Paving the way for innovative Circular Economy products and services in the electronic and automotive sectors

A physical event by the H2020 C-SERVEES and ReCiPSS projects

19 October  |  Brussels & online  |  09:00 - 13:00
Index of presentations

- C-SERVEES General animation
- C-SERVEES Circular Economy Business Models Innovation & Product Service-System (PSS) Demonstration
- How can ICT tools help in implementing Circular Economy Business Models?
- Panel discussion: C-SERVEES Circular Economy Business Models. Results from Printers, ALMs, TVs and Washing Machines Demonstrations
- Panel discussion: Resource-efficient Circular Product-Service Systems (ReCiPSS) and how large-scale implementation of circular manufacturing systems in the electronics / white goods and automotive sectors can lead to a stable circular economy in the EU
- Joint panel discussion: Policy-relevant results and insights for the Circular Economy, jointly provided by C-SERVEES and ReCiPSS
Paving the way for innovative Circular Economy products and services in the electronic and automotive sector

An event by the H2020 C-SERVEES and ReCiPSS projects

Welcome and C-SERVEES GENERAL ANIMATION

Itziar Carracedo, AIMPLAS, C-SERVEES Project Coordinator
Date & Place: 19 October 2022 | Brussels
Paving the way for innovative Circular Economy products and services

C-SERVEES Circular Economy Business Models Innovation & Product Service-System (PSS) Demonstration

Mohamed Osmani, Loughborough University (LOU)
Date & Place: 19 October 2022 | Brussels
Although the concept of Circular Economy (CE) is generally acknowledged and accepted, it is proving difficult to implement.

To date, the adoption of Circular Economy Business Models (CEBMs) in the Electrical and Electronic Equipment (E&E) sector has been piecemeal despite regulatory, business, and economic drivers.

This is compounded by:
  - the lack of an integrated sector-wide CE approach;
  - absence of an accepted framework for depicting CEBMs; and
  - stakeholders’ uncertainty of the potential benefits of CEBMs for their businesses.
C-SERVEES project addressed these sectoral and organisational challenges through two concurrent tasks:

- Development of a **REFERENCE CIRCULAR ECONOMY BUSINESS MODEL (REF-CIRCMODE)** for the E&E sector.
- Applying and customising REF-CIRCMODE to develop 4 **product-specific E&E CEBMs**:
  - WASHING MACHINES CIRCULAR ECONOMY BUSINESS MODEL (WASH-CIRCMODE)
  - PRINTERS CIRCULAR ECONOMY BUSINESS MODEL (PRINT-CIRCMODE)
  - ALM CIRCULAR ECONOMY BUSINESS MODEL (ALM-CIRCMODE)
  - TV SETS CIRCULAR ECONOMY BUSINESS MODEL (TV-CIRCMODE)
Capturing EEE stakeholders’ CEBM awareness, opportunities & barriers (Survey: 1,300 responses, 13 EU countries)

Identifying EEE stakeholders’ business and operational CEBM implementation requirements

Assessing current CEBMs (including PSS) and evaluating their relevance to the E&E sector

Identifying EU and national WEEE and Circular Economy related policy instruments relevant to the EEE sector

Identifying and categorising circularity indicators that support CEBM measurement

Generating a consolidated five-layered REFERENCE CIRCULAR ECONOMY BUSINESS MODEL (REF-CIRCMODE) & Producing a step by step guidance to use REF-CIRCMODE as a framework to develop E&E product-specific CEBMs

Developing four C-SERVEES E&E product-specific CEBMs

Producing short, medium, and long-term ‘Circular Economy Actions’

Implementing short-term ‘Circular Economy Actions’ in four C-SERVEES demonstrations
C-SERVEES REFERENCE CIRCULAR ECONOMY BUSINESS MODEL (REF-CIRCMODE)


C-SERVEES Product specific CEBMs

**Demos**

- Introduce a Product Service System offering to complement current portfolios
- Explore the potential of shared products through simulation and calculation
- Leverage the use of blockchain-based ICT tools to improve partners’ circularity
- Learn from best practice to improve the product collection/orientation programme

**PSS**

- Reduce legislative compliance fees for Weiss management via collection programmes
- Reduce the costs of design for recycling measures
- Improve tracking and reverse logistics systems to assist gate keepers with returned products
- Reduce the risk, hidden cost of waste in alignment to consumers
Product Service-System (PSS) Definition

PSS represents a shift in a business model focus from traditional business offerings that concentrates on manufacturing (and seeing) products to an integrated system of products and services which are jointly capable of fulfilling specific customers’ demands and generating value. Hence, decoupling business success and economic growth from pure product sales.
# Product Service-System (PSS) Types

## PSS Type

<table>
<thead>
<tr>
<th>PSS Type</th>
<th>Offers</th>
<th>Provides</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product-orientated</strong></td>
<td>Add a service to a product</td>
<td>Delivers service related to products</td>
</tr>
<tr>
<td></td>
<td>Extended lifetime covered by warranty</td>
<td>Selling additional services alongside products (maintenance or product related consultancy)</td>
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<tr>
<td></td>
<td>Maintenance &amp; repair</td>
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<tr>
<td></td>
<td>Upgrade services</td>
<td></td>
</tr>
<tr>
<td><strong>Use-orientated</strong></td>
<td>Leasing products</td>
<td>Provides access to products for specific time period or number of units</td>
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<td></td>
<td>Renting products</td>
<td></td>
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<tr>
<td></td>
<td>Sharing products</td>
<td></td>
</tr>
<tr>
<td><strong>Results-orientated</strong></td>
<td>Service provision agreements</td>
<td>Sale of service or capability rather than product.</td>
</tr>
<tr>
<td></td>
<td>Contracts for delivery of functional results</td>
<td>Delivery of functional results, with no pre-determined products involved</td>
</tr>
</tbody>
</table>

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### Value in product

- **PRODUCT**
  - Value in product

### Value in service

- **SERVICE**
  - Value in service
# Product Service-System (PSS) Barriers & Benefits

<table>
<thead>
<tr>
<th>Customers</th>
<th>Benefits</th>
<th>Barriers</th>
</tr>
</thead>
</table>
| • Product and service customisation  
• Avoid repair & maintenance costs, obligations and risks  
• Optimised service  
• After sales care  
• Fashion trends | • Preference for ownership  
• Concerns about cleanliness, damage, etc.  
• Affordability (real and perceived)  
• Unfamiliar with PSS concept | |

<table>
<thead>
<tr>
<th>Companies</th>
<th>Benefits</th>
<th>Barriers</th>
</tr>
</thead>
</table>
| • Marketing opportunities, open to new customers, expanding customer base  
• Enhanced reputation and CSR  
• Less volatility in ash flows  
• Locking in customers, locking out competition  
• Multiple life cycles | • Initial investment  
• Changing rate of return on investment  
• Changing revenue patterns  
• Market demand  
• Support across value chain | |
C-SERVEES PSS Demonstration

Lessons learned from PSS demonstration analysis and implementation for ALM products will be reported in the C-SERVEES ‘Panel Discussion’ at 9:30am.
Thank you!

CONTACT:
Mohamed Osmani
Professor of Sustainable Design
Loughborough University, UK
Email: m.osmani@lboro.ac.uk
Tel: +44 1509 228155
Paving the way for innovative Circular Economy products and services in the electronic and automotive sectors

How can ICT tools help in implementing Circular Economy Business Models?

Teresa Oberhauser, Circularise
Juan Carlos Liebana, Soltel
Sara Fozza, RINA-C

Date & Place: 19 October 2022 | Brussels
With the help of software three companies (Circularise, Soltel and Rina-C) teamed up to solve Circular Economy through software.

We managed to create software that:
- allows companies to assess and retrieve material composition data until deep into their supply chain
- communicate sensitive material data safely without ever giving it out of hand, through blockchain (digital product passport)
- connect the actors of the EEE product’s life cycle to share useful information to help promote the re-use, repair and the efficient recovery of EEE products and materials
- developing the best routing mechanism that optimizes route planning and truck amounts for waste or product collection.
We see a strong trend towards using more sustainable materials. But how are these claims assessed and proven?
Digital Product Passport Tool of C-SERVEES

- Chain of Custody/Digital Twin
- Sourcing Composition
- Chemical Composition
Blockchain for material traceability
1. Create Digital Product Passports
2. Showcase innovation and sustainability efforts to strengthen brand
3. Incentivise sustainable behaviour change e.g. to support take-back systems
4. Differentiate your sustainable products to grow your revenue
5. Share information e.g. user or repair guides to support maintenance and life time extension
6. Collect (Anonymised) Use data e.g. required repairs or downtime of asset throughout lifecycle
Behind technology there will always be **people and companies interested in approaching each other** to be part of something greater.

In addition to developing tools that help us facilitate circular economy processes, we must address the most basic needs of users: **discover, connect and exchange information.**

https://soltel-idi.es/cservees
The IEP is an ICT tool to connect the actors of the EEE product’s life cycle to share useful information to help promote the re-use, repair and the efficient recovery of EEE products and materials.
All the platform's functionalities are aimed at facilitating the connection between users and simplifying the exchange of information:

✓ Partners lists
✓ Share documents (.PDF, .DOCX, .XLSX)
✓ Create and share quick guides.
✓ Forum.

<table>
<thead>
<tr>
<th>File Type</th>
<th>Document Type</th>
<th>Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexmark</td>
<td>PDF</td>
<td>Dismantling manual M5612: Dismantling order with illustrations</td>
<td>May 7, 2022</td>
</tr>
<tr>
<td>Lexmark</td>
<td>XLSX</td>
<td>Lexmark TEST</td>
<td>May 6, 2022</td>
</tr>
<tr>
<td>Lexmark</td>
<td>Quick guide</td>
<td>How to Print a Device Statistics Report on Your Lexmark M5517dx</td>
<td>May 6, 2022</td>
</tr>
<tr>
<td>Indumetal</td>
<td>PDF</td>
<td>Printer demo/Dismantling Manual</td>
<td>May 6, 2022</td>
</tr>
<tr>
<td>Solitex</td>
<td>Quick guide</td>
<td>Logistic Platform test quickguide</td>
<td>May 19, 2022</td>
</tr>
<tr>
<td>Asebel</td>
<td>PDF</td>
<td>EN user manual for CSERVEES WM demo product</td>
<td>Jun 23, 2022</td>
</tr>
<tr>
<td>Asebel</td>
<td>PDF</td>
<td>ES user manual for CSERVEES WM demo product</td>
<td>Jun 23, 2022</td>
</tr>
<tr>
<td>Asebel</td>
<td>PDF</td>
<td>TR user manual for CSERVEES WM demo product</td>
<td>Jun 23, 2022</td>
</tr>
<tr>
<td>Kabinet</td>
<td>DOCX</td>
<td>BELT REPLACEMENT: Washing machine belt replacement process</td>
<td>Oct 4, 2022</td>
</tr>
</tbody>
</table>
The information exchange platform was tested during Lexmark's demonstration on printers and within Arçelik's demonstration on televisions and washing machines.

In both cases it has been a considerable advantage to be able to store the documents in a common and secure repository to share them with their partners in a simple and fast way.
The efficient management of the reserve logistics is one of the elements which makes the circular value chain sustainable and attractive.

- Good planning of the journeys
- Reduction of greenhouse gas emissions
- Reduction of transport costs
- Contribution to the reduction of the final cost of the product
- Increase attractiveness of the re-used and second-hand materials
- Increase environmental behavior
The Logistic Platform allows to create and compare new logistics scenarios including recovered materials as new nodes of the supply chain with traditional ones.

The tool is road network based and aims at optimising the potential multi-stop pathway covered by trucks to connect all the stakeholders.
How the Best Routing Algorithm works:

✓ **Optimizing the route planning** by defining the best sequence of nodes of the supply chain in order to **minimising the driving distance**; and

✓ **Identifying the appropriate number of trucks** according to loading constraints.

For the identified routes the tool evaluates the **environmental impact** applying a methodology based on COPERT 5.2.2

https://logistic.platformdev.xyz/auth/login
The Logistic Platform was applied within the Lexmark demonstration on printers and within the Arçelik demonstration on TVs and washing machines.

In both cases the environmental savings made through the best routing, in terms of driving distance and emissions, compared with the worst (no multi-path route) are about 30-40%.

<table>
<thead>
<tr>
<th>Path</th>
<th>Total CO2 (kg)</th>
<th>Total Nox (kg)</th>
<th>Total PM10 (kg)</th>
<th>Total distance (km)</th>
<th>Truck</th>
<th>Delivery Time</th>
</tr>
</thead>
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<td>[Mansfield-United Kingdom, Saint-Denis-France, Bremen-Deutschland, Weyhe-Deutschland, Żary-Polska]</td>
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<td>9.63</td>
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<td>3,345.69</td>
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C-SERVEES project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 776714

<table>
<thead>
<tr>
<th>CONTACTS</th>
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<tbody>
<tr>
<td>Teresa Oberhauser</td>
<td>Juan Carlos Liebana</td>
<td>Sara Fozza</td>
<td></td>
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<tr>
<td>Circularise</td>
<td>Soltel</td>
<td>RINA Consulting</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:teresa@circularise.com">teresa@circularise.com</a></td>
<td><a href="mailto:juancarlos.liebana@soltel.es">juancarlos.liebana@soltel.es</a></td>
<td><a href="mailto:sara.fozza@rina.org">sara.fozza@rina.org</a></td>
<td></td>
</tr>
</tbody>
</table>

Software Demonstration will happen during lunch break
Please send an email or LinkedIn message to request a personal demonstration!
Panel discussion

How did the C-SERVEES Circular Economy Business Models work in practice?

Demonstrations on TVs, ALMs, printers and toner cartridges, and washing machines

Michele Liberati, PNO
Ana Isabel Díaz, GAIXER
Özlem Ünlüer, Arçelik
Klaus Grobe, ADVA
Patrick Carminati, Lexmark
Hans-Christian Eberl, EC DG RTD
Paving the way for innovative Circular Economy products and services in the electronic and automotive sectors

C-SERVEES Circular Economy Business Models. Results from Printers, ALMs, TVs and Washing Machines Demonstrations

Michele Liberati, PNO Consultants
Date & Place: 19 October 2022 | Brussels
Phase A - Framework

a Current Business Model Assessment

b Framework Development

c Circular Economy Actions

Phase B - Demo

Short Term Actions

Phase C - Validation

Business Model Canvas Validation

Implementation Road Maps

Medium/Long Term Actions
Demo Main Results

**Design & Production**
- Packaging Improvements
  - Plastic reduction/elimination

**Distribution and use**
- Product Service System (PSS) - Analysis
  - Eco-leasing, maintenance, take-back

**End-of-life**

**Lifecycle and «Knowledge» Results**
- Eco-Design Recommendations
  - New design for LCA Optimization (+30ys)
- New Lifetime Analysis KPI
  - ITU-T standardization (under discussion)
- Full Material Declarations
  - Test for future ICT tools/services

ALM - Access Link Monitoring
Demo Main Results

**Design & Production**
- Eco_Design
  - WM Recycled plastic +2%
  - TV Recycled plastics +30%

**Distribution and use**
- Product service system (PSS) - Test
- Eco-leasing, maintenance, take-back

**End-of-life**
- EoL Product Recovery, refurbishment
- Extension in EU

**Lifecycle and «Knowledge» Results**
- Novel/Patented PET Solutions (Formulas)
- + Productivity
- - Virgin raw materials

- Customer Feedback/Acceptance
  - "Living lab"/Survey
  - 39% rent, 78% refurb. (cheaper)

- Analysis of Recovery/Recycling
  - Components recovery by specialized org.
## Future Outcome Expectations

<table>
<thead>
<tr>
<th>Phase/Principles</th>
<th>Washing Machines</th>
<th>TV</th>
<th>Printers</th>
<th>ALM</th>
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<tbody>
<tr>
<td></td>
<td>Arcelic</td>
<td>Arcelic</td>
<td>Lexmark</td>
<td>ADVA</td>
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<tr>
<td><strong>Objectives (SMART)</strong></td>
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<tr>
<td>Design and production / Eco - Desing</td>
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<tr>
<td>% of recycled contents</td>
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<tr>
<td>Products’ lifetime extension/optimization (LCA i.e. carbon footprint reduction)</td>
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<tr>
<td>Distribution and use phase / Eco - Leasing</td>
<td></td>
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<td></td>
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<tr>
<td>NPV - Net present value of business</td>
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<tr>
<td>Sales of new services: leasing, training, maintenance and associated (% of total revenues)</td>
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<tr>
<td>End-of-life phase / ReUse, ReManufacture</td>
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<tr>
<td>Volume of reused/remanufactured products/components (% of total volume)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>New job creation (units)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td><strong>Impact of new ICT Tools</strong></td>
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</tbody>
</table>

**Evaluation of expected results after C-Serves project (3-5 year implementation):**

- % of recycled contents: 
  - <2%: Red
  - 2%<x<10%: Yellow
  - >10%: Green
- Products’ lifetime extension/optimization (LCA i.e. carbon footprint reduction): 
  - <2%: Red
  - 2%<x<10%: Yellow
  - >10%: Green
- Sales of new services: leasing, training, maintenance and associated (% of total revenues): 
  - <0: Red
  - 0<x<10m€: Yellow
  - >10m€: Green
- Volume of reused/remanufactured products/components (% of total volume): 
  - <2%: Red
  - 2%<x<10%: Yellow
  - >10%: Green
- New job creation (units): 
  - <100: Red
  - 100<x<1000: Yellow
  - >1000: Green

- Improved traceability of recycled materials (certification)
- Improved knowledge about material compositions
- Optimization of logistic networks and activities
- Improved information and knowledge sharing
CONTACT
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C-Servees
m.liberati@ciaotech.com

C-SERVEES project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776714
Panel discussion

Resource-efficient Circular Product-Service Systems (ReCiPSS) and how large-scale implementation of circular manufacturing systems in the electronics/white goods and automotive sectors can lead to a stable circular economy in the EU

Dr Farazee Asif, KTH
Aleš Mihelič, Gorenje
Markus Wagner, C-ECO
Ruud de Bruijckere, Signifikant AB
Hans-Christian Eberl, EC DG RTD
Paving the way for innovative Circular Economy products and services in the electronic and automotive sectors

Introduction to the ReCiPSS project

Prof. Magnus Wiktorsson, KTH Royal Institute of Technology
Dr. Farazee Asif, KTH Royal Institute of Technology
Date & Place: 19 October 2022 | Brussels
ReCiPSS General Animation
Paving the way for innovative Circular Economy products and services in the electronic and automotive sectors

White goods demonstrator in ReCiPSS

Dr. Aleš Mihelič, Gorenje
Date & Place: 19 October 2022 | Brussels
Agenda

- Challenges
- The demonstrator
- Key developments
- Support developments
- Economic, environmental and social impacts
- Lessons learned
- Way forward
Challenges

• The linear Economy of Take-Make-Use-Dispose is not sustainable

• Companies like Gorenje cannot run business in a sustainable and profitable way as the material supply uncertainty and material price volatility are increasing

• Demonstrate that it is possible to achieve a win-win effect by transitioning/upgrading the traditional manufacturing industry into a service provider
The demonstrator

Deploy at least 300 appliances as pay-per-use on 4 different markets for B2B and B2C customers
Key developments

Designed and developed long-lasting smart appliances with real-time condition monitoring as well as designed for reparability, refurbishment and recyclability (built with natural materials such as metal and glass)

Developed an IoT platform to support the implementation of the pay-per-use by connecting machines, manufacturer and service providers

Developed mobile/web applications with backend ICT infrastructure for condition monitoring, contract signing, billing and installation order as well as service interventions etc.
Support developments

Characterized market and developed and evaluated pay-per-use business model

Developed long-term product design strategies using 4 design methodologies

Co-created product and service design
Support developments

Assessed reverse logistics and refurbishment/remanufacturing capability

Analyzed supply chains using multi-method simulation models

Analyzed economic, environmental and technical performance using multi-method simulation models
Economic impacts

• It is possible to have profitable pay-per-use,
  • 25% profit margin
  • Monthly fee of 25 Euro/month
    • A high number of use cycles, in average 6 use cycles
• Profitability starts with significant delay, breakeven in month 23
• Operating costs (installation, reinstallation, and transport etc.) are more than 60% of the manufacturing costs

Cost and profit overview from the simulation of 100 washing machines deployed for 15 years
Environmental impacts

• The environmental impact of the sales and pay-per-use model are relatively close to each other

• Combined with price incentives, the pay-per-use model can reduce environmental impacts by 20-40% compared to the sales model

Relative environmental impact per impact category, for user types A, B, C and D
Social impacts

- The new business model with gamification has a large impact on users' behaviour.

- The user acceptance of the recycled, reused, shared change in a positive direction.

- Empathy and community feeling can increase.

- Clear and transparent marketing and no room for greenwashing.
Lessons learned

• The pay-per-use model is evaluated (internally) in the frame of the linear systems

• It will take at least 23 months to breakeven the pay-per-use business model, top management, shareholders, or financiers do not like this

• Customers are asking to complete washing solutions, i.e. washing machines and dryers

• Internal conflicts: SBUs see pay-per-use as a threat to their current business
Lessons learned

• Challenging with flexible pricing, e.g. less cost at lower temperature washing, a legal and marketing challenge of informing the consumers of pricing parameters under consumer protection laws

• Some customers are washing less than expected thus can delay the breakeven

• Appliances disconnect from customer Wi-Fi, no possibility to monitor the usage

• Too unstandardized ICT infrastructures; needed to switch the ICT platform several times during the developments
Lessons learned

- Legal ambiguity as there is no legal framework for the pay-per-use model (cross-border transfer of used appliances eq. waste export)

- Country-specific solutions for some business model elements: e.g., pricing has to reflect a willingness to pay in diverse countries

- Consumer sensitivity to privacy. Finding the acceptable balance between privacy and data collection needs
Way forward

• Scale up the pay-per-use business model

• Continue to collect data from the customers

• Implement different technologies to make value recovery digitalized

• Recovering spare parts from used appliances
Thank you!

Dr. Aleš Mihelič

Gorenje

ReCiPSS

Ales.Mihelic@gorenje.com
Joint panel discussion
Policy-relevant results and insights for the Circular Economy, jointly provided by C-SERVEES and ReCiPSS

Federica Rosasco, RINA-C
Jan Koller, Fraunhofer IPA
Özlem Ünlüer, Arçelik
Maxime Furkel, Lexmark
Aleš Mihelič, Gorenje
Markus Wagner, C-ECO
Olivia Chassais, EC DG ENV
Policy-relevant results and insights for the Circular Economy, jointly provided by C-SERVEES and ReCiPSS

Introduction by policy recommendations from C-SERVEES and ReCiPSS

Federica Rosasco, RINA C
Date & Place: 19 October 2022 | Brussels
C-SERVEES: Policy recommendations - Methodology

Analysis of policy framework
• Desk research on EU policy framework
• Analysis of the information provided by the AB and Involvement of Consortium partners
• Interlink with other RINA’s activities

Analysis of non-technical barriers
• Online interviews with EEE manufacturers and recyclers of the target products

Stakeholders’ consultation
WEEE Forum and Electraco, ERION, ASSORAE, C-SERVEES AB members
• Presence of legislative barriers in E&E sector and ideas on how to overcome them

Analysis of findings & development of policy recommendations
• Legislative Framework in E&E sector
• Ecodesign requirements
• End of Waste criteria
• Recovery, Re-use, Recycle Targets
• Legislative Barriers and Recommendations
# C-SERVEES: Policy recommendations – Main results

## EU institutions for E&E sector

<table>
<thead>
<tr>
<th>Actor Involved</th>
<th>Leg. Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commission</td>
<td>guidelines → increase understanding &amp; compliance with E&amp;E sector regulatory framework</td>
</tr>
<tr>
<td>Member States</td>
<td>public campaigns targeting the main actors: manufacturers, recyclers, administration, final users (improve accurate identification of materials and proper disposal)</td>
</tr>
<tr>
<td>Commission</td>
<td>differentiate regulations according to the specificity of the product</td>
</tr>
<tr>
<td>Policy makers</td>
<td>maintain the requirements of CE at EU level (national laws → market fragmentation)</td>
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<td>Commission</td>
<td>bring the global consensus in a unified market view: examine the laws applicable to E&amp;E sector to create an EU-wide legislation</td>
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<td>Parliament</td>
<td>integrate LCA studies as requirement in procurement practices or invitations to EU projects tender*</td>
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<td>Council</td>
<td>consider the needs of stakeholders within the E&amp;E value chain while updating framework, e.g.:</td>
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<td></td>
<td>- REACH Directive, the CMRT template or the SVHC list</td>
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<td></td>
<td>- WEEE Directive: competencies and responsibilities of stakeholders</td>
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<td></td>
<td>- POPs Regulation: obstacle in the recycling of plastic waste</td>
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<td></td>
<td>- WSR Directive strong restrictions for the export of waste out the EU (cross-border movement), without a distinction between properly treated waste and untreated one</td>
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</table>

C-SERVEES: Policy recommendations – Main results

Other actors in E&E sector

**Actor Involved** | **Leg. Recommendation**
--- | ---

- **Public authorities**
  - express recommendations, via procurement policies, to promote the use of products with higher content of recycled plastic

- **Manufacturers**
  - analyze the impacts of their products according to LCA-based method

- **Manufacturers**
  - state required grade of recycled material to their components’ suppliers
    → suppliers of recycled material can anticipate and meet the manufacturers’ actual needs.
  - Criteria for the grades of recycled material development: manufacturer R&D, Standards Bodies

- **Standards Bodies**
  - with national and local authorities across Europe is fundamental to achieve recycled content targets

- **Cooperation of the whole value chain**

- **Technology developers**
  - provide technical recommendations on standardisation, normalisation and obsolescence of equipment
  - provide instruction manuals that enable and facilitate maintenance & repair
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Paving the way for innovative Circular Economy products and services in the electronic and automotive sectors

ReCiPSS – Policy Recommendations

Legislative Obstacles and Barriers that Inhibit the Full Potential of Circular Economy

Jan Koller, Fraunhofer IPA
Date & Place: 19 October 2022 | Brussels
## Project’s Findings

| 01 | **Double taxation on circular products** rewards the one-time use of products compared to multiple life cycles. |

## Legislative Recommendation

| 01 | Exemption of re-used products from VAT. |

## References

- Umsatzsteuer-Anwendungserlass (»Altteilsteuer«)

| 02 | **Lack of financial incentives for service-based business models** due to the same level of taxation and potentially higher costs compared to product-based business models. |

## Legislative Recommendation

| 02 | Reduction of taxation on service-based business models or End-of-Life activities through, e.g., reduced VAT on products and labor costs. |

## References

- Umsatzsteuergesetz in Germany
- Revision 2016:1055 of the income tax law 1999:1229 in Sweden

| 03 | **Difficulties in harmonizing the markets across countries** result in unnecessary hurdles in international trade. |

## Legislative Recommendation

| 03 | Creation of global standards and incentivize or facilitation of the aftermarket stakeholders in Free Trade Agreements (FTA). |

## References

- Decree of Turkish Import Regime
- FTA EU and United Kingdom
<table>
<thead>
<tr>
<th>Project’s Findings</th>
<th>Legislative Recommendation</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>04</strong> Cross-border transportation of used products can cause difficulties if the</td>
<td>Declaration of used products as products intended to be re-used, remanufactured, or refurbished’ and not as ‘waste’ in EU legislation and standards.</td>
<td>• Directive (EU) 2018/851&lt;br&gt;• EU Waste Shipment Regulation (EC) No 1013/2006&lt;br&gt;• Kreislaufwirtschaftsgesetz (KrWG) § 3 in Germany</td>
</tr>
<tr>
<td>product is intended to be remanufactured and is labeled as ‘waste’.</td>
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<td><strong>05</strong> Different international remanufacturing processes and quality standards</td>
<td>Development of a standard to define a common understanding of remanufacturing processes to which remanufacturers can refer and commit.</td>
<td>• ISO 9001</td>
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<tr>
<td>weaken the substantive of remanufacturing credibility.</td>
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</tr>
<tr>
<td><strong>06</strong> Insufficient visibility of sustainable products for the customer leads to</td>
<td>Implementation of Green Public Procurement by decision-makers into national law.</td>
<td>• Loi n° 2020-105 in France</td>
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<td>a lack of awareness of circular economy and sustainable consumption.</td>
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</table>
A shared indicator for recycling and re-use often leads to the recycling of products that could still be reused.

Separation of the target requirements for re-use and recycling on WEEE to prioritize re-use over recycling and separation of recycling targets by material category.

- Directive 2012/19/EU
- Kreislaufwirtschaftsgesetz (KrWG) § 6 in Germany
ReCiPSS recommendations for CE standardization

Technical committee: ISO/TC 323- Circular Economy

Working Group: WG2-Practical approaches to develop and implement Circular Economy

Standard: ISO 59010:2023, Circular economy — Guidelines on business models and value Networks

Development process

- June 2020- New Work Item Proposal (NWIP) for ISO 59010 ballot and confirmation of Leadership and Secretary
- March 2021- ISO 59010 WD1- call for comments by experts in WG2
- September 2021 - ISO 59010 WD2- call for comments by experts in WG2
- 16 December 2021- ISO 59010 WD3- call for comments by experts in WG2
- 30 May 2022- ISO 59010 CD- call for comments by experts in WG2
- 6-8 December 2022- WG2/CG meeting in Paris to finalize the comments on ISO 59010 CD and
1. Mapping the value network (ISO 59010, Clause 4)


3. Guidelines on how to measure KPIs (ISO 59010, Clause 5)

4. Guidelines for “analyzing desired future”, and “translating gaps into opportunities” (ISO 59010, Clause 5)

5. Linking circularity performance to the business model elements (ISO 59010, Clause 6)

6. Economic rationalization and financial design (ISO 59010, Clause 6)

7. The governance structure (ISO 59010, Clause 7)
C-SERVEES highlights from CE Standardization analysis

- EN 4555x Series standards apply to any ErP: every standardization product committee should prepare a set of standards for the assessment of material efficiency aspects adapted for their specific scope
- The scope should be to adapt the general assessment methodologies to the specificities of a product, being material efficiency aspects strictly related and prioritized in accordance with the product use profile
- The future product group specific standards should take into consideration also other elements: Mission profile, Dependability, Interoperability, Digitization, Energy saving and efficiency, Environmental footprint (as per “IEC/Guide 109 “Environmental aspects - Inclusion in electrotechnical product standards”)
- Strict collaboration should be considered between product group specific TC/WGs and IEC/TC 111, ISO/TC 207
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Stay tuned!
https://c-serveesproject.eu/

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