

Sourcing Lithium from geothermal brine in Germany - with minimal environmental impact

BEYOND ELEMENTS, HANAU 30th April 2025

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VP for Strategy

Foto: Bosch – ecomento.



VULCAN ENERGIE
ZERO CARBON LITHIUM™



THE UPPER RHINE GRABEN - Basics

- Temperature of the deep reservoirs: 120 - 200 °C
- Potential area: approx. 5,000 km² =
- of which Vulcan holds 1800 km²
- Depth of the reservoirs: 2,500 m - 5,000 m
- Salt content of the thermal water: 120 g/l
- Lithium concentration: average 181 mg/l



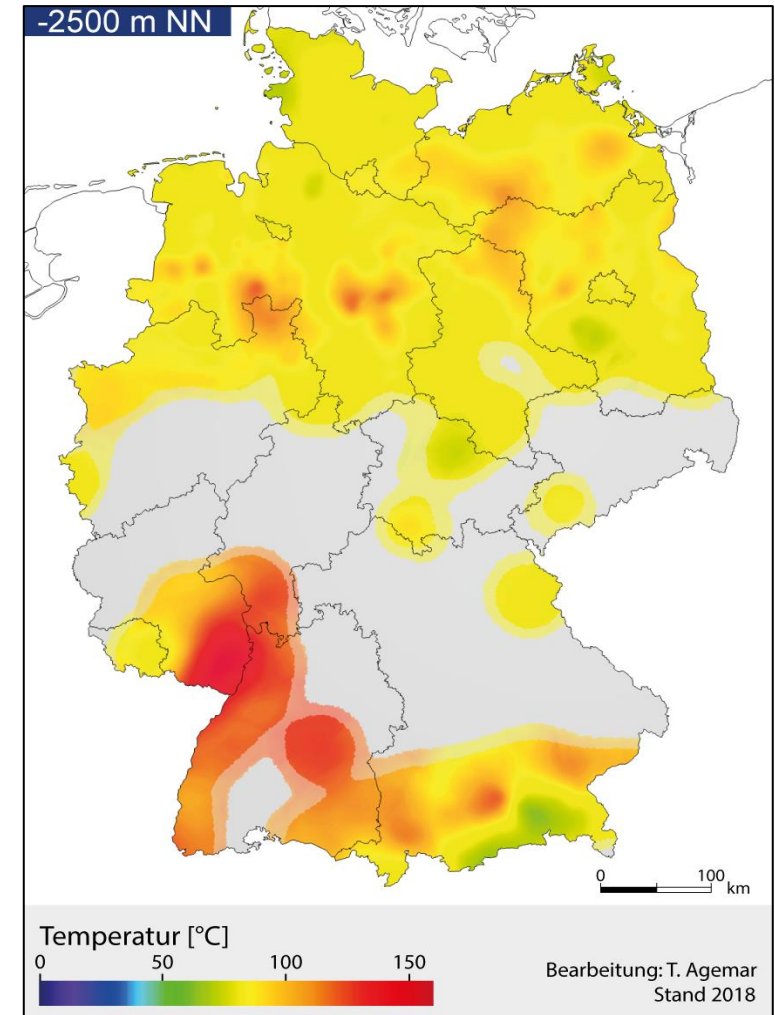
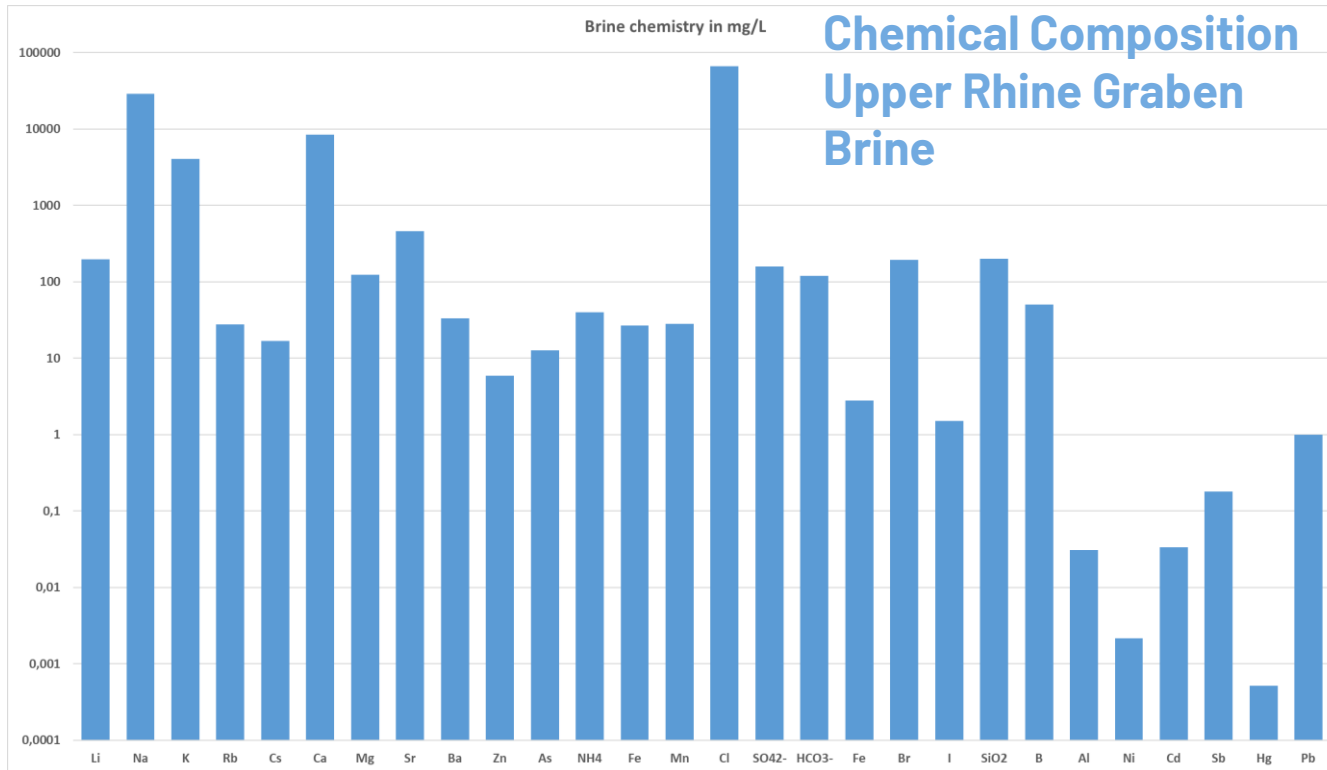
INSTITUT MIXTE
DE RECHERCHES GÉOTHERMIQUES

2

LES RESERVES EN LITHIUM DES AQUIFERES
DU TRIAS DE LA ZONE NORD ALSACE

M. LAMBERT, A. GENTER, H. PAUWELS

valorisation
des fluides géothermaux
contenant du lithium
en vue d'une production
industrielle



BUILDING RENEWABLE ENERGY AND LITHIUM CHEMICALS PRODUCTION

Phase one

270 GWh power p.a.
Up to 560 GWh heat p.a.

LiCl concentrate for
24,000tpa LHM equivalent

24,000tpa
LHM (capacity)

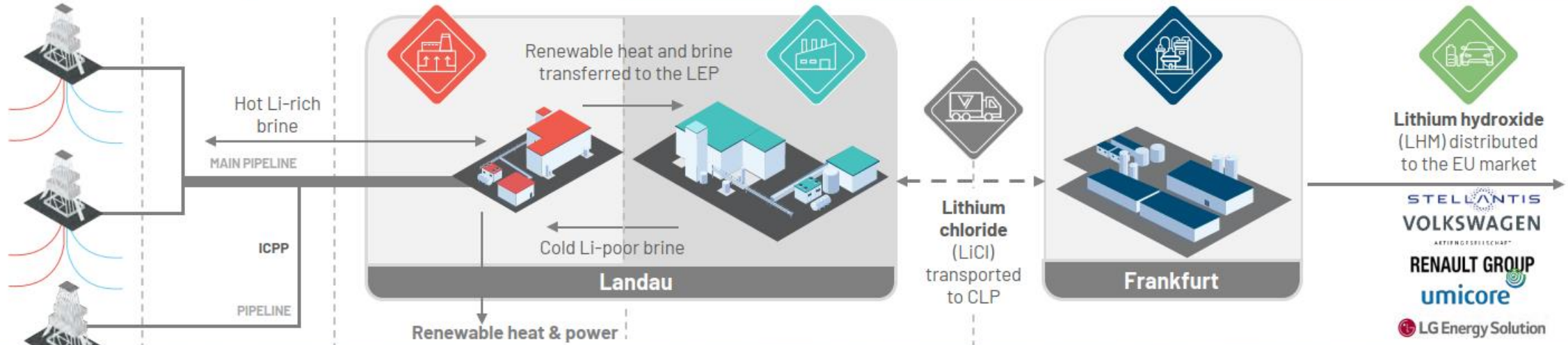
2. Well sites

3. Geothermal Plant

4. Lithium Extraction Plant (LEP)

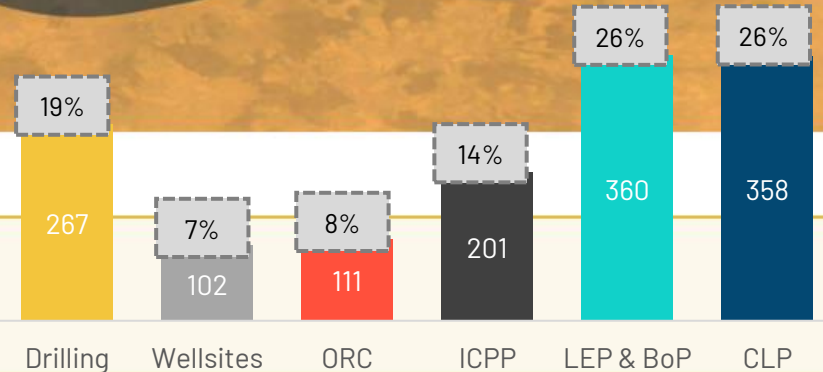
5. Central Lithium Plant (CLP)

Electric Mobility



CAPEX Breakdown €1,399M

€M 400
350
300
250
200
150
100
50
0



1. Reservoir: 3 to 5km deep

Wells are drilled into the deep, hot, lithium-rich brine resource, which is pumped to the surface

Re-injection of brine. A closed loop, circular system

0.57 Mt LCE @ 181 mg/l Li Reserves, 4.16 Mt LCE @ 181mg/l Li Resource in the core "Lionheart" area, centred around current production wells in core of the URVBF field.



LOW COST, LOW IMPACT UPSTREAM LITHIUM & ENERGY PRODUCTION

Phase One Lionheart - fully integrated lithium and renewable power. *From Europe, for Europe*



1 Vulcan's 100% owned Insheim Geothermal Power Plant (operating)

2 Lithium Extraction Optimisation Plant

3 G-LEP - location secured, awaiting construction

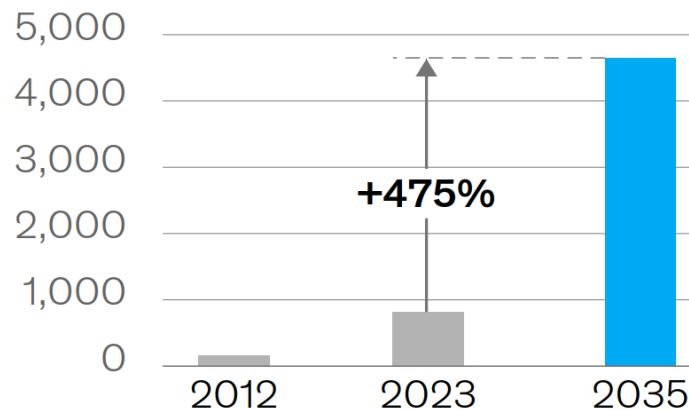
4 Schleidberg - Vulcan's next well site

TARGET PROJECT ECONOMICS¹: BRIDGING ENGINEERING STUDY

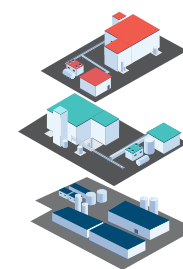
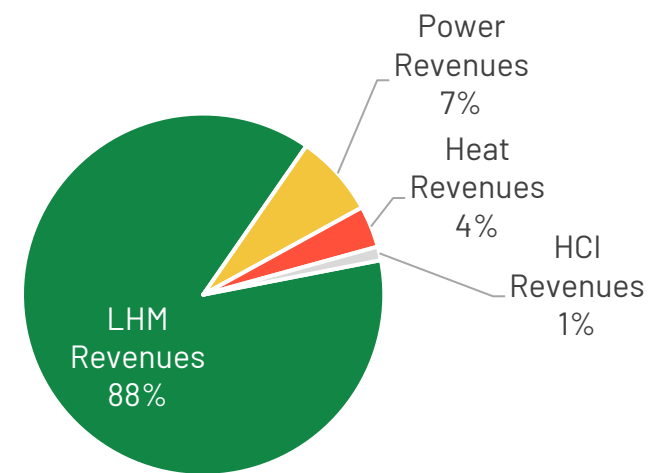
	Base Case Financials Bridging Engineering
Revenues €M/a	705
EBITDA €M/a	521
EBITDA margin %	74%
NPV pre-tax €M	3,906
NPV post-tax €M	2,566
IRR pre-tax %	27.8%
IRR post-tax %	22.5%
Payback in years	4
Total Capex €M	1,399
Avg Opex² €/t LHM	4,022
Avg LHM price 10y forecast³ €/t	€23,865
Avg LHM price forecast ³ €/t	€32,050

Expected Lithium Demand

Lithium, kt LCE¹



McKinsey
& Company
Global Materials
Perspective 2024
September 2024



**€705M/a
revenues**
(average over the
project life)

¹ Vulcan Energy's Phase One Bridging Engineering Study. These are targets and may not be achieved. Please refer to the Forward-Looking Statement disclaimer in Appendix 1.

² OPEX is based on a production at designed capacity at 24,600t, excluding inflation, LHM and including an average power price over the project life.

³ The average forecast realised price per tonne of LHM is taking into consideration Fastmarkets long term price forecast (min 57.5% LiOH) (\$/kg, EU & US) and combining it with Vulcan's pricing concluded in offtake agreements which includes price floors and ceilings, fix prices, and price indexed on indexes like Fastmarkets.

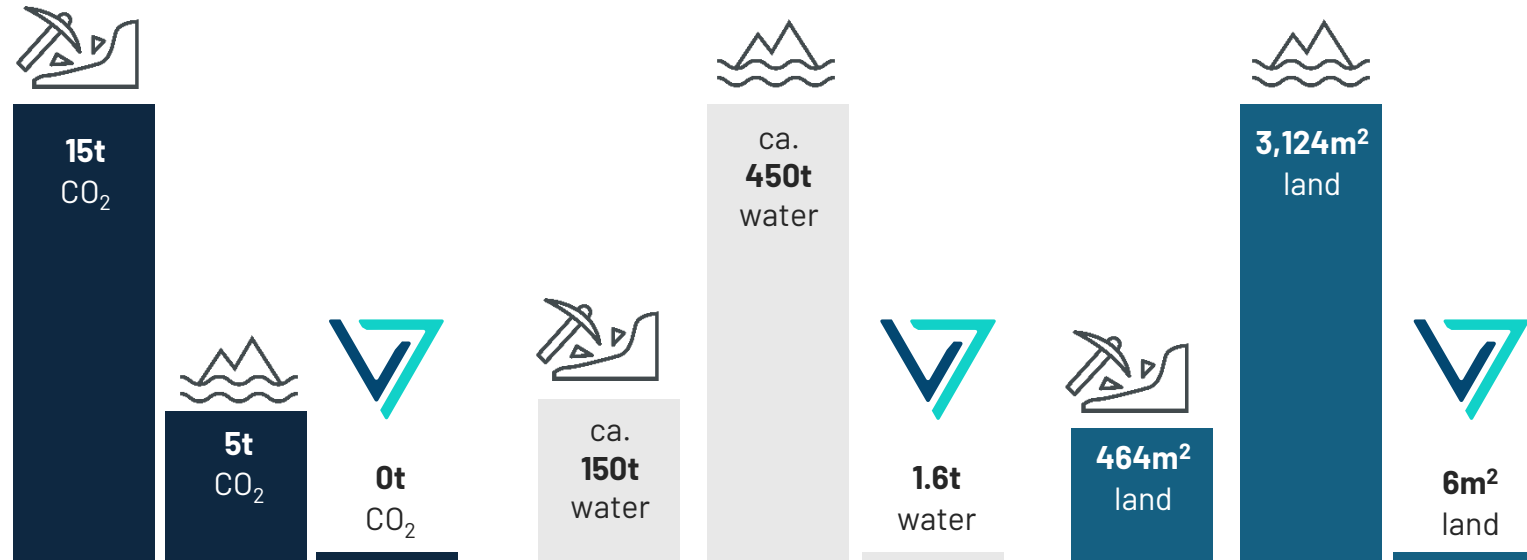
AIMING FOR LOWEST WATER AND LAND FOOTPRINT IN LITHIUM INDUSTRY

Engineered to have industry-leading environmental performance: our core mission

Data based on the DFS. Vulcan in the process of updating its LCA with Minviro based on Bridging Engineering Study.

Strategic Project status aims to offer:

- Strong financing opportunities**
Strategic Project status unlocks **access to EU funds**, investment de-risking, and potential **state aid** – strengthening financial resilience
- Streamlined permitting**
Strategic Projects enjoy **expedited permit-granting processes** with fixed time limits - 27 months for extraction projects and 15 months for processing projects – **rapid and predictable** project execution
- Recognition as a European Strategic Project**
Priority treatment in regulatory processes and a **clear endorsement of Vulcan's role in EU supply security** – strengthening Vulcan's **credibility with offtakers, banks, and investors**



PER TONNE OF LHM PRODUCED

- Hard rock mining
- Brine evaporation ponds and reagents



Assessment	Description
Dark green	Activities that correspond to the long-term vision of a low-carbon climate resilient future.

S&P Global

1. Industry peer data generated from Minviro Life Cycle Assessment (see Vulcan ASX announcement, 4 August 2021); 2. Vulcan Energy's DFS, 13 February 2023 The Company's environmental credentials set out in this slide (and elsewhere in this Presentation) are based on the Company's Studies. There is no guarantee that the Company will be able to achieve the targeted metrics.