronics interventions

At the start of the interventions process, a key question was established for each of the pilot projects. These questions and associated experiment type are set out in figure 3 below. For the Refurbed and Renas experiments, the key question was the same, but they had different focus areas for the intervention.

³² Academy of Change <https://www.aochange.org>

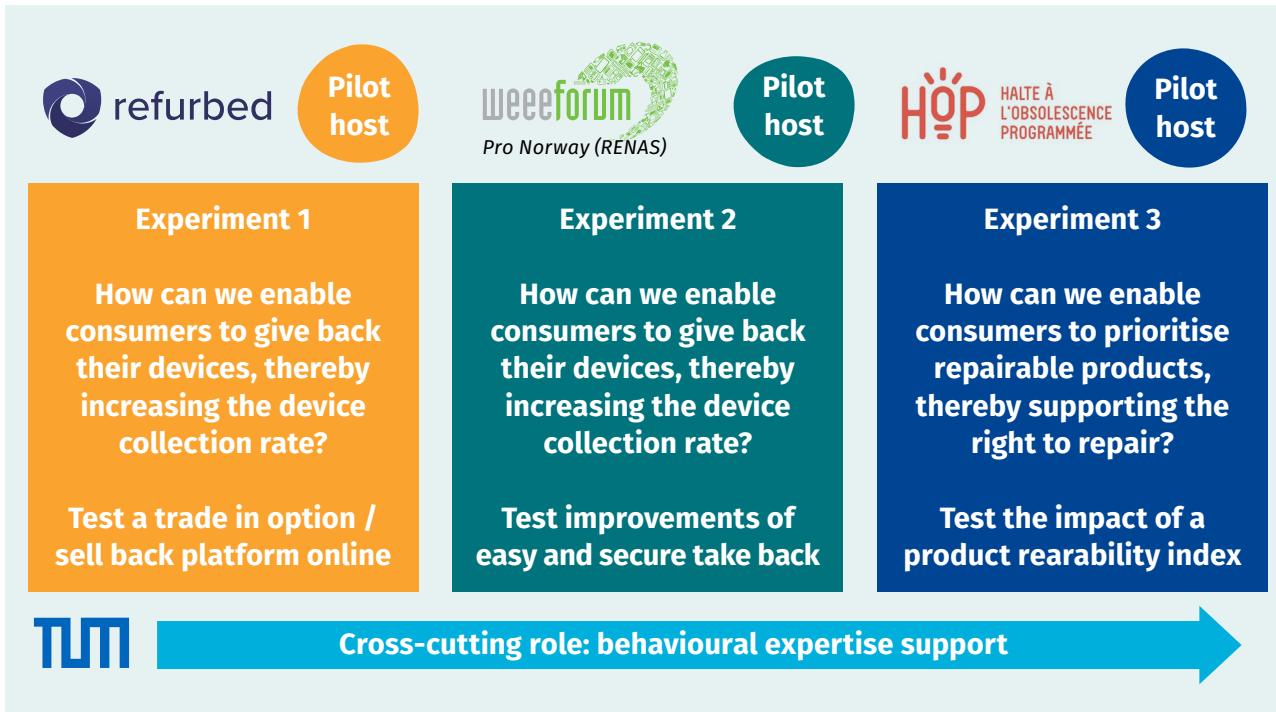


Figure 3: Pilot intervention key questions and experiment types

GATHERING INSIGHT

In order to gain a deeper understanding of the intervention topic, identify key points of consumer behaviour change potential and contribute to research in the field, for each of the pilots we conducted a survey with 1200 citizen respondents in the host organisation country (gathered by working with an agency). Refurbed and Renas had related focus areas and so their surveys followed a similar structure, using online factorial survey experiments to identify consumer behaviour preferences and patterns, linked with sections on participants' attitudes (e.g. environmental awareness and price consciousness). For the HOP pilot, the survey had a different structure, due to the fact that the behavioural intervention focused on a consumer choice experiment, which formed a key part of the survey.

SELECTING INTERVENTION POINTS

With reference to the general research results presented in the insights section (pp. 15–16), for each experiment the teams explored the different aspects of consumer interaction with electronic devices in the specific focus context in order to select the most interesting intervention points. For example, the diagram below shows an example of a user journey map, in which each point of interaction between consumer and device use is displayed. Barriers to 'ideal behaviour' at each stage can then be identified, and potential solutions – as intervention points – explored.

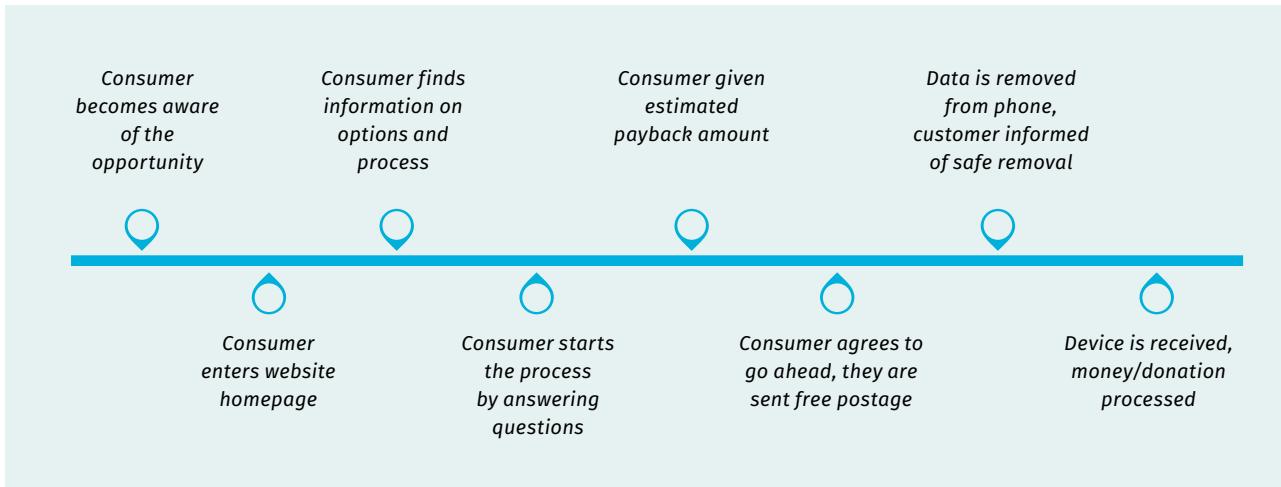


Figure 4: Example user journey map

We additionally drew inspiration from a set of questions used by the Academy of Change capacity-building programme³³. These questions help a group to come up with a range of creative ways to approach behaviour change interventions.

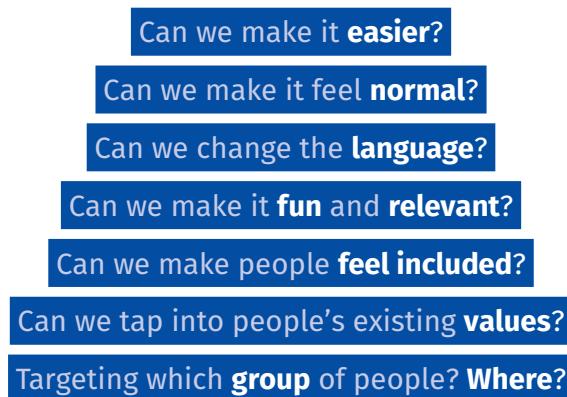


Figure 5: Innovation questions from Academy of Change for use in design of behaviour change interventions

The team for each pilot came up with a shortlist of possible interventions which were then discussed in terms of various considerations such as potential impact, ease of implementation, time and resource requirements. Specific interventions for each pilot were then identified collectively. The host organisation then made arrangements to implement the intervention with their organisation.

³³ Academy of Change <https://www.aochange.org>

IMPLEMENTATION OF INTERVENTION

In the case of Refurbed and Renas, the host organisations led the implementation of the interventions via their organisations. In the HOP pilot, CSCP and HOP worked together on the design of the customer choice experiment and CSCP liaised with the agency to collect participants. CSCP discussed with the host teams throughout the implementation, offering support where needed.

INTERVENTION RESULTS

For each of the experiments, results were gathered and discussed within the pilot teams. Regular updates at Electronics Club meetings enabled the whole Club to hear updates and contribute. Key results are set out in the section on the intervention pilots (p. 24).

ASSESSING SUSTAINABILITY

As already highlighted in the introduction, circular approaches are less about circularity per se than about the contribution to the Sustainable Development Goals (SDGs). This also applies to interventions related to consumer behaviour: They must stand up to critical scrutiny as to the extent to which they are conducive to sustainability. This is why the interventions were subjected to a sustainability assessment. For this purpose, a method was created with the help of which individual projects or interventions can be evaluated and not, as is the case with common Lifecycle Analysis (LCA) methods, entire product value chains. Against this background, the project team decided on a combination of the Handprint Methodology and the SDG Compass of the United Nations.

HANDPRINT – THE CONCEPT

The widely used approach of the Footprint as well as other ecological assessment approaches (e.g., Life Cycle Assessment; LCA) focus mainly on the negative impacts of products, services, or operations. Thus, the goal becomes risk mitigation or achieving a net zero balance – that is, realising efficiency gains while decreasing any negative impacts from the operations or, one step further, sustaining the status quo while having no negative impacts. Yet, looking only at the adverse effects neglects opportunities that go beyond sustaining and preserving the status quo.

One approach that aids the identification of such opportunities is the Handprint approach. Working analogous to the Footprint framework, the Handprint approach looks at the positive impacts in all three dimensions of sustainability – ecological, economic, and social. Therefore, the approach is an extension and to be understood as a complementary measure to the ecological footprint. By integrating positive aspects, the handprint method can ultimately contribute to a more holistic assessment of the sustainability impacts of products, services and operations and

help to harmonize economy, society and environment in the long term. It therefore aims to go beyond mere sustainability to foster restorations and regeneration for a holistic view on the organization's impact.

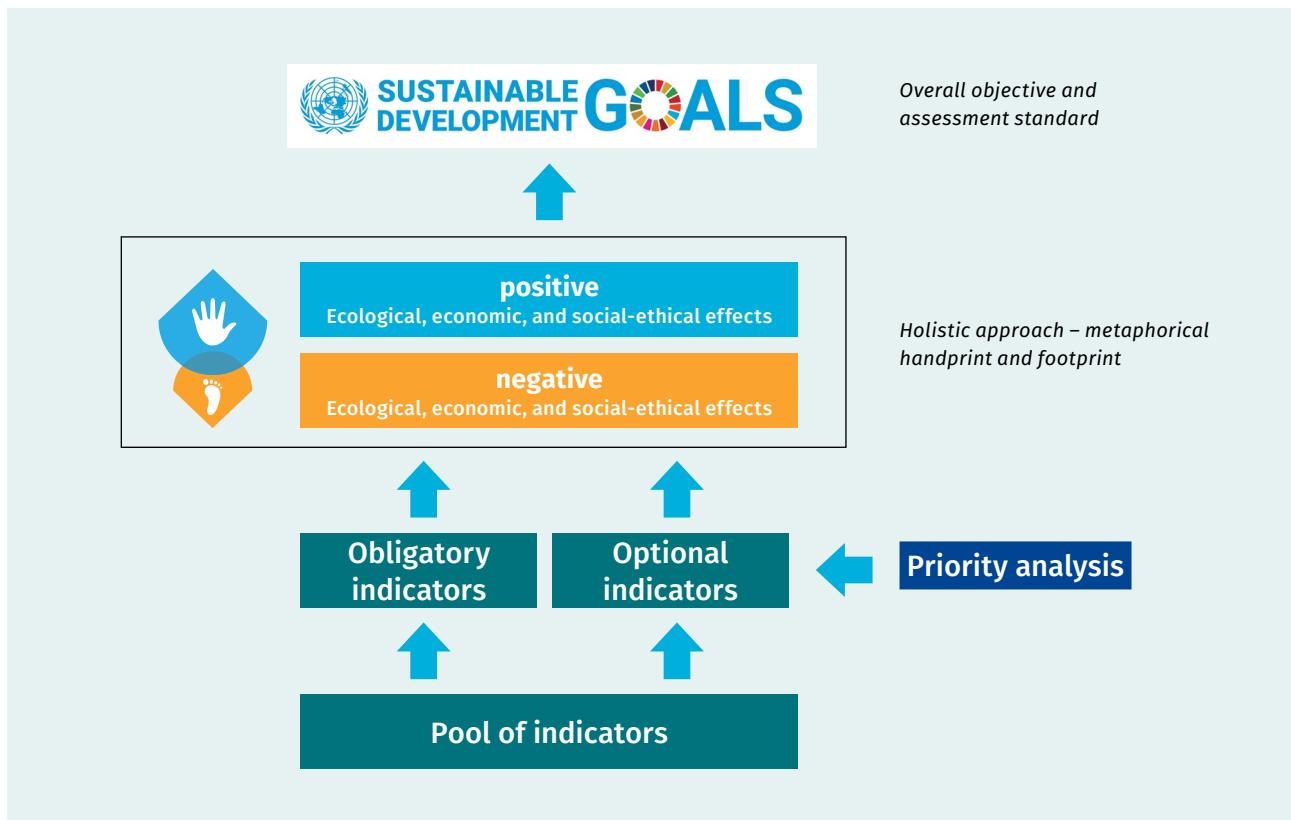


Figure 6: Framework methodology of the handprint

HANDPRINT – THE PROCESS IN CONJUNCTION WITH THE SDG COMPASS

The handprint method initially involves an analysis of the life cycle ("from cradle to grave") of the operations under consideration. Based on the life cycle assessment method, the objective and the scope are defined and a life cycle inventory is drawn up. Subsequently, indicators are identified against which the operations can be evaluated. A commonly accepted set of indicators to use are the Sustainable Development Goals. However, not all of the 17 SDGs are equally relevant for every organisation, product, or service assessment. To identify the obligatory and optional indicators among the many goals, the SDGs most relevant to the organisation have to be identified first. For that, the SDG Compass offers a two-step process.

Firstly, the SDGs are mapped against the value chain. The focus here is a high-level perspective on the greatest impacts rather than a detailed assessment of each SDG for every step of the value chain. Thus, for each section of the value chain the company's core competencies and operations should be evaluated along

with its potential to contribute positively to the implementation of one or more of the SDGs at present or in the future as well as all the business activities that negatively impact one or more of the SDGs, directly or indirectly at present or in the future. Systematic literature reviews as well as Delphi studies, stakeholder dialogues and other methods may be used in order to achieve an initial selection and prioritization.

Secondly, after defining the relevant SDGs, the logic model, a five-step process, guides the identification of obligatory and optional indicators and the data that is to be collected. For the identification the potential impact is traced from input, to activities, to outputs, to outcomes through to impacts. For each high-impact area, one or more indicators are identified that map the link between the company's activities and its impact on sustainable development. With the identification of the respective indicators the corresponding data is collected. In this last step it is important to understand the feasibility and scope and the collection of the necessary data should be proportional to the value of it. With the collected data on the relevant indicators the business operations, the product, or as in this case, the interventions can be evaluated.

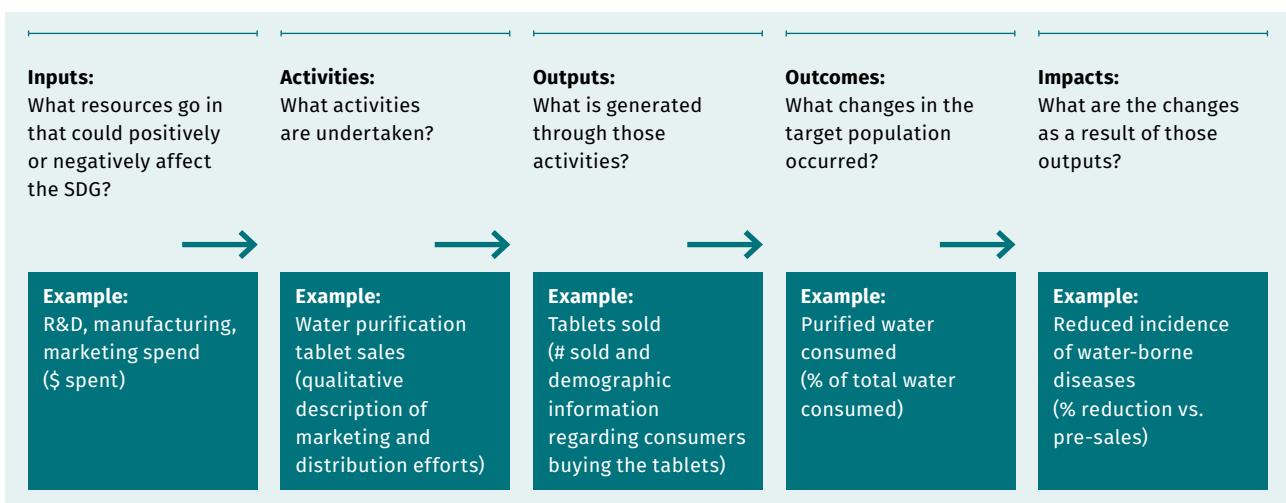


Figure 7: The logic model as proposed in the SDG compass

THE INTERVENTION PILOTS

1

PILOT 1: REFURBED – HOW CAN WE ENABLE CONSUMERS TO GIVE BACK THEIR DEVICES, THEREBY INCREASING THE DEVICE COLLECTION RATE?

Testing a buy-back platform online with Refurbed

Refurbed is a platform for renewed and high-quality products, with uniform and high standards in terms of quality, safety and warranty. The platform allows consumers to sell their old electronic devices, which are repaired and offered again. Crucially, the customers receive at least 12 months warranty on the refurbished devices. Refurbed thus enables consumers to buy sustainable devices easily and without risk.

This intervention focused on testing a smartphone return option through the Refurbed buy-back platform.

Online survey experiment: Consumers' stated preferences

In order to better understand the consumer experience, barriers and preferences around smartphone return, the Refurbed online factorial survey experiment explored consumer preferences around various combinations of different variables, including:

- Marketing – framing the message with environmental benefits or self-interest. This variable looked at whether a smartphone buy-back option was of more interest to consumers when marketed from an environmental benefit angle or a self-interest (housecleaning benefits) perspective.
- Reward – cash, donation, or a mix of cash and donation. This variable looked at consumer preferences around cash rewards for return of a smartphone, versus a donation (tree planting) on behalf of the customer, or a mix of the two.
- Give back mechanism – pick-up, drop-off or send-in. This variable compared different return mechanisms for smartphones.

The key findings from the online survey experiment were:

- Financial rewards are of interest to consumers
- Although both environmentally aware consumer segments and segments with lower environmental awareness prefer financial rewards, donation rewards are more popular among the former than the latter
- There is a preference for drop-off stations and pick-up services rather than send-in mechanisms
- Data protection is mentioned as an additional challenge in open questions

Field intervention – actual reaction

The Refurbed pilot hosted two interventions.

The first focused on the point at which the consumer becomes aware of the opportunity of the smartphone give back option. It therefore focused on Refurbed's marketplace homepage, and the banners at the top of the page which set out various offers to consumers. For the first intervention, the aim was to make the smartphone return option feel relevant to consumers, and tap into existing values. Therefore, an A/B test was run on the banners – with 50% of customers shown one with environmental messaging (planting trees for each smartphone that is sent back), and 50% of visitors shown one with personal benefit messaging (financial incentive of the money they could receive in return for their old phone). The assumption was that by addressing people's existing values (ecological or financial), they feel directly touched and are more likely to click on the buy-back option. **The result was that people were 3x as likely to click the banner offering them money than they were to click the banner offering them to do something good for the environment.**

The second intervention again focused on the moment at which the consumer becomes aware of the opportunity. In this case, the social media channel of Instagram stories was used as a means to make the opportunity fun and easy for consumers. The intervention consisted of a video of a short explanation of the buy-back process which was posted on Refurbed's Instagram for 24 hours. The number of people clicking the link directly to the buy-back site was then observed. **The result was a click-through rate of around 3%** (which can be seen as relatively high for an intervention of this kind).

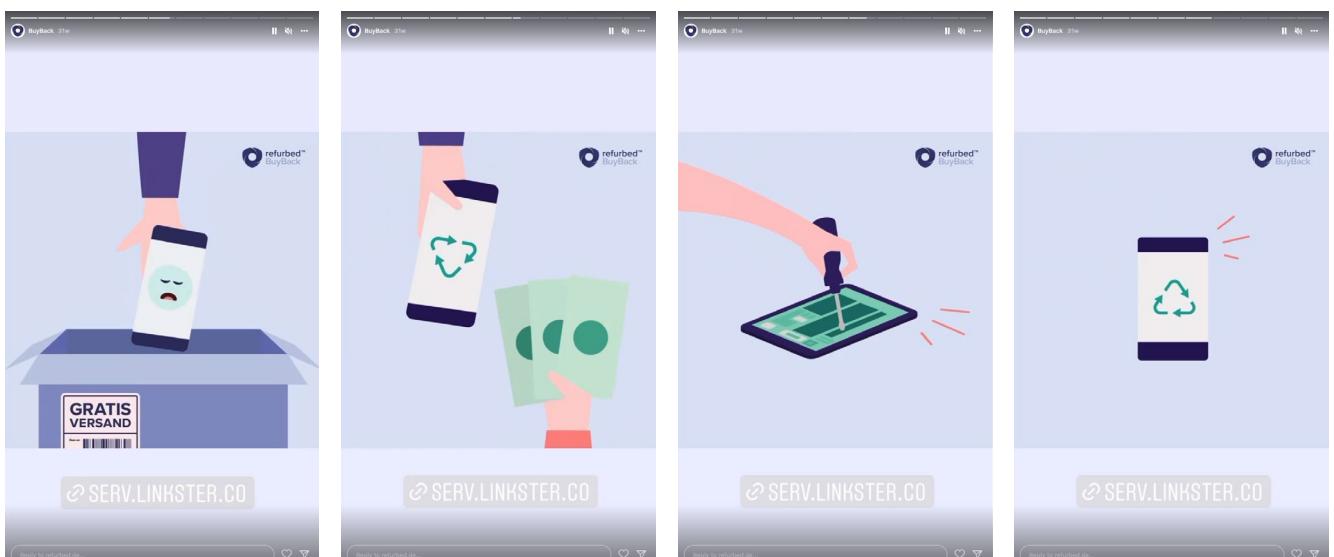


Figure 8: Part of instagram story in Refurbed intervention

Additionally, following the interventions, an analysis of price effects over two months was conducted, to explore the moment at which consumers are given the estimated payback amount in more detail. Here it was found that buy back is more popular for used devices with low prices. For used devices with higher prices we assume that secondhand platforms like eBay are still preferred to buy-back, because they allow consumers to maximize the amount of money they receive for their old devices.

Key findings

- **MAKE IT EASY:** Any intervention should make the buy-back option as easy as possible and tap into existing values (here: financial awareness)
- **MONEY AROUSES INTEREST:** Even though the environmental benefit is our main focus, messages that highlight financial benefits of returning smartphones generate significantly more interest in returning discarded smartphones
- **DONATIONS CAN MOTIVATE:** Despite the central role of financial benefits, it is worthwhile, especially for platforms targeting environmentally friendly customer segments, to pilot donation incentives
- **LAST WAKE-UP CALL:** As buy-back is particularly popular for used devices with low prices, it is a valuable complement to second-hand markets. It gives products with low financial value a last chance to re-enter cycles before they perish in the drawer

Sustainability Assessment

The assessment conducted with the pilot team yielded that the most relevant SDGs with a potential for a positive impact were SDG 11 “Sustainable cities and communities” and SDG 12 “Sustainable consumption and production”. The SDGs most relevant to decrease potential negative impacts included SDG 12 “Sustainable consumption and production”, SDG 13 “Climate action”, and SDG 15 “Life on land”.

Inputs:

- Hours spent by project team
- Hours spent by related departments (research, marketing, creative, analytics)
- Partner/stakeholder consultation (network contacts)
- CIAP Electronics membership (including attendance at meetings)

Activities:

- See description of intervention implementation above

Outputs:

- Number of people who clicked on the video (played 3572 times)
- Number of people who clicked on the banner in each case (displayed to about 17.000 marketplace visitors)
- Money banner: 31 users clicked the link directly to the buy-back-site
- Trees banner: 11 users clicked the link directly to the buy-back-site

Outcomes:

- Numbers of smartphones sent back always vary, so the impact of the interventions can only be estimated. A single-digit number of devices is most likely
- Awareness raising was successful among at least 3500 people who clicked on the video plus those who clicked on the banners
- The overall business model and strategy were confirmed by the analysis of the price effects
- Every phone that is sent back and refurbed replaces a new device and therefore saves CO₂ emissions and resources. According to Refurbed, CO₂ savings can be calculated as follows:
- On average refurbishing a smartphone only causes 30 % of the carbon emissions that new production requires. In other words, 70 % of emissions are reduced. The main reason for that is that most components remain the same and a few are replaced or lightly processed (e.g., new battery or minor surface improvements).
- On average across model configurations, an iPhone SE 2020 causes 64 kg of CO₂ emissions over its entire lifetime, 84 % of which are generated in the production process. For the calculation of the CO₂ emissions saved by refurbishing an iPhone this means: **64*0,84*0,7 = 37,682 kg**

Impacts:

- In the long run, Refurbed aims to achieve a double-digit resale rate, i.e. 11–90 % of their buyers should sell their old smartphones with them
- Long-term learning has been achieved, e.g. that convenience is crucial to persuade consumers to sell and that it is important to address target groups differently
- Awareness-raising through videos and banners can have a long-term effect and possibly trigger further behavioural changes and also stimulate conversations on the topic
- Refurbed contributes to the development of a new take-back infrastructure and thus also to long-term market changes
- Added value can be generated in the EU through local cycles. This also influences jobs in the EU, social standards in the electronics sector and reduced dependence on imports of resources
- In general, the market for refurbished electronic devices as well as the right to repair movement are strengthened

PILOT 2: RENAS – HOW CAN WE ENABLE CONSUMERS TO GIVE BACK THEIR DEVICES, THEREBY INCREASING THE DEVICE COLLECTION RATE?

Testing improvements of easy and secure take back with Renas

RENAS AS is a non-profit company founded in 1997 by two Norwegian industry organizations: The Federation of Norwegian Industries and Elektroforeningen (The Electro Association). In 1999, RENAS went operational with a nation-wide WEEE take-back system to cover collection and treatment, making sure all pollutants were properly handled and material resources were recycled into new products. RENAS partners operate approximately 100 collection points, in addition to the collection done by municipalities, retailers, and other industries. At the collection point WEEE is sorted into 10 sub-groups and made ready for transport to one of 14 treatment facilities.

This intervention focused on testing updated methods of easy and secure take back of smartphones.

Online survey experiment: Consumers' stated preferences

The Renas pilot survey was structured in a similar way to the Refurbed survey, using a factorial survey experiment to explore consumer preferences around a number of variables. The survey was also able to explore respondents' environmental awareness, price consciousness and privacy concerns. In this case, the variables included were:

- **MARKETING** – framing the message with environmental benefits or self-interest. This variable looked at whether a smartphone take-back option was of more interest to consumers when marketed from an environmental benefit angle or a self-interest (housecleaning benefits) perspective
- **DATA RECOVERY** – here it was investigated whether data recovery as an additional part of the give back service would appeal to consumers
- **GIVE BACK MECHANISMS** – drop-off, pick-up or send-in. This variable compared different return mechanisms for smartphones.
- **DATA DELETION CERTIFICATES** – The aim was to investigate whether data deletion certificates would address consumers` data protection concerns

The key findings from the survey were:

- **MARKETING:** There was no effect of environmental framing on willingness to make use of take-back services, not even among more environmentally aware participants
- **DATA RECOVERY:** No significant effect on take-back intentions, not even among participants with more privacy concerns
- **RETURN MECHANISMS:** Drop-off options (dedicated station or recycling center) are somewhat more popular mechanisms than pick-up or send-in

- **DATA DELETION CERTIFICATES:** Positive effect on willingness to use take-back services, especially among participants with higher privacy concerns
- **RESPONDENTS' ENVIRONMENTAL AWARENESS** has a significant positive effect on take-back intentions whereas respondents' price consciousness does not affect participants' willingness to use take-back services
- **RESPONDENTS' PRIVACY CONCERN**s have a negative effect on intentions to return devices, which is offset, if data deletion certificates are offered

Field intervention – actual reaction

For the field intervention, a pilot project called “REDOIT” was run over two months in order to test improvements of **easy** and **secure** take back schemes. In practice, this consisted of the piloting of a take back scheme with envelopes to send back old mobiles or smartphones. A Redoit online platform was set up and designed where participants would register. A major insurance company was found as business partner to address the employees as potential participants. 1000 people were addressed through an internal group in the company, with 50 opting to participate in the scheme, out of which 25 wanted to test the platform and experience it. An additional survey was conducted to understand the experience of those who participated, and another with 50 persons of the group who decided not to take part in order to understand their decision. These were either not aware or did not have an old device at home.

As a result, 78 smartphones were sent back, out of which 20 could probably be repaired and reused. Several participants reported that they felt happy and relieved that they had finally sent back their old devices afterwards. As a follow-up, some people would like to receive feedback on the data deleting process and would like to know what happens after with the device. Overall, most of the participants (95%) found it easy to complete the process and deliver the device. Renas learned that questions about the condition of the battery should be included in the smartphone registration process, as smartphones have been returned with damaged batteries, which can pose a risk.

Key findings

- **ADDRESS PEOPLE PERSONALLY:** Direct approach e.g. via the employer in the context of a group activity can motivate
- **DATA DELETION:** Feedback on the handling of data on the smartphone can build trust
- **MUTUAL COMMITMENT:** Registration on a homepage creates mutual commitment
- **PRODUCT HISTORY:** People feel attached and like to know what happens to their device
- **DANGER:** Potentially hazardous condition of equipment or components must be identified

Sustainability Assessment

The assessment carried out with the pilot team yielded that the most relevant SDG with a potential for a positive impact was SDG 11 “Sustainable cities and communities”. The SDGs most relevant to decrease potential negative impacts on the other hand included SDG 12 “Sustainable consumption and production”.

Inputs:

- Personal resources of the team
- Partner/stakeholder consultation, especially to find a business partner willing to address his employees
- Research in people's homes, analysis of existing data, surveys

Activities:

- See description of intervention implementation above

Outputs:

- 78 smartphones were sent back in total, with several smartphones per person
- Out of these 78 smartphones, 20 could potentially be repaired and/or reused

Outcomes:

- The 20 phones that can be repaired or reused may prevent 20 people from buying a new phone. This will lead to a second pilot on repair and reuse
- A third pilot will be conducted on the assessment of how many resources are saved by the take back scheme
- The awareness of at least 100 persons was raised
- Learnings for future development of the project, e.g. reporting on the data deletion process and integration of questions on the battery in the registration process

Impacts:

- Renas' long-term goal is to offer Redoit to all of their clients and customers as well as to private consumers. At a later stage, other devices shall also be included
- The launch of the project will be accompanied by a campaign to raise awareness
- The project will contribute to setting up new infrastructures and solutions for take back and will also create new information flows between stakeholders such as producers and recyclers (e.g. on material data of different smartphone models)

Test the impact of a product reparability index with HOP

Stop Planned Obsolescence (HOP) is an organisation working for durable and repairable products for the consumers and the planet³⁴. Their work focuses on enabling products to be produced without planned obsolescence, “the conscious reduction of product life in order to accelerate product renewal”³⁵. France was the first country to make this illegal³⁶, and a reparability index was brought in for five product categories (including smartphones and laptops) in 2021³⁷.

This pilot project focused on understanding the impact of the French reparability index on consumer product choices by conducting a survey and a consumer choice experiment within the same survey. Due to this alternative structure of the intervention, the sustainability assessment was not carried out as in the other pilots.

Survey – what do consumers say?

The HOP pilot survey took a different format to the other two pilot surveys. This was due to two factors: the topic focus being on the influence of the reparability index, and the intervention choice being a consumer choice experiment which was also to be conducted within the survey.

The following key questions were set out to be addressed through the survey section focusing on the reparability index:

- How is the reparability index understood by the consumers?
- Do consumers notice the index during their purchase decision-making?
- Do consumers take the index into account in a purchase situation?

Additionally, a few questions were included to start to understand the potential of durability ratings as a potential addition to the reparability index:

- How is the concept of durability understood by the consumers?
- Are consumers likely to take a durability index into account in a purchase situation?
- What is the relationship between reparability and durability?

KEY FINDINGS FROM THE SURVEY

- 55 % of the 1206 respondents had heard of the French national reparability index
- Different age groups had heard about the index in different places: We found that age does have a visible effect on the source of information about the index. While

34 <https://www.stopobsolescence.org>

35 <https://www.stopobsolescence.org>

36 <https://www.stopobsolescence.org>

37 <https://repair.eu/news/the-french-repair-index-challenges-and-opportunities>

the TV was an important source of information for all age groups, older age groups had read about the index more in journals. For younger age groups, the information provided in online stores and in ordinary stores was a more valuable source of information than for older groups. Lastly, another interesting aspect is that social media has informed a considerable amount of the 25–44 years old, but has had less of an impact for the youngest group and the older groups

- Out of 211 people who had made a purchase, 76% said the repairability index was helpful for making their purchase choice
- Interestingly, there is a tendency that the older the age group, the less likely they are to have experience related to repairing electronic products
- Those with any level of experience related to repairing a product, were slightly more likely to approve the statement that the index helps to better purchases

Field intervention – actual reaction

In this case, the intervention took the form of a consumer choice experiment, included as part of the online survey. The key questions guiding this were:

- Does the indicated degree of product repairability affect the consumer choice?
- Are consumers willing to pay more for more repairable products?
- Is the effect of the repairability index mediated by the brand loyalty?

The choice experiment was run as an A/B consumer preference test, where participants were shown questions with images of different smartphone options (designed as if options on an online shop). The options included information on each of the following variables:

- Price – high (700 Euro) or medium (400 Euro)
- Brand – favourite brand or not favourite brand
- Repairability index score – medium (5,5) or high (8,5)



Figure 9: Example of smartphone options seen by participants in consumer choice experiment

For each product choice, the participant was asked to indicate how likely they would be to purchase the smartphone. The A/B test enabled various combinations to be tested for consumer preference, and compared in order to explore the influence of the different variables.

Key findings from the consumer choice experiment

The results of the comparison show that consumers rationally take into account the repairability index, e.g. when shown two products of the same price category. A higher repairability index made the products significantly more attractive. By comparing the ‘likelihood to purchase’ for each product choice, we were able to start looking at whether consumers are willing to pay a higher price for a more repairable product:

- The likelihood for purchase of the medium price option of a favourite brand/medium repairability score smartphone is 13.6% higher compared to the high price option
- For high price-favourite brand smartphones, the option with a high repairability score is 14.7% more popular than the option with a medium score.

Although further analysis would be necessary to explain any direct causality, this could be used as an indicator for the positive effect of the index and likelihood of purchase in high-priced products.

Generally, there are mixed signs for the link between brand loyalty and the effect of the repairability index:

- The effect of a higher repairability index is more dominant with the non-favourite brand products.
- But, when looking at the high-priced products, this picture changes: it can be clearly seen that the non-favourite, high-priced phone with a high repairability score is more attractive than the favourite-brand, high-priced, mid-repairability phone.

These results could be interpreted as an indicator that brand loyalty does not have the same effect among different price categories and that having a higher repairability score can provide a competitive advantage over more popular competition.

EXPLORING THE SOCIAL IMPACTS OF THE CIRCULAR ECONOMY

Circularity is intended as a means to an end rather than an end in itself, where the end goal is to ultimately achieve long-term sustainable development environmentally, economically and socially.^{38/39/40/41} However, in practice, it seems that the discourse on social aspects has been lacking or certainly less prevalent than on economic and environmental aspects^{42/43/44/45}. Therefore, there was a need to further explore the social impacts of circularity and its potential societal benefits.

This is why the Electronics Club had a strand of work focused on further exploring the potential of the social impacts of the circular economy. To gather the necessary information for a more comprehensive understanding of the topic of social impacts within a circular economy, individual expert interviews as well as discussions in expert panels and conference workshops were undertaken, in addition to an extensive literature review. As a result, the CIAP team has created a paper entitled “Discussing the Social Impacts of Circular Economy”. The specific purpose of the paper is to enhance understanding and to provide emerging ideas and areas of exploration to spark further multi-stakeholder dialogues for advancing and improving the social impacts of circularity. The paper presents some categorisation of social impacts according to literature, and then goes on to explore various themes with expert opinions of challenges, gaps and opportunities. The conclusion suggests ways to continue the conversation as well as questions for further exploration, for example, in future dialogues of the European Circular Economy Stakeholder Platform and other workshops and events.

³⁸ Geissdoerfer, M.; Savaget, P.; Bocken, N.M.P.; Hultink, E.J. *The Circular Economy—A new sustainability paradigm?* J. Clean. Prod. 2017

³⁹ Korhonen, J.; Honkasalo, A.; Seppälä, J. *Circular Economy: The Concept and its Limitations*. Ecol. Econ. 2018.

⁴⁰ Zhu, J.; Fan, C.; Shi, H.; Shi, L. *Efforts for a Circular Economy in China: A Comprehensive Review of Policies*. J. Ind. Ecol. 2018.

⁴¹ Prieto-Sandoval, V.; Jaca, C.; Ormazabal, M. *Towards a consensus on the circular economy*. J. Clean. Prod. 2018.

⁴² Tomic, T.; Schneider, D.R. *Circular economy in waste management—Socio-economic effect of changes in waste management system structure*. J. Environ. Manag. 2020.

⁴³ Schroeder, P.; Anggraeni, K.; Weber, U. *The Relevance of Circular Economy Practices to the Sustainable Development Goals*. J. Ind. Ecol. 2018.

⁴⁴ Homrich, A.S.; Galvão, G.; Abadia, L.G.; Carvalho, M.M. *The circular economy umbrella: Trends and gaps on integrating pathways*. J. Clean. Prod. 2018.

⁴⁵ CIRAI. *Circular Economy: A Critical Literature Review of Concepts*; CIRAI: Montreal, QC, Canada, 2015.

The following table includes an overview of the topics discussed in the paper and the associated key questions.

Tensions and challenges	Gaps and opportunities
Work What is certain is that the circular economy will bring about changes in the labour market – the challenge is to manage this in a socially responsible way.	How can the positive changes in the labour market (creation of new jobs, integrative approaches) best be supported and the negative changes (loss of employment in non-cyclical contexts) be cushioned? What reskilling and upskilling strategies are promising for the labour market to make the European workforce fit for the circular economy?
Fairness Where a benefit of a move towards circularity might be felt in one place, there could be direct or indirect negative implications for other places and trade-offs between e.g. developed and developing countries could emerge.	How can the representatives of different regions best enter into dialogue and find common solutions? What kind of mechanisms would work best? How could these trade-offs be balanced in the future?
Social equity It is unclear how the concept of the Circular Economy will lead to greater social equality, in terms of inter- and intragenerational equity, but also diversity in its various forms and aspects.	How can be ensured that all social groups are represented, and that diversity is a key element in the creation of a new circular economy? Which monitoring mechanisms should be installed in the long term?
Social norms Social norms and other trends partly work against the principles of the Circular Economy, e.g. the ever shorter life span of products and the desire to always own the latest model.	Is there a way to transform or use these social trends so that they might even support the Circular Economy? If not, who can influence social norms and how?
Narratives There is a lack of clear narrative on the social impacts of the circular economy, limiting the ability of consumers to engage with those benefits as an incentive for circular behaviours.	How can the social side of the circular economy become as present and widely understood as the economic and environmental sides? How can we provide consumers with the information and knowledge they need to feel a connection on the social side of the circular economy?

Table 2: Social impact themes and emerging gaps and opportunities

The paper is available on the CIAP website and also communicated widely by CSCP and other members of the CIAP Electronics Club to various stakeholders.

STAKEHOLDER ENGAGEMENT

Throughout the project, activities have been undertaken to broaden the work of the CIAP Electronics project beyond the members of the Electronics Club. This has been conducted primarily through two routes: stakeholder networking; and communication and dissemination.

While the very nature of the Circular Electronics Club is to bring together stakeholders from different sectors, to strengthen the network of individuals and organisations discussing and working on the issues at the heart of the CIAP Electronics project, the project team has endeavoured to seek out additional opportunities to discuss and promote the work of the Electronics Club. This not only helps to disseminate the learnings from the Club and its interventions, but also contributes to the field through sharing insights, building relationships between different sectors and organisations, and providing ideas and inspiration for future related projects. This type of advocacy and dialogue contributes to the EU policy field on the topic of the Circular Economy.

Examples of stakeholder networking activities include the CIAP Electronics project's strong links with the EU Circular Economy Stakeholder Platform, through which the project has been represented and has provided discussion inputs on two EU Circular Talks organized by the Leadership Group on Retailers, Consumers and Skills that is led by the CSCP:

- May 25th, 2021: 1st EU Circular Talk on “Insights on the EU Circular Electronics Initiative & Skills required to make it happen”⁴⁶
- October 19th, 2021: 2nd EU Circular Talk on “Circular consumer electronics: getting it right from design to consumption”⁴⁷

In terms of communications and dissemination of project work and learnings, CIAP Electronics has engaged in, run or produced a number of events, discussions and workshops and public communications. For example, the CIAP Electronics Team developed and facilitated two workshops on the Social Impacts of the Circular Economy as part of the Circular Week 2021 conference⁴⁸, in order to share early findings of that project research strand and to gather inputs and feedback which were then integrated into the final discussion paper.

In terms of communications of the project, updates at various stages have been shared on the [CIAP, European Circular Economy Stakeholder Platform](#) and [CSCP](#) websites and social media channels, as well as through the CSCP newsletter. These have engaged stakeholders^{49/50}, provided information on the project as well as updates, for example on the interventions⁵¹. This has enabled us to engage an audience that goes beyond the immediate project network.

⁴⁶ <https://www.youtube.com/watch?v=lFeZy-pxsFY>

⁴⁷ <https://www.cscp.org/ce-talk-recording>

⁴⁸ <https://www.cscp.org/social-impacts-webinar>

⁴⁹ <https://www.cscp.org/ciap-circular-behaviours-in-the-electronics-sector>

⁵⁰ <https://www.cscp.org/call-for-innovation>

⁵¹ <https://www.cscp.org/circular-economy-pilots>

CONCLUSIONS, CONTRIBUTIONS AND AREAS OF FUTURE POTENTIAL

In order to conclude our report on the CIAP Electronics project, share what it has contributed to the field and suggest areas of future potential, we have grouped this final section around three themes: the Electronics Club model, contributions from the pilot interventions and areas of future potential. As well as drawing from the rest of this report, we reached out to all Club Members to contribute to this section.

The aim was to gather some input on what worked well, what could be improved upon, and what should not be included in future Club settings. Therefore, in the final meeting of the Electronics Club, we asked members to share their reflections on the structure of the Club, the content of the meetings and the pilot interventions. We provided the opportunity to input by email and by participating in an interactive Miro online whiteboard activity.

THE ELECTRONICS CLUB MODEL

The Electronics Club model used in this project was specifically designed to address the need to bring together different key stakeholders to explore some of the issues of circular electronics from the consumer side, and to develop and test potential solutions.

In terms of the structure of the Electronics Club (e.g. membership and meetings), highlights included the bringing together of different stakeholder groups and getting businesses on board with the project. Possible development of the model could take the form of having face-to-face meetings where possible (this was not possible due to the pandemic), involving more companies and increasing members' engagement through methods such as having defined roles or areas of expertise for designated contributions, or requiring Club Members to each host a session.

Concerning the content of the Club Meetings (e.g. presentations, discussions and reporting) the use of interactive tools such as Miro was appreciated, as was the opportunity to share updates and resources during the regular 'tour de table' part of each Club meeting. Suggestions were made that Club Members could be invited to run short interactive activities as well as presentations, and a schedule could be set at the start of the year so that people could save time in advance and the Club would benefit from increased attendance at meetings.

CONTRIBUTIONS FROM THE PILOT INTERVENTIONS

The main contributions of the pilot interventions come in the form of the results and findings shared in the previous sections. We hope that these new learnings help to move the field some steps forward and can provide the basis for further testing, innovations and solutions going forward.

When it comes to the pilot interventions, the Club Members were very positive about these, with some ideas on how these could be improved further. For example, one member suggested we could consider how to make these more transparent and include more people in storytelling of the experiments. There were additionally ideas of how to scale the experiments, for example thinking about how some of the most beneficial experiments could be scaled into bigger practical experiments, or how more companies could take part with dedicated resources. In terms of organisation, suggestions included to have Club Members work in small teams to tackle shared challenges, or to map skills across the Club to involve more Members and share skills through the experiments.

AREAS OF FUTURE POTENTIAL

We also asked Club Members for any ideas for the future, in terms of topics, expected challenges or needed initiatives. Here we can see various possibilities, including building on the intervention learnings to create ‘toolkits’ of methods and tips for those pursuing similar interventions, or experimenting with the social impact side of the circular economy, to explore how to improve aspects of fairness and just transition. The social impact discussion paper provides tips and methods for a range of possible ways to take this exploration further.

Overall, we hope that the Electronics Club has had an impact on the field of circular electronics through providing new insights and learnings on the latest solutions from testing ideas in practice. Additionally, the network developed through the project has strengthened relationships and collaboration between different stakeholders, which we hope has created a strong foundation upon which future initiatives can grow.

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