

# DPP IMPLEMENTATION IN EUROPE AND BEYOND CHALLENGES AND OPPORTUNITIES

1 SEPTEMBER | 15:00-18:00 CEST | VAREMBÉ CONFERENCE CENTRE (CCV)

*CE-RISE Annual Event taking place in the framework of WRF'25*



# AGENDA

Time	Title	Speaker
15:00-15:10	CE-RISE Information System Introduction	Cristina Guerreiro, Project Coordinator, NILU
15:10-15:20	Measuring the Applicability of Circular Strategies	Francesco Barill, Research Scientist, Empa
15:20-15:30	Socio-Economic, and Environmental (SEE) Impacts	Sónia Cunha, Assistant Professor, Leiden University
15:30-15:45	Viessmann Case Study	Andreas Wade, Director Sustainability & ESG, Viessmann Climate Solutions
15:45-16:00	Data Interoperability	Riccardo Boero, Senior Scientist, NILU
16:00-16:10	Questions	
16:10-16:30	Coffee Break	
16:30-18:00	Panel Discussion on the Implications and Opportunities of the Implementation of DPPs in Europe and Outside Europe	Rembrandt Koppelaar (EcoWise & Cirpass-2 global DPP & EU regulatory observatory), Catherine Chevauché (Circular Economy Director, Veolia), Reyna Ubeda (ITU-T SG5 Engineer: Environment, EMF, Climate Action and Circular Economy, ITU), Colette van der Ven (Founder & Director, TULIP Consulting), Maxime Furkel (Head of Government Affairs, Lexmark)
18:00-19:00	Networking Drinks	



# THE CE-RISE PROJECT

Circular Economy Resource Information System (Grant Agreement ID [#101092281](#))

Cristina Guerreiro | Project Coordinator | Nilu



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,  
Education and Research EAER  
State Secretariat for Education,  
Research and Innovation SERI

EU Framework Programmes

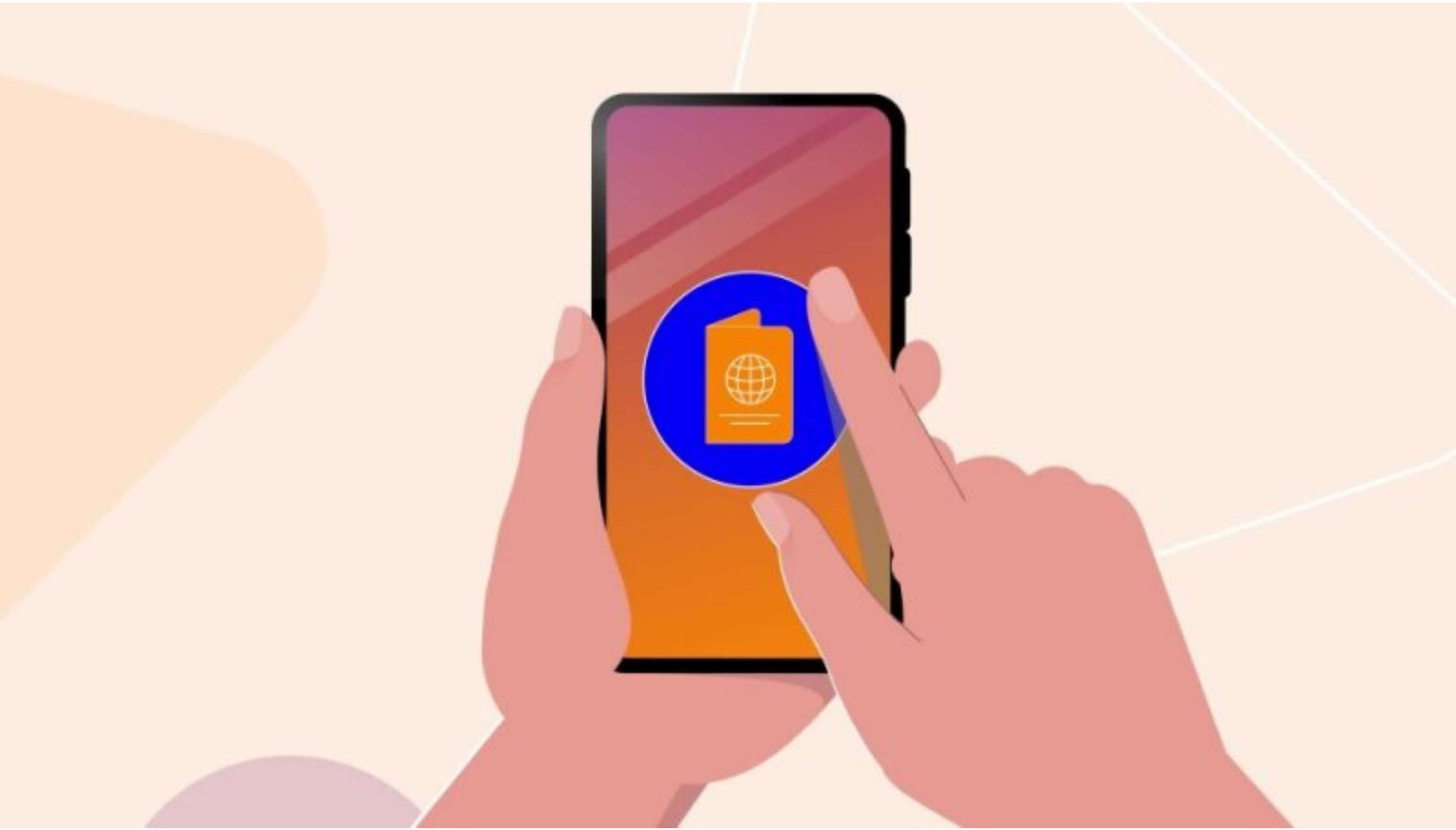


UK Research  
and Innovation

nilu



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the European Union



### FOSSIL FUEL INTENSIVE ECONOMY

*Powered by coal, oil, gas*



### RENEWABLE ENERGY & DIGITALIZED ECONOMY

*Enabled by intensive use of raw materials* 



Transition towards electrification and digitalization



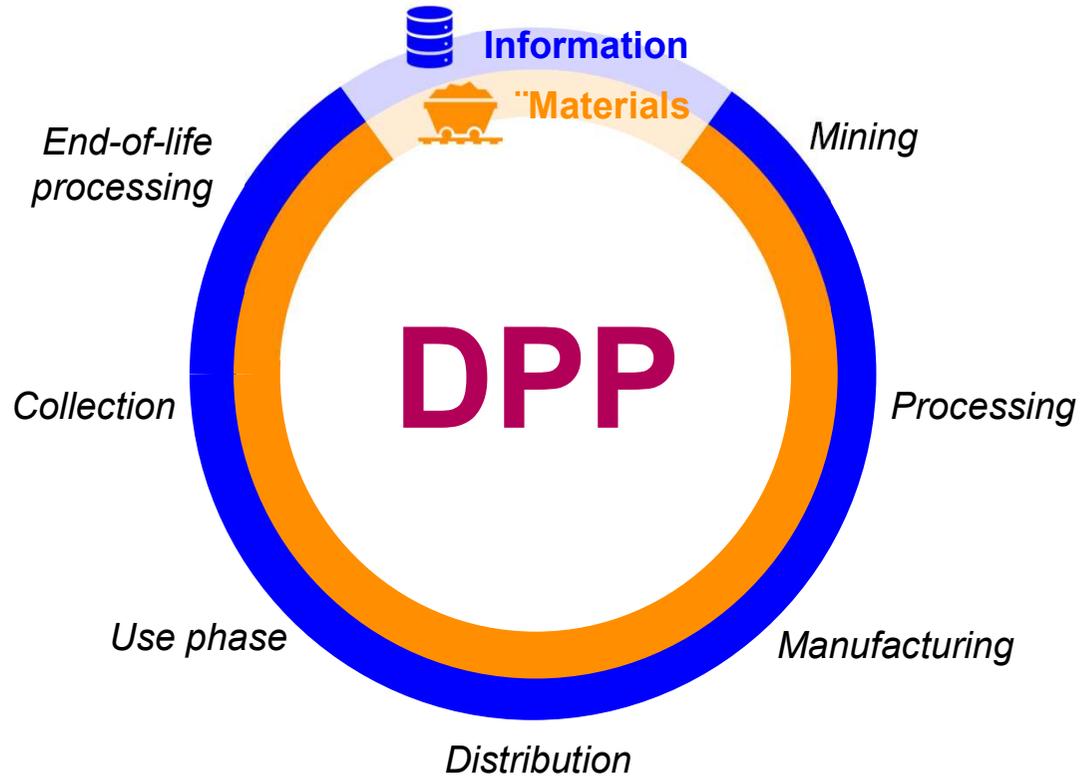
Limited supply of key raw materials

**CRMs strategy**

Improve supply chain resilience and security

**Promote sustainability and circularity of raw materials**

# CIRCULAR ECONOMY ACTION PLAN (CEAP) & ECODESIGN FOR SUSTAINABLE PRODUCTS REGULATION (ESPR)



## CE-RISE: VISION & GOALS



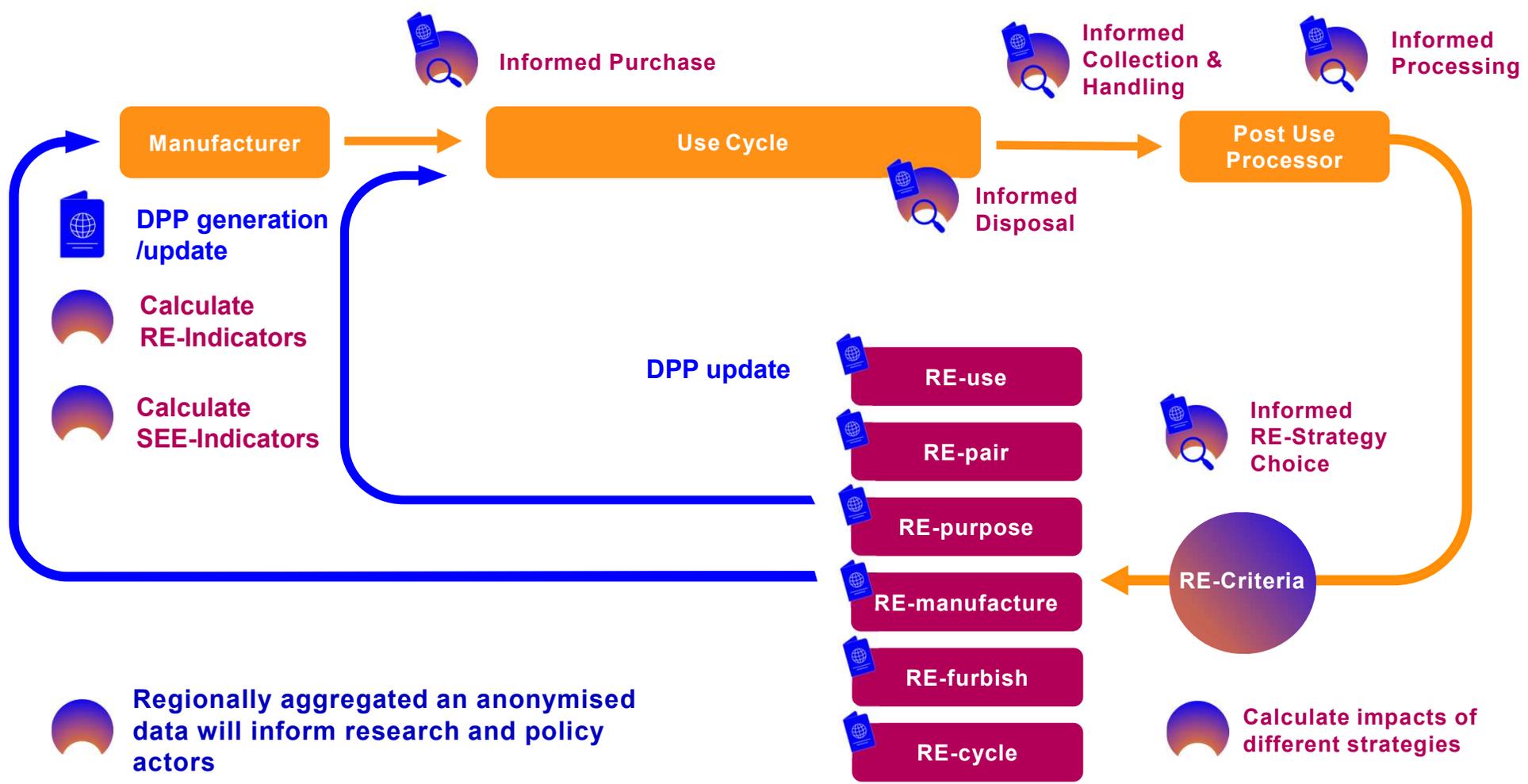
**Accelerate circular economy practices** to enhance material efficiency, reduce environmental impacts, and foster new business opportunities, ultimately **contributing to a more equitable, resilient, and sustainable society.**



- Develop a Resource Information System
- **Integrate DPP information** into Circular Strategies and SEE-Impact Assessments
- Improve **confidential information sharing**
- Provide **open-access software** supporting sustainable and circular products

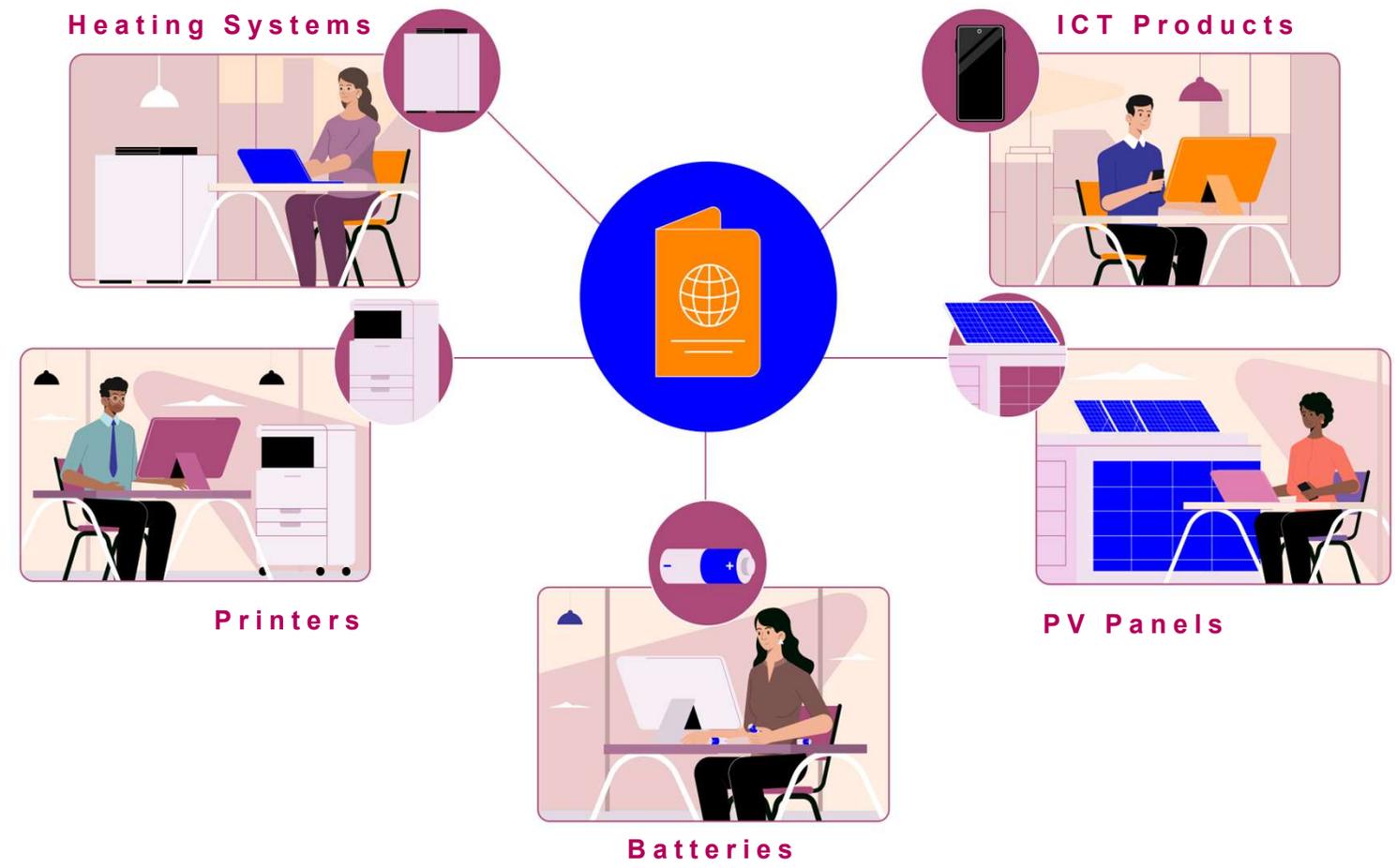
# CE-RISE: THE INFORMATION SYSTEM

WHY?  
HOW?  
WHAT?  
WHO?



Click icon to add partner logo

# CASE STUDIES





WHY?

HOW?

WHAT?

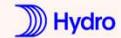
WHO?



Jan 2023 – Dec 2026 | €7,65M | 27 Partners from 11 countries

Project Coordinator: **nilu**

**INDUSTRY PARTNERS**



**REFURBISHING AND RECYCLING PARTNERS**



**ACADEMIA, RESEARCH, AND TECHNICAL PARTNERS**



**CONSULTING AND EXTENDED PRODUCER RESPONSIBILITY ORGANISATIONS**



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# Contact details



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NILU

Oslo, Norway

[cbg@nilu.no](mailto:cbg@nilu.no)

**nilu**



# MEASURING THE APPLICABILITY OF CIRCULAR STRATEGIES

Francesco Barilli | Research Scientist | Empa



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra  
Swiss Confederation

Federal Department of Economic Affairs,  
Education and Research EAER  
State Secretariat for Education,  
Research and Innovation SERI  
EU Framework Programmes



UK Research  
and Innovation



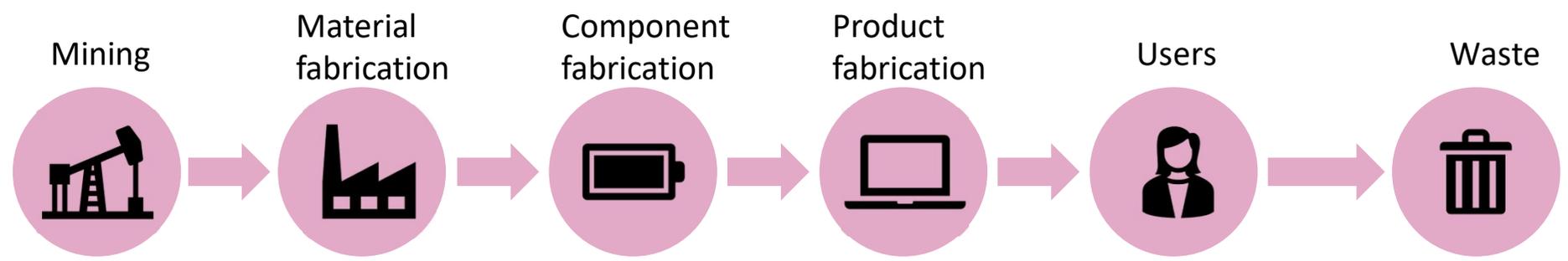
Empa

Materials Science and Technology

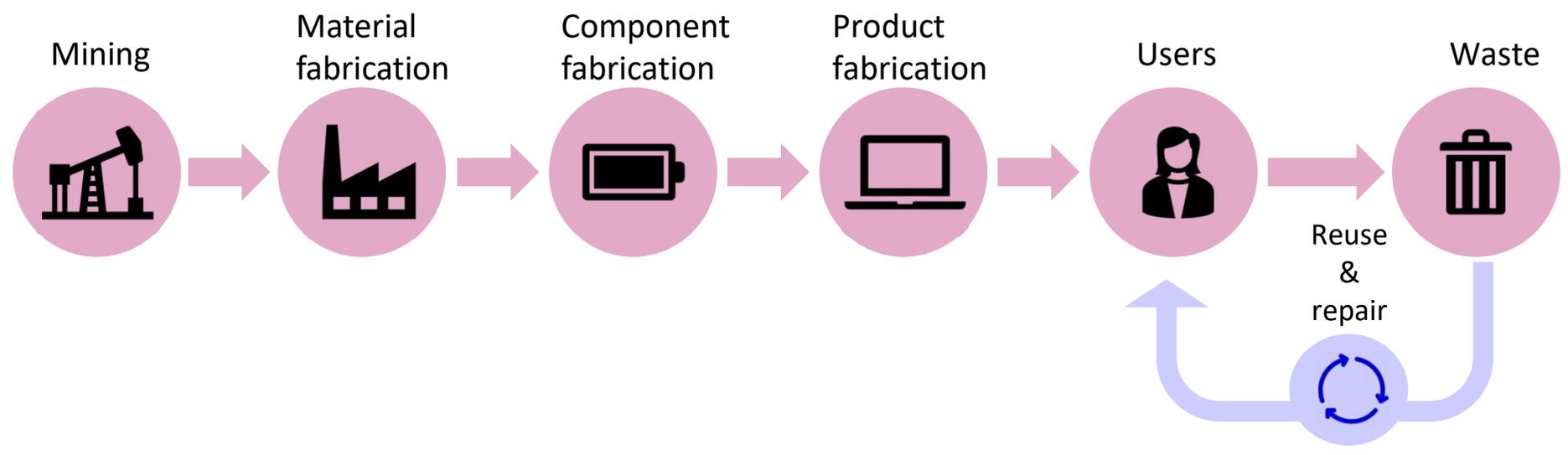


Funded by  
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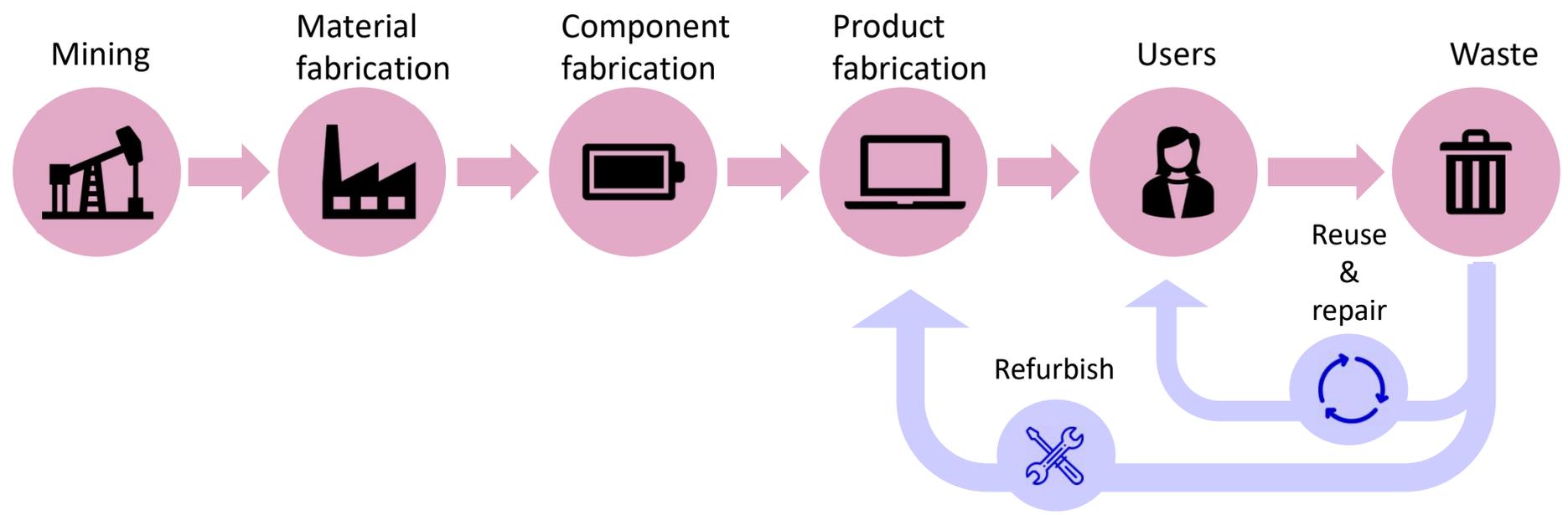
# Circular strategies: Transitioning from linear to circular economy



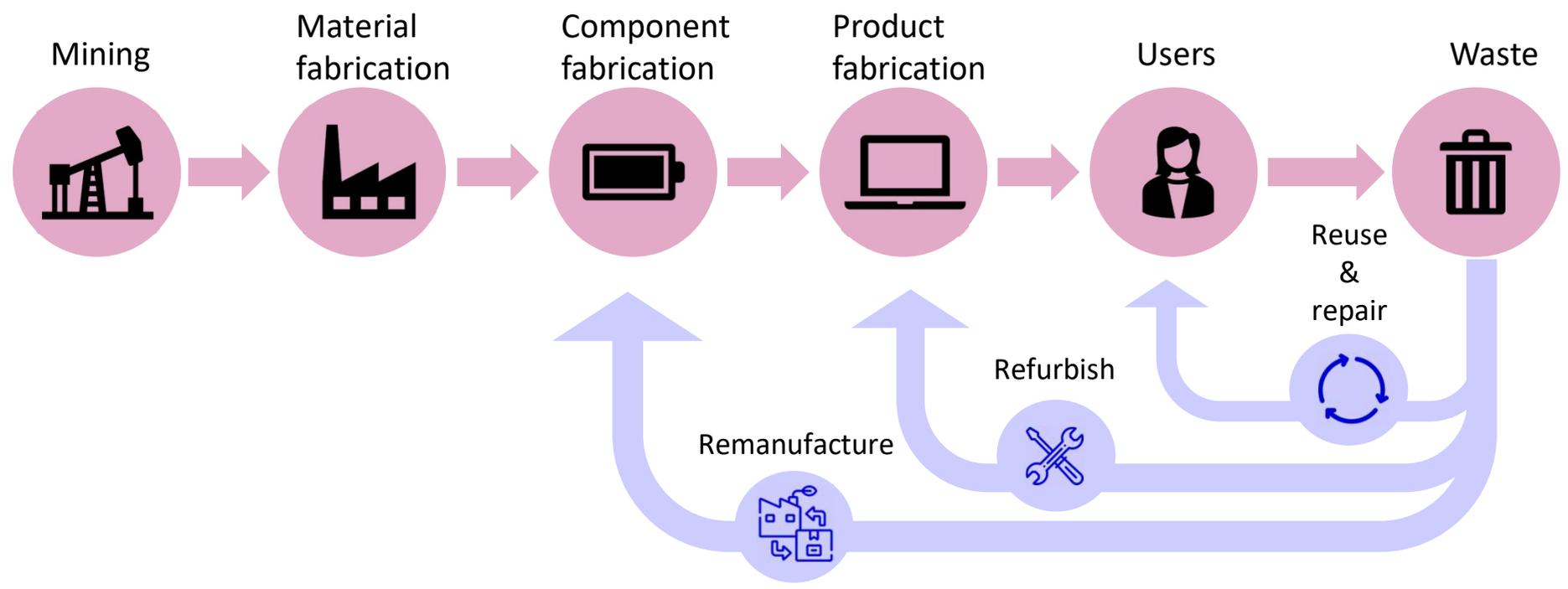
# Circular strategies: Transitioning from linear to circular economy



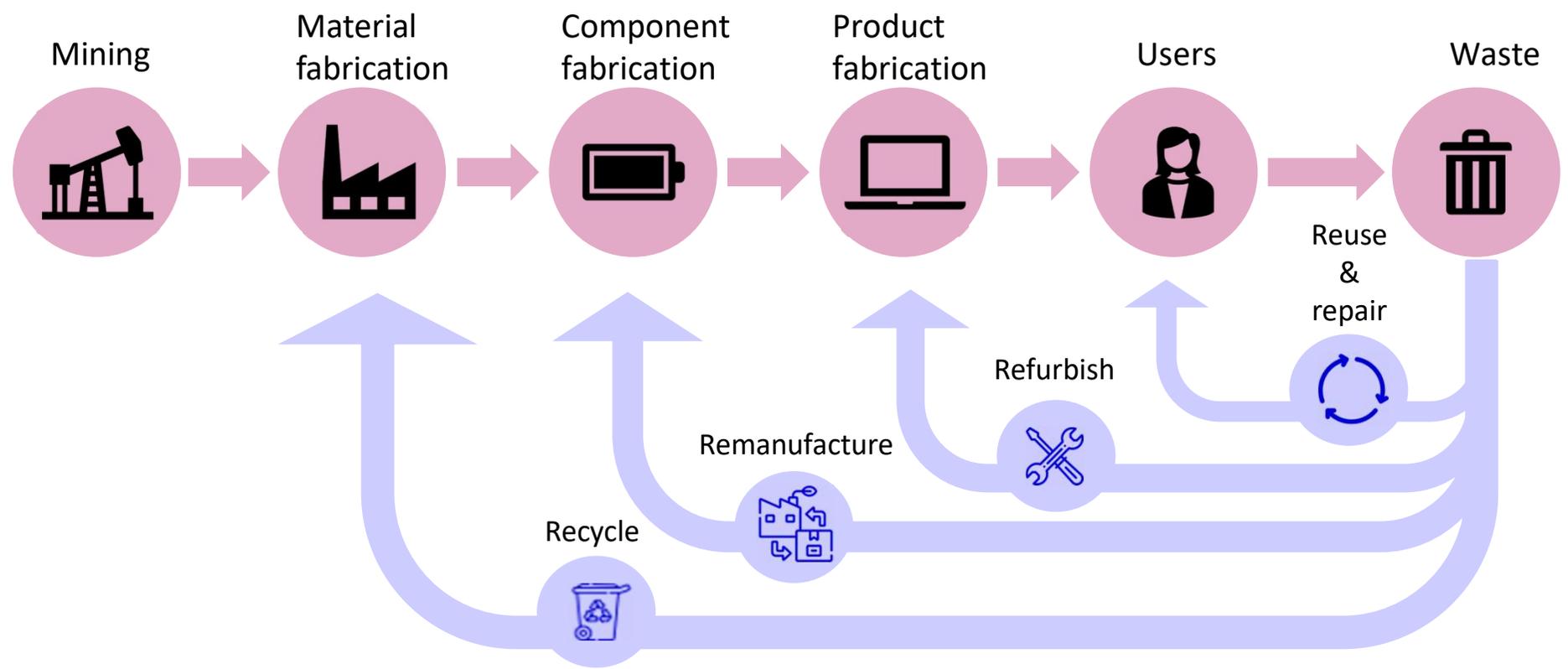
# Circular strategies: Transitioning from linear to circular economy



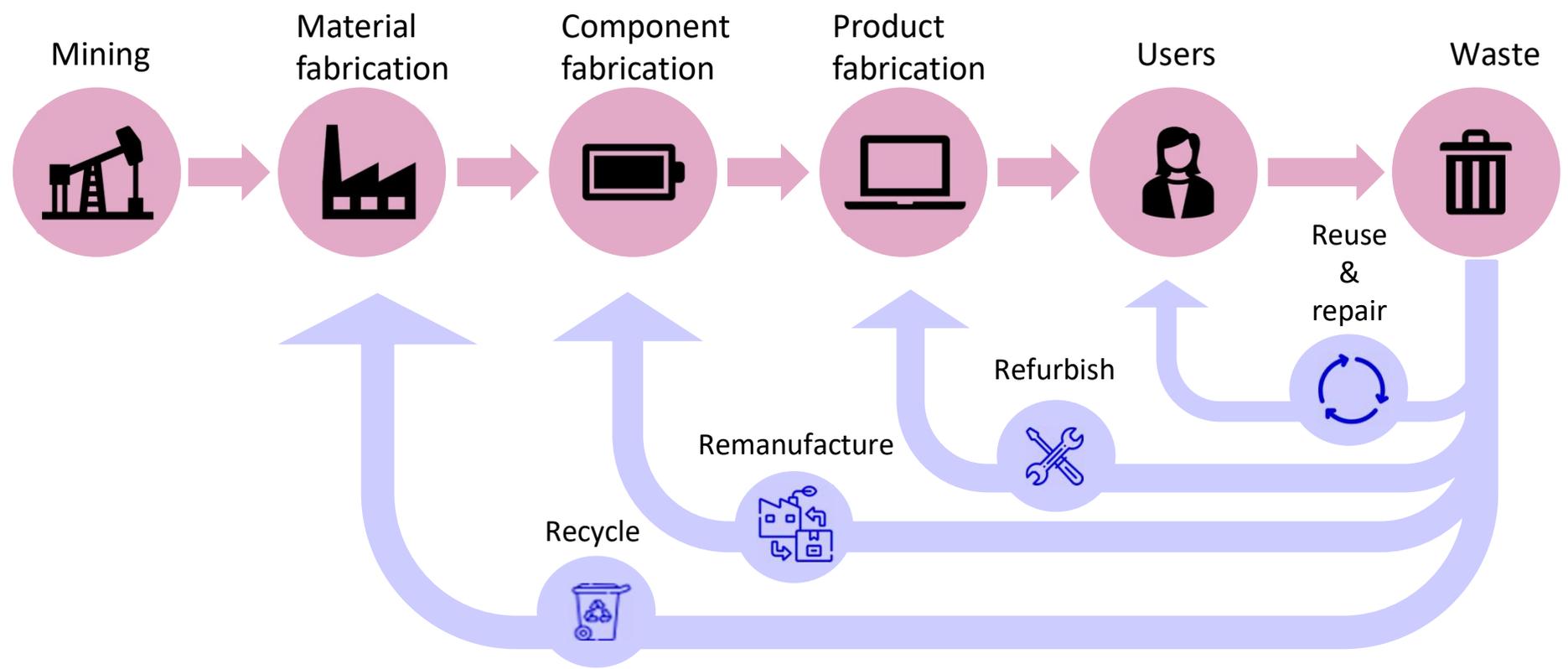
# Circular strategies: Transitioning from linear to circular economy



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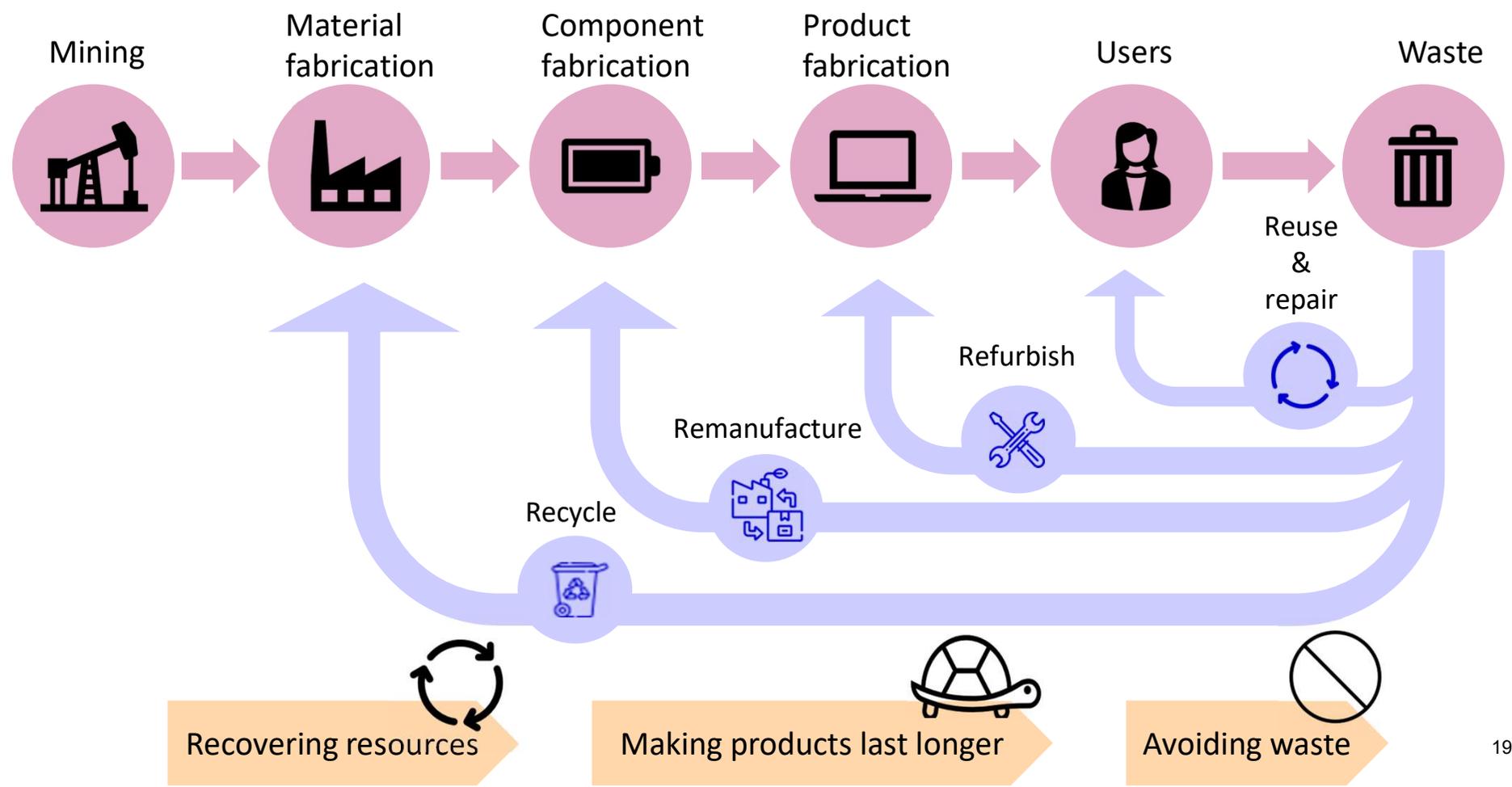


# Circular strategies: Transitioning from linear to circular economy



Strategic actions are needed to strengthen product circularity

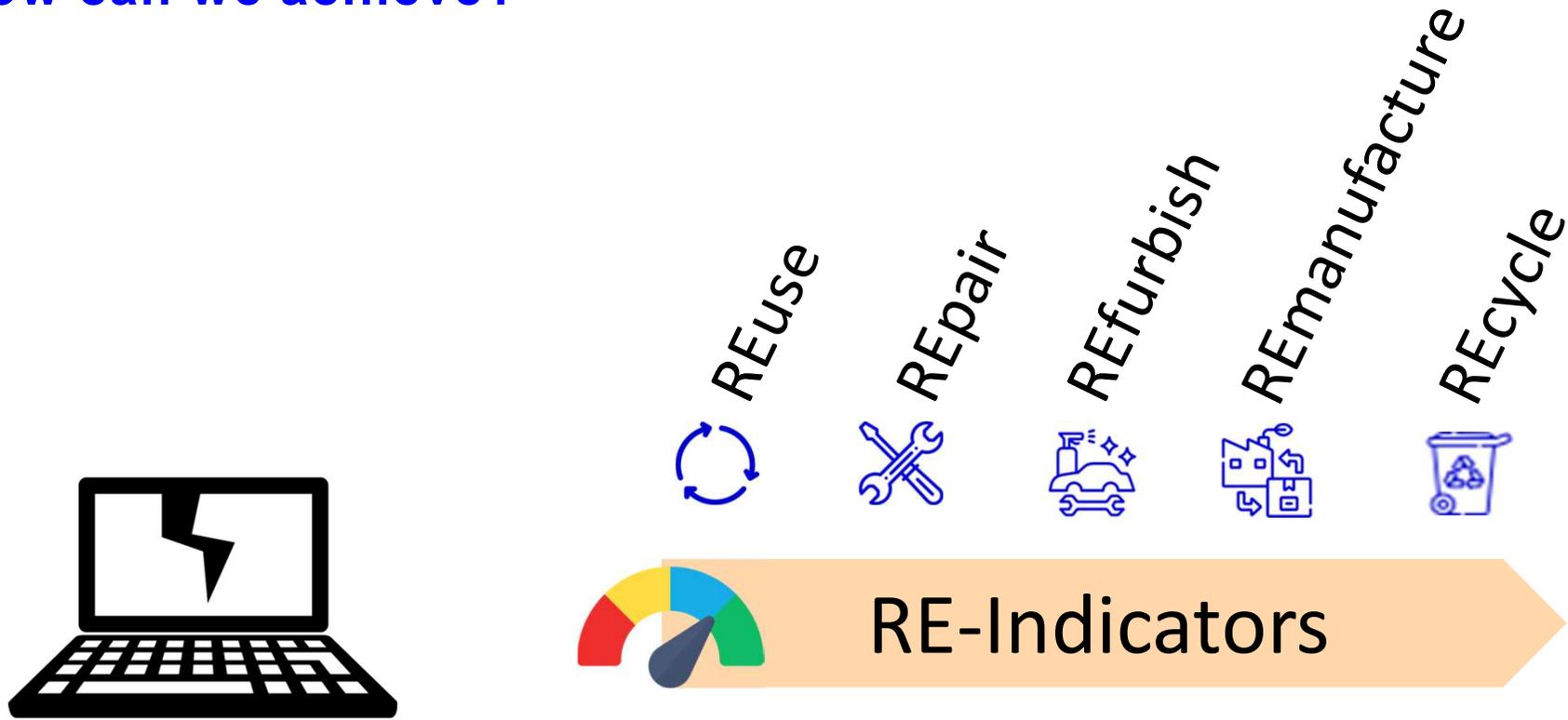
# Circular strategies: what do we achieve?



# Circular strategies: How can we achieve?



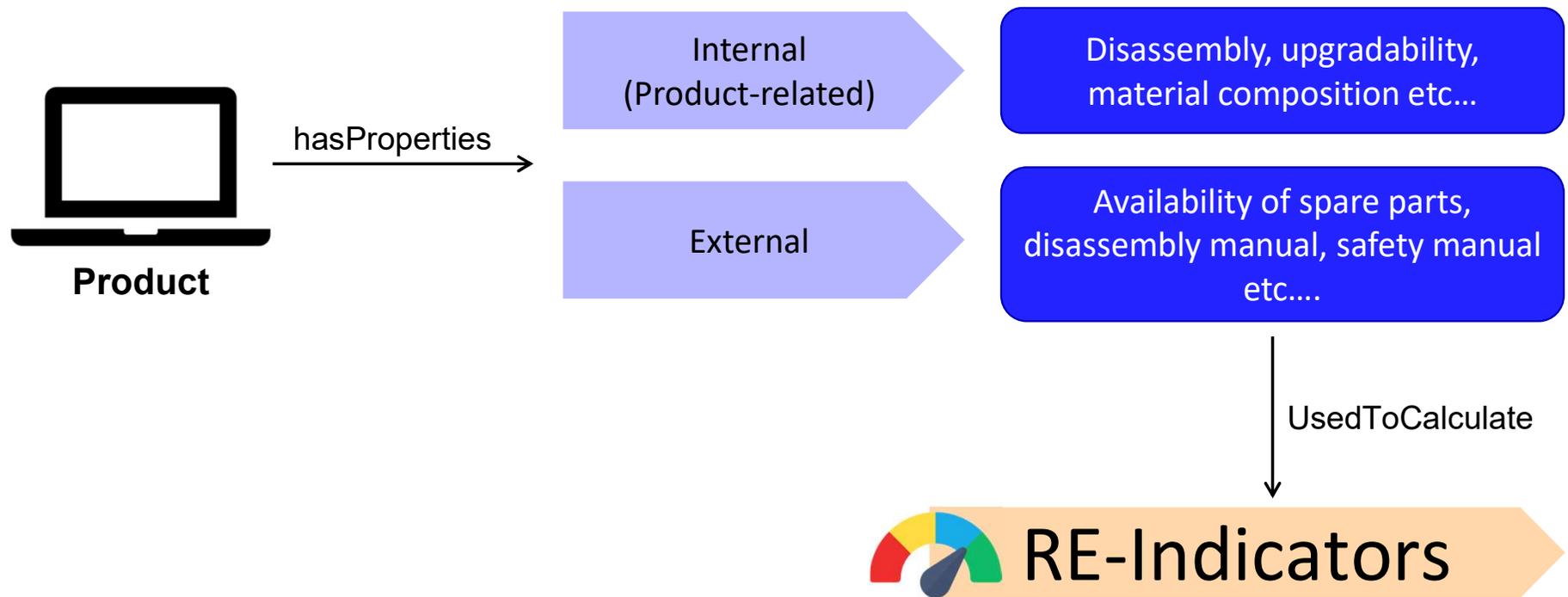
# Circular strategies: How can we achieve?



**RE-INDICATOR** : Semi-quantitative metric of the applicability of a circular -strategy

# RE-Indicators

**RE-INDICATOR** : Semi-quantitative metric of the applicability of a circular -strategy



# RE-Indicators

## REpairability example



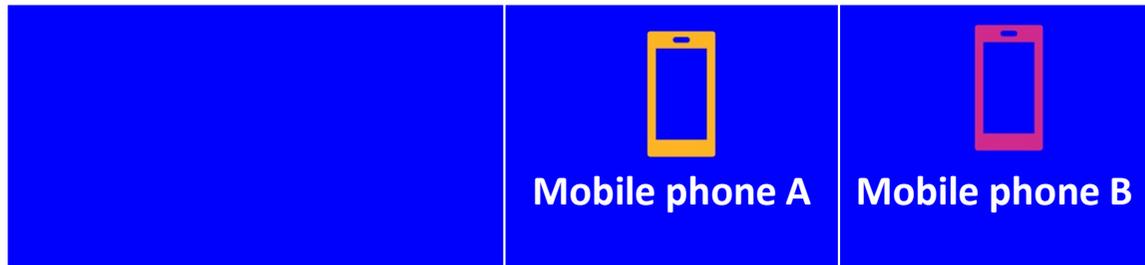
Mobile phone A



Mobile phone B

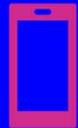
# RE-Indicators

## REpairability example



# RE-Indicators

## REpairability example

	 <p>Mobile phone A</p>	 <p>Mobile phone B</p>
<p>Disassembly</p>	<p>Score A.1</p>	<p>Score B.1</p>



# RE-Indicators

## REpairability example

	 <b>Mobile phone A</b>	 <b>Mobile phone B</b>
<b>Disassembly</b>	<b>Score A.1</b>	<b>Score B.1</b>
<b>Tools</b>	<b>Score A.2</b>	<b>Score B.2</b>



# RE-Indicators

## REpairability example

	 <b>Mobile phone A</b>	 <b>Mobile phone B</b>
<b>Disassembly</b>	<b>Score A.1</b>	<b>Score B.1</b>
<b>Tools</b>	<b>Score A.2</b>	<b>Score B.2</b>
<b>Availability of spare parts</b>	<b>Score A.3</b>	<b>Score B.3</b>



# RE-Indicators

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	 <b>Mobile phone A</b>	 <b>Mobile phone B</b>
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<b>Tools</b>	<b>Score A.2</b>	<b>Score B.2</b>
<b>Availability of spare parts</b>	<b>Score A.3</b>	<b>Score B.3</b>
<b>Disassembly manual</b>	<b>Score A.4</b>	<b>Score B.4</b>



# RE-Indicators

## REpairability example

	 <b>Mobile phone A</b>	 <b>Mobile phone B</b>
<b>Disassembly</b>	<b>Score A.1</b>	<b>Score B.1</b>
<b>Tools</b>	<b>Score A.2</b>	<b>Score B.2</b>
<b>Availability of spare parts</b>	<b>Score A.3</b>	<b>Score B.3</b>
<b>Disassembly manual</b>	<b>Score A.4</b>	<b>Score B.4</b>
<b>Total REpairability score</b>	<b>Score A</b>	<b>Score B</b>





# RE-Indicators

The RE-indicators is relevant for multiple stakeholders across the value chain:

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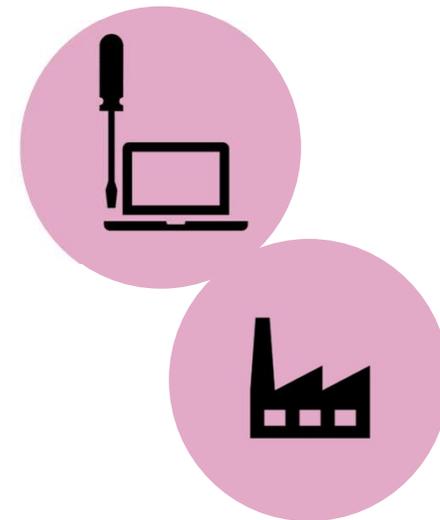
- **For remanufacturers**, accessing information on which parts are critical, how to access them, which tools to use, and whether spare parts are available.



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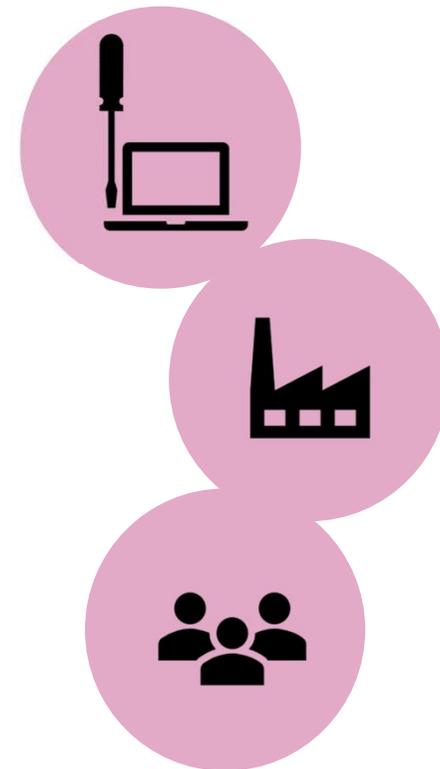
- **For remanufacturers**, accessing information on which parts are critical, how to access them, which tools to use, and whether spare parts are available.
- **For product designers**, providing guidance on where to act in design and production to improve product circularity and overall performance.



# RE-Indicators

The RE-indicators is relevant for multiple stakeholders across the value chain:

- **For remanufacturers**, accessing information on which parts are critical, how to access them, which tools to use, and whether spare parts are available.
- **For product designers**, providing guidance on where to act in design and production to improve product circularity and overall performance.
- **For consumers**, serving as an understandable measure of the product's repairability and sustainability.





# Coming Soon

## Methodological foundations of the CE-RISE – Indicators

Smriti Anand Jha, Salgam setenay, Joana Francisco Morgado, Kirsten Remmen, Patrick Wäger

Wednesday, September 3rd

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### 2A Measuring and Advancing Circularity in Consumer & Industrial Goods

Scientific Session

🕒 11:00 AM – 12:15 PM

📍 Salle 4

CONSUMER/IND GOODS

# Contact details



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Empa

Switzerland

[francesco.barilli@empa.ch](mailto:francesco.barilli@empa.ch) & [Smritianand.Jha@empa.ch](mailto:Smritianand.Jha@empa.ch)





# Leveraging DPPs for the calculation of: **SOCIOECONOMIC AND ENVIRONMENTAL (SEE) IMPACTS**

Sónia Cunha | Assistant Professor | Leiden University

Berend Mintjes | PhD Student | Leiden University



Schweizerische Eidgenossenschaft  
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Swiss Confederation

Federal Department of Economic Affairs,  
Education and Research EAER  
State Secretariat for Education,  
Research and Innovation SERI

EU Framework Programmes



UK Research  
and Innovation



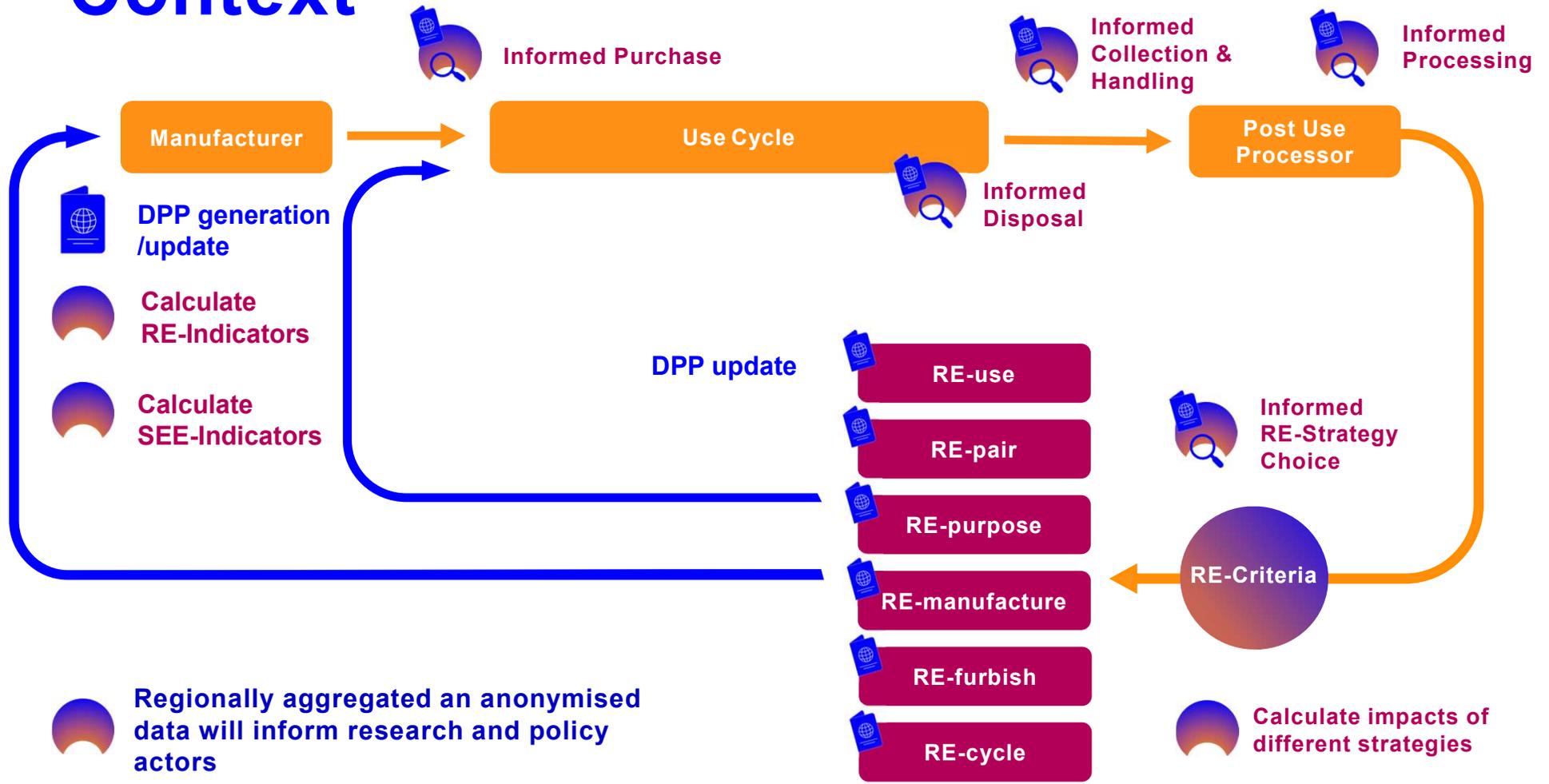
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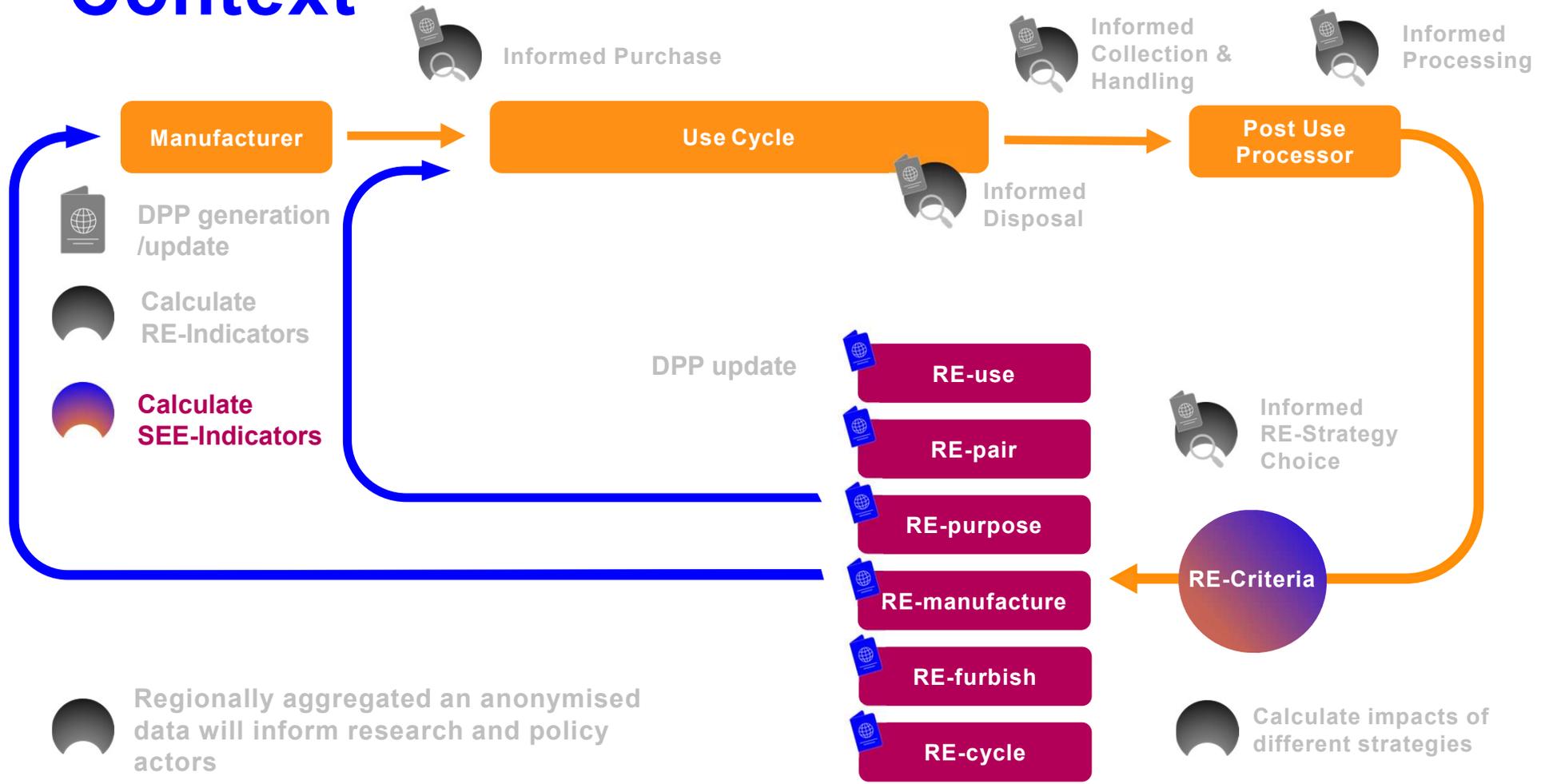
# Context

CONTEXT  
METHOD  
RESULTS  
DISCUSSION



# Context

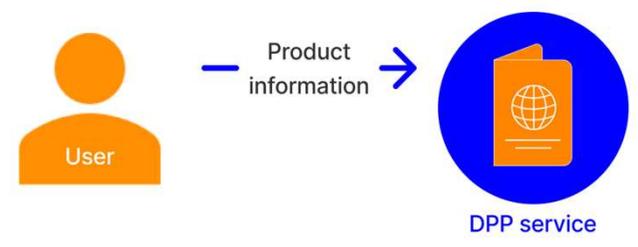
CONTEXT  
METHOD  
RESULTS  
DISCUSSION



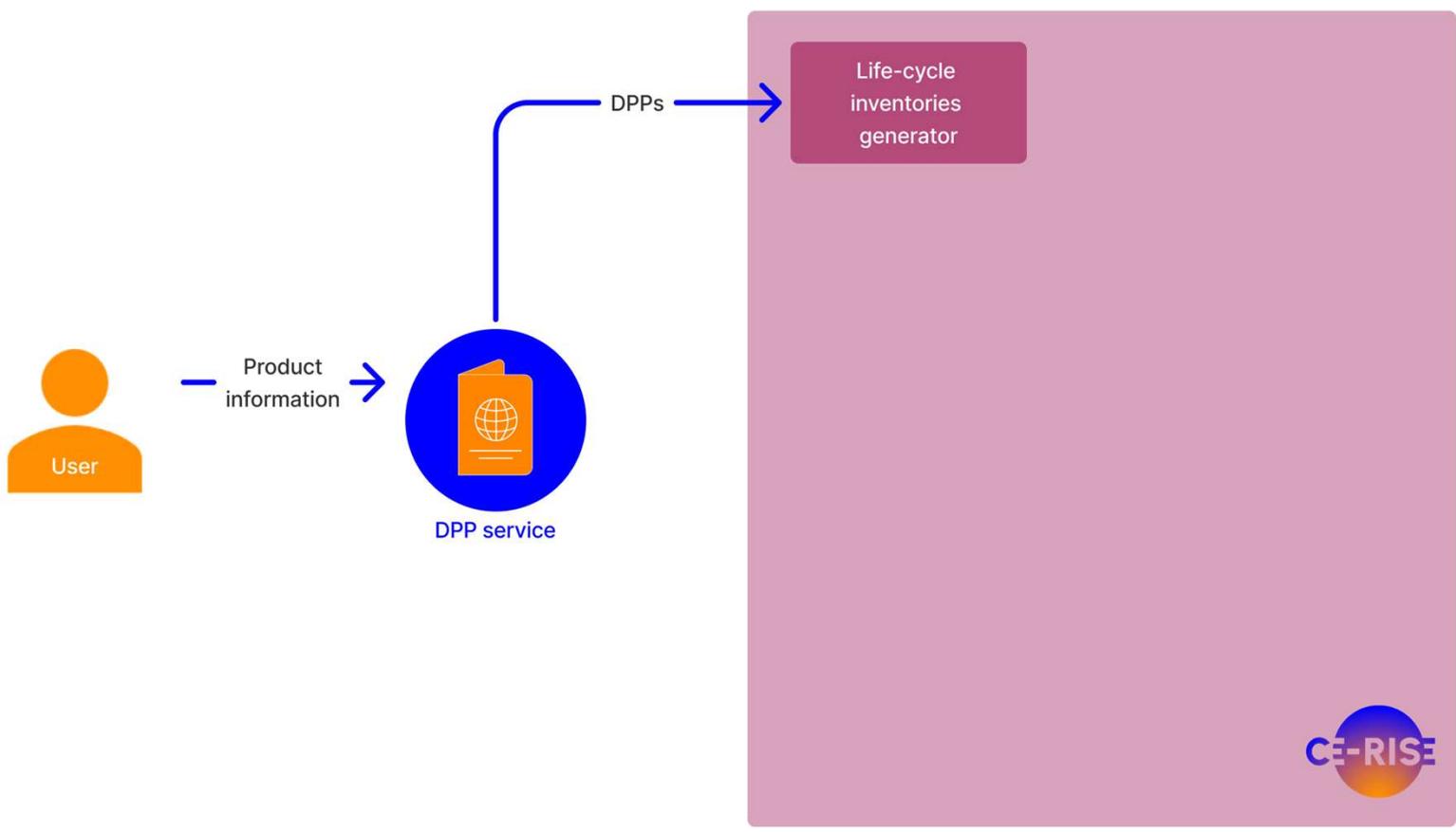
# Context

- The DPP is used for data sharing anyway, so why not share data on the inputs, outputs and impacts of your own processes?
- By sharing process data through the DPP, less data gathering is needed.
- You provide information on **your own process only** and can use linked DPP processes for impact assessment across their full value chain.

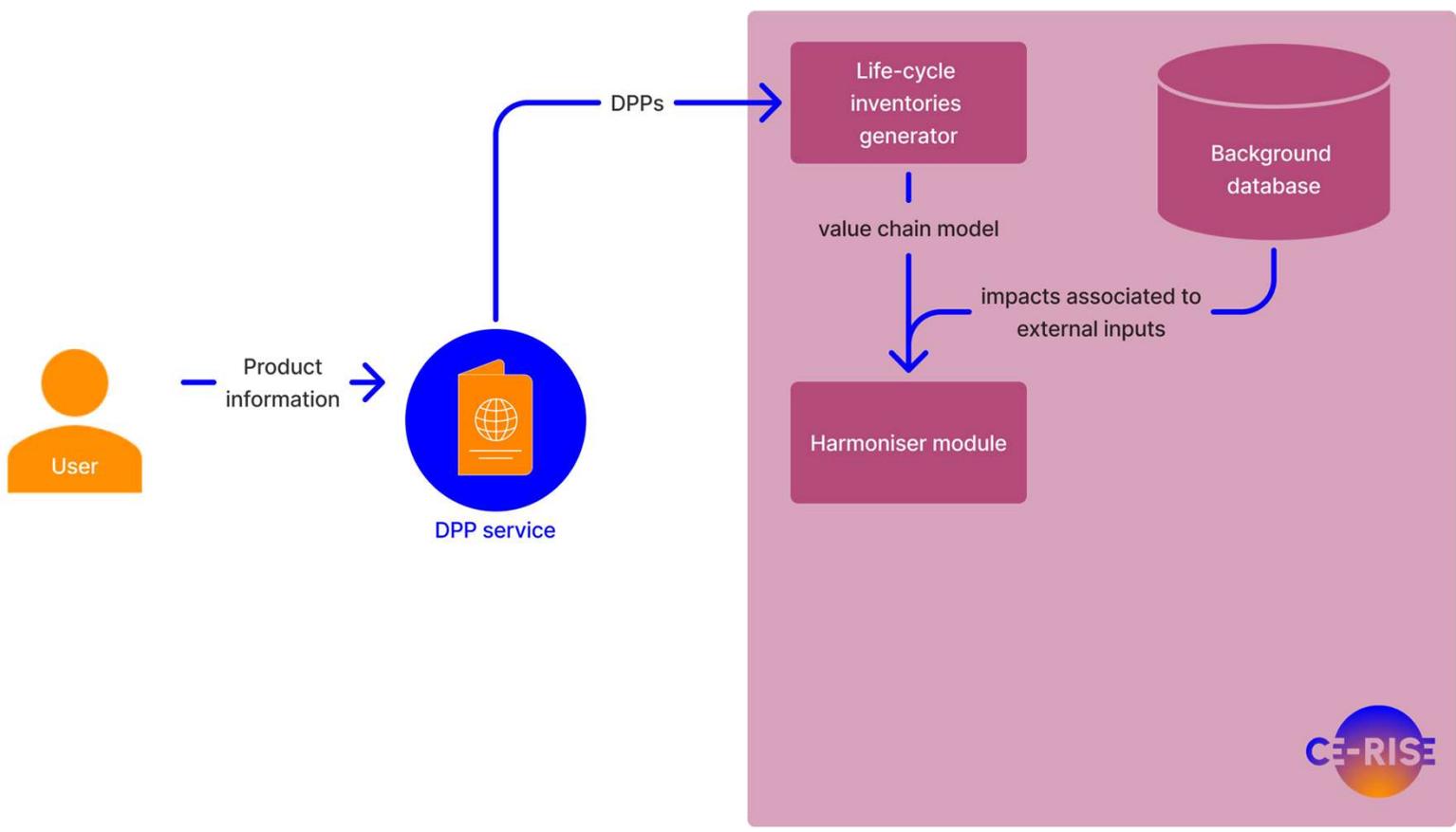
# Method



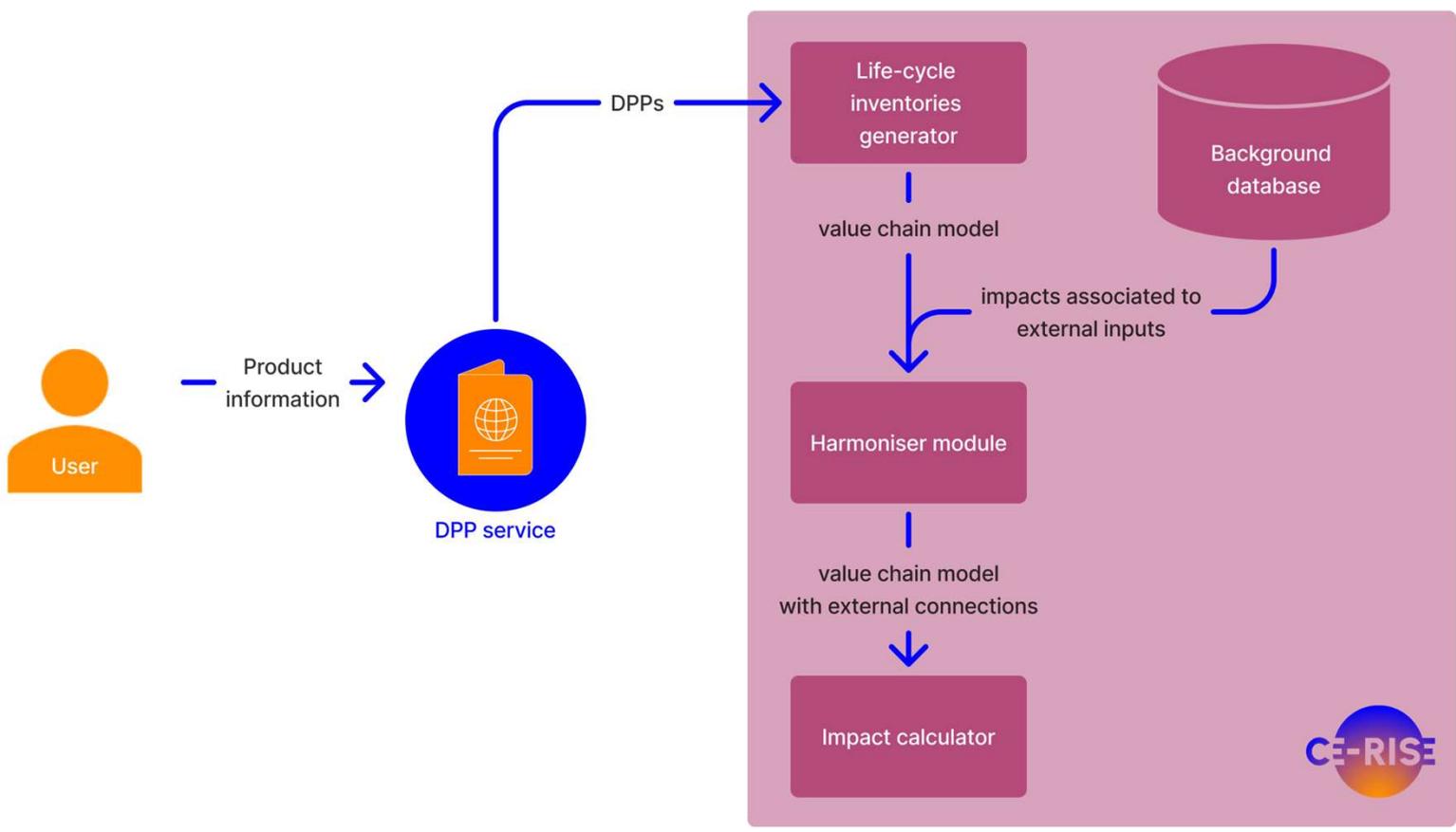
# Method



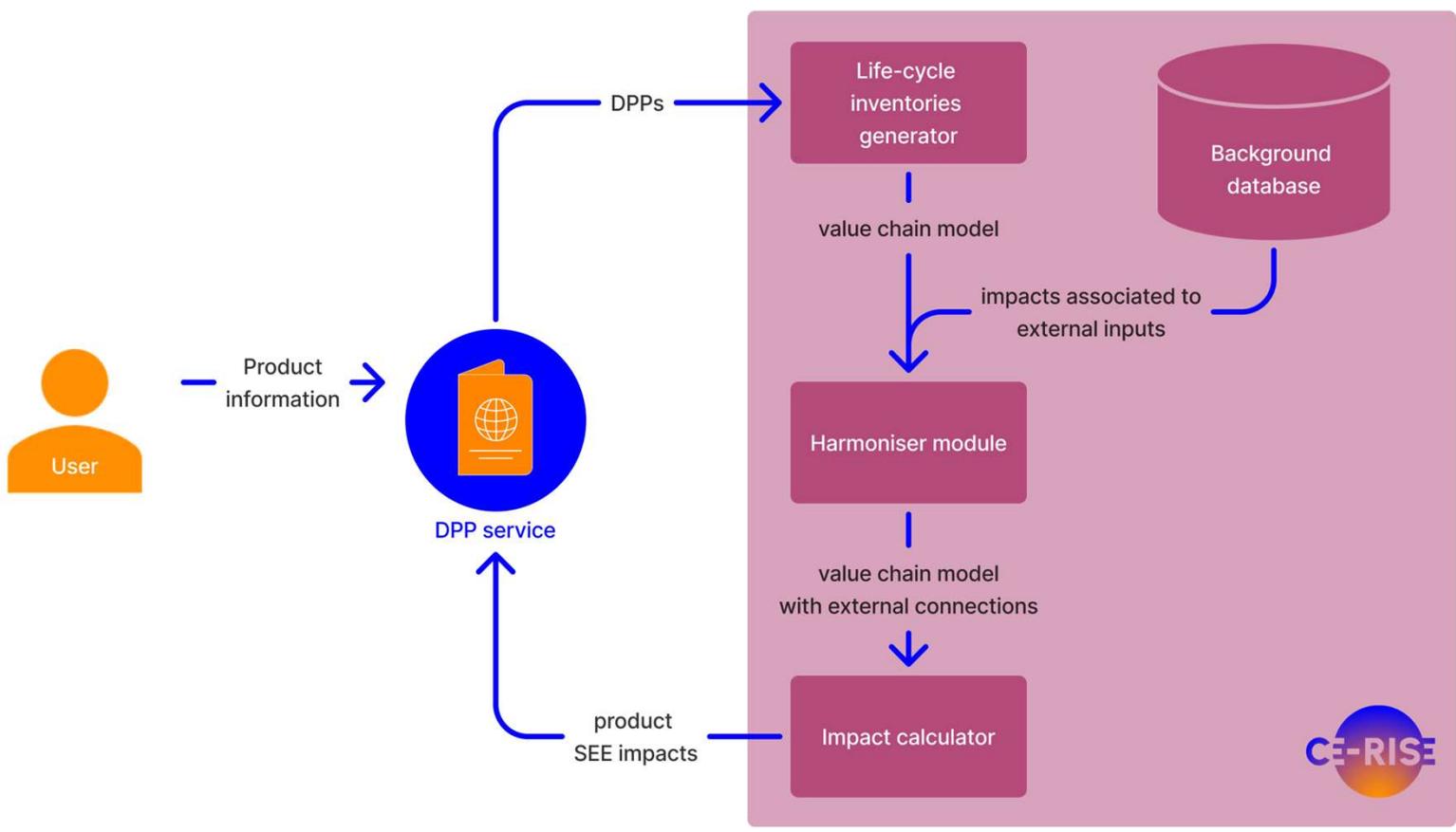
# Method



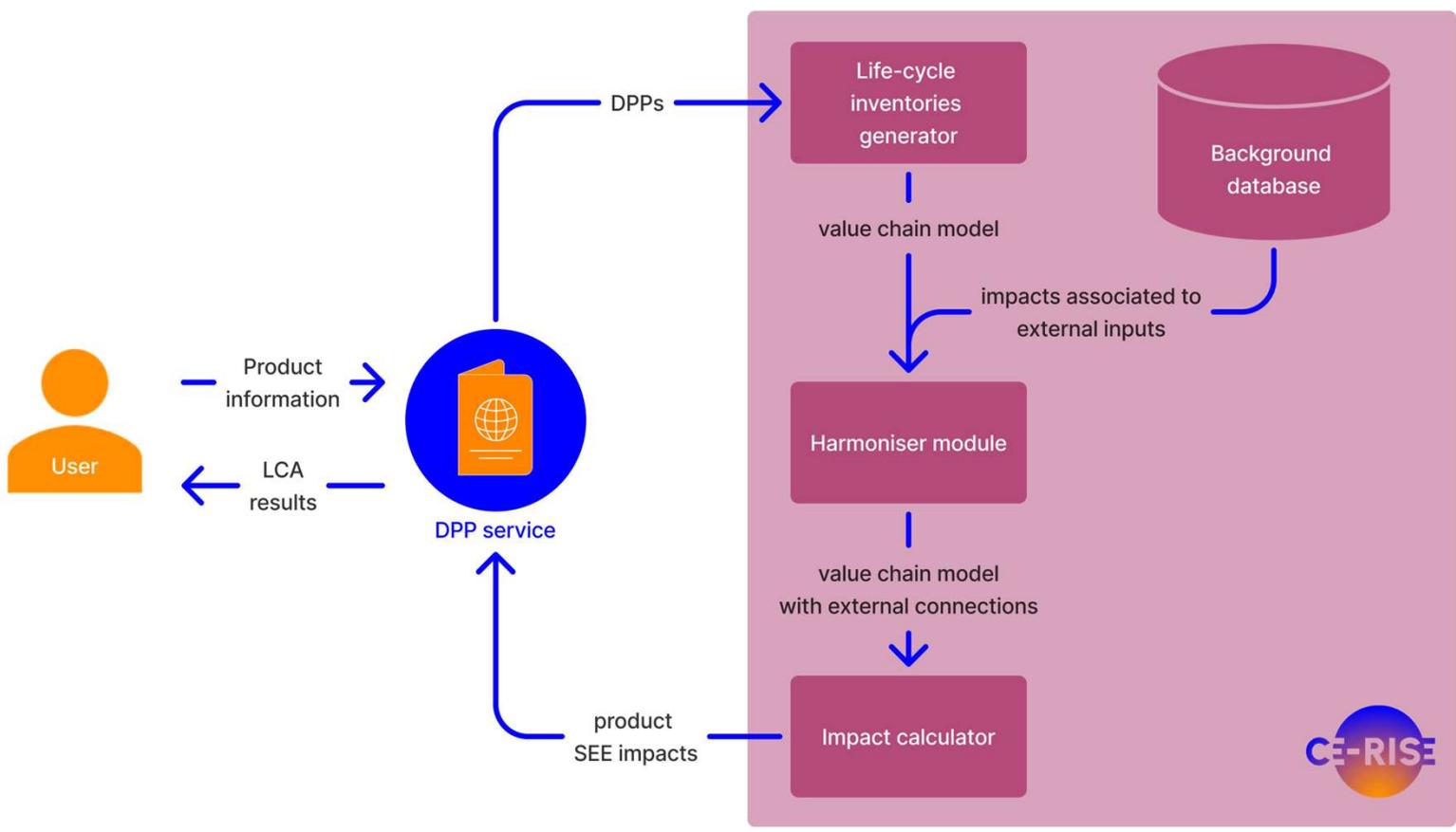
# Method



# Method

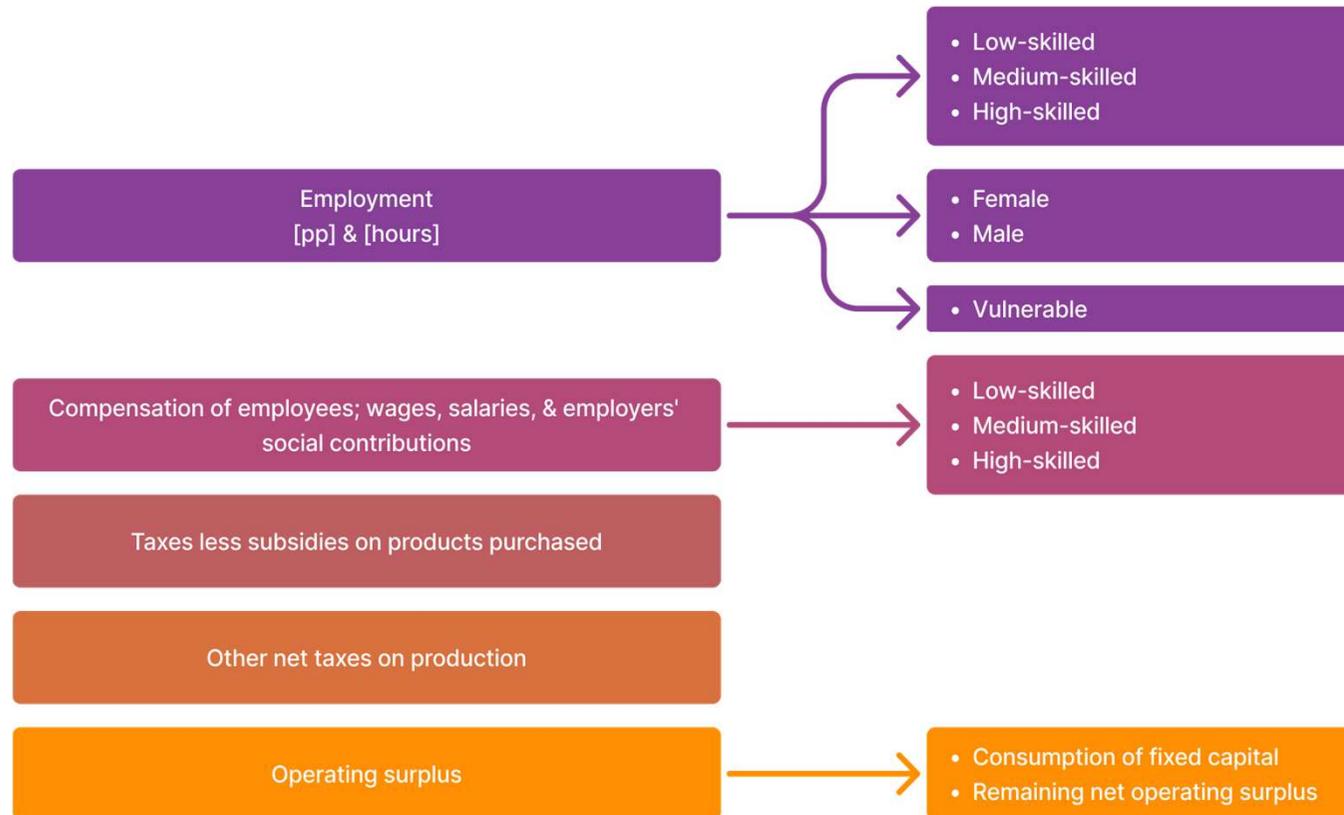


# Method



# Results – Socioeconomic impacts

- Socioeconomic impact categories covered:



# Results – Environmental impacts

- Product Environmental Footprint compliant impact assessment results – 16 categories:



Climate change



Ozone depletion



Human toxicity, cancer



Human toxicity, non-cancer



Particulate matter



Ionising radiation, human health



Photochemical ozone formation, human health



Acidification



Eutrophication, terrestrial



Eutrophication, freshwater



Eutrophication, marine



Ecotoxicity, freshwater



Land use



Water use



Resource use, minerals and metals

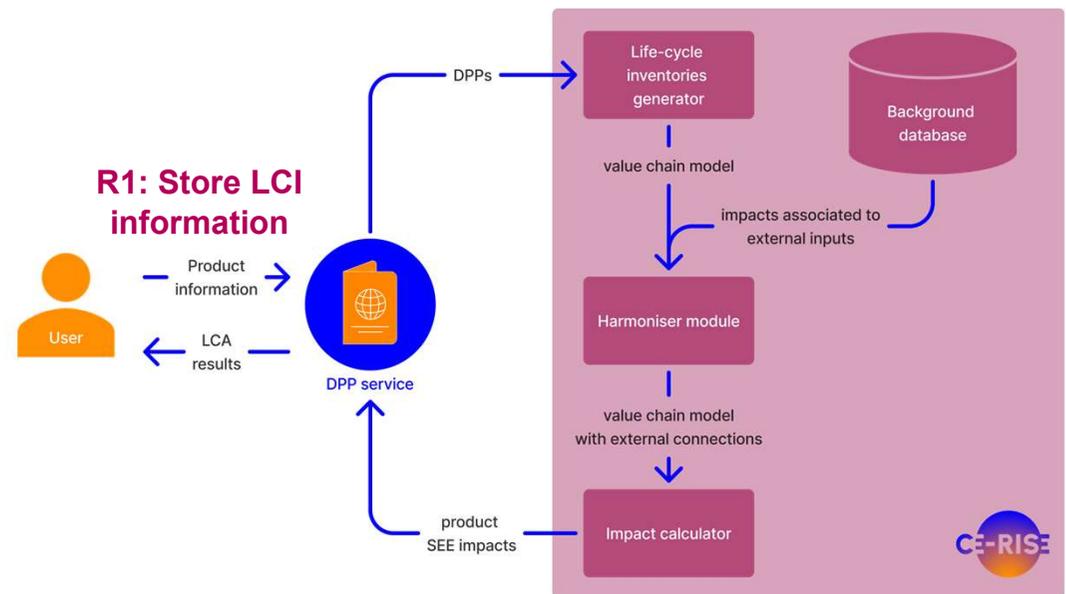


Resource use, fossils



# Discussion

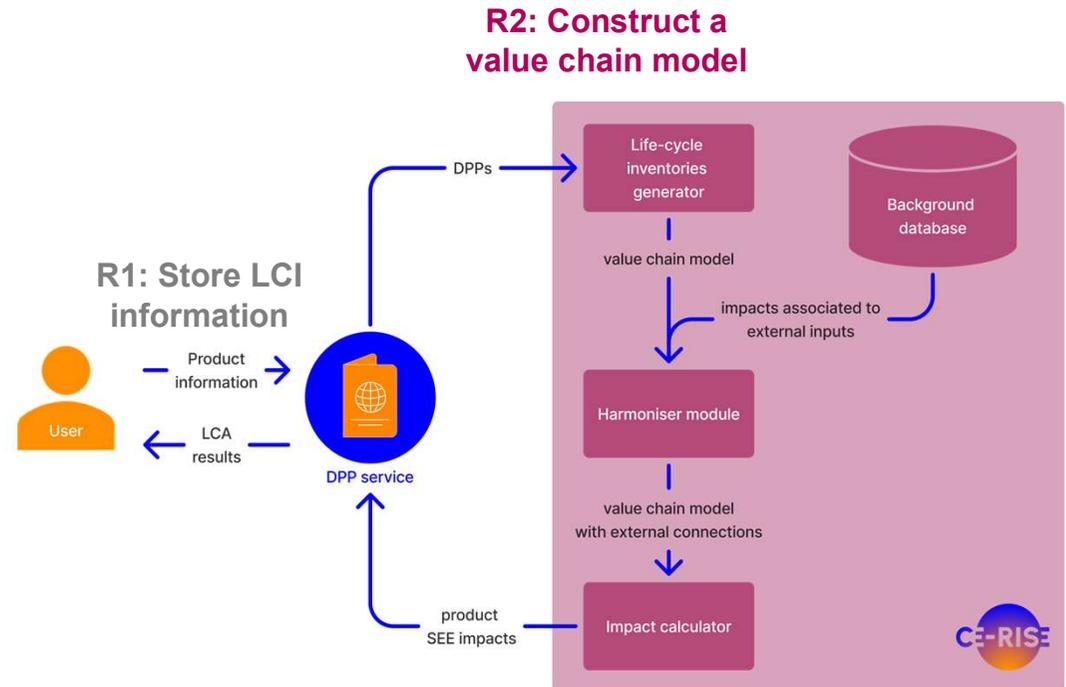
- **Confidentiality:** Process data is more sensitive than the impact assessment results, in our system, the software service has access to anonymised process data, but other actors do not have this
- Reduced data gathering burden



# Discussion

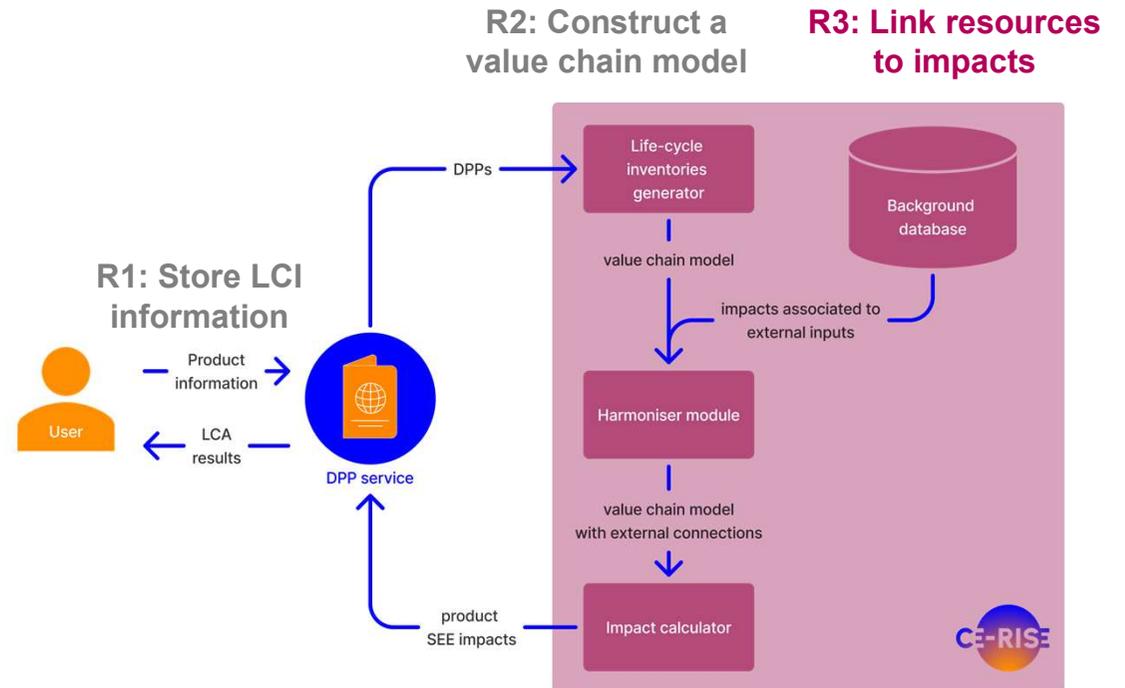
## Use phase data

- a full (cradle-to-grave) impact analysis by an OEM requires data on phases after manufacturing which is not in the DPP yet
- a full-scale analysis outside the system requires gathering or modelling this data as well, and the system still reduces the data gathering burden for component manufacturing and resource use.



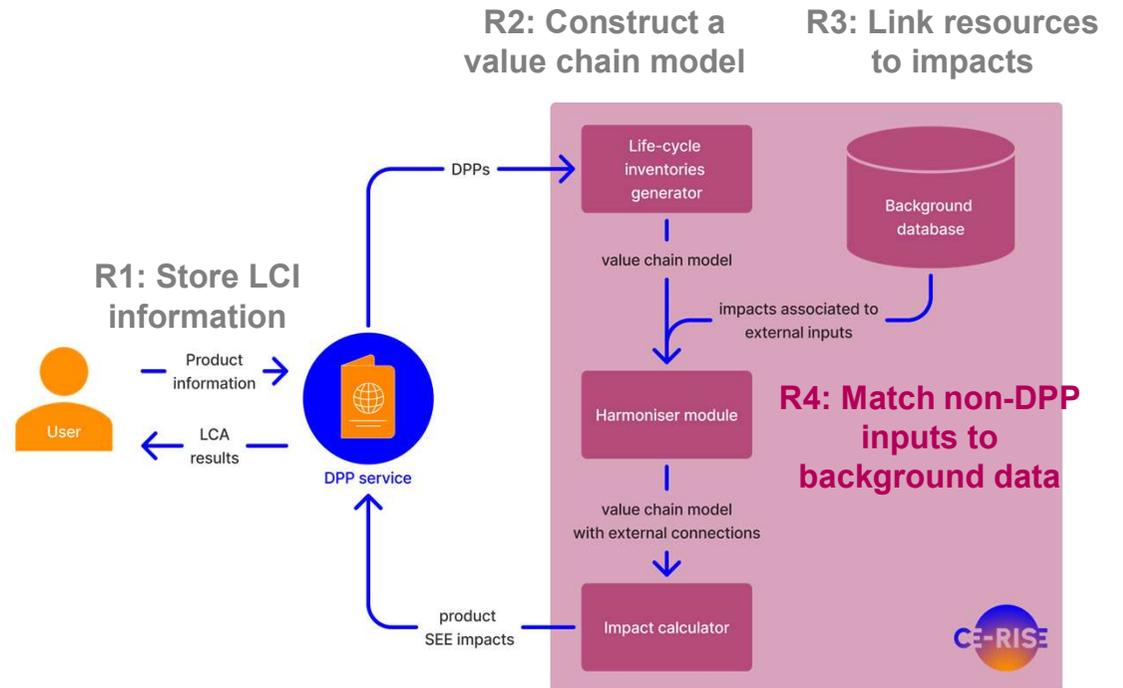
# Discussion

- Reduced data gathering burden
- Ensures comparability and PEF compliance



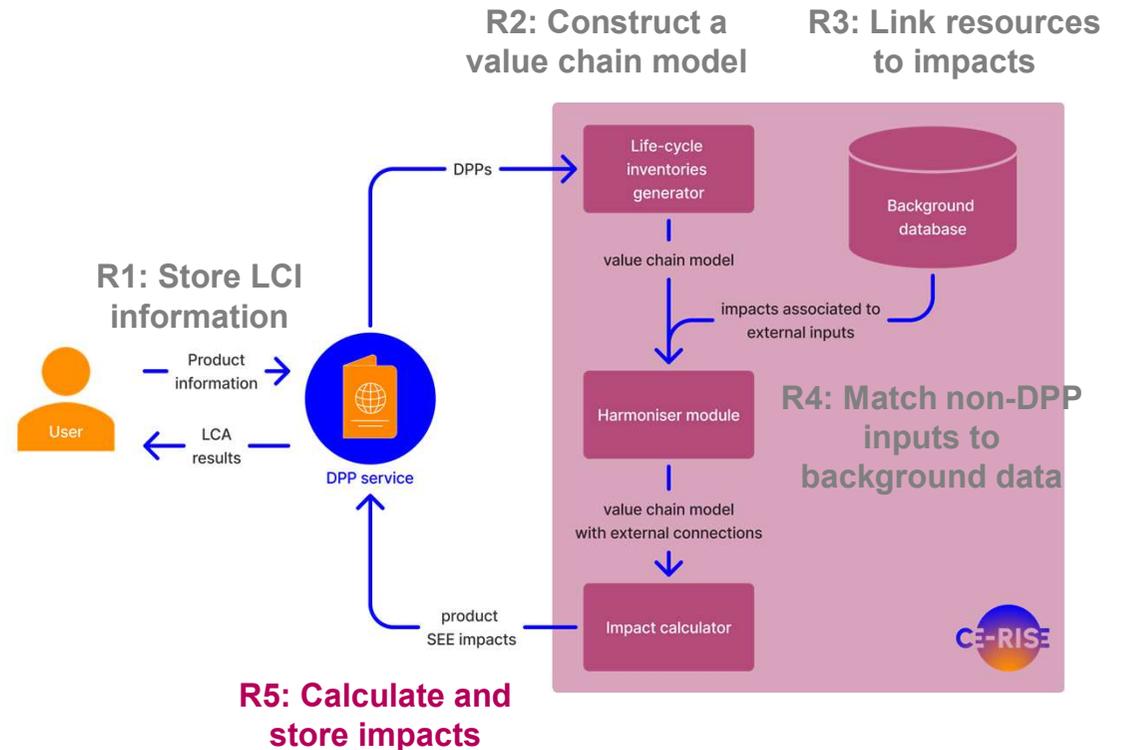
# Discussion

- Machine learning, or
- Correspondence tables, or
- User uses known classifications



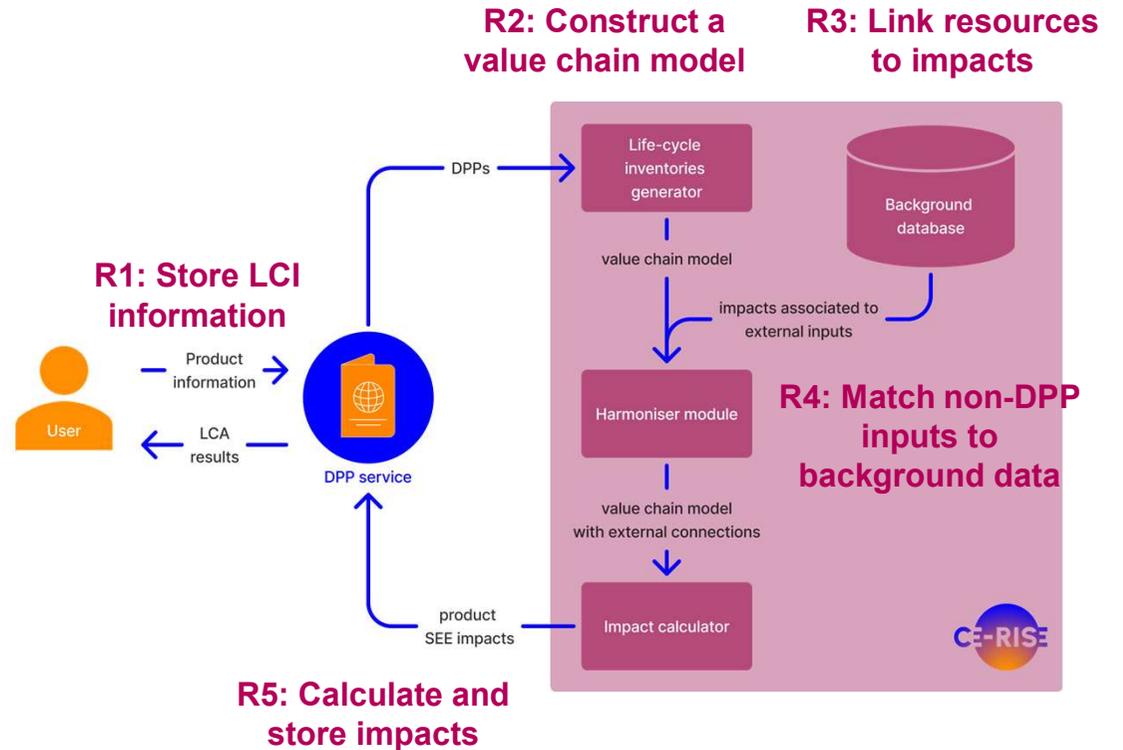
# Discussion

- In system calculations ensure that impacts are calculated in a standardised and comparable way
- User has access to product specific impacts by only providing and having access to its own data



# Discussion

- The integration of the DPP with the CE-RISE system for impact calculation provides users with a streamlined process that reduces data gathering and calculation burden while providing comparable and standardized SEE results.
- Challenges: use phase data and and category matching



# Coming Soon:

**Enhancing sustainability assessments? The role of digital product passports in industrial ecology**

*Yanan Liang, Sónia Cunha, Berend Mintjes, Robert Istrate* -  
Leiden University

Tuesday, September 2nd

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**1H Innovation, Design & Digital Solutions**

**Scientific Session**

🕒 6:00 PM – 7:00 PM

📍 Salle 1

BUILT ENVIRONMENT

CONSUMER/IND GOODS

EXTRACTIVE SECTOR

# Contact details



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Universiteit  
Leiden



# VISSMANN CASE STUDY

## Combining green energy, circularity and digitalization

01.09.2025 | Andreas Wade | Viessmann Climate Solutions

 Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,  
Education and Research EAER  
State Secretariat for Education,  
Research and Innovation SERI

EU Framework Programmes



UK Research  
and Innovation

**VISSMANN** Climate Solutions



Funded by  
the European Union

# Vitocal 250-A Heat Pump



# Deconstruction to DPP level



- 1. Buffer tank
- 2. Diaphragm vessel
- 3. Motor
- 4. Water pump

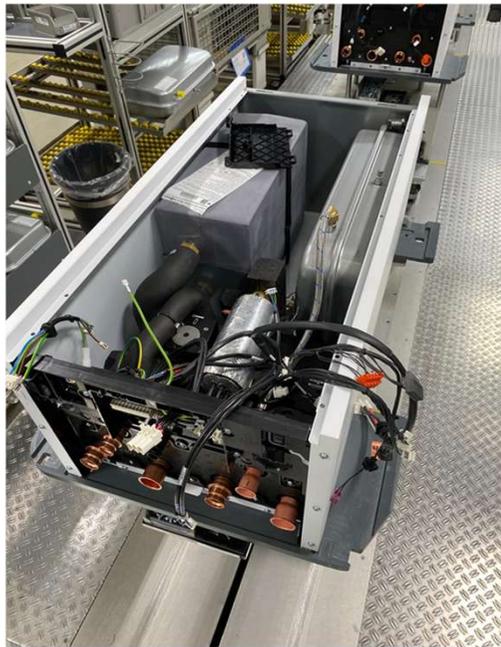
Indoor unit



- 1. Accumulator
- 2. Fan
- 3. Refrigerant circuit containing:
  - a. 2 heat exchangers
  - b. Accumulator
  - c. Compressor
  - d. Electronic inverter
  - e. Copper pipes
  - f. Aluminum heat sinks
  - g. Thermoplastics
  - h. Insulation
- 4. Metal sheets (outer covering)

Outdoor unit

# Deconstruction to DPP level

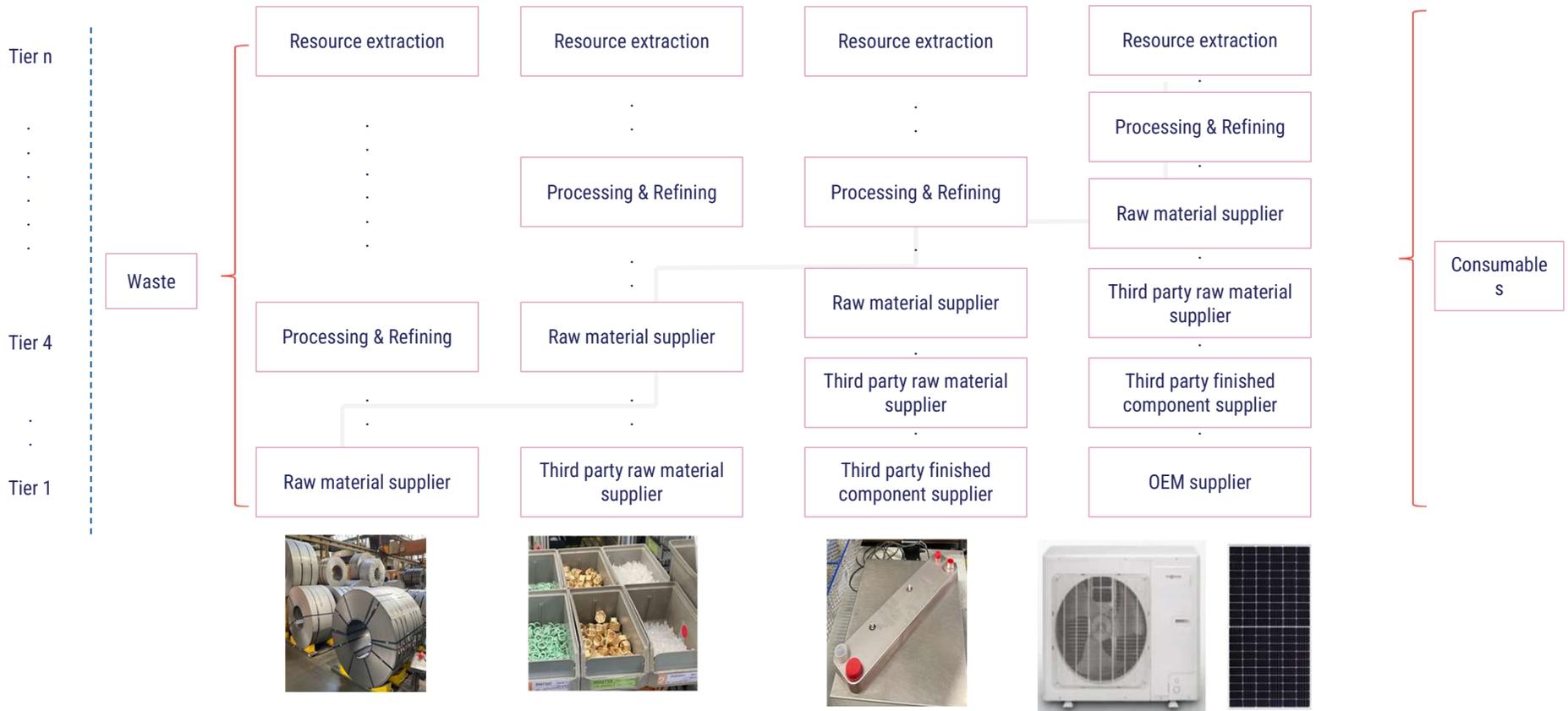


Indoor unit

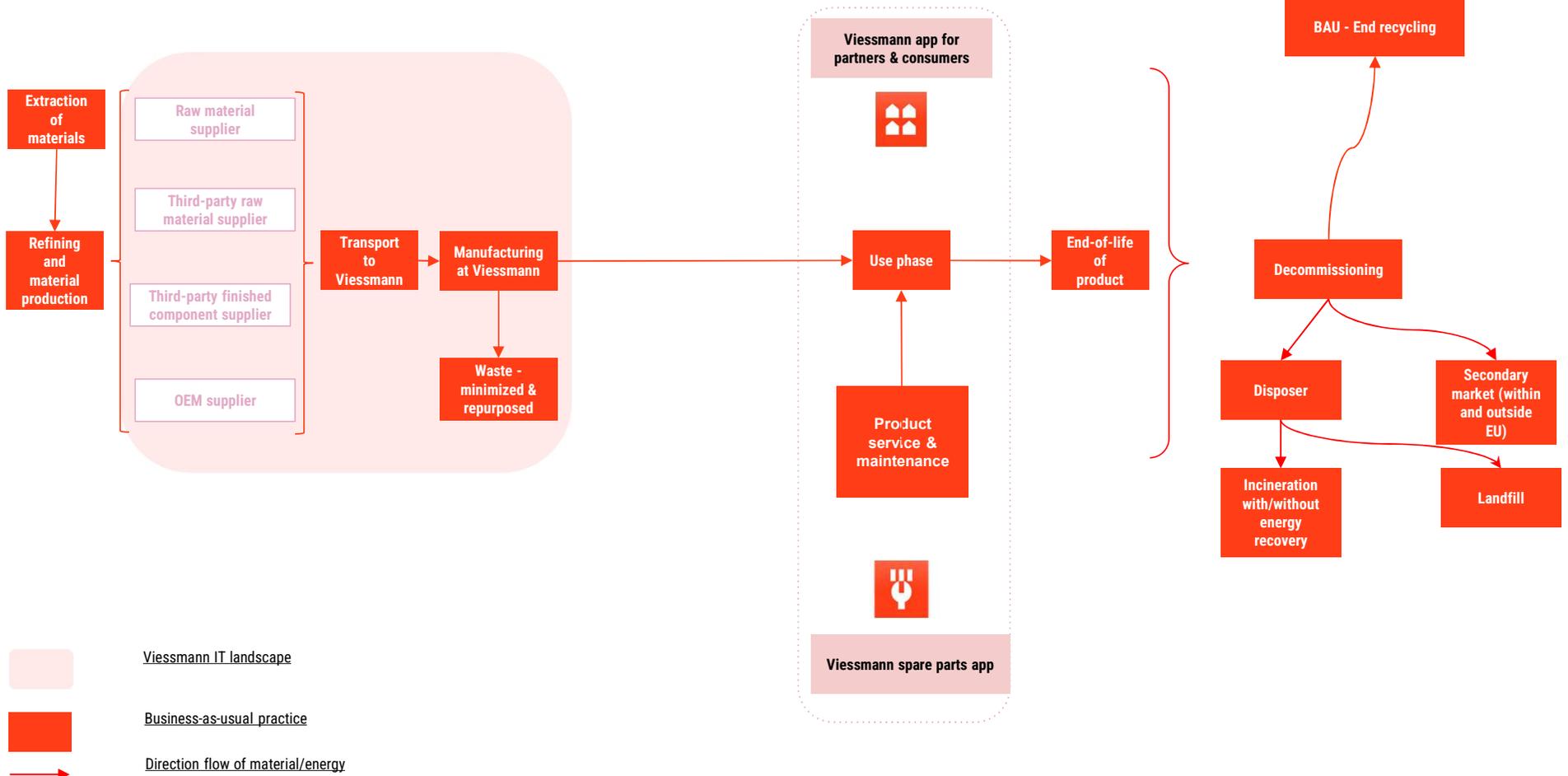


Outdoor unit

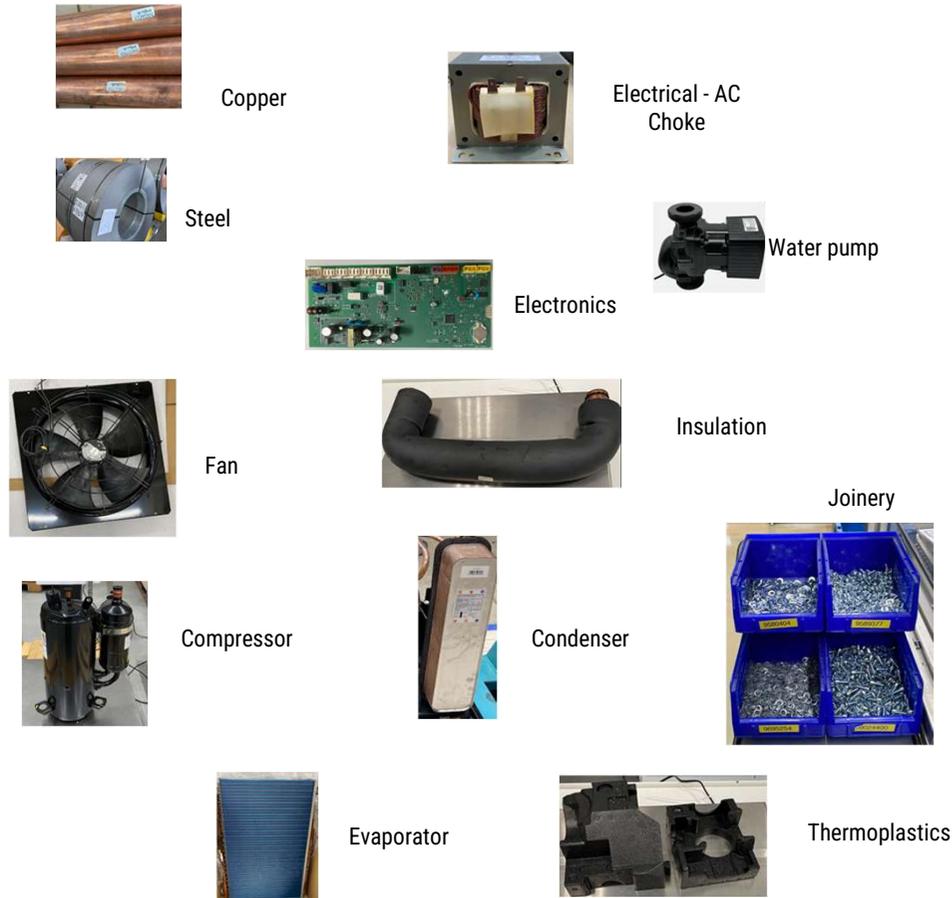
# Supply Chain Challenge (Cradle to Gate)



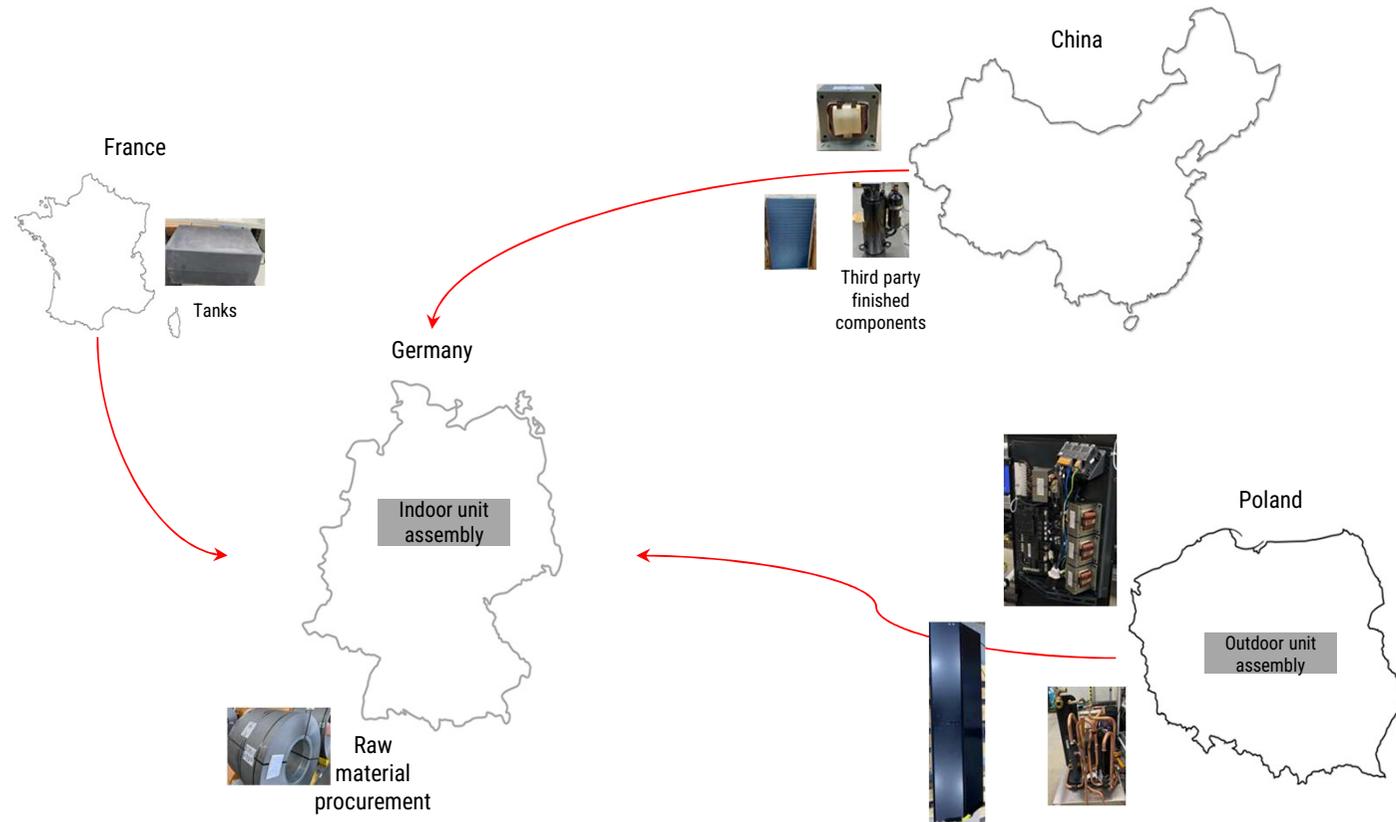
# Life Cycle



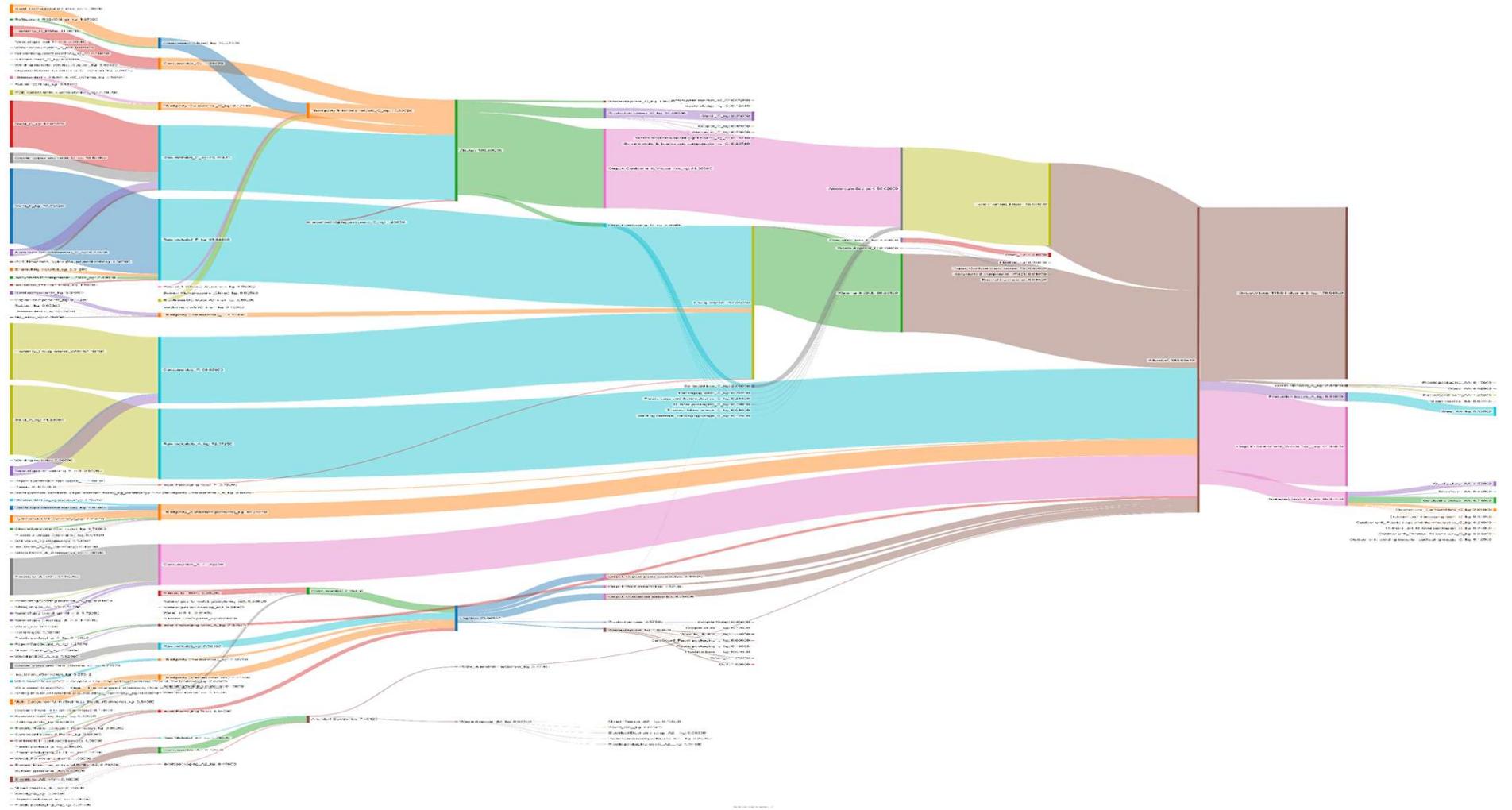
# Upstream Value Chain



# Upstream Value Chain

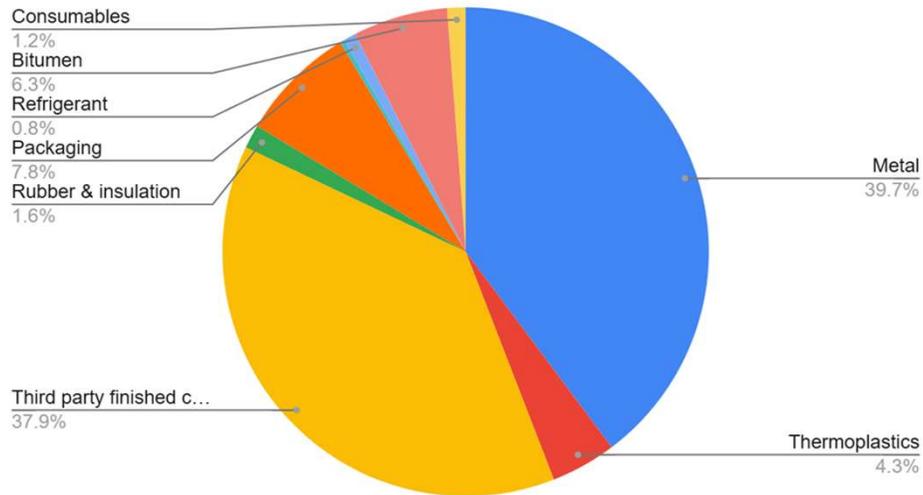


# Upstream Value Chain



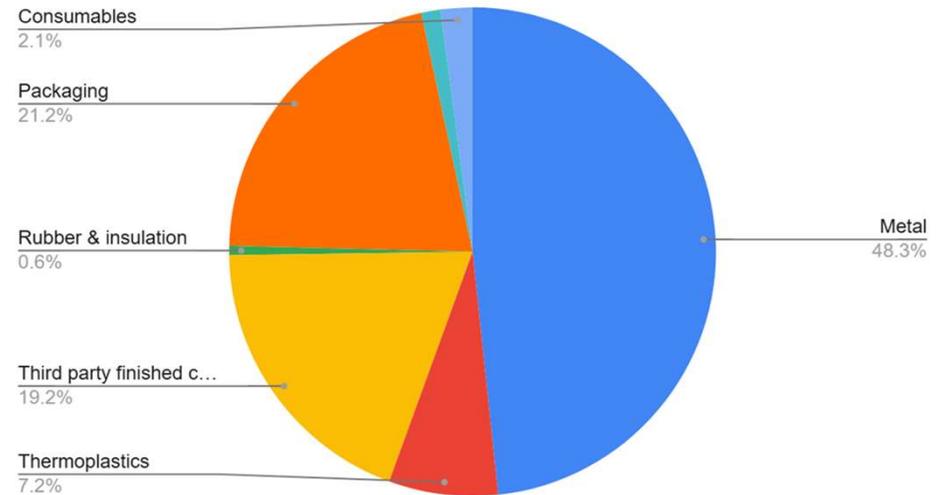
# Mass Share – Vitocal 250-A

Mass share in outdoor unit



**244 kg**

Mass share in indoor unit



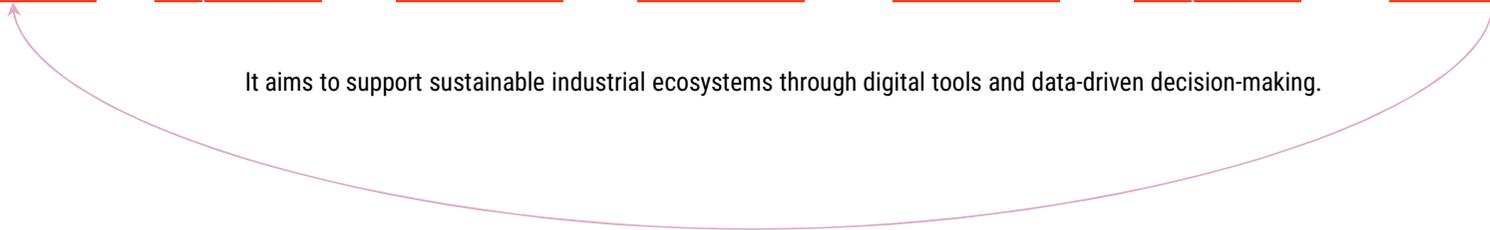
**54 kg**

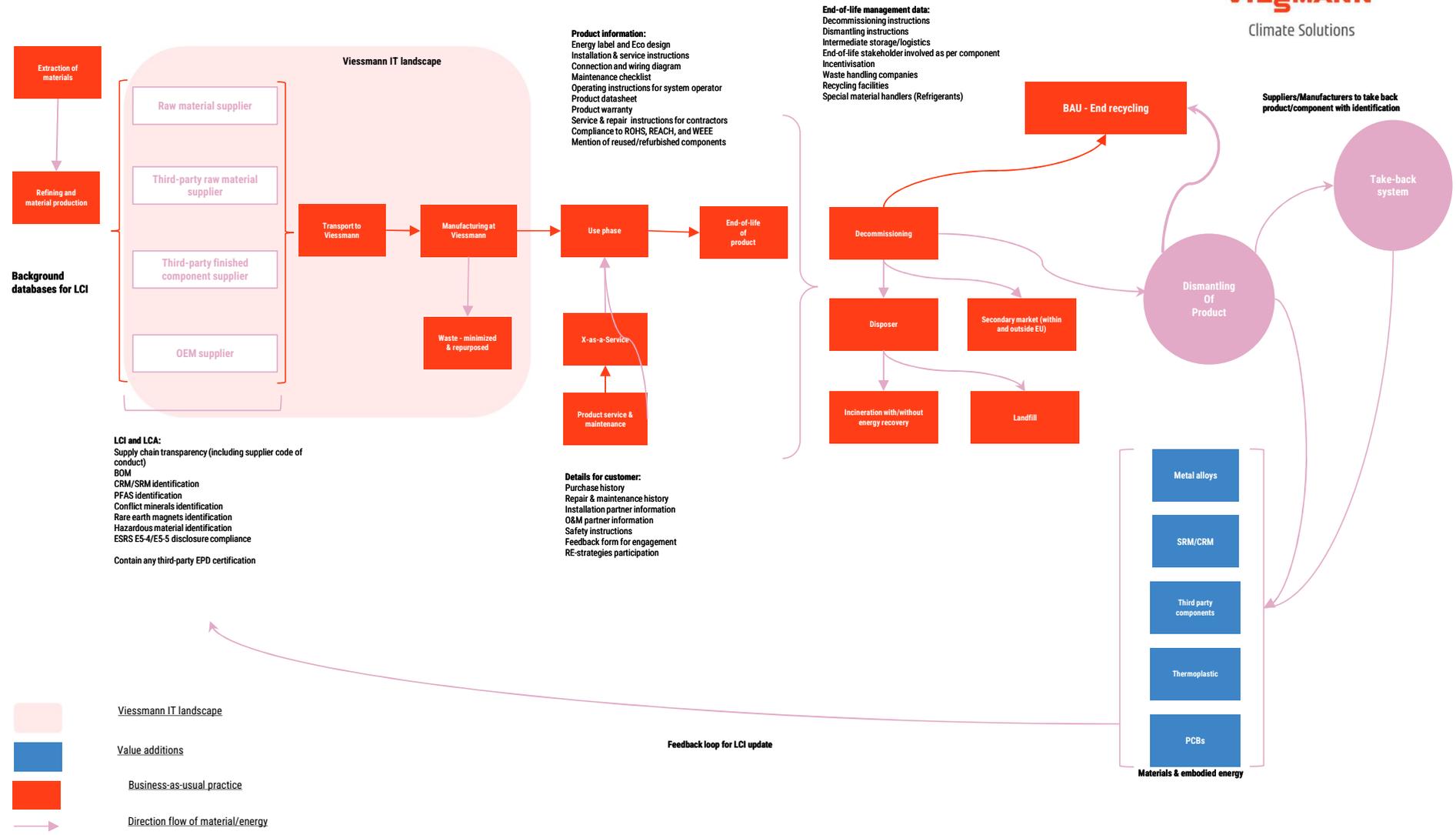


# CE-RISE Value Proposition

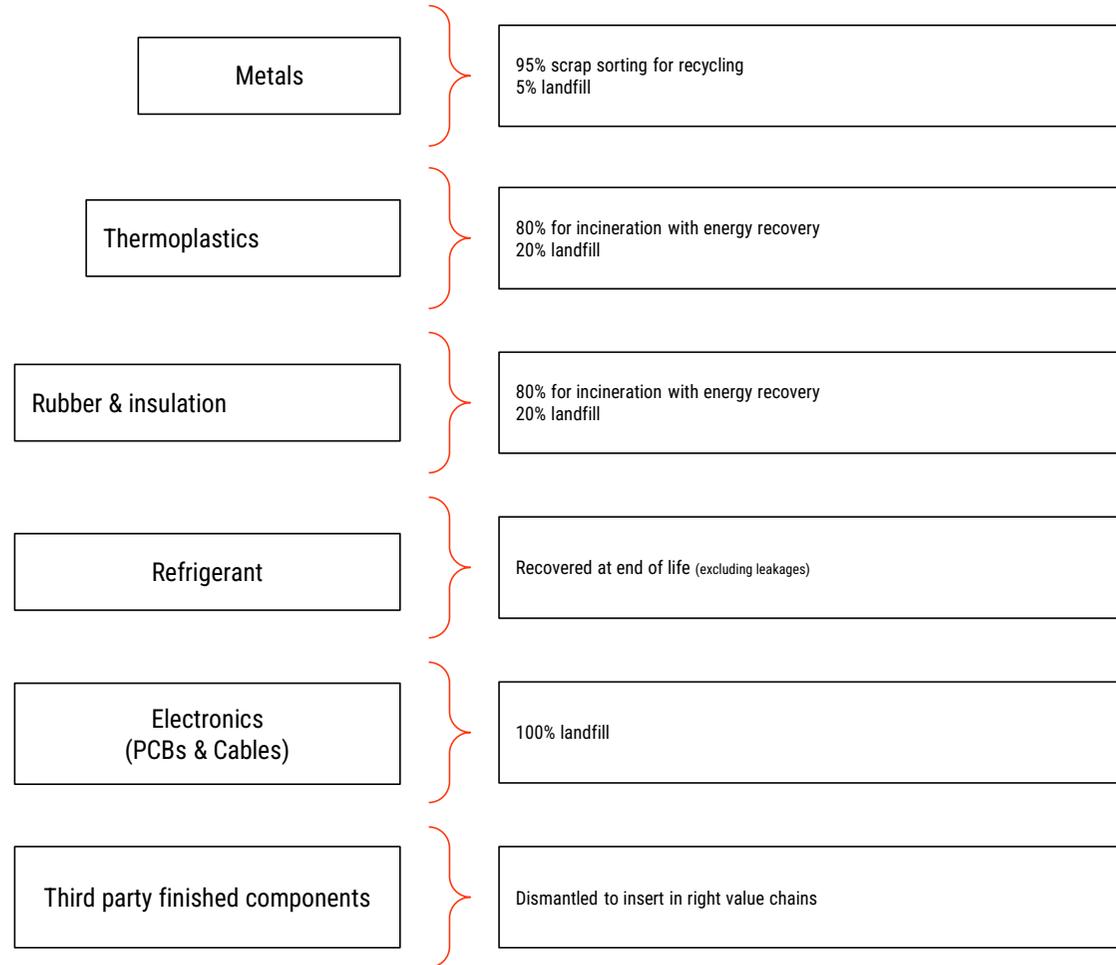


It aims to support sustainable industrial ecosystems through digital tools and data-driven decision-making.

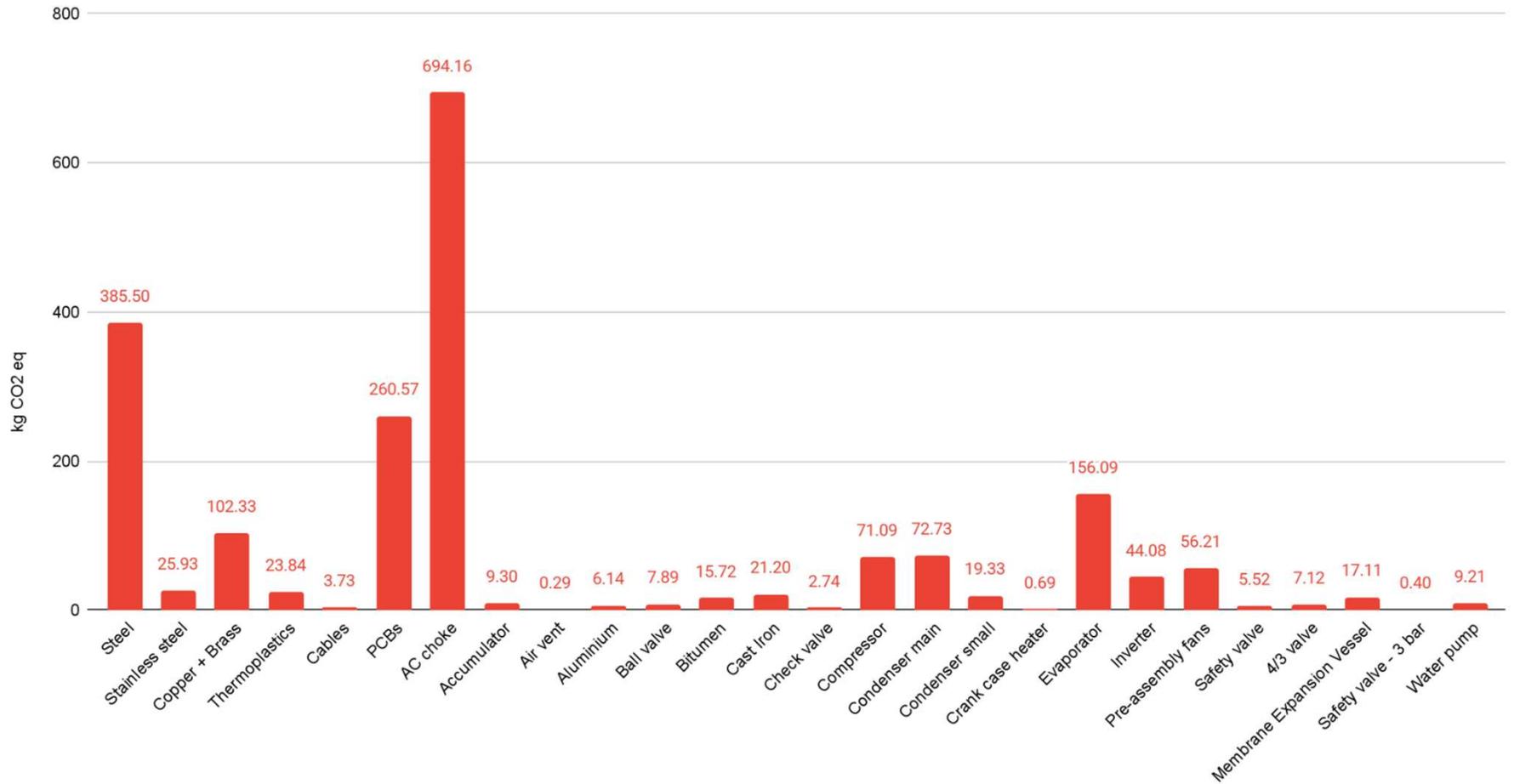




# Downstream Value Chain



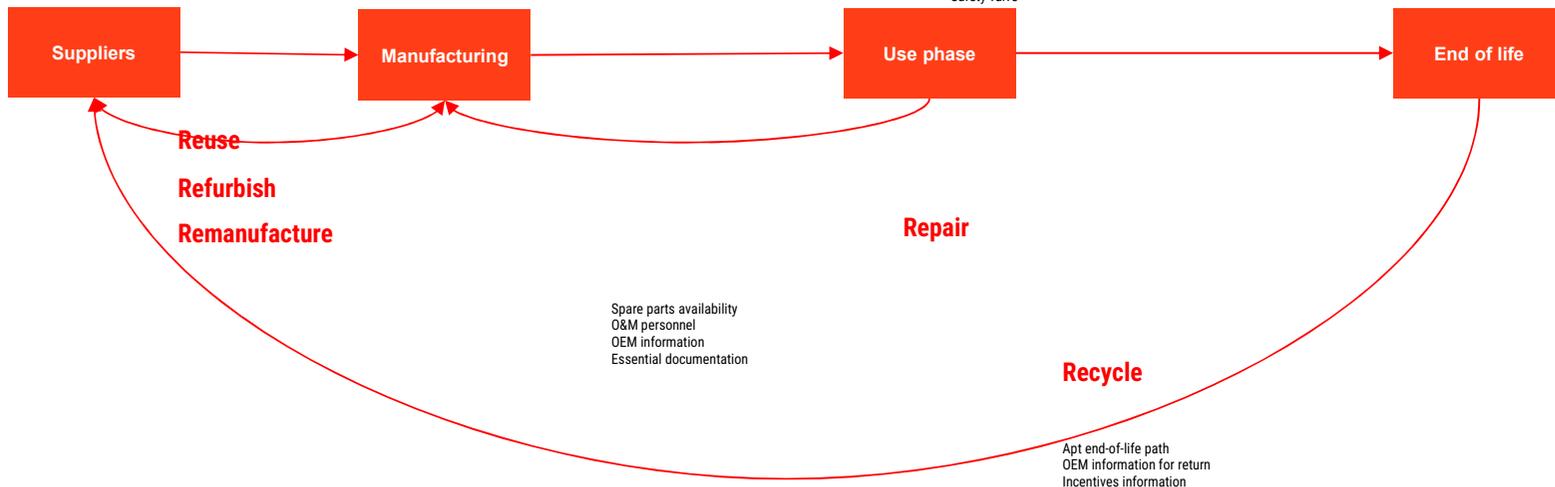
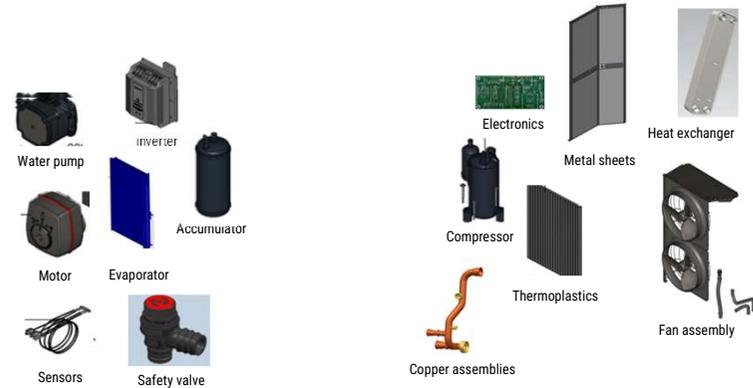
# Embodied Carbon – Vitocal 250-A



# CE-RISE Enabled RE-Strategies

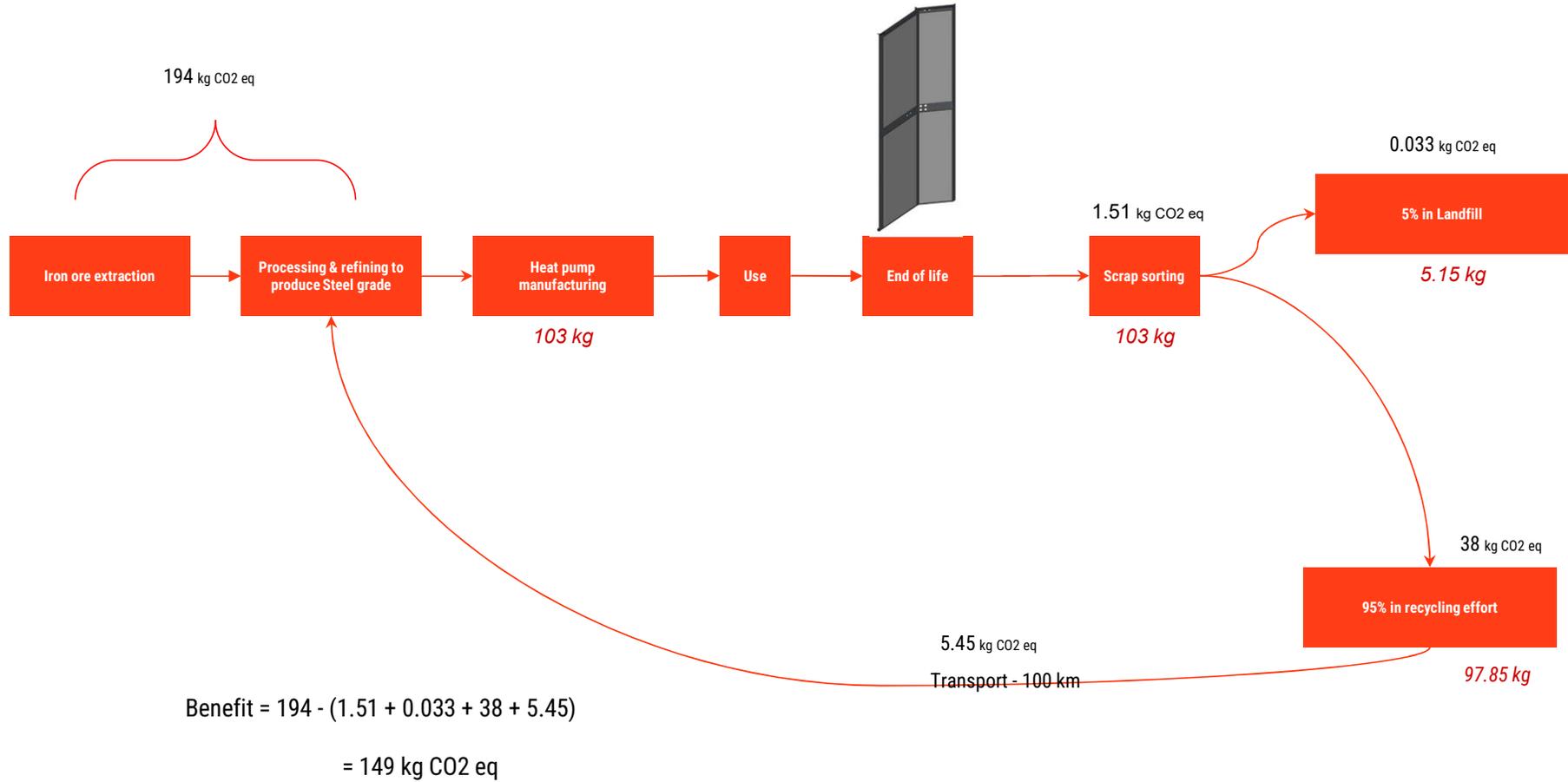


Product information  
Regulatory declarations

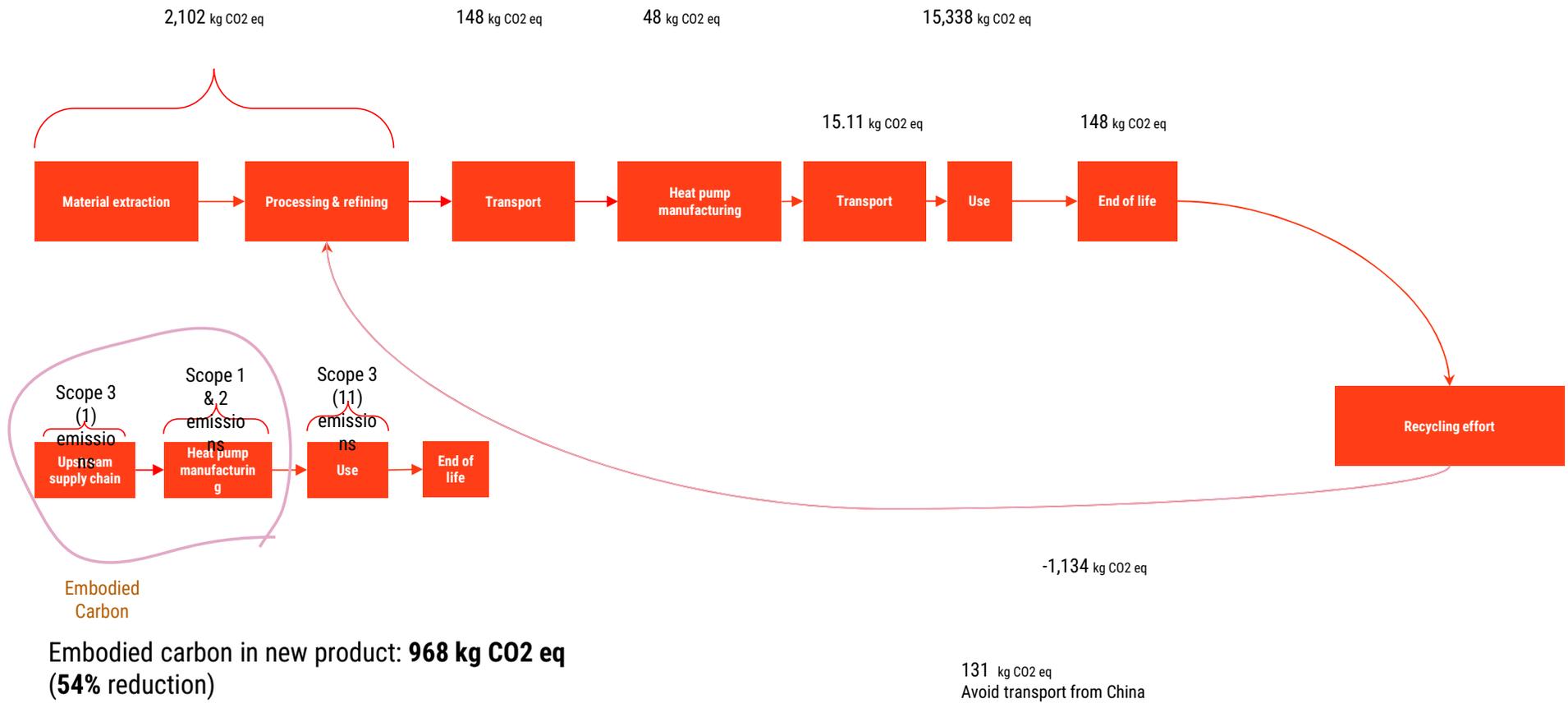


CE-RISE information system

# Circularity Benefit - Steel



# Circularity Benefit – Heat Pump



# Contact details



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# DATA INTEROPERABILITY

Riccardo Boero | Senior Scientist | NILU



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
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Swiss Confederation

Federal Department of Economic Affairs,  
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# Why Interoperability

-  **Data ownership:** allow sharing while respecting who controls the information
-  **Data quality:** ensure reliable data when data is migrated from siloed private systems
-  **Semantic alignment:** common meaning of terms is essential for information to be understood and compared
-  **Scalability & flexibility:** allow the DPP system to grow across sectors and adapt over time

# Key Challenges

- 🔑 **Data ownership:** no clear rules (nor expectations) on how to maintain ownership in the DPP system
- ✓ **Data quality:** current reality is siloed, proprietary solutions with little incentive or capacity to migrate data
- 🧩 **Semantic alignment:** lack of metadata and machine-readable open standards prevents common interpretation
- 🌱 **Scalability & flexibility:** closed, fragmented solutions cannot scale across sectors or adjust to new requirements

# Expected Benefits

- 🔑 **Data ownership:** the cost of sharing is paid off through collective benefits in resource efficiency and circularity
- ✓ **Data quality:** richer, comparable data improves decision-making, also for managing data itself
- 🧩 **Semantic alignment:** understand (machine-readable) information and reuse it for automation and analytics (including green tape)
- 🌱 **Scalability & flexibility:** enable data-driven innovation, even across value chains

# Our (CE-RISE) Approach

 **Data ownership:** open science approach for the transition from private data to shared value while maintaining control

 **Data quality:** scientific methods to migrate and harmonize heterogeneous data, making outputs transparent and reusable

 **Semantic alignment:** open-source, machine-readable standards to ensure a common understanding of information

 **Scalability & flexibility:** open data standards + a modular foundation that adapts and fosters system-wide innovation

# Coming Soon:

## Quantifying the Potential of Digital Innovations to Advance Circular Economy in Consumer and Industrial Goods

*Riccardo Boero, Miguel Las Heras Hernandez, Cristina Guerreiro* | NILU

Tuesday, September 2nd

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**1H Innovation, Design & Digital Solutions**

**Scientific Session**

🕒 6:00 PM – 7:00 PM

📍 Salle 1

BUILT ENVIRONMENT

CONSUMER/IND GOODS

EXTRACTIVE SECTOR

# Contact details



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# Thank you !

[ce-rise.eu](http://ce-rise.eu)



CE-RISE Project

*Register as a stakeholder for updates  
and event invitations!*



Schweizerische Eidgenossenschaft  
Confédération suisse  
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**COFFEE BREAK 16:10-16:30**

**How can we better communicate the value of circularity - like repair, reuse and remanufacturing - to build customer trust?**

*CE-RISE Consumer Survey (5 minutes)*



## PANEL DISCUSSION



**Catherine Chevauché**  
Circular Economy  
Director, Veolia



**Reyna Ubeda**  
ITU-T SG5 Engineer:  
Environment, EMF,  
Climate Action and  
Circular Economy, ITU

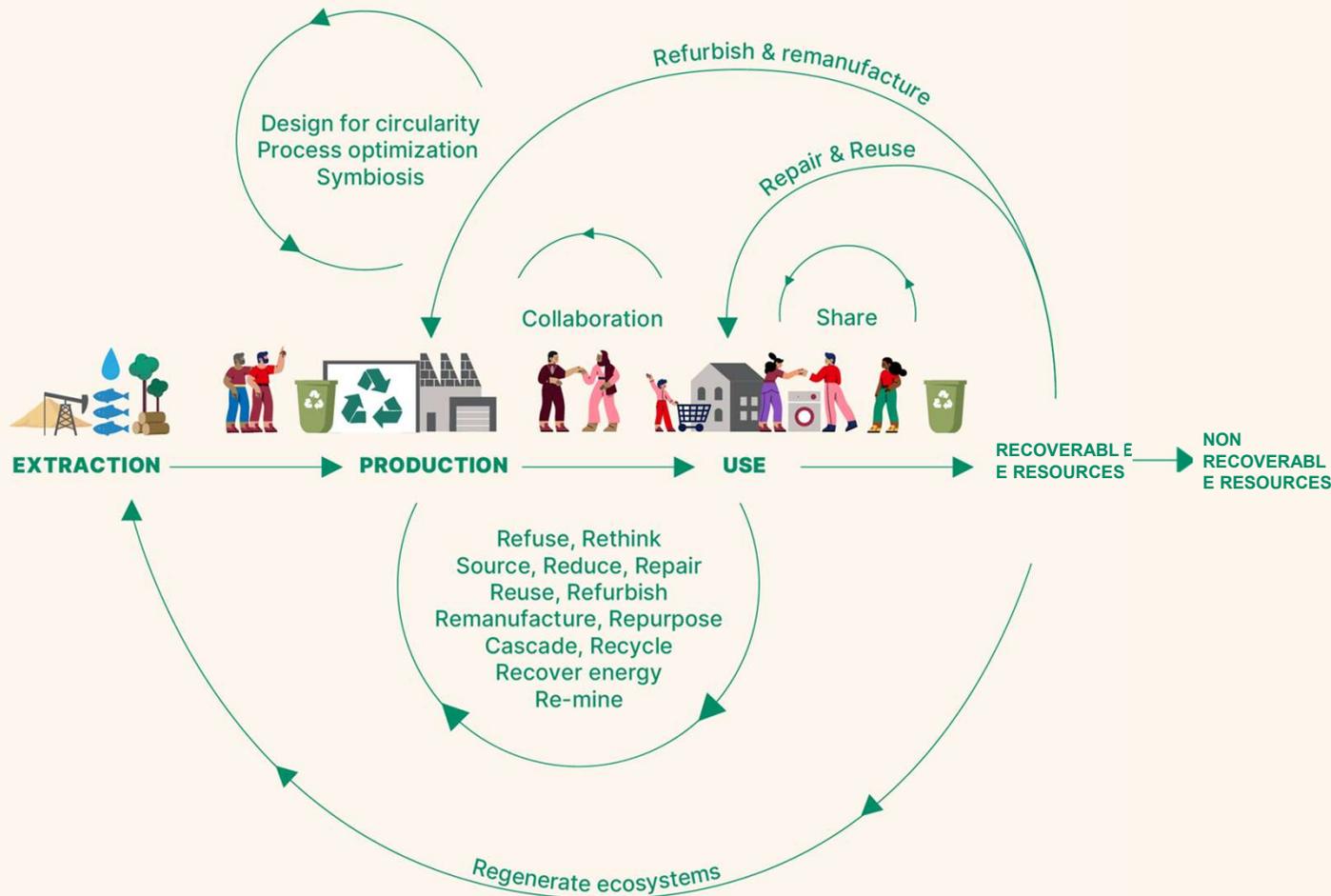


**Colette van der Ven**  
Founder & Director,  
TULIP Consulting



**Maxime Furkel**  
Head of Government  
Affairs, Lexmark

# ISO 59000 Circular economy family of standards includes the Product Circularity Data Sheet



ISO 59004 - Vocabulary, principles and guidance for implementation

ISO 59010 - Guidance on the transition of business models and value networks

ISO 59020 - Measuring and assessing circularity performance

ISO 59014 - Sustainability and traceability of secondary materials recovery – Principles, requirements and guidance

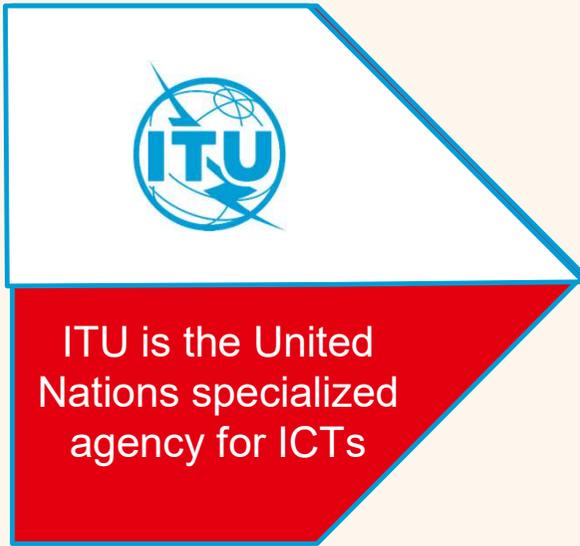
## ISO 59040 - Product Circularity Data Sheet

**Ease circular economy data exchange to better maintain and recover product value:**

- Material inputs,
- Circular production,
- Durability and extended lifetime,
- Circularity at end of product use period.



# Digital Product Passport



- *ITU definition*

*Digital Product Passports: Structured collection of product-specific data conveyed through a unique identifier*



Jointly developed with



## ITU-T SG5 supports Environment, EMF, Climate Action & Circular Economy

- Framework & Guidelines
- Reduction
- Recycling
- Batteries
- Environmental Assessment
- Circular Economy
- User Device Sustainability Solution
- Stakeholder Engagement and Awareness
- Supply Chain
- **Digital Product Passport**



## A Framework for Digital Product Information Systems

### 1 Phase 2024

#### a) Data Assessment & Technical overview

- Value proposition
- Identified potential data categories and framework outline

#### b) Consultations:

- Over 40 countries and over 200 organizations
- Global South engagement
- New partners

### 2 Phase 2025

#### c) Pilot testing

- High-impact sectors: ICT and textiles.

#### d) Draft Framework

- Moving from technical to political conversation to get buy in.

### 3

### Phase 2026 and onwards

#### e) Launch and promote adoption/use on a voluntary basis by Member States and stakeholders

- High level political forums: UNEA, HLPF, UNGA, etc.

### Standard under development

**L.DPIS** - Guidelines for a modular and scalable data system design for Digital Product Information Systems (DPIS) for ICT goods

# Colette van der Ven



Background: International trade lawyer (Harvard JD); Executive Director of TULIP Consulting, an impact-driven firm that advises the public sector on the trade, environment, and development nexus; Visiting Lecturer, International Economic Law, Graduate Institute



Focus of work: external dimension of green trade instruments, including the Ecodesign for Sustainable Products Regulation which sets out the DPP requirement



Sector-specific approaches to DPP:

Studies that focus on ecodesign and DPP requirements on the textiles and apparel sector (SITRA; Center for Trade and Investment Law in India);

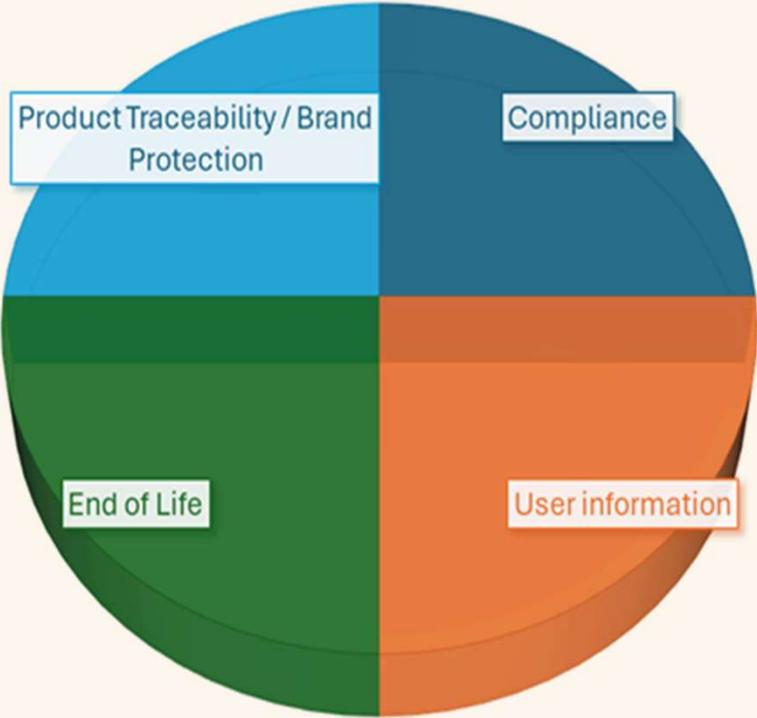
Study focused on eco-design/DPP and its impact for steel in India



Trade facilitation: focus on interoperability through trade agreements to prevent DPPs from becoming a barrier to trade

# Xerox|Lexmark: Four Pillars of the Digital Product Passport

## DPP FOR XEROX/LEXMARK



**End-of-Life Management**

DPP emphasizes our circular economy commitment, appealing to ESG-conscious buyers.

At our circularity hub, DPPs can make manual-intensive remanufacturing better for EoL decisions.

Detailed device data speeds up EoL decisions, reduces shipments, and minimizes environmental impact.

Supports takeback programs and product-as-a-service models.

Helps recyclers dismantle and recycle devices efficiently.

**User Information**

Provides transparent lifecycle and sustainability data on devices and materials.

Boosts confidence in remanufactured products and informed purchasing decisions.

Verified data builds trust globally, especially in markets without mandatory DPP regulations.

**Compliance**

Early EU adoption could support future global framework compliance.

DPP workflows, informed by our circularity hub expertise, have the potential to balance scalability and customization.

Centralized digital DPP reduces labeling/packaging costs and enhances operational efficiency.

ISO/ITU standards can harmonize DPP requirements globally, supporting interoperability.

**Product Traceability / Brand**

Verified lifecycle data reinforces credibility and sustainability marketing.

Helps prevent misinformation and protect brand integrity.

DPP will support printer and cartridge collection programs.

Full device visibility supports new service models and circular economy practices.

Early adoption positions Xerox/Lexmark as innovative and sustainable leaders.

# Remanufacturing workflow with the CE-RISE DPP



**NETWORKING DRINKS 18:00-19:00**

**How can we better  
communicate the  
value of circularity -  
like repair, reuse and  
remanufacturing - to  
build customer trust?**

*CE-RISE Consumer Survey (5 minutes)*

