



# SR2022-3 : Emerging Lithium Extraction Technologies

## Background

The revolution in battery technologies has caused a sharp acceleration in the demand growth for lithium and the trend is expected to continue. With electric vehicle costs falling and infrastructure improving, demand for lithium from battery applications is projected to increase at 15 – 25 percent per year over the next 10 years.

Lithium derivatives are sourced from either minerals or brines with recycling not widely practiced yet. Minerals can be commercially treated to produce lithium hydroxide monohydrate or lithium carbonate. For brines, lithium chloride is initially produced as a solution which can then be processed by carbonation into lithium carbonate or dried to produce lithium chloride. It is not commercially viable to produce lithium hydroxide directly from brines using conventional technologies.

The limitations of existing technologies and exponential demand growth have driven the emergence of novel technologies. These technologies are looking to target uneconomic deposits based on conventional technologies with improved environmental footprint of these projects.

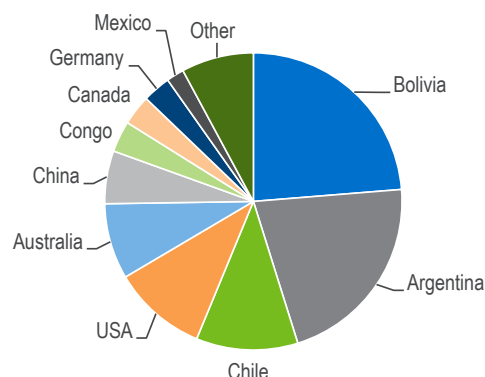
## What is Included in the Report?

**Business Overview** – A background and introduction to the lithium industry

**Strategic Review** – a qualitative and quantitative review of the technologies based on NexantECA's criteria

**Emerging Brine Technologies** – a detailed analysis of the emerging technologies targeting brines resources.

## Lithium Resource by Country, 2022



## Objective

This report will provide an overview of technological, economic and commercial aspects emerging lithium extraction technologies as well as provide a strategic review of each technology in comparison to its peers. The following issues will be addressed in the report:

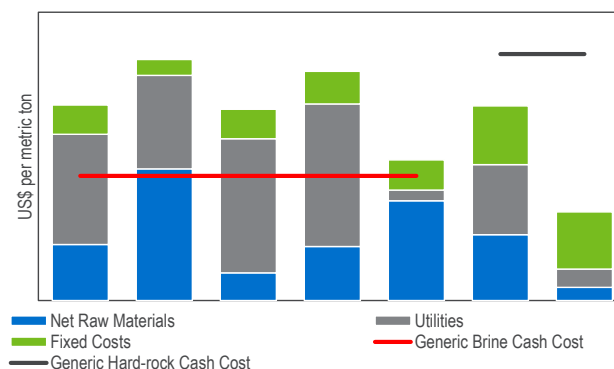
- What is driving the emergence of new technologies and how do these technologies differ from conventional routes?
- What are the major emerging technologies used for extraction of lithium from brine and hard rock resources?
- What is the background of the companies and their management developing this technology?
- What are the stages of the process under development and where available, what are the key raw materials, utilities and pieces of major equipment?
- What is the cost position of the most developed technologies and what are the key cost sensitivities?

**Emerging Hard Rock Technologies** – a detailed analysis of the technologies targeting brines resources.

**Chinese Lithium Extraction Technology Development** – a detailed analysis of the emerging technologies being developed in China

**Cost of Production Estimates** – a presentation of the cost analyses completed for the most developed of the emerging technologies

## Cash Cost of Lithium Extraction, 2022



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