

Highlights

Large, lithium-rich geothermal brine project, in the Upper Rhine Valley of Germany.

Europe's **largest** JORC-compliant lithium resource.

Aiming to be the world's first **Zero Carbon Lithium™** producer.

Strategically located at the heart of the EU Li-ion battery industry.

MoU agreement with German geothermal operator at a **producing power plant**

Fast-track development of project under way towards production.

Corporate Directory

Managing Director
Dr Francis Wedin

Chairman
Gavin Rezos

Executive Director
Dr Horst Kreuter

CFO-Company Secretary
Robert Ierace

Fast Facts


Issued Capital: 53,670,002
Market Cap (@17c): \$9.1m

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Appointment of Chief Financial Officer and Company Secretary

Vulcan Energy Resources Ltd ('Vulcan' or the 'Company' | ASX: VUL) is pleased to announce the appointment of Mr Robert Ierace as Chief Financial Officer and Company Secretary, effective 1st of April.

Robert is a Chartered Accountant and Chartered Secretary with over 20 years' experience, predominately with ASX and AIM-listed resource and oil and gas exploration and production companies. He has extensive experience in financial and commercial management including experience in corporate governance, debt and capital raising, tax planning, risk management, treasury management, insurance, corporate acquisitions and divestment and farm in/farm out transactions. Robert holds a Bachelor of Commerce degree from Curtin University, a Graduate Diploma in Applied Corporate Governance from the Governance Institute of Australia and a Graduate Certificate of Applied Finance and Investment from the Securities Institute of Australia.

Robert has previously served in senior finance roles with a number of ASX-listed companies including Gulf Manganese Corporation Limited, Key Petroleum Limited, Amadeus Energy Limited, Kimberley Diamond Company NL and Rio Tinto Iron Ore. With today's appointment of Mr Ierace, Mr Mauro Piccini has resigned as Company Secretary.

Managing Director, Dr. Francis Wedin commented:

"We are extremely pleased to have secured someone of Robert's ability as CFO, as we continue to maintain our growth momentum at the Vulcan Zero Carbon Lithium™ Project. In particular, Robert's commercial experience in the oil and gas sector, which has many similarities to the geothermal renewable energy industry, will be invaluable to us as we progress the Project, and as we continue to decarbonize our economies we expect further shifts of such high-calibre personnel into the geothermal lithium space.

The Board would like to thank Mauro Piccini for his contribution to the Company and wishes him well with his future endeavours."

For and on behalf of the Board

Robert Ierace

Chief Financial Officer - Company Secretary

For further information visit www.v-er.com

Zero Carbon Lithium™

Disclaimer

Some of the statements appearing in this announcement may be in the nature of forward-looking statements. You should be aware that such statements are only predictions and are subject to inherent risks and uncertainties. Those risks and uncertainties include factors and risks specific to the industries in which Vulcan operates and proposes to operate as well as general economic conditions, prevailing exchange rates and interest rates and conditions in the financial markets, among other things. Actual events or results may differ materially from the events or results expressed or implied in any forward-looking statement. No forward-looking statement is a guarantee or representation as to future performance or any other future matters, which will be influenced by a number of factors and subject to various uncertainties and contingencies, many of which will be outside Vulcan's control.

Vulcan does not undertake any obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events. No representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions or conclusions contained in this announcement. To the maximum extent permitted by law, none of Vulcan, its Directors, employees, advisors or agents, nor any other person, accepts any liability for any loss arising from the use of the information contained in this announcement. You are cautioned not to place undue reliance on any forward-looking statement. The forward-looking statements in this announcement reflect views held only as at the date of this announcement. This announcement is not an offer, invitation or recommendation to subscribe for, or purchase securities by Vulcan. Nor does this announcement constitute investment or financial product advice (nor tax, accounting or legal advice) and is not intended to be used for the basis of making an investment decision. Investors should obtain their own advice before making any investment decision.

Competent Person Statement:

The information in this report that relates to Mineral Resources for the Vulcan Geothermal-Lithium Project is extracted from the ASX announcements "maiden JORC (2012) Mineral Resource Estimate for its Ortenau licence" and "Maiden Indicated Resource Insheim Vulcan Zero Carbon Lithium" released on the 4th of December 2019 and 20th of January 2020 which are available on www.v-er.com. The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcements.

Appendix 1

Vulcan Project Summary: Unique Zero-Carbon Lithium™ Production

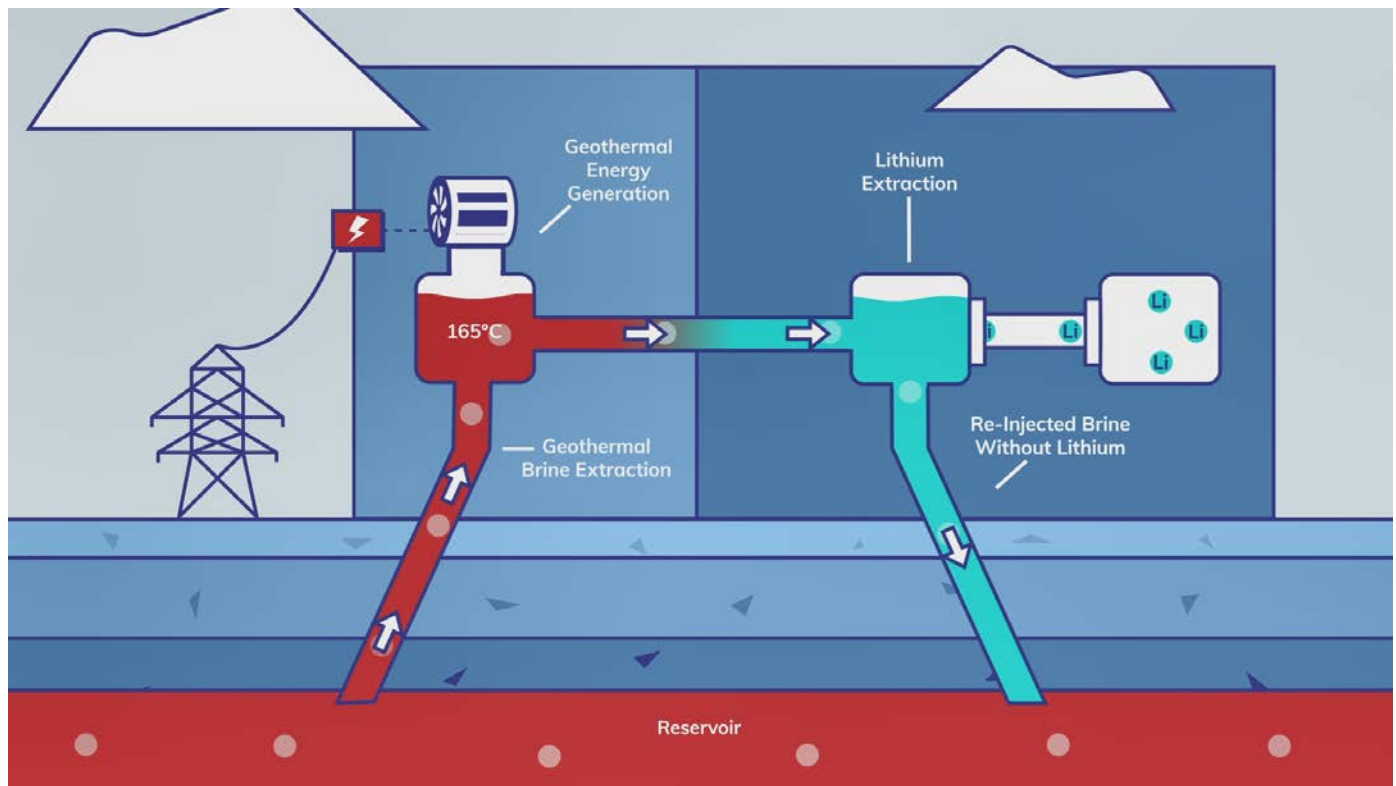


Figure 1: Schematic of the Zero Carbon Lithium™ process.

World's First & Only Zero-Carbon Lithium™ Process

Co-generation of geothermal energy from production wells will power lithium extraction. Unique process will satisfy OEMs' stated desire for ISO-compliant, zero carbon Electric Vehicle (EV) raw materials supply.

Europe's Largest JORC Lithium Resource

Recent JORC Mineral Resources contain a total combined Indicated and Inferred estimates of 13.95 million tonnes of Lithium Carbonate Equivalent (LCE)¹. Large enough to be Europe's primary source of battery-quality lithium hydroxide.

Most Optimally Positioned for Supply Chain Security & Footprint Reduction

Located in Germany, in the centre of the European lithium-ion battery industry. Removes dependence on South America/China for this designated Critical Raw Material. Removes carbon footprint of supply chain.

¹ See ASX releases 4th of December 2019 and 20th of January 2020. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcements.

Europe's Lowest Impact Lithium Project

No hard-rock mining, no evaporation ponds required in Vulcan's Zero Carbon Lithium™ process. Instead lithium extraction the European way, from renewable energy-producing geothermal brine wells rich in Li.

Rapidly Advancing Lithium Project

Recent agreement with German geothermal operator provides access to existing wells and potentially a fast-track to production.

Unprecedented Demand Forecast for Lithium Hydroxide in Europe

Ramp-up of lithium-ion battery manufacturing for auto industry in Europe in 2020s forecast to dwarf China expansion of 2016-18. Zero local supply of battery quality lithium hydroxide.

The **Vulcan Zero Carbon Lithium™ Project** is aiming to be Europe's and the **world's first Zero Carbon Lithium™ project**. It aims to do achieve this by producing **battery-quality lithium hydroxide** from hot, sub-surface geothermal brines pumped from wells, with a renewable energy by-product fulfilling all processing energy needs.

The Vulcan Zero Carbon Lithium™ Project is strategically located, within a region well-served by local industrial activity, at the heart of the European auto and lithium-ion battery manufacturing industry, just 60km from Stuttgart. The burgeoning European battery manufacturing industry is forecast to be the world's second largest, with currently zero domestic supply of battery grade lithium products.

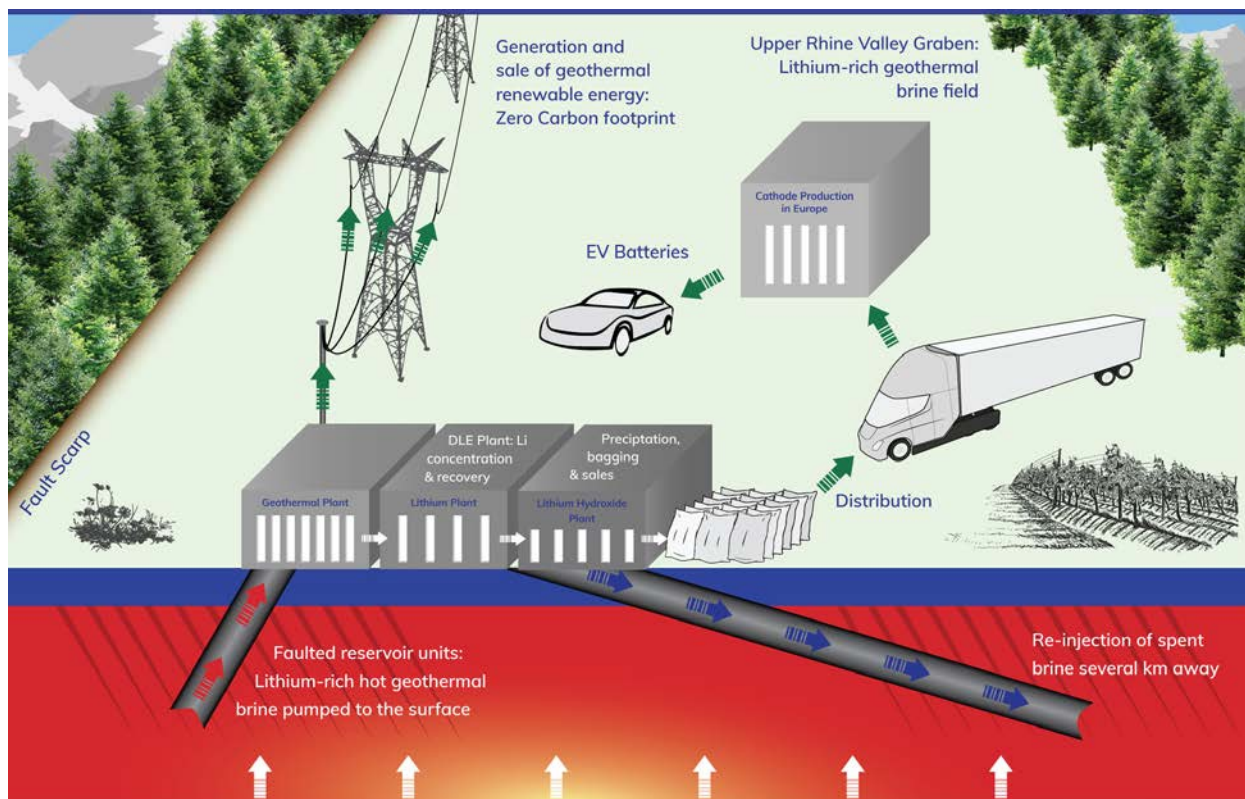


Figure 2: Schematic of the Zero Carbon Lithium™ project.

Unprecedented Demand for Lithium in Europe - The Next China?

- In the 2010s, China experienced the world's highest growth in lithium-ion battery production for electric vehicles. **It caused a lithium supply shortage & 300% lithium price spike.**
- In the 2020s, the **same is forecast to happen in Europe, on a larger scale.**
- "European battery cell production capacity is set to increase rapidly in the coming decade. Europe currently has no commercial lithium production or refining capacity of its own to meet this demand, but plans are afoot to change this" (Benchmark Mineral Intelligence, 2019).

There is an unprecedented ramping up of lithium-ion and associated cathode production in Europe. Forecasts show that the European Union (EU) is set to require the equivalent of the entire current global battery quality lithium demand by the mid-2020s, with 2023 being the main inflection point. There is currently zero EU production of battery-quality lithium hydroxide, let alone a CO₂-neutral product. A severe battery-quality lithium chemical supply shortfall is thus developing in the EU.

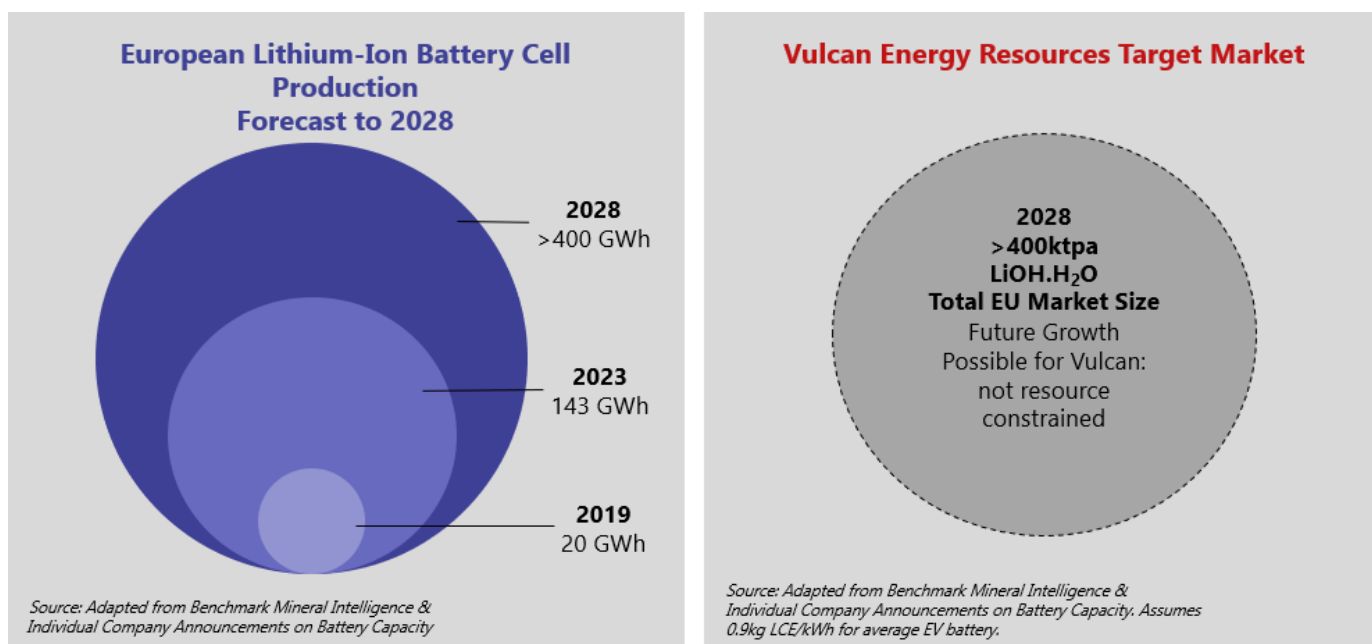


Figure 3: Forecast battery production in EU and associated lithium demand²

Why Vulcan? Zero Carbon Supply Chains Required

BEV raw material supply chains have a carbon footprint problem, producing more CO₂ during production than Internal Combustion Engines (ICE). Car manufacturers are actively trying to reduce the carbon footprint of their battery supply chains to bolster the credibility of their BEV offerings. This will enable them to avoid financial emissions penalties and obtain premium pricing for lowest carbon footprint in production. Volkswagen, among

² Adapted from Benchmark Mineral Intelligence and Individual Lithium-Ion Battery Manufacturing Company Announcements from Tesla, Northvolt, CATL, Leclanche, PSA, SVolt, TerraE, BMZ, Freyr Energy, Microvast, Farasis, LG Chem, Johnson Matthey, Umicore, SK Innovation, Samsung, BYD.

others, is placing great importance on having a CO₂-neutral production supply chain for its very extensive new EV line-up, with a raw materials purchasing metric for sustainability put on par with price³, and the goal of producing net zero carbon BEVs as delivered to the customer. The European Commission is following suit, recently flagging that “CO₂ Passports” will be issued to BEVs detailing the full CO₂ footprint of each battery. The aim is to differentiate EU lithium-ion battery and BEV production, by producing uniquely low CO₂ products. The EU has declared a climate emergency and aims to cut 55% of emissions by 2030, net zero by 2050. Currently, there is no “zero carbon” lithium chemical product in the world, since all current extraction, processing and transport routes are very carbon intensive. Spodumene converted by fossil fuel-fired processes and lithium products transported from South America will always emit significant quantities of CO₂ to sell their lithium products in Europe.

Hard-rock lithium production has a high OPEX and high CO₂ footprint due to its inherent energy requirement for mining, crushing and processing to producing battery quality lithium chemicals, as well its transport distance to major global markets. A processing bottleneck has also developed for spodumene concentrate going through lithium refinery plants in China, creating downward pressure on concentrate prices. South American lithium brine operations make up the balance of current production. Because of their distance to market, remoteness and substantial use of reagents from North America, there is a substantial CO₂ footprint inherent in these operations also. These operations can also be very slow and unreliable in terms of producing battery quality lithium chemicals, as the evaporation process makes them vulnerable to weather events. The evaporation can also cause stresses on local environment and communities. The world’s conventional lithium supply chains are not geared towards low carbon intensity production, so Europe will need to build its own.

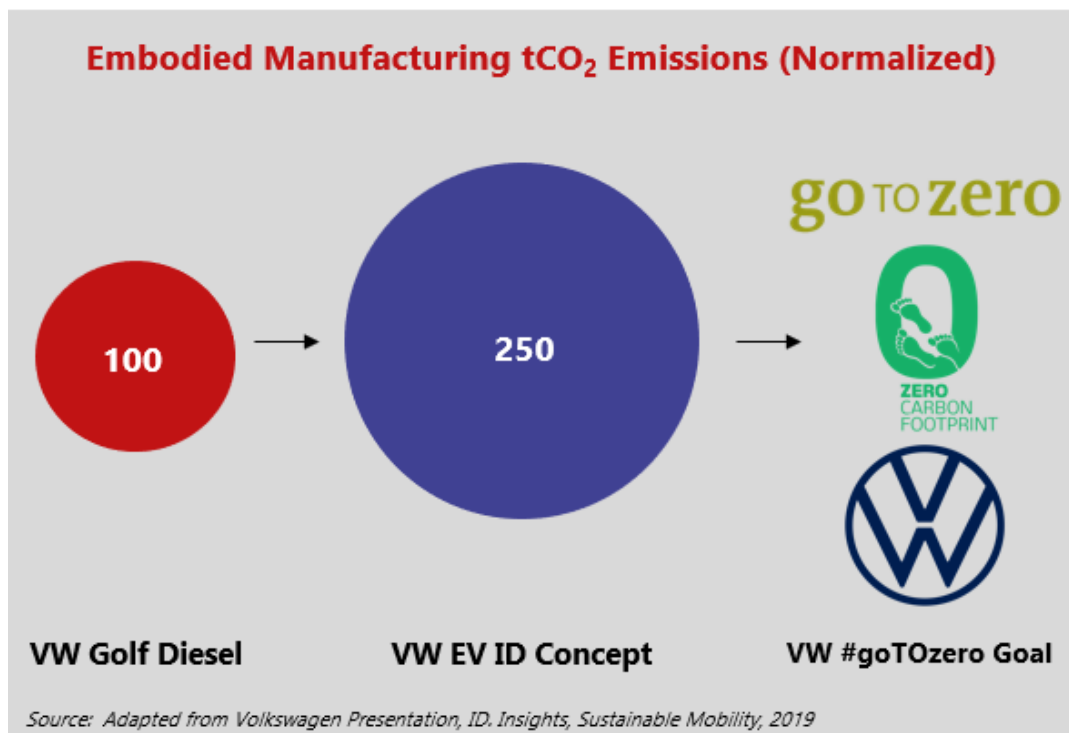


Figure 4: EVs’ carbon problem, and the industry goal to fix the problem

³ Volkswagen ID presentation, 2019

The Solution: Vulcan's Zero Carbon Lithium™ Project

The Company believes that the solution lies in the **Vulcan Zero Carbon Lithium™ Project**. This comprises a very large, lithium-rich geothermal brine field in the Upper Rhine Valley of South-West Germany, in the heart of the EU's battery "giga-factory" production.

Summary

- Unique flowsheet developed by Vulcan, making use of **binary cycle geothermal electricity & heat** to create a **Zero Carbon Lithium™ product**.
- Direct Lithium Extraction (DLE) process to produce $\text{LiOH} \cdot \text{H}_2\text{O}$ from the brine,
- Zero carbon electricity generated and used to produce premium, Zero Carbon Lithium™ with no gas input.
- Spent brine re-injected into reservoir with no evaporation losses.
- Processing time **hours instead of months**, not dependent on weather like South American brines.
- Creates high purity, high concentration solution that is easily converted on site into **battery quality $\text{LiOH} \cdot \text{H}_2\text{O}$** .
- Excess **power will be sold** at a Feed-in-Tariff, displacing coal and decarbonizing the German electric grid.
- No need for high energy mining, crushing, grinding and conversion processes used in hard-rock lithium deposits.

Vulcan intends to test and de-risk this flowsheet in 2020, during its feasibility studies.

The Zero Carbon Lithium™ production stems from a clever, unique process:

1. Standard geothermal production wells will be drilled into high flow rate, lithium-rich brine reservoir units, including the Buntsandstein unit. Geothermal energy wells have been successfully doing this for decades in the Upper Rhine Valley, so there is strong precedent. The heated brine is pumped up and produces geothermal energy via a binary cycle plant, which emits no CO_2 .
2. Usually the spent brine would then be re-injected into the reservoir. In the Vulcan process, the spent brine gets diverted through a Direct Lithium Extraction (DLE) plant, where the vast majority of the lithium is extracted in less than an hour, while leaving other impurities. The brine is then re-injected into the reservoir minus the lithium. A new lithium stream of much higher concentration is formed for further processing and nothing is added to the brine. Livent has used a similar process to produce $\text{LiOH} \cdot \text{H}_2\text{O}$ from Argentine brine for over 30 years.
3. A series of chemical operations convert the lithium stream into battery quality lithium hydroxide using conventional processes all previously demonstrated at commercial scale. Water is recycled, no toxic wastes are produced, and no gases are emitted. Heat and power from the geothermal plant are used, meaning no fossil fuels are burned, eliminating carbon emissions from lithium hydroxide processing. On top of being a zero-carbon product, it is expected that the Vulcan flowsheet will be a very low cost $\text{LiOH} \cdot \text{H}_2\text{O}$ operation.

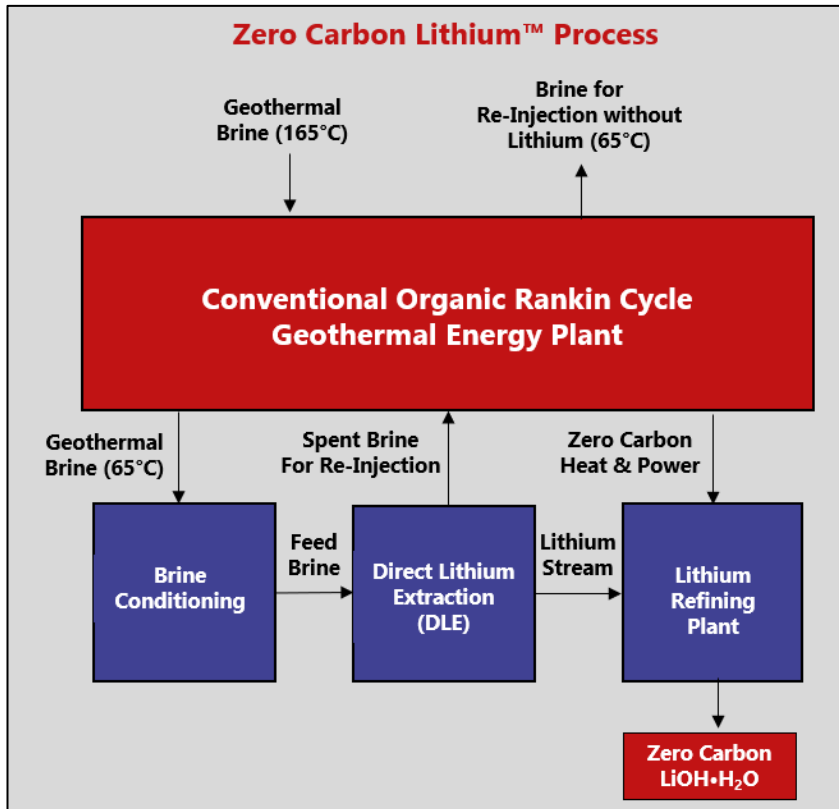


Figure 5: Vulcan's Zero Carbon Lithium™ process.

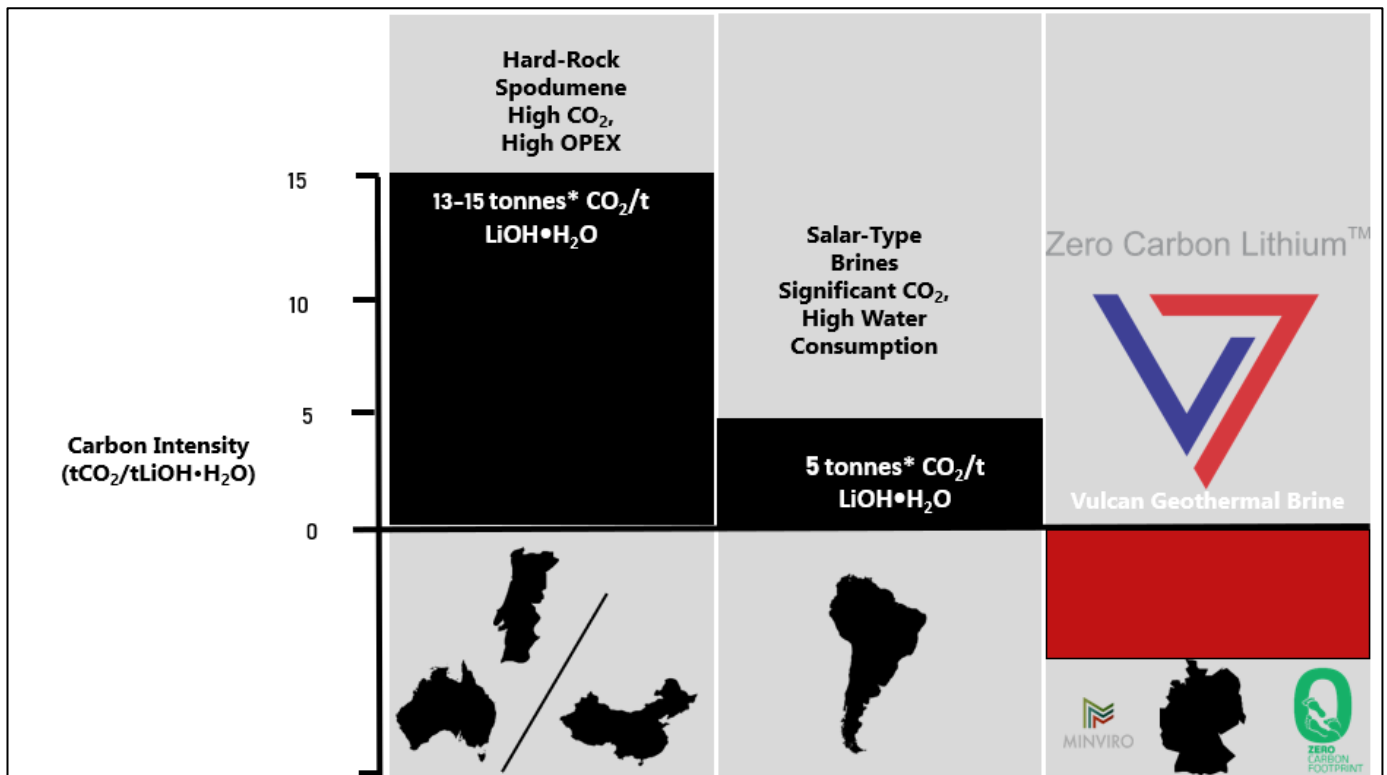


Figure 6: Climate change impact for the production of 1 tonne of battery quality lithium hydroxide monohydrate through five distinct production routes to Europe (See Positive Scoping Study announcement, 21/02/2020).

Vulcan Project, Germany: Strategic Location, Large License-Holding

Summary

- Most well-explored graben system in the world: large quantities of existing 2D and 3D seismic data to shortcut development timeline.
- Dominant license landholding in lithium-rich brine field - ~800 km² of license area.
- Thousands of historical wells and multiple operating geothermal wells in the region provide a wealth of data and readily accessible brine.
- Geothermal brine production socially & environmentally accepted in region with vineyards and communities next to existing operations.
- Lithium hydroxide is a “semi-bulk” commodity. Vulcan’s short distance to markets is a major cost advantage as well as carbon advantage.
- Strategic, secure domestic supply for EU OEMs at a time of global trade insecurity.
- Located in Germany just 60km from Stuttgart; the centre of the burgeoning European lithium-ion supply chain.

The **Vulcan Zero Carbon Lithium™ Project** is situated within one of the most well-studied and well-explored graben systems in the world. This means that the lithium-rich brine in the field is very well understood, and large amounts of seismic and geochemical data are readily available, reducing the need for exploration time and spend. Drilling data and existing wells are also available and can be used to shortcut project development. Based on historical data, the Upper Rhine Valley brines have been shown to have grades in the same order of magnitude as typical South American salars, in the hundreds of ppm Li, but with the advantage of readily available heat and power. Commonly, grades are >150 mg/l Li in the Upper Rhine Valley at the depths targeted, with grades sometimes up to 210mg/l Li. This means that the Upper Rhine Valley brine field is one of the only geothermal brines in the world, the Salton Sea in California being the other main example, with both high flow rates and lithium grades within the brine reservoir. The Vulcan project represents a dominant licence landholding within this brine field.

Importantly, as well as being European, the project is just 60km away from Stuttgart, the home of the German auto-industry. It is perfectly placed to reduce the transport footprint of lithium chemicals down to almost negligible amounts, both from a carbon cost and direct financial cost perspective. In addition, existing and recently permitted geothermal operations within the area are testament to the social and environmental acceptance of drilling geothermal wells within the region, in contrast with hard rock mining projects elsewhere in Europe. Indeed, the Insheim geothermal operation, which is the subject of Vulcan’s MoU with Pfalzwerke geofuture, is surrounded by vineyards, showing the harmony of such operations with local communities.

VULCAN ENERGY

Zero Carbon Lithium™

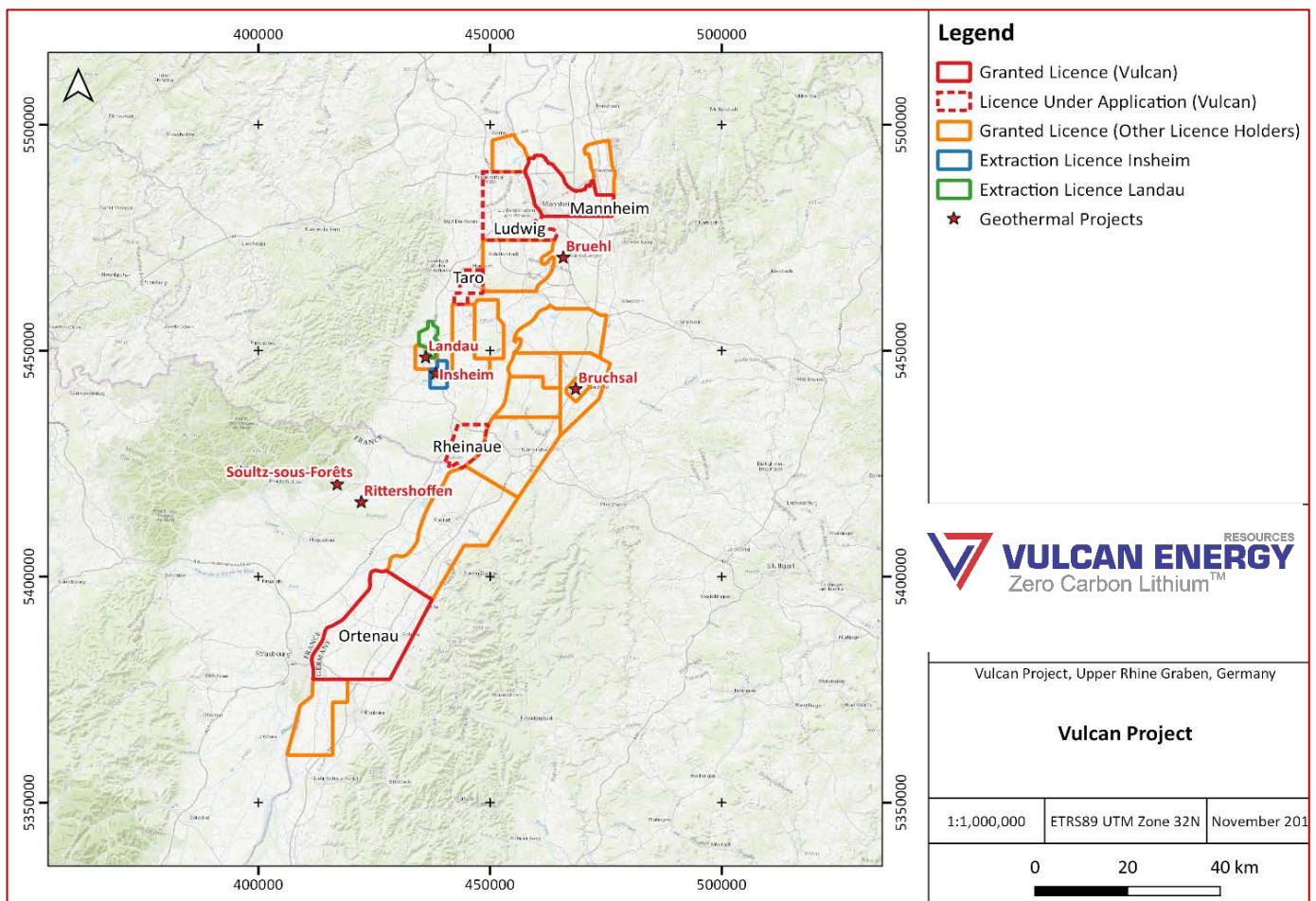
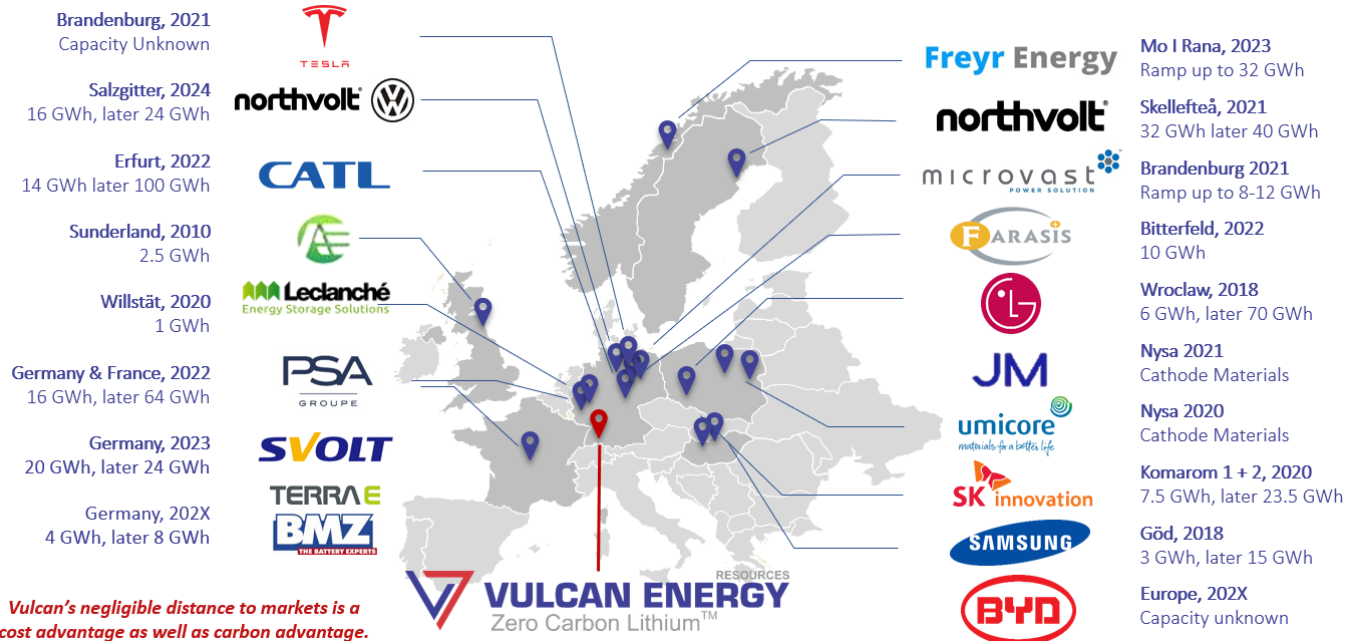


Figure 7: Vulcan Zero Carbon Lithium™ Project Location.