LiCORNE

Lithium recovery and battery-grade materials production from European resources

Brussels, Belgium

14 November 2022

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Project overview

Grant agreement no: 101069644

Coordinator: Fundación Tecnalia Research & Innovation

Participants:

🌍 **16** partners from **10** countries:

Spain, Austria, Germany, France, Belgium, Norway, Greece, The Netherlands, Chile and United Kingdom

⏳ **Duration:** 1 October 2022 to 30 September 2026

💵 **Project budget:** EUR 6.8 Million

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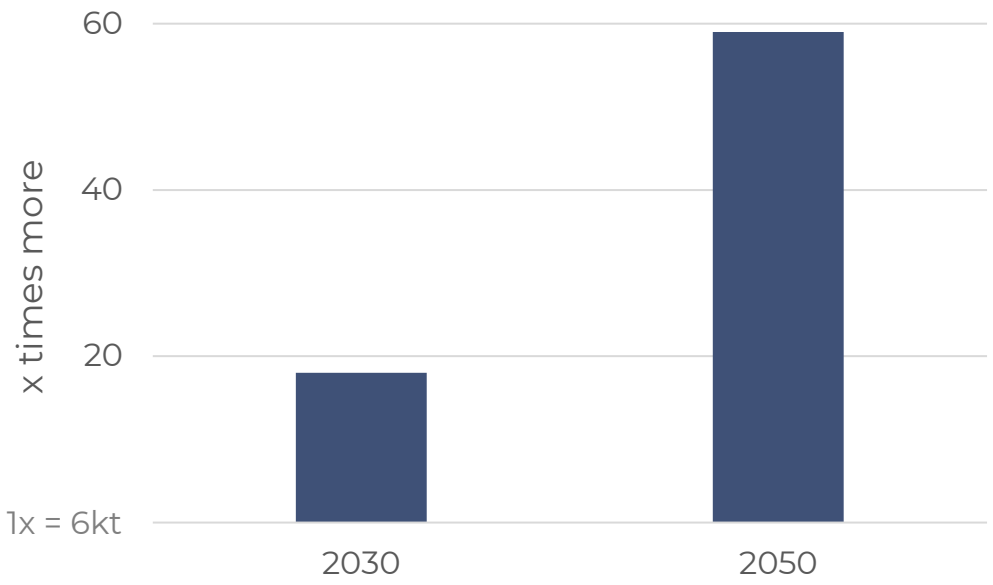
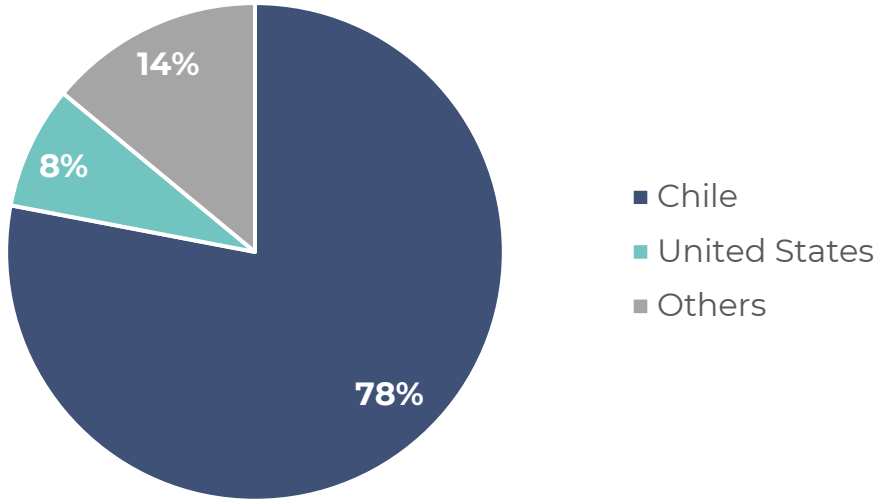
Motivation

Increasing demand of Lithium



Source: Critical Raw Materials for Strategic Technologies and Sectors in the EU (2020), A Foresight Study (URL)

European Union Lithium dependency



Source: Study on the EU's list of Critical Raw Materials (2020), Final Report (URL)

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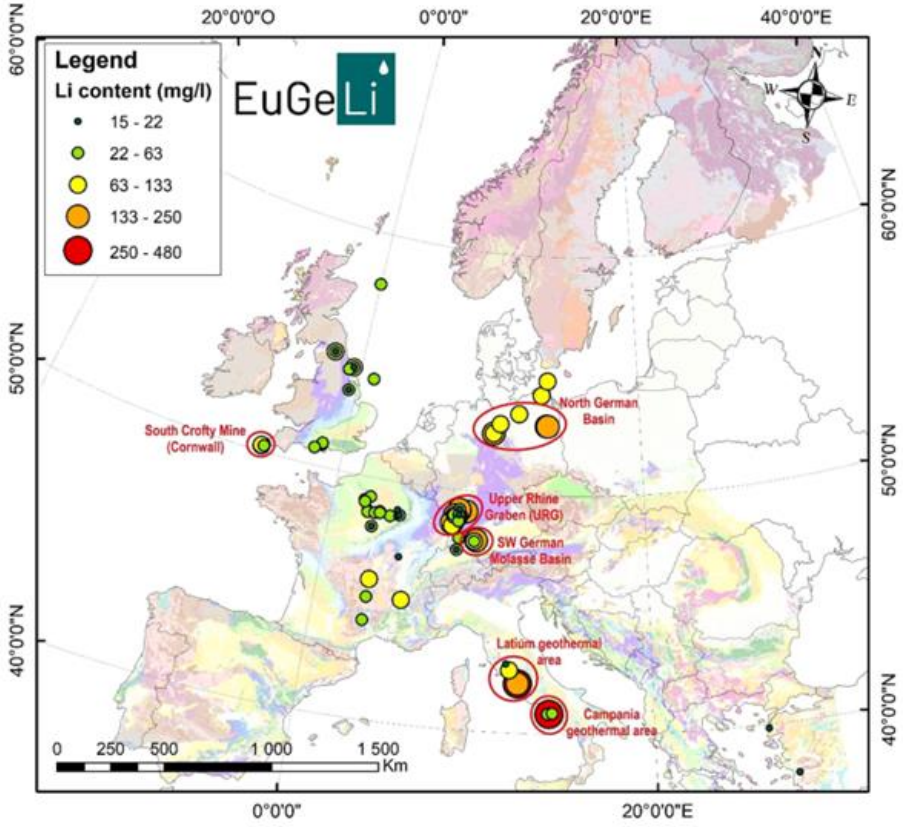
Opportunities

Planned Li projects from pegmatites in Europe

Source: Infinity Lithium Corporation (2020). San Jose Valdeflorez lithium project, investor presentation.



Lithium-rich geothermal brines in Europe

Source: Lithium-rich geothermal brines in Europe: An up-date about geochemical characteristics and implications for potential Li resources (URL)

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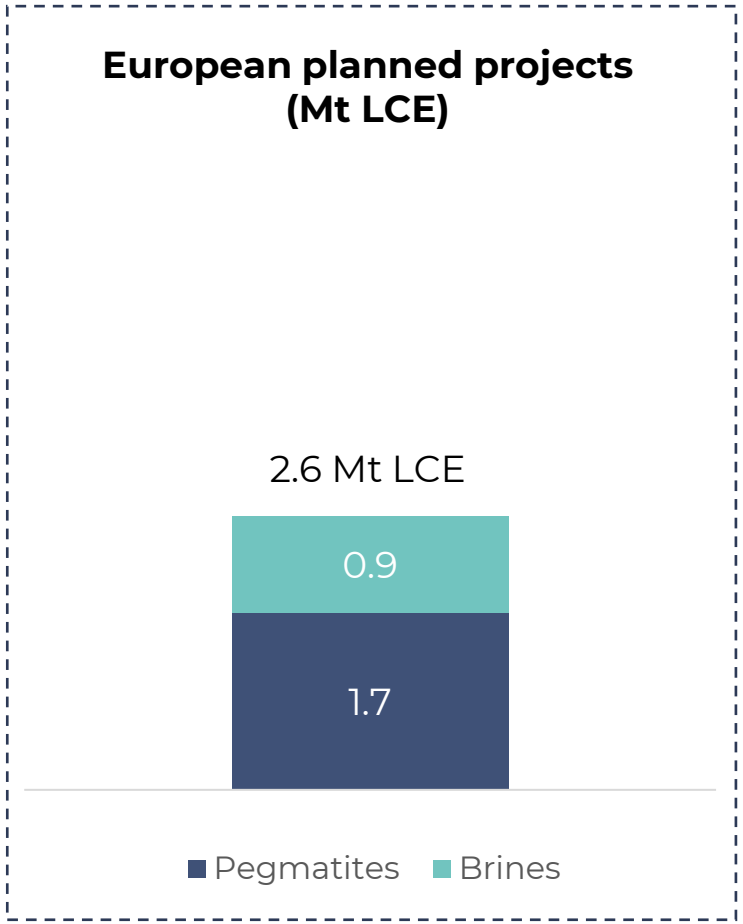
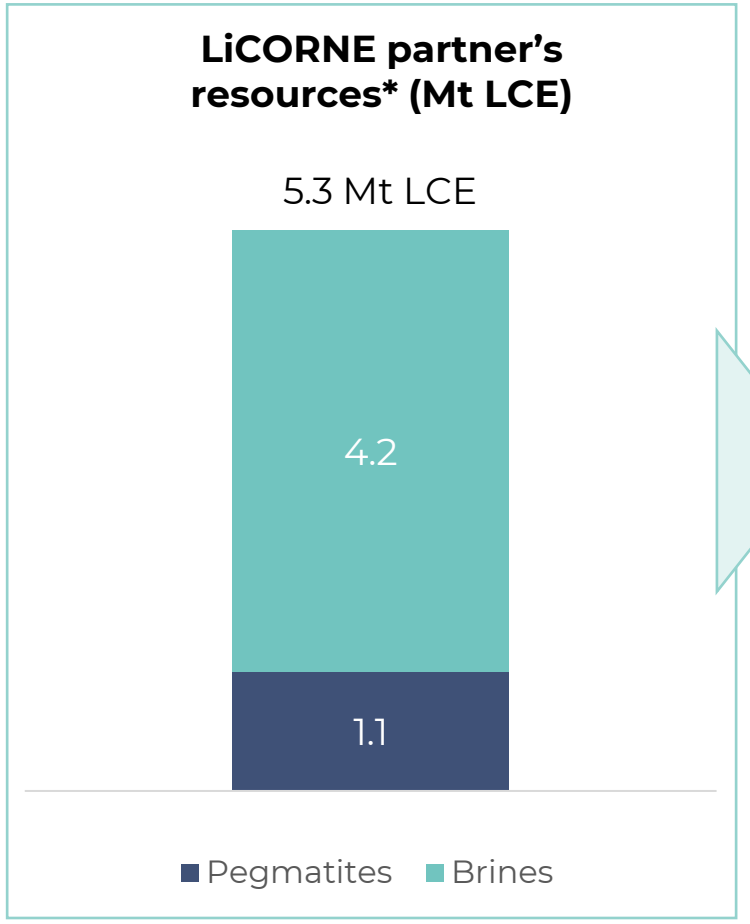
Lithium resources





Enough to supply ~5,800 GWh of batteries

LCE: Lithium carbonate equivalent

*Worldwide resources

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LiCORNE's objective

The LiCORNE project aims to establish the **first ever Li supply chain in Europe**, increasing the European Li processing and refining capacity for producing battery-grade chemicals from **ores, geothermal and continental brines, tailings and off-specification** cathode materials (waste).

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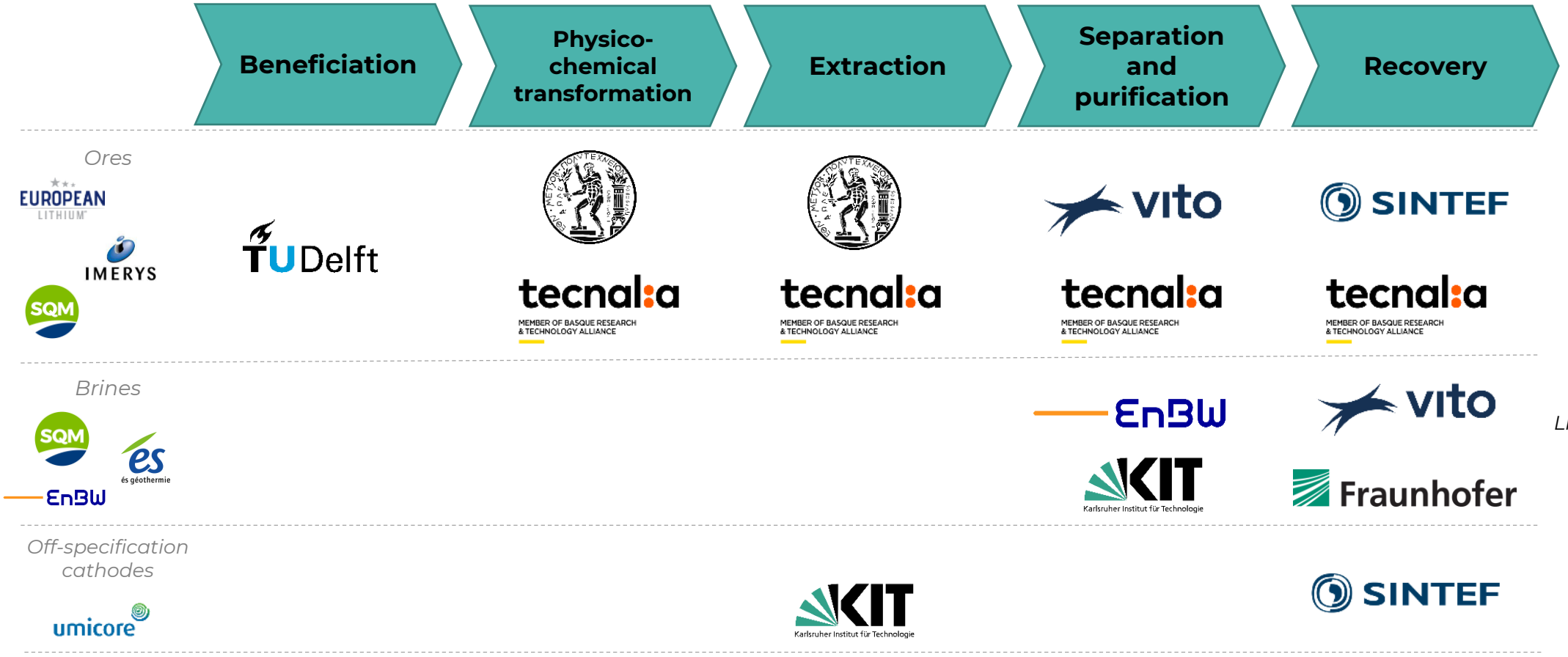
The concept

14 different ground-breaking technologies



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Work plan

Year 1: M1 – M12	Year 2: M12 – M24	Year 3: M25 – M36	Year 4: M37 – M48
Research & Development		Upscaled process (to TRL5)	

WP 1 - TEC: Project Management

WP 2 - ESG	WP 3 - NTUA	WP 4 - KIT	WP 5 – VITO	WP 6 - SINTEF	WP 7 - LEV
Supply and characterization of feedstock	Beneficiation of ore and physico-chemical transformation	Extraction from concentrates, waste cathode material, ore and tailings	Separation and purification of solutions	Recovery as battery-grade chemicals	Operation and validation of LiCORNE process

WP 8 - TEC: Environmental and economic sustainability assessment

WP9 - PNO: Development of Communication, Dissemination and Exploitation (CDE) actions

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Specific objectives

- To **develop technologies at TRL 4**

1. **Beneficiation** technologies to increase Li concentration in pegmatites ore aiming to prevent 15% gangue entering downstream processes.
2. **Physico-chemical transformation** of Li-pegmatite concentrates with non-acidic and low temperature process (~200°C) to facilitate downstream processes
3. **Efficient extraction of Li** contained in pegmatites concentrate and Li, Co and Ni from cathode waste, targeting 90-95% Li extraction while eliminating high-energy process such as calcination and sulfuric acid use.
4. **Separation and purification** of Li from leachates and brines, targeting 94-99% Li selectivity depending on feedstock
5. **Recovery of Li** as battery-grade chemicals Li_2CO_3 or $LiOH \cdot H_2O$ targeting minimum 99% purity

- Benchmark the investigated technologies and **upscale the most promising one to TRL 5** - production of ~1 kg of battery-grade Li chemical (i.e., $LiOH \cdot H_2O$, Li_2CO_3 or Li-metal)

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Expected impacts

- Reduced carbon emissions, increased energy efficiency, and more efficient resource use and yield
- Production of battery grade intermediates and precursor materials in a sustainable and socially acceptable way from European *low-grade deposits and secondary material sources*
- Reduction of the European dependency on critical raw materials by increasing refining capacity to battery-grade material
- New business opportunities and models for the European industry, creating additional jobs from increased processing and refining capacity

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Website

www.licorne-project.eu

Coming soon

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LinkedIn

LiCORNE EU project

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