



CarE-Service



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776851



D1.4 Presentation

Requirements for generalization of the approach to EU industry

FCA



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776851

Aim and scope of the deliverable

Deliverable 1.4 allows to open the eyes on the European scenarios trying to understand which are the actual drivers able to make the value chains of end of life components and materials (BATTERIES, METALS, TECHNOPOLYMERS) the most exploitable possible.



- What could be the criteria for identifying European development directions for CarE-Service project outputs?
- Are there any ways to qualify project activities in a PAN-EUROPEAN way?



Some uncertainty levels

Today this hybrid/electric vehicles market remains highly uncertain and there is a substantial risk of low penetration in the early and midterm market. Top factors contributing to market share variability are **range limitations, price sensitivities, energy cost and charging availability.**

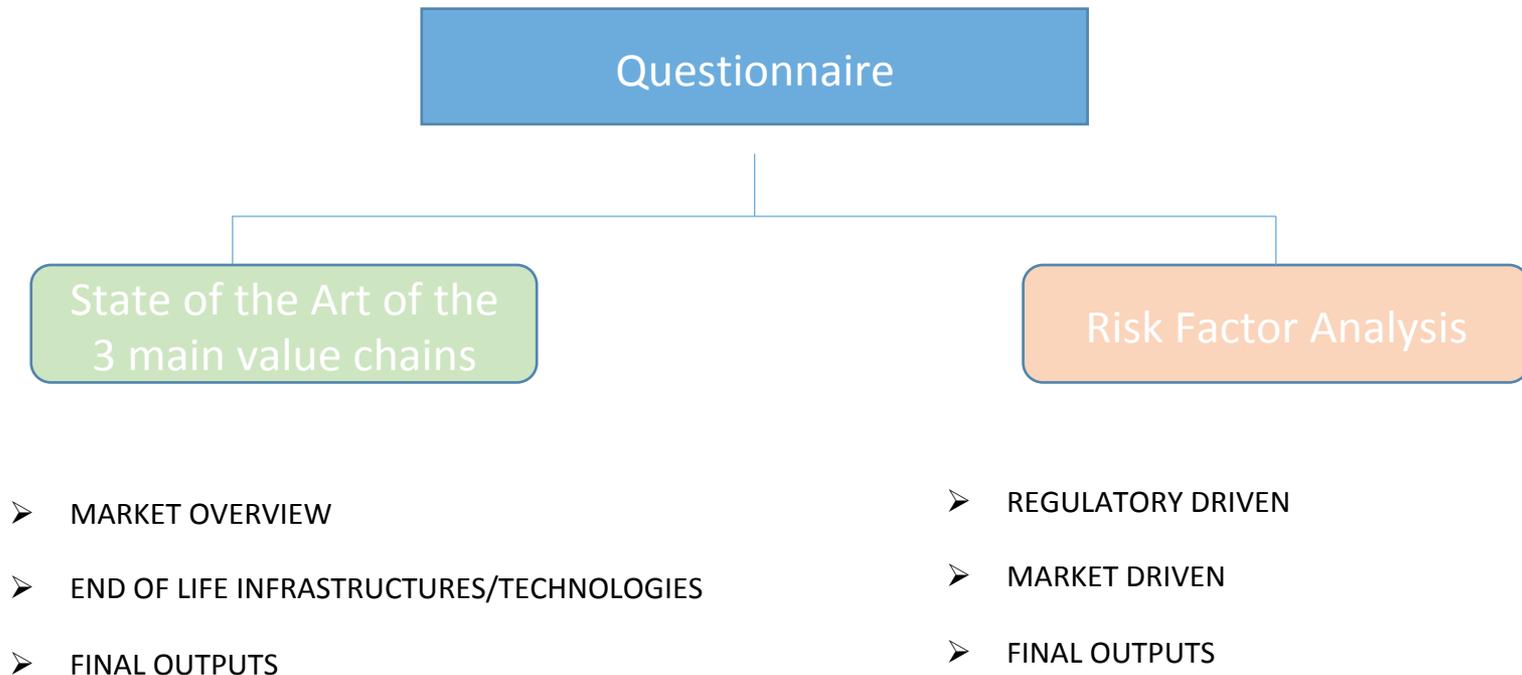
FCA has already begun to consider how this gradual transition to the electric and hybrid will affect the management of end-of-life vehicles, with the following conclusions:

- despite the growing % of electric and hybrid vehicles sold per year, the circulating fleet changes very slowly and in 2025 it will represent about 15% of the circulating fleet and about 30% in 2030;
- the world of End of life vehicles (ELVs) management will change slowly, the volumes of components sent to re-use coming from internal combustion engine vehicles (ICEVs) will decrease and the volume of those coming from electric/hybrid vehicles will increase;
- dismantling companies will have to do specific training for the management of electric/hybrid vehicles, supported by carmakers and importers;
- new business will grow, directly linked to the recycling and eventually to Second life of batteries.



Methodological approach

Collecting, organizing, describing and interpreting data on materials and components coming from ELVs was an obligatory step to have a current picture of how this vast and varied flow stream is managed in Europe.



Some interesting results - METALS

The European Union's auto shredding capacity has grown significantly in recent decades, with more than 300 plants now in operation.

In Europe about 93 million of metals scrap tons have been used for steelmaking in 2017.

There are no documented technologies or processes focused on metals reuse in automotive sector at the moment and the only alternative is recycling.

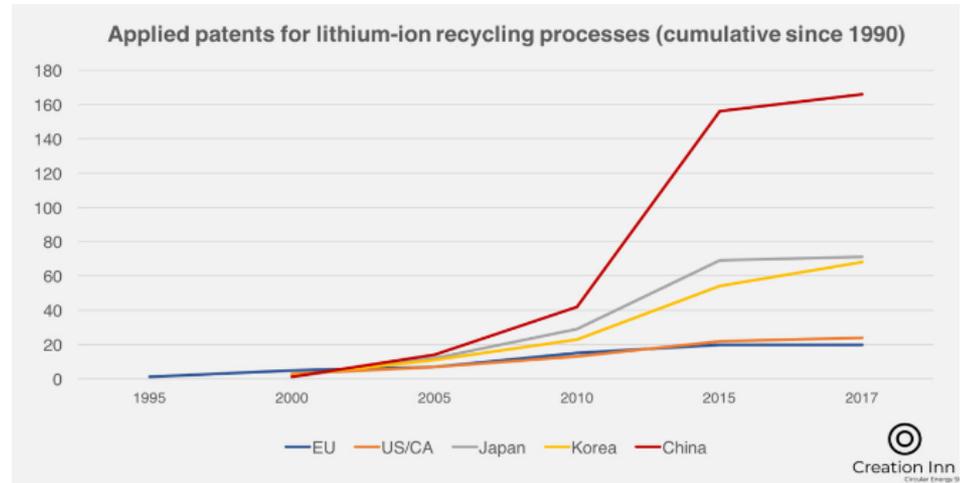


About the remanufacturing or remolding of metals scraps to be reused in the new vehicles (closed loop) or in other products applications (open loop) there are **no data available in the technical literature and current expertise on ELVs treatment.**

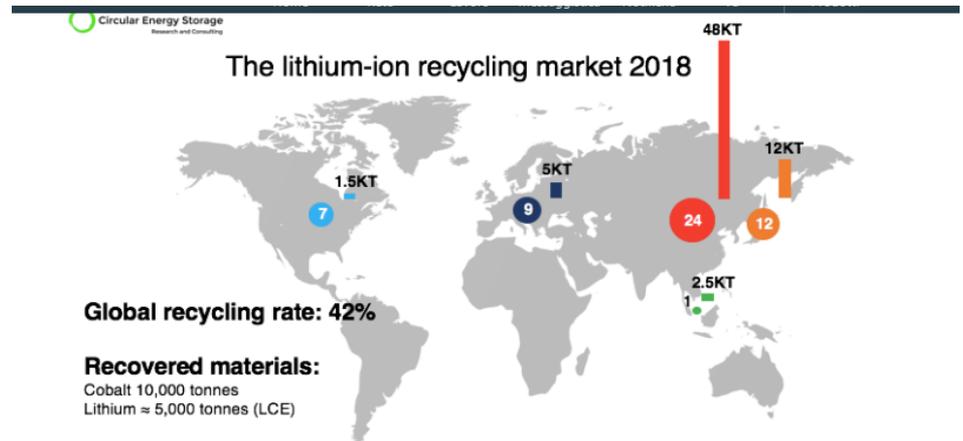


Some interesting results - BATTERIES

Today most of lithium-ion batteries recyclers are based in China, which is where more than three quarters of all batteries, are recycled today. Two thirds of that industry is based in China and a large part of the remaining third is found in South Korea and Japan.



The driver of recycling is primarily to secure supply when the markets for cobalt and lithium are getting more and more squeezed. **The strong demand has triggered scale up of several plants based on advanced technology and has made Chinese recyclers world leaders.**



European generalization criteria (I)

Value chains criteria		
Batteries	Metals	Technopolymers
Complementarity of Recycling and Reuse (Second Life) processes, to be optimized by a comprehensive approach	Technological ability to manage non only metals in batteries, but also other flows of specific new materials typical of new lightened and electrified vehicles	Availability and readiness in studying, validating and applying a method for quantifying the presence of recycled plastic within the vehicles
Technological elasticity in treating batteries of different vehicles brands and models	Flexibility and ability to dialogue with different economic entities holding the flows of metals to be treated, by the support of distributed information technology tools	Improvement in the extended use of IDIS tool for the optimization of flows of plastic families to be dismantled and recycled
Flexibility for responding to different levels of integration between Recycling and Reuse options during next years	-	-



European generalization criteria (II)

Other technical-normative criteria

- Linguistic variety and accessibility of the software platform
- Ability to respond to the expected EU push to the development of regulated market of reused-recycled components
- Ability to respond to the expected EU push to the technical identification standards for reused/recycled materials and components
- Constant monitoring of end of life vehicles and batteries legislation evolution

Cross-cutting criteria

- Extensive use of methodology for Life cycle assessment (LCA/PEF) or CO₂ assessment (carbon footprint)
- Prolonged lifetime of products
- Traceability improvement
- Synergies between ELVs and WEEEs policies





CarE-Service



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776851