

# Our OBJECTIVES



To deliver battery grade secondary Co, Ni, Mn, Li, C-graphite and benchmark recovered RMs in NMC811, MMC9½½ and LMNO cathodes versus cathodes containing primary RMs.



To build a prototype of second life battery from BATRAW sample.



To develop and deliver eco-design guidelines on pack manufacturing supporting better repair and dismantling of large battery packs.



To develop and deliver guidelines and best practices for safe handling and transport of end-of-life battery waste.



To develop and demonstrate a blockchain platform for Raw Materials, product, and supply chain tracking.




To contribute to policies and standardisation by feeding the European Commission's Raw Materials Information System.



To fully substantiate an exploitation and business plan that takes abroad EU-wide focus, including Circular Business models.



To quantify environmental impacts and benefits of BATRAW results by LCA study.

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Recycling of end of life battery packs for domestic raw material supply chains and enhanced circular economy

[www.batraw.eu](http://www.batraw.eu)



Co-funded by the European Union

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ISLE UTILITIES LTD participant in Horizon Europe Project BATRAW is supported by UKRI



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**BATRAW, project funded by the European Commission under the Horizon Europe programme with a total budget of 12,323,911 million euros, of which the European Commission will grant a maximum of 9,786,739.** The 4-year project is coordinated by the Technological Centre LEITAT and is integrated by 17 partners from 7 different countries.

BATRAW main objective is to develop and demonstrate two innovative pilot systems for sustainable recycling and end of life management of electric vehicle batteries to recover all the metals and materials contained in them, i.e. cobalt, nickel, manganese, lithium, graphite, aluminium, and copper.

1.- The first pilot will apply semi-automated processes to the handling of these batteries to separate their components, including cells and modules suitable for reuse. This pilot will deliver innovative technologies, and processes for dismantling of battery packs, achieving recovery up to 95% of battery pack components, and separating waste streams; including cells and modules by semi-automated processes for recycling.

2.- The second pilot will implement a mechanical pre-treatment and hydrometallurgical technology to improve the separation of the materials contained in the black mass (a substance composed of non-ferrous metals resulting from the shredding of the batteries). It will expand and demonstrate efficient pre-treatment and continuous hydrometallurgical recycling of battery cells



48 months



12,3 M€ total budget



17 partners



7 countries



and modules, including innovative steps for the separation of C-graphite, Al and Cu from the black mass and the extraction of Mn, which will achieve a recovery of the full range of battery raw materials (Co, Ni, Mn, Li, C-graphite, Al and Cu) with a selectivity of 90-98%.

BATRAW results are of strategic importance within the prospects of the exponentially growing EU battery market and reducing EU import dependency of "Critical Raw Materials" (CRM). The project will further promote the overall sustainability and circularity of battery products and raw materials by developing new procedures for battery repair and reuse, enabling faster diagnostics and conversion of EV packs into second life batteries, delivering eco-design guidelines for battery manufacturing, demonstrating blockchain platform for raw material tracking and supply chain transparency (Battery Passport) and delivering guidelines for safe transports and handling of battery waste.

The project aims to maximize market uptake and impact through ambitious C&D&E plan including circular business models, workshops, dissemination in EU platforms etc.

