

Research topic: Monitoring the transition towards a Circular Economy (DIG1)

- Research line: Resource management for a Circular Economy
- Research group: Sostenipra (Industrial and Urban Ecology)

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Are electric vehicle batteries design for reuse, repair and remanufacture?

The value chain of many complex products have become global. Product data and knowledge is not exchanged among manufacturers and de-and remanufacturers, as well as among sectors leading to unlocked cross-sectorial material re-use opportunities. There is a lack of certification protocols for secure re-used materials and components transfer among sectors, and a poor acceptability of products embedding recycled materials by end-customers.

In this TFM, the student will focus on the **analysis of the design of electric vehicle batteries**. The analysis would help understand the existing limitation from the design perspective which may hamper their potential secondary use. The study will be developed in collaboration with several partners of the DigiPrime project.



Main goal: To develop a single score method to assess the reuse, repair and remanufacture of EV batteries

MAIN TASKS:

- 1) To perform a literature survey about the current state of the art of EV batteries reaching their end of life, and the market trends
- 2) To review the existing methods available to obtain a single score to account for the potential to reuse, repair and remanufacture (inspired in the EN 45554)
- 3) To investigate the design of EV batteries from a set of batteries analysed as part of the DigiPrime project.
- 4) To discuss about the existing limitations hampering the implementation of CE strategies, especially reuse and remanufacture
- 5) To write a paper for a peer-review journal with the main findings of the research project (Tentative date: June 2023)