



RELiEF Newsletter Issue 1



RELiEF kicks off its activities!

After a virtual kick-off meeting in July, the **RELiEF consortium** had the chance to participate in its official Kick-Off Meeting at the locations of the coordinator [Avesta Battery and Engineering \(ABEE\)](#) next to Brussels.

It was a perfect occasion to get to know each other and already work on the next steps of the project. The inputs delivered by the consortium show a strong commitment by all members and demonstrate the potential of the project.

The EC Project Officer provided the consortium with some useful guidance tools

and we are looking forward to a fruitful collaboration.

The main goal of **RELiEF** is to improve the Lithium (Li) metal circular value chain by developing a continuous battery material recovery process with integration of innovative and disruptive unit processing from the primary, recycling, and battery material processing fields and recover Li from potential secondary sources, in order to reduce unrecovered Li from its waste generation. Therefore, RELiEF will contribute strategically to decreasing the dependency of the EU on imported battery chemicals and raw materials by proposing an integrated recycling facility for Li from secondary raw material sources with continuous processing to produce battery materials.

The Partner [08-Pegmatitica](#) is an SME and represents a mining family, working in a "non-metallic" geological area - "Lithium Pegmatites" (Lepidolite), for over five decades, adding innovation to the accumulated experience of 3 generations of miners. Pegmatitica has access to critically needed raw material streams from secondary sources (slags, liquid wastes, etc.) to feed the various Li recovery method development tasks, through direct connections with the mining and recycling industry. Furthermore, Pegmatitica has the concession of Mine C-57 authorized by the Portuguese State - DGEG for the extraction of raw material - Litinated Feldspar = Pegmatite with Lepidolite from secondary sources as heaps and surplus pegmatite miners, without any physical or chemical treatment, formed from bulk sales to the floor ceramics industry in the Iberian Peninsula.

The work of Pegmatitica within **RELiEF** started with an important fire during mid-August 2022, burning a great area of the mine as well as the entire area surrounding the district of Guarda and Serra da Estrela in Portugal. Though it was considered a disaster zone for a period of one year, the material collected in the tailings for the RELiEF project samples was not affected. The samples collected on the surface and at different depths were then treated, highlighting the following methods: washed by electric water jet, dried, mapped to their origin, labelled, packed in Big Bags with pallets, sieved in 3 different granulometries, homogenized individually for the 3 cases, stored in our metallic sea container.

The first samples were then sent to France, Belgium and Portugal to the partners [01-ABEE](#), [02-EXTRACTHIVE](#), [10-Université Libre de Bruxelles](#) and [11-Universidade Nova de Lisboa](#) for analysis. Because of the meteorological situation in Portugal, more effort has been spent in human resources and less in powerful equipment and machines.



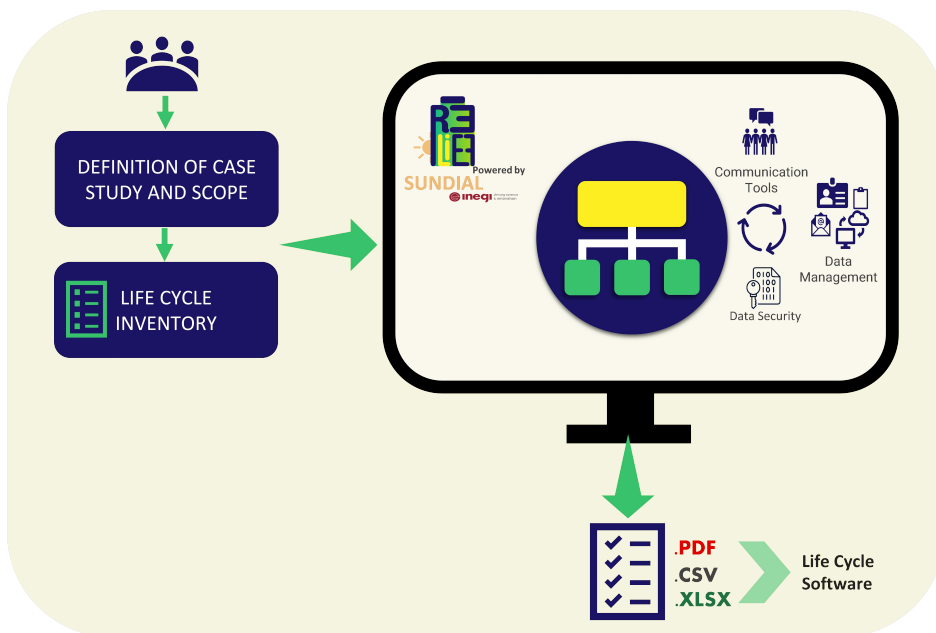
EU Raw Materials Week

On 14th of November, **Gabriel Hidalgo** Gutierrez from **Avesta Battery & Energy Engineering** (ABEE), coordinator of the RELiEF



project, had the opportunity to present the goals and challenges of the project during the [EU Raw Materials Week](#). The **European Commission** organised the 7th edition of this event, gathering a wide range of stakeholders discussing policies but also relevant alternatives in the field of raw materials.

The meeting also gave several EU funded projects the chance to meet and exchange on further [clustering possibilities regarding lithium waste reduction and lithium recycling](#).



RELiEF's Sundial Platform

The RELiEF project will release soon the first version of a **digital data platform** (SUNDIAL: Sustainability Data Digital Platform) adapted for the collection of important data for life cycle assessment studies of its new processes.

One of the main purposes of the RELiEF project is to fully characterize the sustainability performance of the developed processes. With this purpose in mind, [INEGI](#) is responsible for the development and adaptation of a digital data platform that aims to improve and accelerate the collection of foreground data in a reliable and secure database. This information can then be exported into automatically organized life cycle inventories from which the environmental, economic and social impacts will be measured.

With the support from this SUNDIAL platform and the RELiEF partners, INEGI will be able to not only fully characterize the developing processes, but also provide **quicker results to developers of the RELiEF processes for lithium recovery**. By providing reliable, and yet faster results, it will be possible to influence the design of the processes by identifying the main hotspots where to focus on, in order to reduce costs, social impacts and improve the environmental performance more

effectively.

The **new platform SUNDIAL** includes a series of user-friendly features, such as a visual supporting tool to all of the process life cycle, easy access to the already saved information and an exportation feature to download the created life cycle inventory. This month, an initial version will be deployed to partners, with the primary attributes already available for testing.

In this first release, partners will be able to create the scope of the life cycle study, and add initial data that can characterize their processes, such as: material usage, supplies, waste generation, energy consumption, machinery, chemicals, process efficiency and final output. New features will be added in the next iterations, together with suggestions made by partners in each round of testing. This way, SUNDIAL will be matured and personalized according to the RELiEF project necessities, data specifications, and life cycle scope requirements up until the end of the first year of the project, the date of the release of the final version.



MEET GABRIEL

"By revolutionising the Lithium recycling process through the inclusion of unused secondary materials, the RELiEF project plays a crucial role in avoiding future supply chain disruptions and in closing the loop for a circular economy."

Gabriel Hildago
RELiEF Coordinator

www.lithium-relief.eu

Meet the partners: ABEE, Coordinator of RELiEF

In a nutshell, could you briefly describe what RELiEF is all about?

RELiEF project is about **reducing Lithium (Li) waste from unused secondary Li sources.**

What is the impact of RELiEF? Who will benefit the most?

The impact is multidimensional. It covers, among others, the environment (waste reduction), social (sustainability awareness), political and institutional (implementation of effective policies to encourage and support circular business models), battery factories (adoption of recycling in battery

manufacture).

Could you briefly describe your institutional and personal role within the RELiEF project?

The institution's role is to coordinate the project, providing a defined organizational framework, guidance, supervision, and revision of all project activities. At the scientific level, it provides support in the pre-treatment, characterization, material validation, and process demonstration. The project's coordination is my personal role.

Which results have already been achieved on your end and what will be the next milestones?

Apart from the ongoing activities that the coordination entails, so far, we have reported on the use cases, KPI and test definition as well as materials and intermediate requirements. Results that are essential to precisely defining the project's guiding criteria. The next milestone is to ensure the delivery of the waste pre-processed material to conduct the effective leaching processes.

For you personally, what has been the most exciting/most challenging part of the project so far?

There are numerous aspects of the project that I am excited about. The fact of connecting with people towards a common goal is exciting. Every partner has their own viewpoint and expertise in the field, so being able to connect with them, learn, and solve practical problems is what I enjoy the most.

Which are the most significant challenges and opportunities related to the recycling of raw materials in your opinion?

The hardest part, in my opinion, is to translate recycling and sustainability concepts and/or ideas—which often are very ambitious—into practical, effective solutions. But once a solution is found, it inspires the next one, and one realizes that earlier recycling challenges are easier to solve than previously believed.

How will RELiEF concretely contribute to the reduction of lithium waste in the future?

RELiEF offers the opportunity to combine innovative recycling technologies and exploitation strategies into one main goal, to reduce the Li waste. The outcome of the project will definitely help to improving future recycling processes as it implements a panel of different recycling technologies and unique scientific expertise that would not otherwise be possible to integrate.

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