VULCAN ENERGY
ZERO CARBON LITHIUM™

Vulcan Energy Resources Corporate Presentation

April 2022

Disclaimer

No investment or financial product advice

This Presentation, and the information provided in it, does not constitute, and is not intended to constitute, financial product or investment advice, or a recommendation to acquire Vulcan Shares, nor does it constitute, and is not intended to constitute, accounting, legal or tax advice. This Presentation does not, and will not, form any part of any contract for the acquisition of Vulcan Shares. This Presentation has been prepared without taking into account the objectives, financial or tax situation or particular needs of any individual. Before making an investment decision (including any investment in Vulcan Shares or Vulcan generally), prospective investors should consider the appropriateness of the information having regard to their own objectives, financial and tax situation and needs, and seek professional advice from their legal, financial, taxation or other independent adviser (having regard to the requirements of all relevant jurisdictions). Vulcan is not licensed to provide financial product advice in respect of an investment in shares. Any investment in any publicly-traded company, including Vulcan, is subject to significant risks of loss of income and capital.

This Presentation **Forward-looking statements**

may contain certain forward-looking statements. Often, but not always, forward-looking statements can be identified by the use of forward-looking words such as "may", "will", "expect", "intend", "plan", "estimate", "target", "propose", "anticipate", "continue", "outlook" and "guidance", or other similar words. Such forward-looking statements may include, but are not limited to, statements regarding: the proposed use of funds; estimated mineral resources and ore reserves; expected future demand for lithium products; planned production and operating costs; planned capital requirements; planned strategies and corporate objectives; and expected construction and production commencement dates.

By their nature, forward-looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause actual results, performance and achievements to be materially greater or less than estimated, including those generally associated with the lithium industry and/or resources exploration companies such as those in the "Risk factors" section of the September ERP, the risks contained in the ASX Announcement "Positive Pre-Feasibility Study" released to ASX on 15 January 2021 and the "Risk factors" section of the Equity Raising Presentation released to ASX on 2 February 2021 (together the "**Previous Disclosures**").

These factors may include, but are not limited to, changes in commodity and renewable energy prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development (including the risks of obtaining necessary licenses and permits and diminishing quantities or grades of reserves), political and social risks, changes to the regulatory framework within which Vulcan operates or may in the future operate, environmental conditions including climate change and extreme weather conditions, geological and geotechnical events, environmental issues, the recruitment and retention of key personnel, industrial relations issues and litigation.

Any such forward-looking statements, opinions and estimates in this Presentation (including any statements about market and industry trends) are based on assumptions and contingencies, all of which are subject to change without notice, and may ultimately prove to be materially incorrect. Accordingly, prospective investors should consider any forward-looking statements in this Presentation in light of those disclosures, and not place undue reliance on any forward-looking statements (particularly in light of the current economic climate and significant volatility, uncertainty and disruption caused by the COVID-19 pandemic). Forward-looking statements are provided as a general guide only and should not be relied upon as, and are not, an indication or guarantee of future performance. All forward-looking statements involve significant elements of subjective judgement, assumptions as to future events that may not be correct, known and unknown risks, uncertainties and other factors – many of which are outside the control of Vulcan.

Except as required by applicable law or regulation (including the ASX Listing Rules), Vulcan does not make any representations, and provides no warranties, concerning the accuracy of any forward-looking statements, and disclaims any obligation to update or revise any forward-looking statements, whether as a result of new information, future events or results, or otherwise. Neither Vulcan nor any of its directors, officers, agents, employees or advisors give any representation or warranty, express or implied, as to the fairness, accuracy, completeness or correctness of the information, opinions and conclusions contained in this Presentation.

Investment Risks

As noted above and contained in the Previous Disclosures, an investment in Vulcan is subject to both known and unknown risks, some of which are beyond the control of Vulcan. Vulcan does not guarantee any particular rate of return or its performance, nor does it guarantee any particular tax treatment. Prospective investors should have regard to the risks in the Previous Disclosures particularly the September ERP, when making their investment decision, and should make their own enquires and investigations regarding all information in this Presentation, including, but not limited to, the assumptions, uncertainties and contingencies that may affect Vulcan's future operations, and the impact that different future outcomes may have on Vulcan. There is no guarantee that any investment in Vulcan will make a return on the capital invested, that dividends will be paid on any fully paid ordinary shares in Vulcan, or that there will be an increase in the value of Vulcan in the future. Accordingly, an investment in Vulcan and Vulcan Shares should be considered highly speculative, and potential investors should consult their professional advisers before deciding whether to invest in Vulcan.

Ore Reserves and Mineral Resources Reporting

It is a requirement of the ASX Listing Rules that the reporting of ore reserves and mineral resources in Australia comply with the Joint Ore Reserves Committee's Australasian Code for Reporting of Mineral Resources and Ore Reserves ("**JORC Code**"). Investors outside Australia should note that while ore reserve and mineral resource estimates of the Company in this document comply with the JORC Code (such JORC Code-compliant ore reserves and mineral resources being "Ore Reserves" and "Mineral Resources" respectively), they may not comply with the relevant guidelines in other countries and, in particular, do not comply with (i) National Instrument 43-101 (Standards of Disclosure for Mineral Projects) of the Canadian Securities Administrators (the "Canadian NI 43-101 Standards"); or (ii) Industry Guide 7, which governs disclosures of mineral reserves in registration statements filed with the US Securities and Exchange Commission ("**SEC**").

Information contained in this Presentation describing mineral deposits may not be comparable to similar information made public by companies subject to the reporting and disclosure requirements of Canadian or US securities laws. In particular, Industry Guide 7 does not recognise classifications other than proven and probable reserves and, as a result, the SEC generally does not permit mining companies to disclose their mineral resources in SEC filings. You should not assume that quantities reported as "resources" will be converted to reserves under the JORC Code or any other reporting regime, or that the Company will be able to legally and economically extract any such resources.

Disclaimer Vulcan, to the maximum extent permitted by law, expressly excludes and disclaims all liability (including, without limitation, any liability arising out of fault or negligence on the part of any person) for any direct, indirect, consequential or contingent loss or damage, or any costs or expenses, arising from the use of this Presentation or its contents, or otherwise arising in connection with it.

Acknowledgement and agreement

By attending an investor presentation or briefing, or accepting, accessing or reviewing this Presentation, you acknowledge and agree to the terms set out in this "Disclaimer" section of the Presentation.

Introduction

Vulcan Energy Resources is aiming to become the world's first integrated lithium chemicals and renewable energy producer with net zero greenhouse gas emissions.

Vulcan's unique Zero Carbon Lithium™ Project aims to produce both renewable geothermal energy and lithium hydroxide for electric vehicle batteries from the same deep brine source in the Upper Rhine Valley, Germany.

Renewable energy

Lithium chemicals

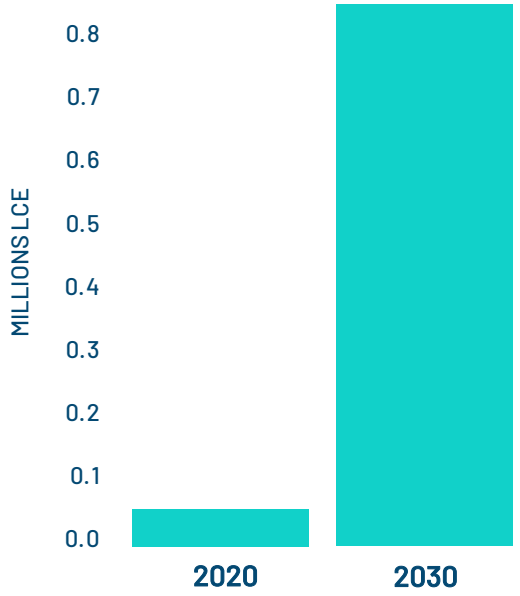
Right place, right time
for fully integrated renewable energy and sustainable lithium chemicals business in Europe

How to support 30million EVs by 2030 in Europe?

1,000GWh Lithium-ion Battery capacity by 2030[1]

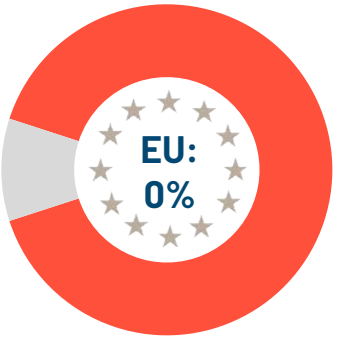
Source: Public announcements

EU: fastest growing Lithium market in the world[2]



Source: Based on LiB capacity, Benchmark Minerals & Roland Berger

Zero local supply of lithium hydroxide



CHINA: 80 - 90%

Source: Bloomberg

Note 1: Refer to Appendix 5 for further details on EU lithium-ion battery capacity
Note 2: Based on electric vehicle sales and lithium-ion battery production growth; https://www.reuters.com/article/us-climate-change-eu-transport-idUSKBN28E2KM
Bloomberg - https://www.bloomberg.com/news/articles/2020-12-03/eu-aims-to-have-30-million-electric-cars-on-the-road-by-2030

Auto battery and cathode-makers committing to carbon neutrality

RENAULT GROUP

'Reducing carbon footprint is not just reducing vehicle emissions while they are being operated, but also [...] from the company's resource extraction and production processes through to the end of the vehicle's life cycle'.

STELLANTIS

'We work in partnership to implement responsible procurement practices, to ensure sustainable progress throughout the entire supply chain, with specific emphasis on the wise use of natural resources.

VOLKSWAGEN GROUP

'By 2025, the company aims to reduce the carbon footprint of cars and light-commercial vehicles across the entire value chain by 30 percent compared to 2015 – and by 2050 to make the entire Group's balance sheet CO_2 neutral."

umicore

'Umicore commits to carbon neutrality for its Scope 1 and Scope 2 GHG emissions by 2035 ... Umicore pledges that its future growth, whether organic or through M&A, will be entirely carbon neutral'.

LG Energy Solution

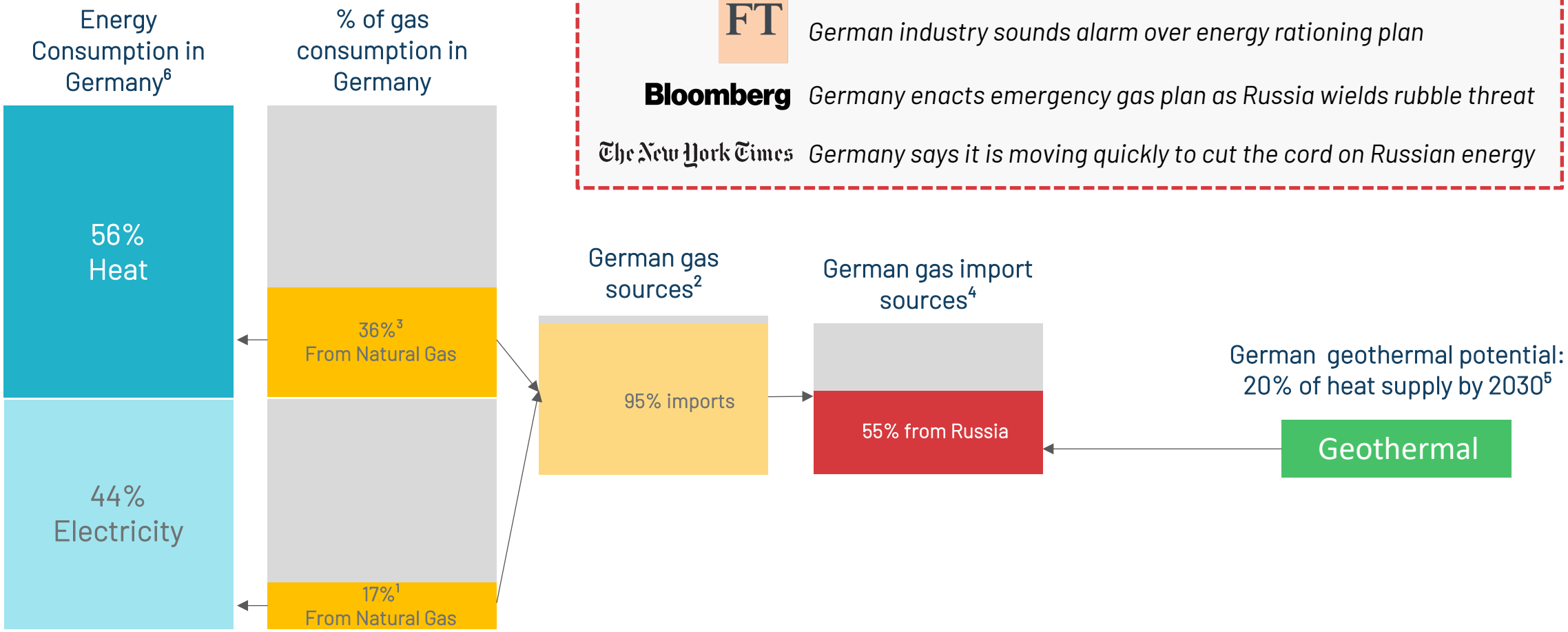
'LG Energy Solution commits to be 100 percent carbon neutral by 2030. LG will set an example in cutting carbon emissions through battery production and promote the expansion of EVs'.

Refer to Appendix 9: Lithium market dynamics favour sustainable lithium production

Current Lithium production has a significant environmental footprint:

Source: Minviro

How to support the German energy crisis?



Note 1: https://www.iea.org/countries/germany
Note 2: https://www.cleanenergywire.org/factsheets/germanys-dependence-imported-fossil-fuels#:~:text=Germany%20%2D%20GAS,imports%2C%20according%20to%20the%20BGR.
Note 3: https://iea.blob.core.windows.net/assets/60434f12-7891-4469-b3e4-1e82ff898212/Germany_2020_Energy_Policy_Review.pdf
Note 4: https://www.economist.com/europe/2022/01/29/how-will-europe-cope-if-russia-cuts-off-its-gas?gclid=Cj0KCQiAmpyRBhC-ARIsABs2EArS9KC3GxzZtyldz0trnOVJ0S6W2LviP1EVXk6lrunwxM040avYzHoaAl6MEALw_wcB&gclsrc=aw.ds
Note 5: Klimaneutrale Wärme aus Geothermie 2030 / 2050 - Mai 2021 - Bundesverband Geothermie e. V. | www.geothermie.de.
Note 6: https://heatroadmap.eu/wp-content/uploads/2018/09/HRE4-Country_presentation-Germany-1.pdf

Germany prioritising rapid growth of renewable energy sources

Geothermal energy

Make greater use of the potential of geothermal energy for energy supply

Significantly expedite planning and permitting processes

Fraunhofer

Geothermal roadmap[3]

- Installation of 70GWh of capacity, deep geothermal energy could cover more than a quarter of Germany's annual heat requirements
- Mobilisation of government assistance and the national economy, to enable the drilling of deep 2,000 geothermal wells by 2030, and at least 7,000 to 10,000 more by 2050
- Billion-Euro level federal funding to support the development

Climate targets

German coalition agreement[1] includes:

Order to secure the goal of climate neutrality

Generate almost all the country's electricity from renewable sources by 2035

Generate 50% of heat in a climate-neutral way by 2030

All new cars sold to be electric by 2035

Lithium production for EVs

European Commission

EU support:

- New EU Battery Regulation
- Carbon Border Adjustment Mechanism
- Battery Passport
- ISO/TC 333 Lithium
- European Battery Alliance
- Critical Raw Materials List
- EIB new energy lending policy
- European Raw Materials Alliance

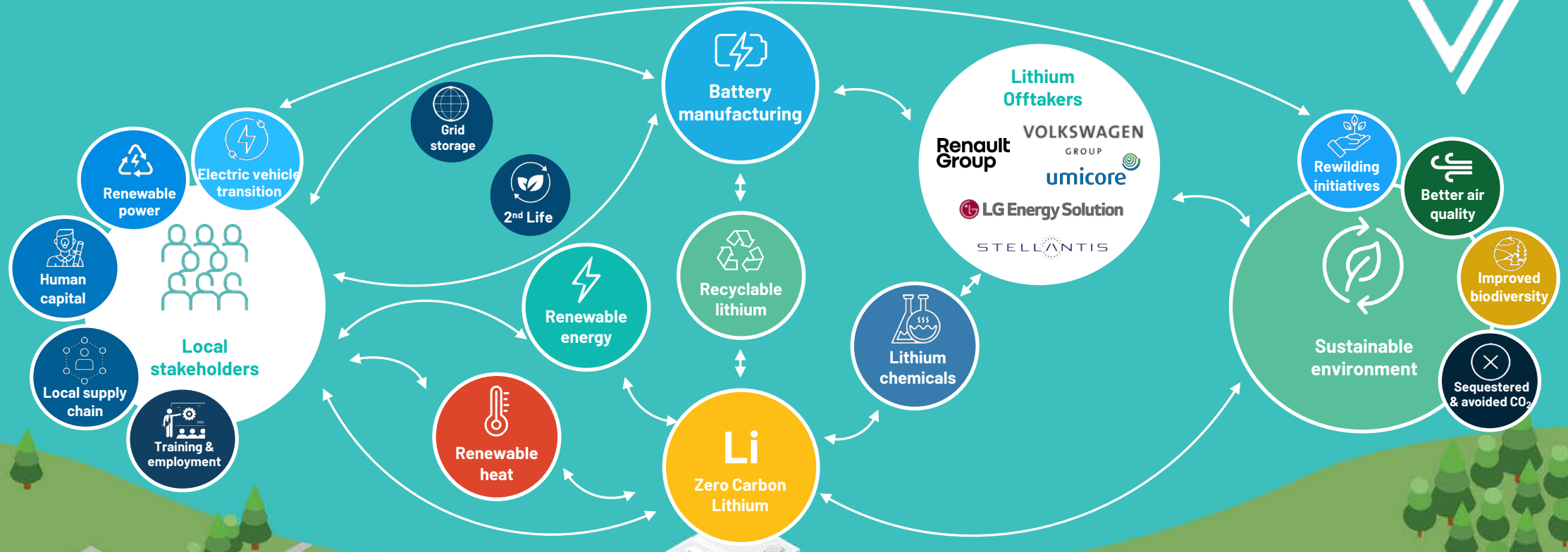
Refer to Appendix 8: The new EU Battery Regulation

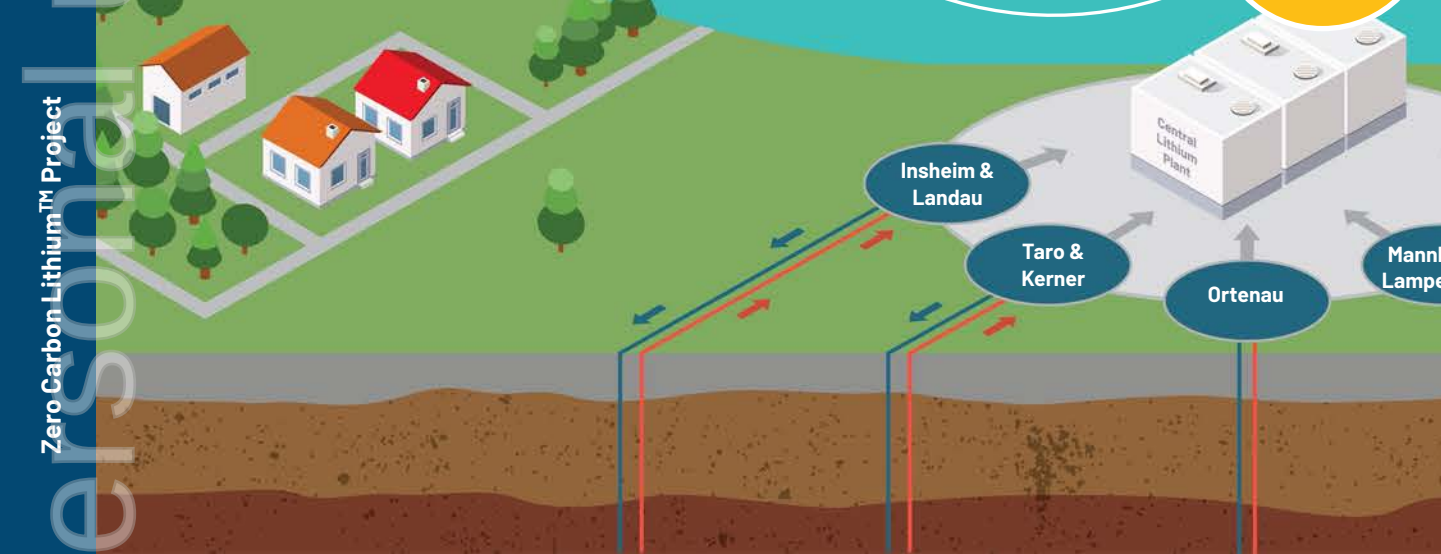
[1] Koalitionsvertrag 2021 – 2025 zwischen der Sozialdemokratischen Partei Deutschlands (SPD), BÜNDNIS 90 / DIE GRÜNEN und den Freien Demokraten (FDP) / Coalition agreement 2021 - 2025 between the SPD BÜNDNIS 90 / DIE GRÜNEN and the Free Democrats (FDP)

[2] Bloomberg, Germany brings forward goal of 100% renewable power to 2035, https://www.bloomberg.com/news/articles/2022-02-28/germany-brings-forward-goal-of-100-renewable-energy-to-2035

[3] Roadmap deep geothermal energy for Germany – recommendations for action for politics, business and science for a successful heat transition. https://www.ieg.fraunhofer.de/content/dam/ieg/documents/Roadmap%20Tiefe%20Geothermie%20in%20Deutschland%20FhG%20HGF%2002022022.pdf

Vulcan's fully integrated project

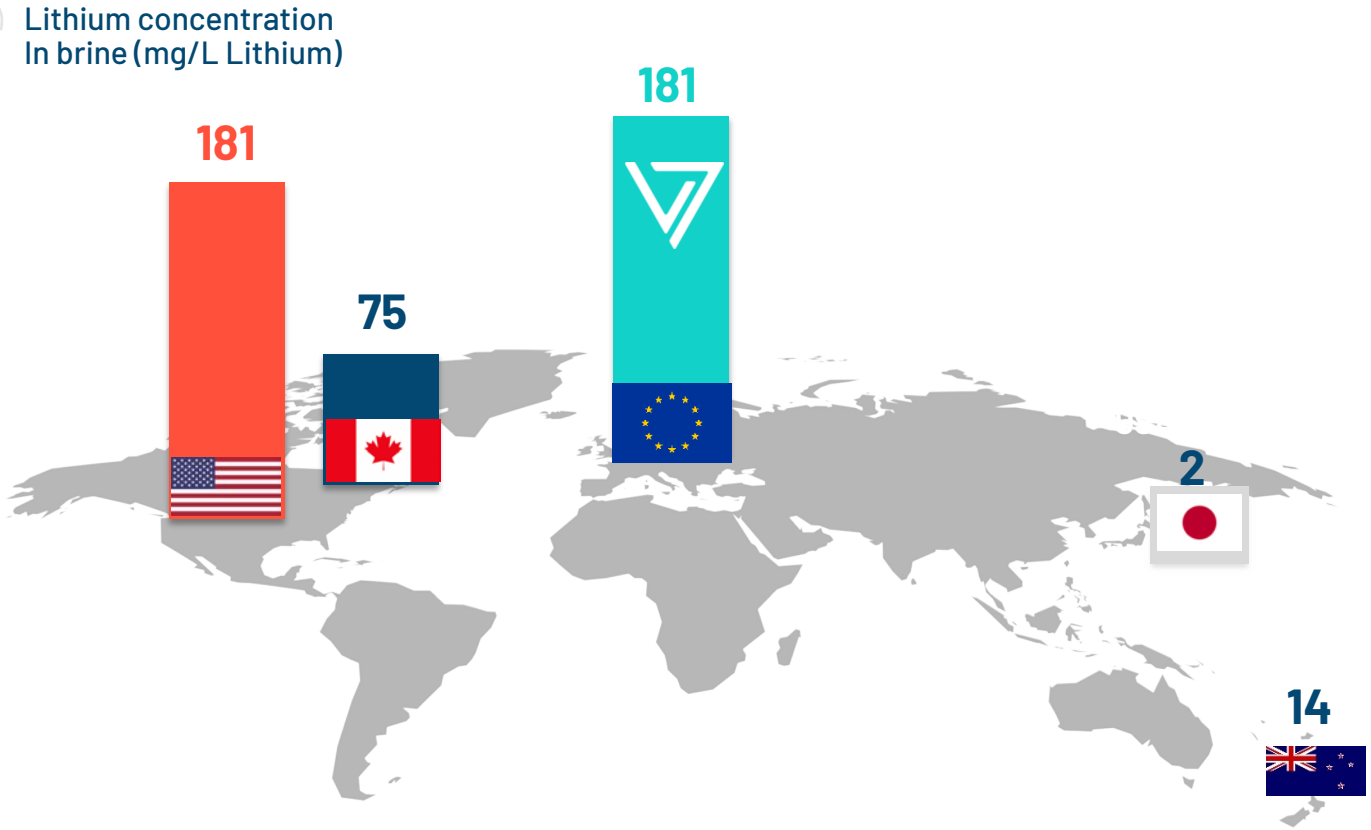




VULCAN ENERGY
ZERO CARBON LITHIUM™

Delivering the Zero Carbon Lithium™ Project

We scoured the globe to find the right conditions for our Zero Carbon Lithium™ development



We had the lithium and geothermal expertise to know that a Zero Carbon Lithium™ Project was possible using modern extraction methods, provided a geothermal brine reservoir could be found that had the following conditions:

1. Renewable heat
2. High lithium grades
3. High brine flow rate potential

Our initial research showed that this could be done in just two places:

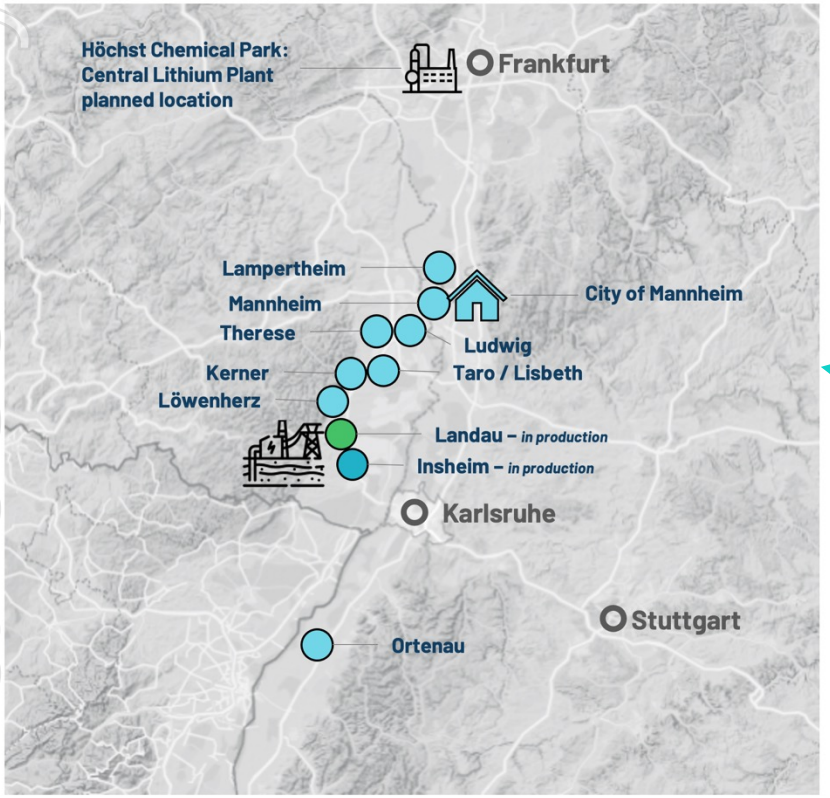
1. The Upper Rhine Valley in Germany
2. The Salton Sea in California

We chose Germany and Europe.

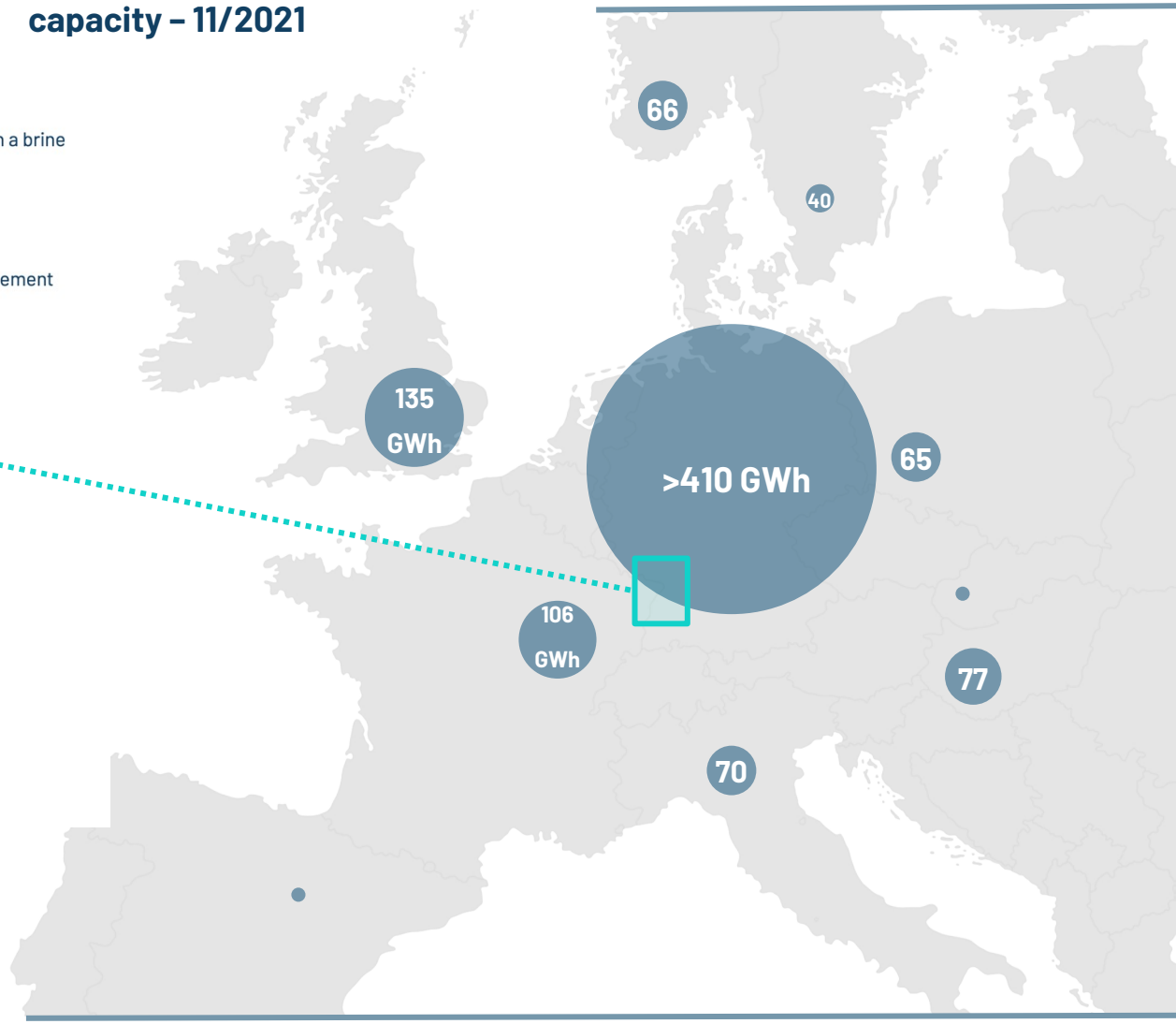
Note 1: Appendix 11: Brine composition comparison

Largest lithium resource at the centre of the fastest growing market in the world

Largest lithium resource in Europe: 15.85Mt LCE[1]



Planned European battery manufacturing projects in GWh capacity – 11/2021



Source: Batterynews.de

Note 1: Appendix 2: Largest JORC lithium resource in Europe; Appendix 3: Lithium focused peers with comparable project size and stage for project size comparison,

Vulcan's renewable energy and lithium chemicals project

Electric mobility

Lithium hydroxide distributed to the EU market

6

Central Lithium Plant

LITHIUM BUSINESS

Renewable electricity and/or heat sold to the grid

2

Lithium chloride transported to the central lithium plant

5

ENERGY BUSINESS

Geothermal Plant

Renewable heat, electricity and brine transferred to the sorption plant

3

Sorption Plant

Reservoir

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

1

VULCAN ENERGY
ZERO CARBON LITHIUM™

4

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

Commercially available technologies combined and adapted to be fossil-free

Our process incorporates technologies with commercial analogues across the world.
What is unique about us is the proposed combination of these different steps, and our **strict exclusion of fossil fuels to power our process.**

1. Binary cycle geothermal plant

Hundreds of geothermal energy plants running **globally**

37 deep geothermal energy plants in operation in **Germany***

Upper Rhine Valley well-known area for geothermal operations

Team of **leading in-house experts** in developing and permitting geothermal plants

Insheim **geothermal plant acquired**

Vulcan Group | GEC CO | GEOTHERMAL ENGINEERING | Natür³Lich Insheim

2. Sorption plant

DLE commercially **used for decades & Vulcan has unique expertise.**

Adsorbent-type DLE technologies **commercially available** from several suppliers

DUPONT

>90% lithium recoveries from initial test work

Ongoing **piloting on live brine**, 24/7

Demo plant planned for H2 2022 to de-risk scale up

Vulcan Group
In-house team of experts

3. Central lithium plant

Conversion of lithium chloride to lithium hydroxide using an **electrolysis process**

Electrolysis has been used by the **chlor-alkali industry** in a similar process for more than 100 years

Joint project for the development, construction and operation of the CLP

NOBIAN

Site selected near Frankfurt[2]

Vulcan Group
In-house team of experts

4. End product

First **samples** of battery quality lithium hydroxide produced

Binding offtake contracts signed[1]:

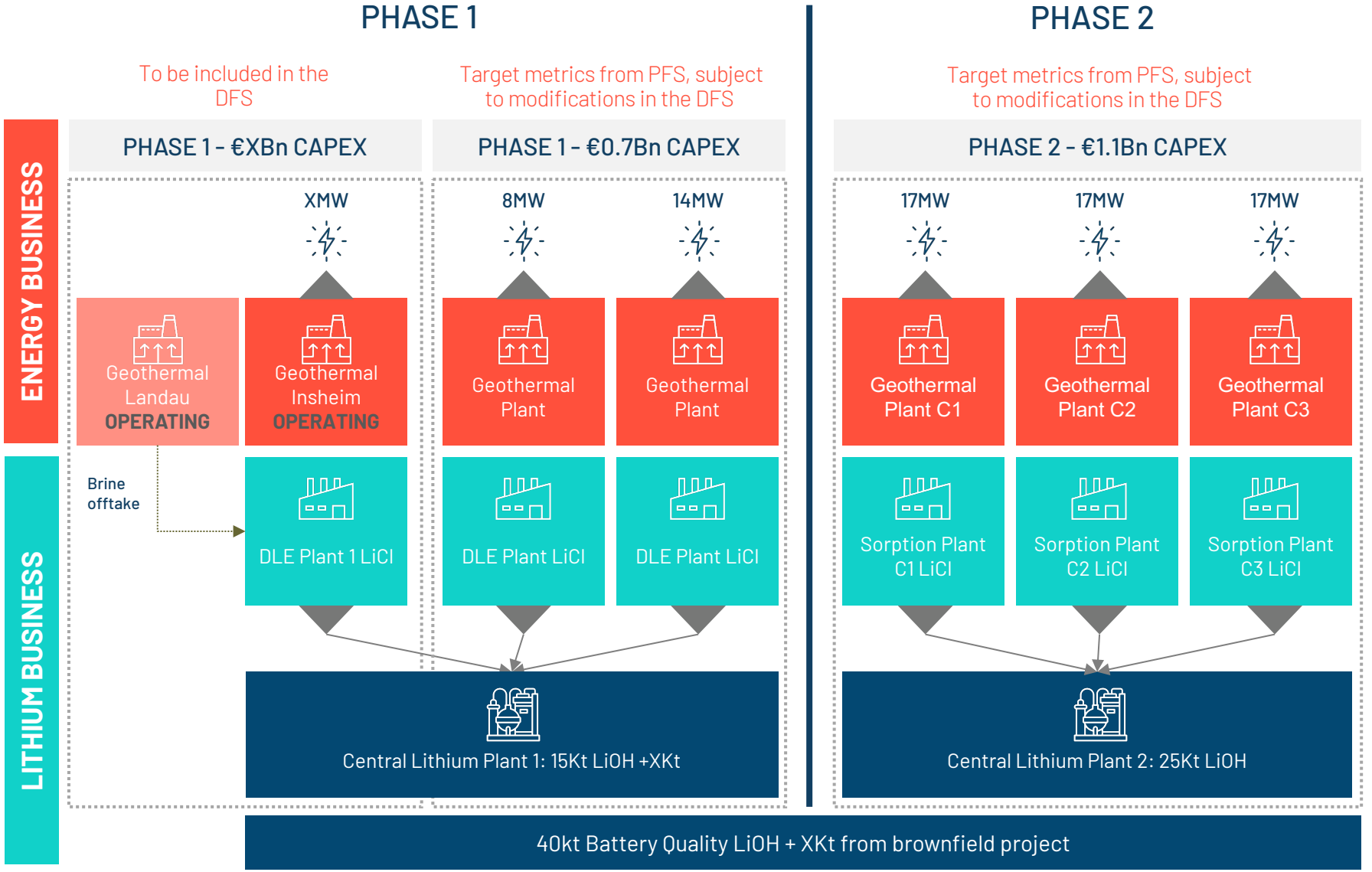
VOLKSWAGEN GROUP | STELLANTIS | RENAULT GROUP | umicore | LG Energy Solution

Vulcan Group
In-house team of experts

Source: Clean Energy Wire

Note 1: Refer to slide 20 for further details regarding the Company's offtake arrangements
Note 2: Refer to Appendix 12 for more information on the location of the CLP

Our proposed expansion plan across the Upper Rhine Valley field



ADDITIONAL LICENCES
Available to add capacity

>1,000km² of licenses in the Upper Rhine Valley presenting opportunities to develop additional assets

Mannheim Granted	Lampertheim Granted
Kerner Granted	Löwenherz Granted
Therese Granted	Ludwig Granted
New application	New application
New application	Etc.

Note 1: Refer to Appendix 13-15 for further details regarding Project economics and production capacity

Taking advantage of and expanding from existing infrastructure

To be included in the DFS

PHASE 1 - €XBn CAPEX

Geothermal Plant Insheim (A1)

- Vulcan acquired Insheim in Dec 2021
- Current technical ability to produce up to 4.8MW power or 28.5MW thermal energy
- Aiming to upgrade capacity and increase brine flow rate
- Indicated Mineral Resource of 0.7Mt Lithium Carbonate Equivalent @181 mg/l Li
- FY2020 revenues €5.8M
- Feed-in Tariff in place

5km

Currently assessing the feasibility of integrating lithium extraction

Brine

Brine offtake

Sorption Plant A1 LiCl

Central Lithium Plant 1

Geothermal Plant - Landau

- Vulcan executed a 20-year brine offtake agreement with geox GmbH, subject to financing a third well
- Expected brine volume from the production well of at least 100 l/s
- Existing production well at Landau has the tested ability to produce at a rate of over 100 l/s, but an additional re-injection well is planned to help accommodate this flow

Note 1: Refer to Appendix 13-15 for further details regarding Project economics and production capacity

The information in this report that relates to Insheim's Mineral Resources is extracted from the ASX announcement made by Vulcan on 20 January 2020 ("Maiden Indicated Resource Insheim Vulcan Zero Carbon Lithium"), which is available on www.v-er.eu. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original 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.

Direct Lithium Extraction: a commercial technology adapted to our local resource

- Direct lithium extraction (DLE) using sorption has a fifty-year development and implementation history.
- Sorption-type DLE practiced commercially in South America for 26 years by Livent. More recently sorption-type has been commercially deployed in China.
- Large investment into DLE projects have recently been made in Argentina by Rio Tinto (Rincon project[1]) and Eramet (Eramine project[2])

DLE includes several key advantages compared to traditional brine evaporation:

- Higher lithium recovery
- Lower water and chemicals consumption
- Shorter lead time to production
- Minimal footprint

DLE associated with geothermal brine adds:

- No need to heat up the brine with natural gas
- Potential for no carbon emissions
- Additional revenue stream from energy

For more information, see our DLE presentation here:
https://bit.ly/3x0eWp2

Livent's Fenix plant, Argentina

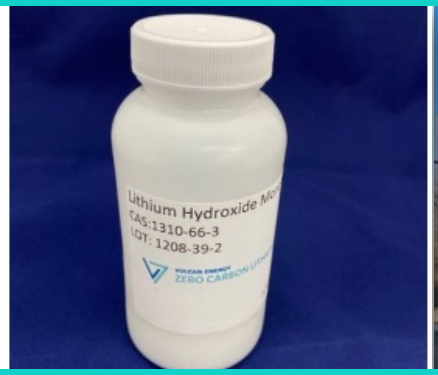
Refer to Appendix 6 & 7: DLE Projects and Assets – References
Note 1: https://www.riotinto.com/news/releases/2021/Rio-Tinto-to-acquire-Rincon-Mining-lithium-project
Note 2: https://www.eramet.com/en/eramine-world-class-lithium-production-project

Lithium division update

Laboratory work

- Lab and pilot studies for DFS active since April 2021, generating data for DFS
- Expanded laboratory to be opened in early 2022

Pilot plant operations



Images of lithium hydroxide monohydrate from Zero Carbon Lithium™ project

- Pilot Plant 1, located at an operational geothermal plant, with "live" geothermal brine
- Plant is focused on:
  - Brine pre-treatment
  - Lithium extraction
  - Post treatment to return brine to same state
- Multiple sorbents from commercial providers have been successfully tested, including from DuPont and others, providing optionality
- Scale-up of piloting continuing during 2021-22
- Rapidly growing team on pilot and lab sites in Germany

Demonstration (Demo) plant

Vulcan's Demo Plant, major skids ordered and currently under construction.

- Demo Plant fully integrated with all process steps including electrolysis
- DLE at site with "live" geothermal brine
- Conversion to LHM in a chemical park (same as commercial plant design)
- All recycles to be included
- Enables the Vulcan team to run the full process onsite and provide training prior to commercial operation
- Major skids ordered and under construction
- The DLE section of the Demo Plant is targeted to commence operation on in Q3 2022, and will represent an approximately 1:200 scale of the first commercial plant.

Dual revenues: energy and lithium

ENERGY BUSINESS

Decarbonising the grid → **Grid**

Coal phase-out in Germany → **Industries**

Bans for fossil heating systems → **Cities**

Renewable Electricity: Geothermal energy in the form of electricity is sold to the grid

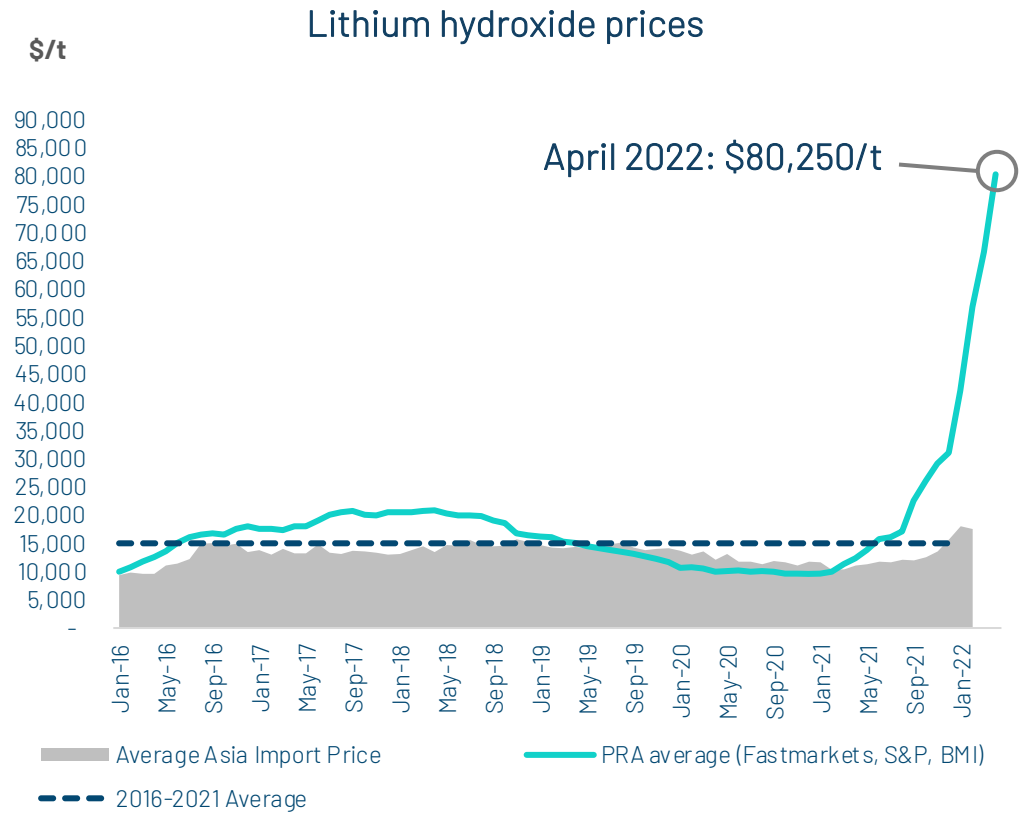
Feed-in Tariff: €0.252 /KWh Guaranteed for 20 years for new projects

Renewable Heat: Energy in the form of heat can be sold to several public and private customers via pipes, proximity is a requirement

One heat offtake has been concluded and negotiations for additional offtakes with local stakeholders are under way

Vulcan Energy's 100% owned NatürLich Insheim, an operational geothermal renewable energy power plant in the Upper Rhine Valley, Germany.

LITHIUM BUSINESS



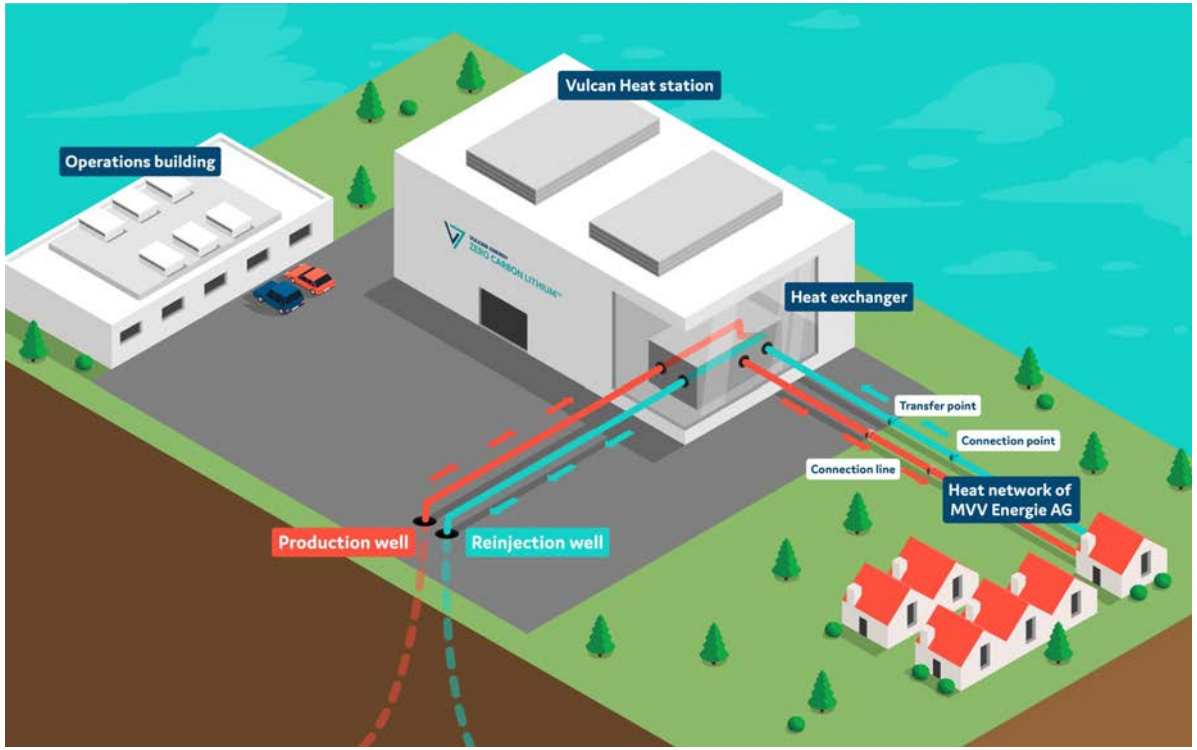
Source: Trade statistics compiled from Global Trade Atlas®, Benchmark Minerals (2016-2017), Fastmarkets (2017-2022)

Note 1: Refer to Appendix 15: The fossil-nuclear era in Europe is coming to an end

Vulcan to supply German energy company with renewable, zero carbon heat

First of a number of planned district heating arrangements from geothermal energy to help combat Germany's energy crisis

- Vulcan and MVV Energie AG (MVV) have executed a binding purchase agreement for 240 gigawatt hours per year of renewable heat, a first for Germany.
- 20-year, long-term agreement commences in 2025.
- Includes the supply of a minimum of 240,000MWh per year to a maximum of 350,000MWh per year.
- The heat will be supplied from Vulcan's planned geothermal wells in the area surrounding the City of Mannheim.
- Vulcan is developing its Mannheim licence as part of a planned larger Phase 2 of the Zero Carbon Lithium™ Project.



Heat will be transferred via heating grids and a series of underground pipes that deliver hot water or steam to buildings in the local community.

Securing long term lithium supply contracts

Zero Carbon Lithium™ Project

Cathodes

umicore

- **Binding lithium hydroxide offtake agreement**
- Initial **5-year term**, starting in **2025,** which can be extended by further 5 years
- Minimum of **28,000t** and a maximum of **42,000t** of battery grade lithium hydroxide

Lithium-ion batteries

LG Energy Solution

- **Binding lithium hydroxide offtake agreement**
- Initial **5-year term**, starting in **2025**, which can be extended by further 5 years
- Minimum of **41,000t -50,000t** of battery grade lithium hydroxide

Electric vehicles

RENAULT GROUP

- Binding lithium hydroxide offtake agreement
- Initial **6-year term**, starting in **2025,** which can be extended by further 5 years
- Minimum of **29,000t** and a maximum of **49,000t** of battery grade lithium hydroxide

STELLANTIS

- **Binding lithium hydroxide offtake agreement**
- Initial **5-year term**, starting in **2026**
- Minimum of **81,000t** and a maximum of **99 ,000t** of battery grade lithium hydroxide

VOLKSWAGEN GROUP

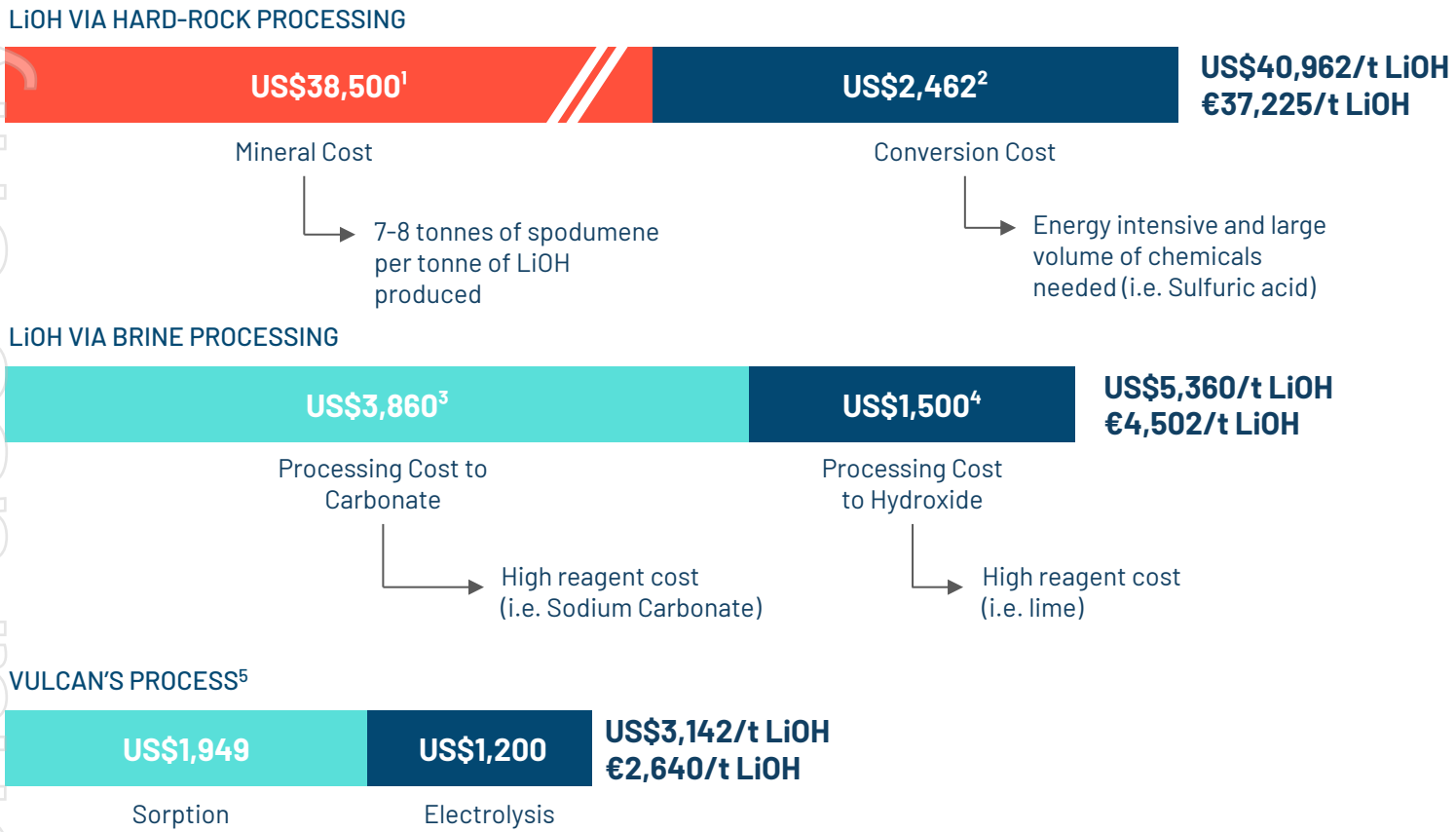
- **Binding lithium hydroxide offtake agreement**
- Initial **5-year term**, starting in **2026**
- Between **34,000t and 42,000t** of battery grade lithium hydroxide

Vulcan Energy signed a binging lithium offtake agreement with Umicore Group in October 2021. Vulcan's VP Business Development, Vincent Ledoux Pedailles, with representatives from Umicore.

Note 1: Refer to Vulcan Investor Centre for ASX announcements relating to each offtake agreement, including the Conditions Precedent terms for each agreement; https://v-er.eu/investor-centre/

Potential for very low OPEX operation

Select South American brine and Australian/Chinese mineral conversion vs Vulcan's process



Feedstock

Vulcan's "feedstock" is expected to be low cost and have a dual purpose: lithium extraction and energy production in the form of renewable electricity.

Processing

Vulcan plans to use sorption to isolate lithium as opposed to using large volumes of chemicals such as sulfuric acid to dissolve a rock feedstock or soda ash for brine. Vulcan intends to use low-cost energy coming from its geothermal operation.

Upgrading

Vulcan plans to use electrolysis to upgrade chloride into a high purity hydroxide using renewable energy. No heavy reagent usage such as sodium hydroxide or lime.

Note 1: Fastmarkets Spodumene min 6% Li2O, spot price, cif China, $/tonne 31 March 2022
Note 2: Kidman Resources PFS announcement, October 2018, contingency on Refinery OPEX of 15%. Cash operating cost including royalties.
Note 3: Cash operating costs lithium carbonate, Orocobre 2021 Annual report
Note 4: Orocobre 2020 Corporate Presentation – Naraha Lithium Hydroxide plant, Japan
Note 5: Refer to Appendix 13-15 for further details regarding Project economics and production capacity

Note 6: Figures in this slide assume an exchange rate of €0.84/US$1.00
Note 7: Vulcan notes that the comparison operating cost figures above are actual results from lithium hydroxide projects that are currently in production, whereas the above data for Vulcan's process is based on estimates in the PFS. As the Project is still at an early exploration and development stage, there is a high level of inherent uncertainty associated with the Project. A comprehensive list of risks is flagged in the PFS under "Project Risks and Opportunities"

Robust target project financials and production metrics from PFS

ENERGY BUSINESS

74MW Power*

* Renewable heat sales to also be examined in DFS

€0.7Bn NPV Pre-tax

16% IRR Pre-tax

€226M CAPEX Phase I

Payback: 6 years

€0.5Bn NPV Post-tax

13% IRR Post-tax

€0.066/KWh OPEX

LITHIUM BUSINESS

40,000tpy LiOH

€2.8Bn NPV Pre-tax

31% IRR Pre-tax

€2,681/t LiOH OPEX

Payback: 4 years

€1.9Bn NPV Post-tax

26% IRR Post-tax

€474M CAPEX Phase I

Numbers are based on the PFS published in 2021 and are subject to change

BNP PARIBAS appointed as Financial Advisor toward financing the Zero Carbon Lithium™ Project

Note 1: Refer to Appendix 13-15 for further details regarding Project economics and production capacity

Improvement in lithium pricing environment since PFS

January 2021 – PFS Lithium project economics

LITHIUM BUSINESS

40,000tpy LiOH

€2.8Bn NPV Pre-tax

€1.9Bn NPV Post-tax

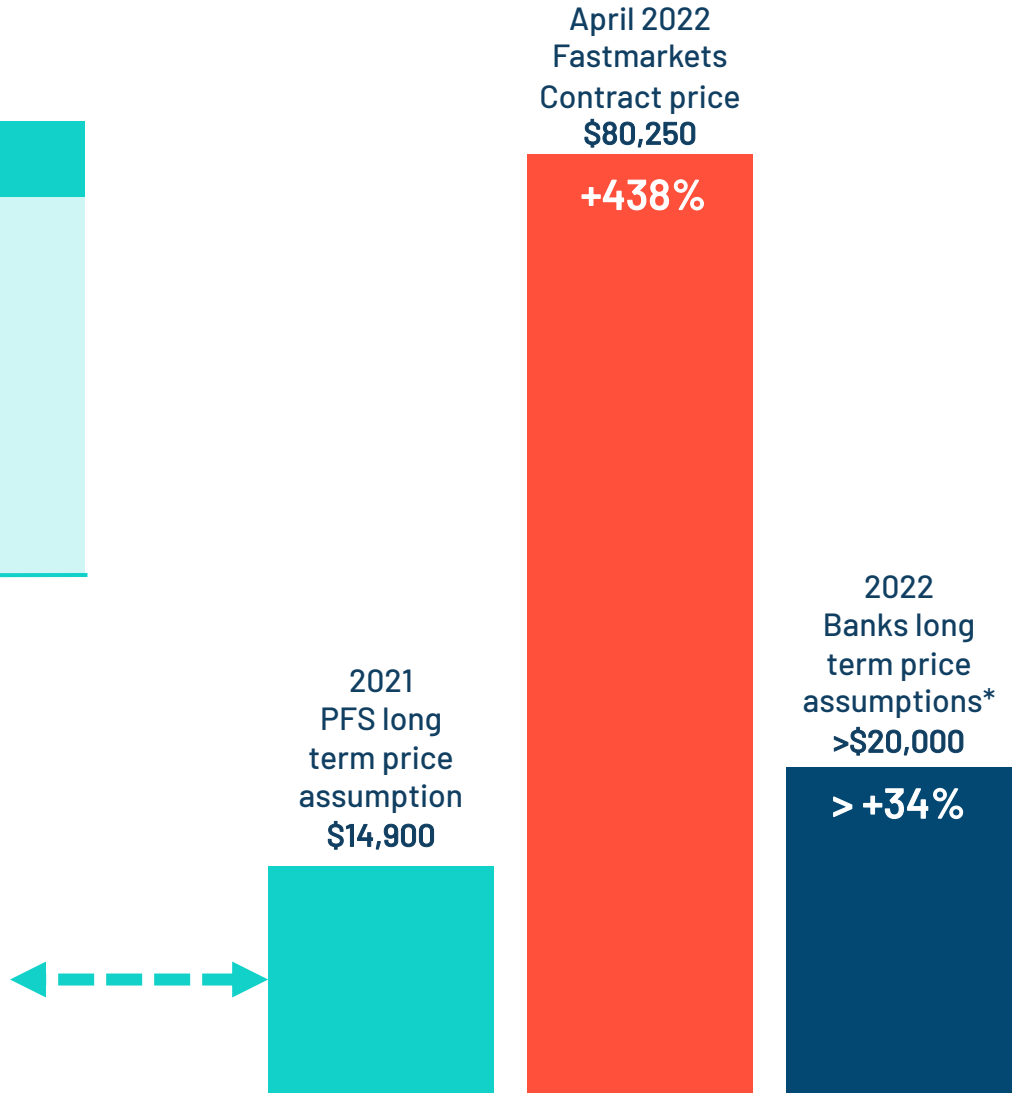
31% IRR Pre-tax

26% IRR Post-tax

€2,681/t LiOH OPEX

€474M CAPEX Phase I

Payback: 4 years



*Jefferies & Canaccord Genuity long term lithium hydroxide price forecast 2022-2030, Citi price forecast 2022-2025

Working hard to de-risk the project further and address all identified risks

Risk		Mitigation
Availability of key equipment	Drill rigs that can reach the deep geothermal reservoirs are in short supply in Germany. With Germany phasing out fossil fuels, rigs will likely be in short supply as there is a sharp increase in geothermal project development for heating.	Vulcan has agreed to acquire two electric drill rigs, re-purposed from the oil and gas industry, which can reach the target depths required to reach the deep geothermal reservoir in the Upper Rhine Valley. Vulcan is developing its own in-house drilling unit, VERCANA, which will provide approximately 30 jobs locally. This will be a strategic asset, as decarbonisation efforts in Germany and Europe continue to accelerate, and demand for renewable heat increases.
Brine flow rates	The amount of renewable energy and lithium that can be extracted will depend on the brine flow rate achieved at each site. The flow rate from each well will be verified once the well has been drilled.	Vulcan uses modern geothermal industry best practice by incorporating 3D seismic data and analysis into its geological modelling to target high-flow fault zones, and factors in state-of-the-art techniques to increase flow, such as double completion of wells and multi-reservoir completion, using the experience of its technical team.
Resources/ Reserves	Lithium resources and reserves indicated must be considered as estimates only until such reserves are actually extracted and processed. Vulcan's resources are based on limited data points because the reservoir is deep.	Vulcan utilises the considerable local geological expertise of its team, as well as state-of-the-art 3D seismic data, to construct the most accurate models it can. Vulcan reports on its estimates of Mineral Resources and Ore Reserves in compliance with the JORC Code, the ASX Listing Rules and applicable regulation. Vulcan's resource estimates and reserves are signed off by independent external consultants APEX Geoscience Ltd. and GLJ Ltd. respectively.
Sorption	Lithium extraction from brine using sorption is used commercially, but each brine chemistry is different, and risks remain when adapting to each brine.	We are testing multiple alumina-based sorbents at our pilot plant to find the best fit. Similar approaches are used at multiple locations around the world with existing lithium production. This and other types of similar DLE techniques are being used in numerous new lithium developments worldwide. We are adapting this technology to fit with our geothermal brine, in collaboration with companies such as Dupont, and with the experience of our team. Critically, we are testing on "live" geothermal brine, which so far has produced encouraging results.
Permitting	The project may be affected by delays in receiving the necessary approvals from all relevant authorities and parties.	We will continue to keep our stakeholders updated on the timetable, and if anything changes, we will inform the market. We have a team of experts in geothermal development who have developed numerous projects in the past. We have received encouragement from state and federal governments that renewable energy project permitting times will be reduced as a priority, and domestic production of strategic raw materials will also be prioritised.
Social acceptance	As with virtually any sort of new development especially for infrastructure projects, we expect some opposition - as has and has been seen with wind and solar in Germany.	This is normal and we will work to address these concerns. Vulcan has an experienced public relations team. We use geothermal industry best practice, and we are commencing community engagement in the various areas where we intend to develop projects. We think that by clearly and transparently explaining our process to develop renewable heat and power, combined with sustainable lithium extraction, we will achieve stakeholder acceptance.

Note1 : A comprehensive list of risks is flagged in the PFS under "Project Risks and Opportunities" and in the Risk Factors section of our presentation from September 2021 https://bit.ly/3bBAkVv
Refer to Appendix 16: Project development timeline: example for one project area; Appendix 17: Brine flow rates

Environment, Social, Governance

Materially improving the global battery chemicals supply chain

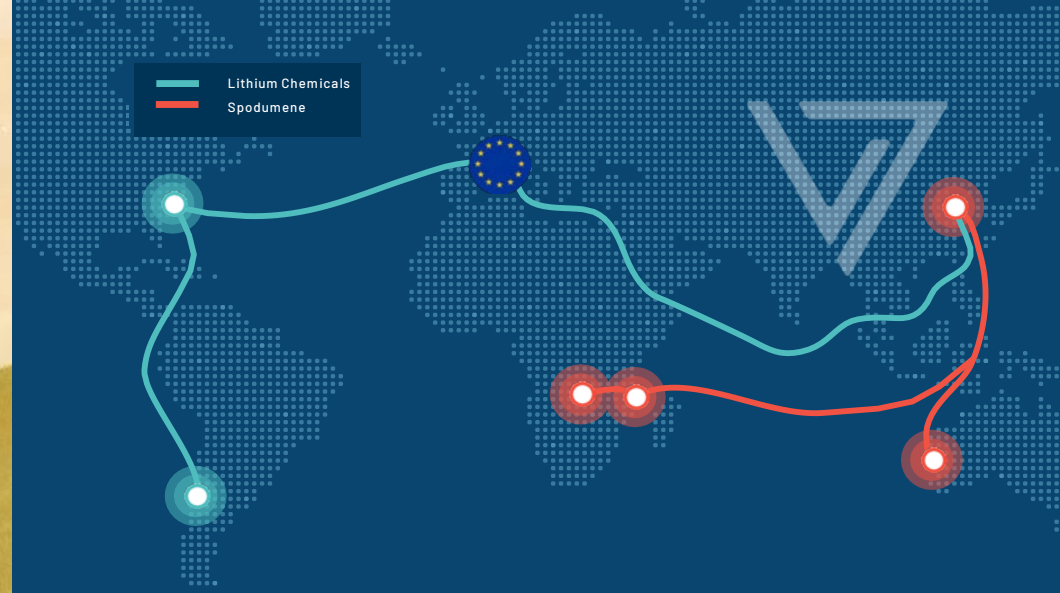
Process development and R&D development of world's first lithium and renewable energy co-production process in Pre-Feasibility Study: Zero Carbon Lithium™.

Life cycle assessment shows leading environmental credentials including negative carbon footprint (Scope 1, 2, 3) for planned lithium production, a world first.

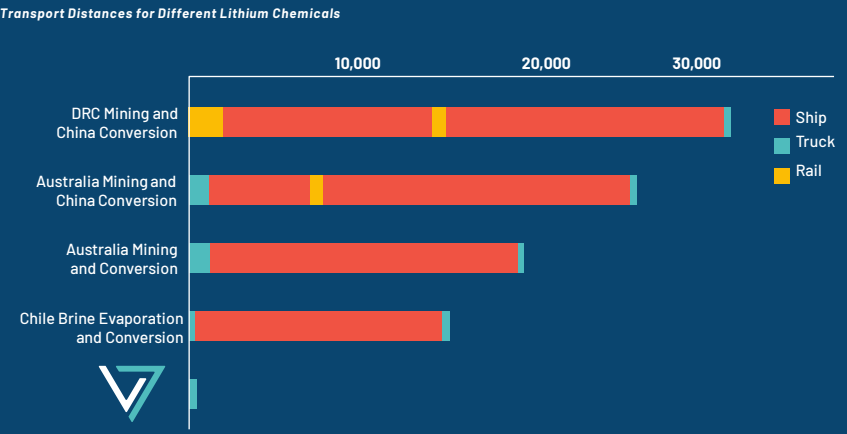
Working with Circulor to achieve world's first lithium traceability and dynamic CO_2 measurement across supply chain.

Admission to Global Battery Alliance toward advancing battery materials traceability and transparency.

CARBON NEUTRAL NOW, AND IN THE FUTURE.



Transport Distances for Different Lithium Chemicals



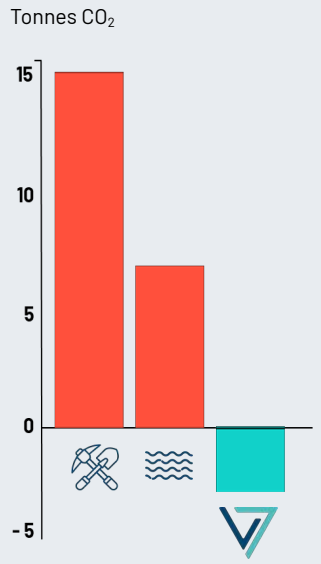
As well as having a carbon neutral process, the Vulcan Zero Carbon Lithium™ Project also intends to reduce the transport distance of lithium chemicals into Europe

Refer to Appendix 18: Vulcan & Circulor to establish world-first full lithium traceability & transparency across the EU supply chain

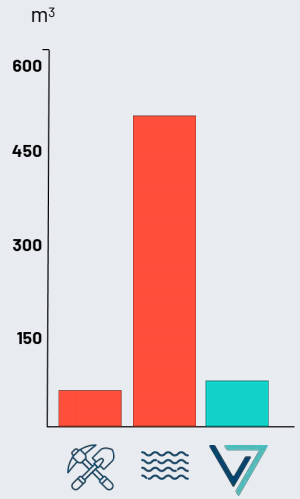
Leading environmental credentials

Per tonne of lithium hydroxide produced

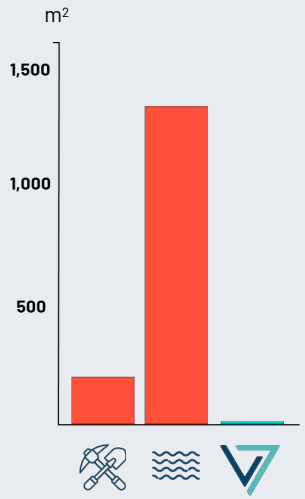
CARBON EMISSIONS (Scope 1,2,3)



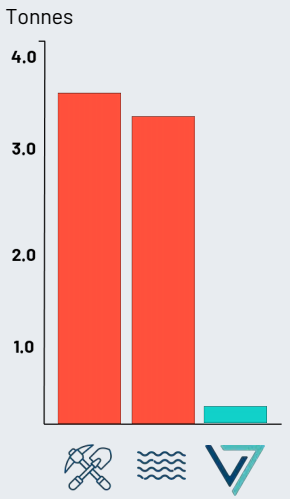
WATER CONSUMPTION



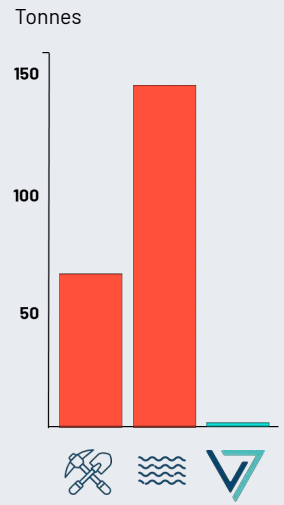
LAND USE



REAGENTS CONSUMPTION



WASTE GENERATION



Hard rock mining
60% of world lithium production

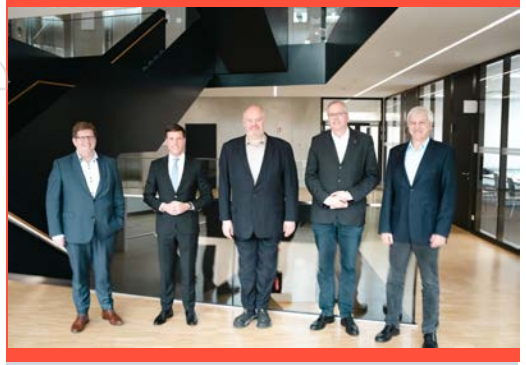
Evaporation ponds
40% of world lithium production

VULCAN ENERGIE
ZERO CARBON LITHIUM™

Source: Minviro Life Cycle Analysis 2021 & Vulcan Energy's Pre-Feasibility Study
Note 1: The Company's environmental credentials set out in this slide (and elsewhere in this Presentation) are based on the Company's Pre-Feasibility Study. There is no guarantee that the Company will be able to achieve the targeted metrics.

Four pillars of community engagement

Public affairs



- Discuss and exchange ideas regularly with political representatives
- Recent meetings with CDU and the Greens
- Presentations for members of the state parliaments
- Introduction of Vulcan and questions and answers in the municipal councils

Media engagement

- Raise awareness through in-depth reporting
- Interviews with national and international magazines, TV Stations, Radio broadcasts
- Background-stories in the Laboratory/ Pilot Plant

Community outreach

- Community roadshows, school presentations, discussion forums
- 'Show truck', targeting local events and markets Info-Community Hotline
- Website with milestones and updates
- Sponsoring of environmental events

Partnerships/ cooperation

- Conduct research projects with universities and colleges, as well as renowned research institutions
- Cooperate with renewable energy networks/ battery and raw material alliances
- Engagement in regional technology networks

Note 1: See appendix 19: R&D projects

VULCAN ENERGY
ZERO CARBON LITHIUM™

The right team for the job

Board of Directors

Gavin Rezos
Chair

Executive Chair/CEO positions of three companies that grew from start-ups to the ASX 300. Extensive international investment banking experience. Investment banking Director of HSBC with senior multi-regional roles in investment banking, legal and compliance functions. Currently Chair of Resource and Energy Group, principal of Viaticus Capital, Non-Executive Director of Kuniko Limited and Non-Executive Chair Resources & Energy Group Limited.

Dr. Francis Wedin
Managing Director & Founder-CEO

Founder of Vulcan Zero Carbon Lithium™ Project. Lithium industry executive since 2014. Previously Executive Director of ASX-listed Exore Resources Ltd. Track record of success in lithium industry as an executive since 2014, including the discovery of three resources on two continents. PhD in Geology, MBA in Renewable Energy, global experience in battery metals sector.

Dr. Horst Kreuter
Executive Director Germany

Ex-CEO of Geothermal Group Germany GmbH and GeoThermal Engineering GmbH (GeoT). Co- Founder of Vulcan Zero Carbon Lithium™ Project. Successful geothermal project development & permitting in Germany and worldwide. Widespread political, investor and industry network in Germany and Europe. Based in Karlsruhe, local to the project area in the Upper Rhine Valley.

Josephine Bush
Non-Executive Director

Member of the EY Power and Utilities Board. Led and delivered the EY Global Renewables and Sustainable Business Plan and spearheaded a series of major Renewable Market Transactions. Successfully advised on the first environmental yieldco London Stock Exchange listing, Greencoat UK Wind PLC. Ms. Bush is a Chartered Tax Advisor, holds an MA Law degree from St Catharine's College, Cambridge, and brings a wealth of experience in ESG strategic advisory.

Dr. Heidi Grön
Non-Executive Director

Dr. Grön is a chemical engineer by background with 20 years' experience in the chemicals industry. Since 2007, Dr. Grön has been a senior executive with Evonik, one of the largest specialty chemicals companies in the world, with a market capitalization of €14B and 32,000 employees..

Annie Liu
Non-Executive Director

Former Tesla Head of Battery and Energy Supply Chain. Led and managed Tesla's multi-billion-dollar strategic partnerships and sourcing portfolios that support Tesla's Energy and Battery business units including Battery, Battery Raw Material, Energy Storage, Solar and Solar Glass, including raw materials sourcing efforts such as lithium for battery cells. 20 years' experience with Tesla and Microsoft.

Ranya Alkadamani
Non-Executive Director

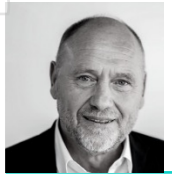
Founder of Impact Group International. A communications strategist, focused on amplifying the work of companies that have a positive social or environmental impact. Experience in working across media markets and for high profile people, including one of Australia's leading philanthropists, Andrew Forrest and Australia's former Foreign Minister and former Prime Minister, Kevin Rudd.

Dr Günter Hilken
Non-Executive Director

Dr Hilken has over 35 years' experience in and a deep understanding of the German chemicals, renewables and infrastructure investment sectors and, through leading industry advocacy associations, the German Government at the State and Federal level. Dr Hilken is a Senior Advisor to Macquarie Asset Management, Director of Currenta and President and Chairman of the Board of the German Federation of Industrial Energy Consumers (VIK).

Leadership team

Dr. Francis Wedin
Managing Director & Founder-CEO



Dr. Horst Kreuter
Executive Director Germany

Vincent Ledoux-Pedailles
VP – Business Development

Rob Ierace
Chief Financial Officer (Australia)

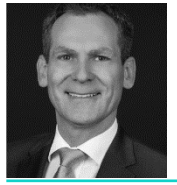
Daniel Tydde
CoSec & In-House Legal Counsel

Beate Holzwarth
Chief Communication Officer (Germany)

Thorsten Weimann
Chief Operating Officer

Dr Stephen Harrison
Chief Technical Officer

Markus Ritzauer
Chief Financial Officer (Germany)



Dr Meinhard Grodde
In-House Legal Counsel (Germany)

Jessica Bukowski
Public & Investor Relations Manager (Australia)

Renewable Energy Business

Markus Ruff
CEO Global Engineering & Consulting Company

Tobias Hochschild
CEO GeoThermal Engineering GmbH

GEC CO GLOBAL ENGINEERING CONSULTING

GEOTHERMAL ENGINEERING

VERCANA

Natür³Lich Insheim

Lithium Chemicals

Dr Thomas Aicher
Lead Chemical Engineer

Dr Angela Digennaro
Lab Manager

Chemical Engineering & Piloting Team

Laboratory Team

VULCAN ENERGIE
ZERO CARBON LITHIUM™

Vulcan Group: integrated, in-house capability to execute on our strategy

Vulcan's expertise and assets

Renewable energy

- **Gec-co** Above-surface geothermal engineering team
- **GeoT** Sub-surface geothermal & engineering team
- **Insheim** geothermal renewable energy plant
- **VERCANA** Deep geothermal rigs & team
- Exploration data packages acquired
- Multiple geothermal-lithium brine licences
  Multiple renewable energy projects in development across multiple licences

Lithium

- Fully equipped in-house lab with team
- Operational pilot plant
- Chemical engineering team
- Demonstration plant under construction

Sustainability

- Carbon neutrality commitment during development and operations
- Life Cycle Assessment and global study on the environmental footprint of lithium hydroxide production
- Supply chain traceability and CO_2 measurement

Finance

- Strong cash position
- A$320 million capital raising in 2021
- Low cost and resilient financials

Customers

- Five definitive lithium offtake agreements
- One offtake agreement concluded and multiple additional heat offtakes in discussion

Independent expertise

GLJ
APEX Geoscience Ltd.
HATCH
DUPONT
NOBIAN
Circulor
MINVIRO
Climate Active Carbon Neutral BUILDING

Capital raisings | Financing advisors | Listing advisors

cg Canaccord Genuity
BNP PARIBAS
Goldman Sachs
BERENBERG

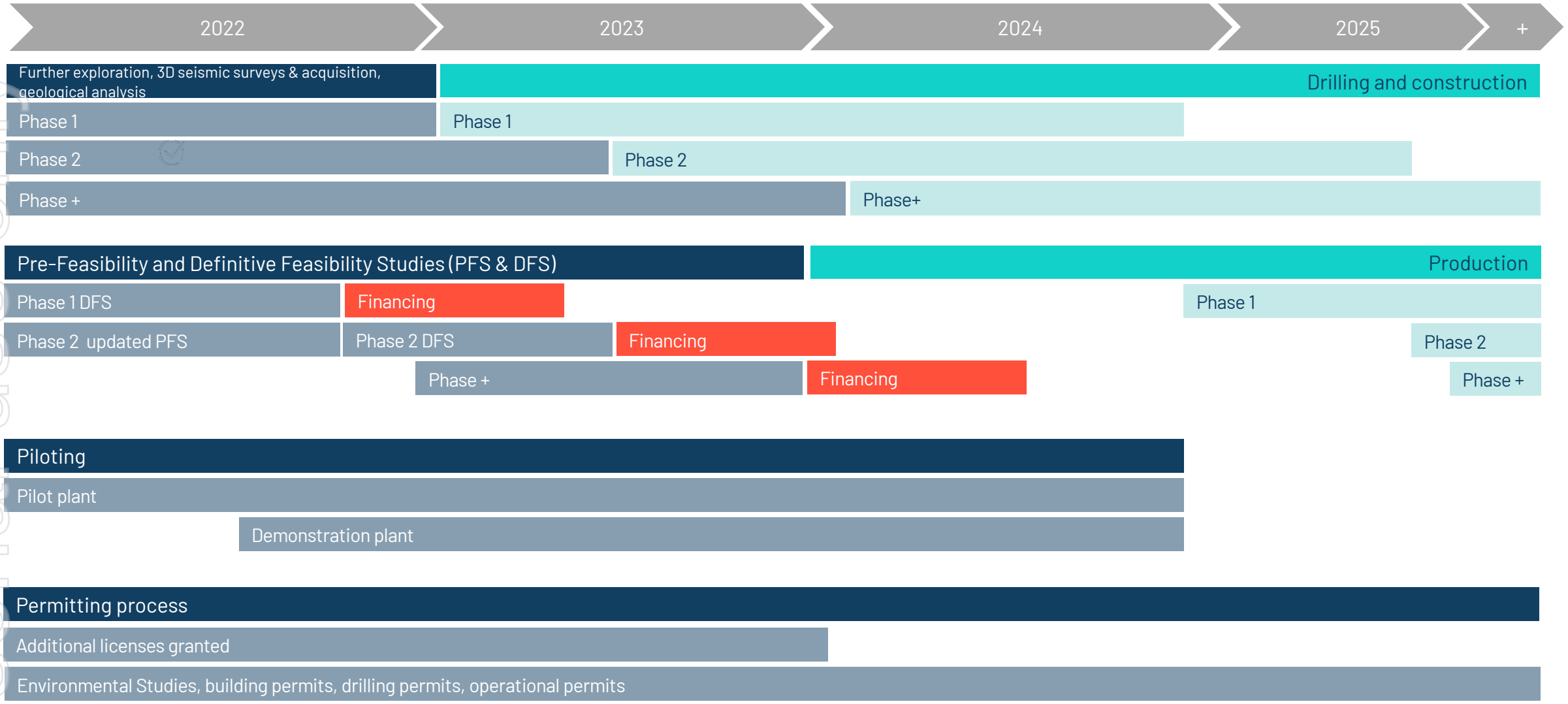
Customers

VOLKSWAGEN GROUP
Renault Group
umicore
STELLANTIS
LG Energy Solution

Industrial ecosystem

Bundesverband Geothermie
AGENTUR FÜR ERNEUERBARE ENERGIEN
KLiB Kompetenznetzwerk Lithium Ionen Batterien
ISO
EGEC GEOTHERMAL
BVMW Bundesverband mittelständische Wirtschaft
eit InnoEnergy
WIRTSCHAFTSRAT Deutschland
EUROPEAN BATTERY ALLIANCE
GLOBAL BATTERY ALLIANCE
automotive engineering network aen

Target project timeline



Share price and capital structure

ASX : VUL	
Shares on Issue	131,645,090
Performance Shares*	91,174
Performance Rights	8,656,324
Market Capitalisation at $10.19 (undiluted)	~$1.34B
Cash Position (as of 31 December 2021)	€135M
Top 20 Shareholders	~56%
Management (undiluted)	~19%

Frankfurt: VUL

Key Shareholders	
Dr. Francis Wedin	12.51%
Gavin Rezos	5.77%
Hancock Prospecting Pty Ltd	5.64%

VUL share price (AUD) (1 January 2021 – 4 April 2022)

*Refer ASX Announcement 6 July 2021 for further details.

Conclusion

Commercial geothermal plant in operation

Electric drill rigs acquired

Europe's largest lithium Resource. Granted license area increased to over 1,000km^2

Site for Central Lithium Plant secured

AUD$320 million capital raised

Five binding lithium offtake agreements

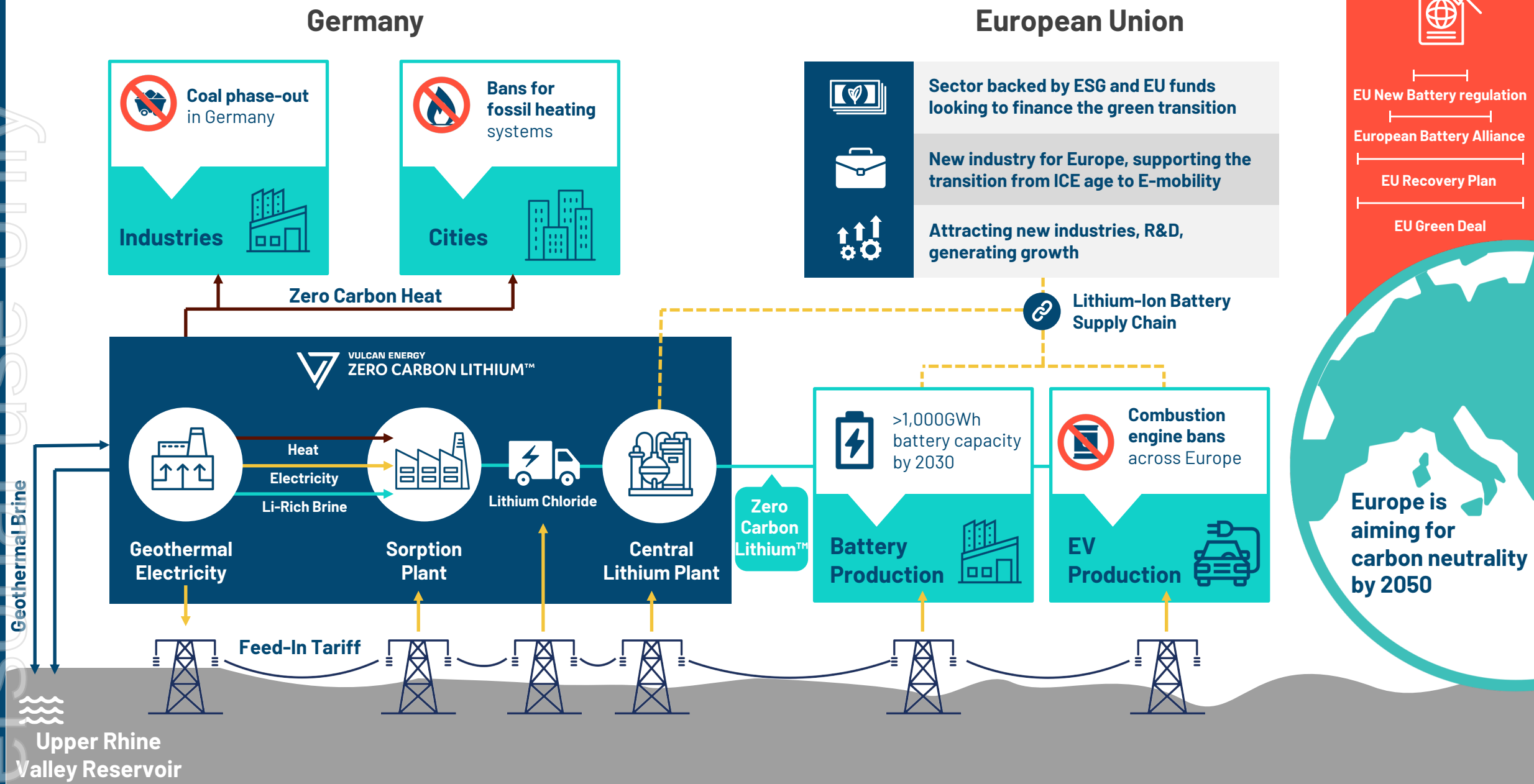
LCA results with negative CO_2 emission intensity

Vulcan team now >100 personnel and growing

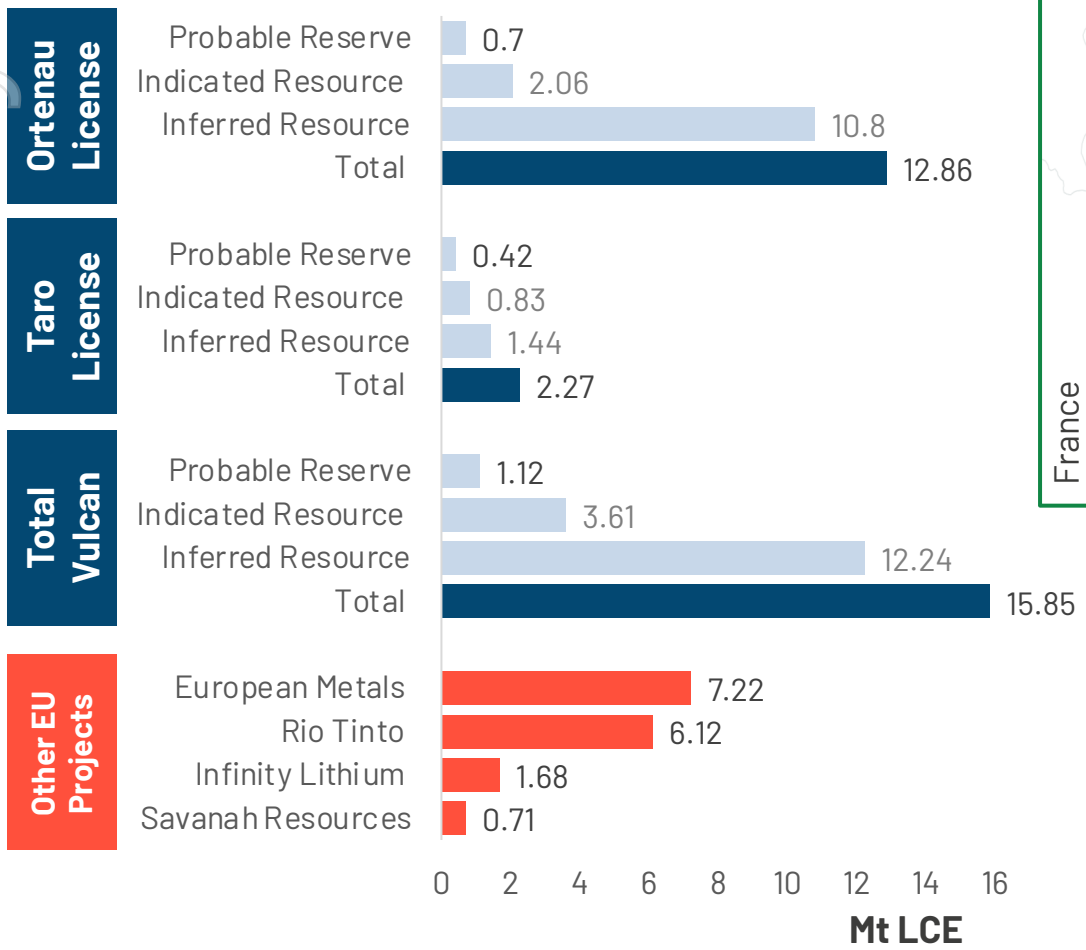
Dual listed on the regulated market (Prime Standard) of the FSE

Appendices

Appendix 1: Vulcan's integrated renewable energy and lithium project description



Appendix 2: Largest JORC lithium resource in Europe



- **1 exploitation permit granted**
- **8 exploration permits granted** and several applications
- Largest lithium resource in Europe: **15.85Mt LCE**

Note 1: Vulcan's URVP Li-Brine resource and reserve area in Europe. Mineral resources are not ore reserves and do not have demonstrated economic viability. Refer to the ASX Announcement entitled "Updated Ortenau Indicated and Inferred Resource" dated 15 December 2020 and the ASX Announcement entitled "Positive Pre-Feasibility Study" dated 15 January 2021, which refer to the Company's Mineral Resources and Ore Reserves (respectively) included in this Presentation, available on the Company's website and www.asx.com. The Company confirms that it is not aware of any new information or data that materially affects the information including in the original market announcements and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements 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 in this Presentation have not been materially modified from the original market announcements

Appendix 3: Europe-focused and DLE lithium projects peer comparison references

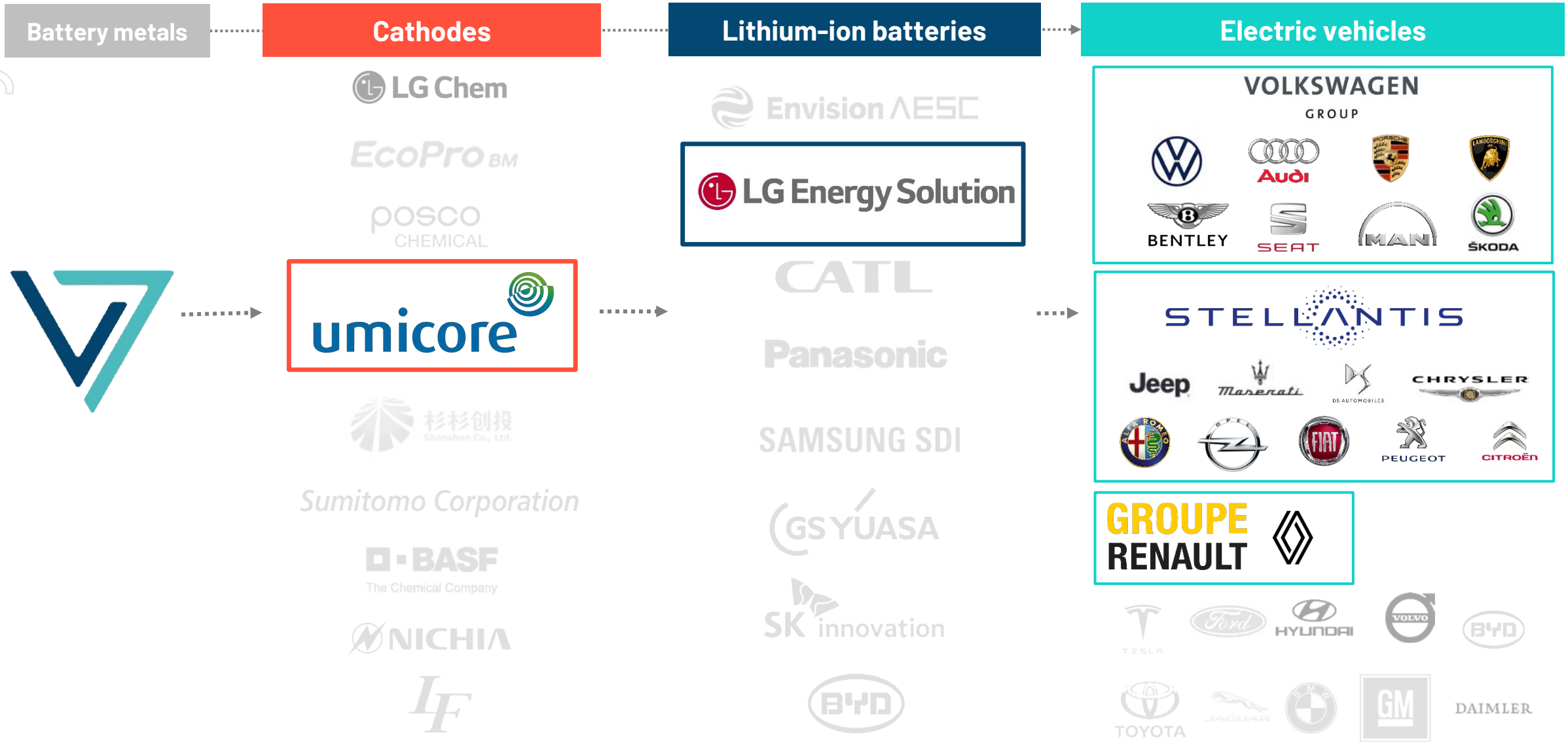
Company[1]	Code	Project	Stage	Resource Category	Resources M tonnes	Resource Grade (Li2O)	Contained Mt LCE Tonnes	Information Source
European Metals	ASX: EMH	Cinovec	PFS Complete	Indicated & Inferred	695.9	0.42	7.22	Corporate Presentation July 2021 - Company Website
Rio Tinto	ASX: RIO	Jadar	PFS Complete	Indicated & Inferred	139.3	1.78	6.12	ASX Announcement Released 10 December 2020
Infinity Lithium	ASX: INF	San Jose	PFS Complete	Indicated & Inferred	111.3	0.61	1.68	Company Presentation Released to ASX 16 February 2021
Savannah Resources	AIM: SAV	Barroso	DFS Underway	Measured, Indicated & Inferred	27.0	1.00	0.71	Corporate Presentation September 2021 – Company Website

Company	Project	Stage	Resource Category	Brine Volume	Resource Grade	Contained Mt LCE Tonnes	Information Source
Controlled Thermal Resources	Hell's Kitchen	PEA Completed	Inferred	Unknown	181mg/l Li	2.7	Company Website
E3 Metals	Clearwater, Rocky and Exshaw	PEA Completed	Inferred	5.5 billion m^3	74.6mg/l Li	2.2	PEA released in December 2020

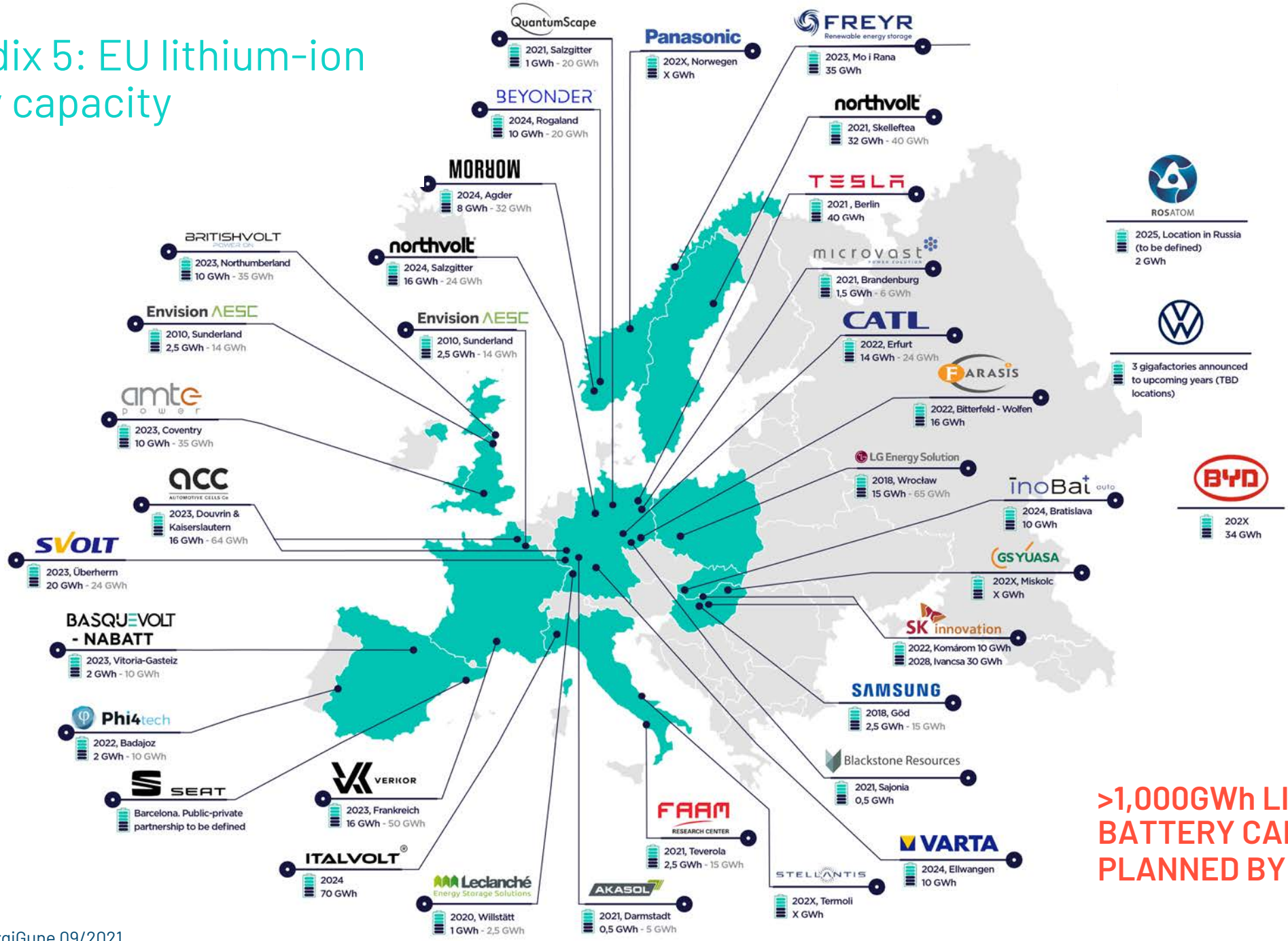
Elders, W., Cohen, L., (1983) The Salton Sea Geothermal Field, California, Technical Report. Institute of Geophysics and Planetary Physics, University of California
GeORG (2013) Projektteam Geopotenziale des tieferen Untergrundes im Oberrheingraben Fachlich-Technischer Abschlussbericht des INTERREG-Projekts GeORG. Teil 2: Geologische Ergebnisse und Nutzungsmöglichkeiten
Pauwels, H., Fouillac, C., Brach M. (1989) Secondary production from geothermal fluids processes for Lithium recovery 2nd progress report. Bureau de Recherches Geologiques et Minieres Service Geologique National
Pauwels, H. and Fouillac, C. (1993) Chemistry and isotopes of deep geothermal saline fluids in the Upper Rhine Graben: Origin of compounds and water-rock interactions. Geochimica et Cosmochimica Acro Vol. 51, pp. 2737-2749
Sanjuan, B., Millot, R., Innocent, C., Dezayes, C., Scheiber, J., Brach, M., (2016) Major geochemical characteristics of geothermal brines from the Upper Rhine Graben granitic basement with constraints on temperature and circulation. Chemical Geology 428 (2016) 27–47

Note 1: Data provided for lithium focused peers with comparable project size and stage and published resource information
Note 2: The Company is not aware of any new information or data that materially affects the information contained in the above sources or the data contained in this Presentation

Appendix 4: Vulcan will supply leading actors across the lithium-ion battery supply chain



Appendix 5: EU lithium-ion battery capacity



>1,000GWh LITHIUM-ION BATTERY CAPACITY PLANNED BY 2030

Source: CIC energiGune 09/2021

Appendix 6: Global DLE assets and projects

Company	Livent	Lanke Lithium	Zangge Lithium	Jintai Lithium	Eramet/ Tsingshan	Standard Lithium	Vulcan Energy	Rio Tinto	CTR	Energy Source Minerals	Berkshire Hathaway	Lake Resources/ Lilac	Compass Minerals	E3 Metals
Asset name	Hombre Muerto	Qinghai	Qinghai	Qinghai	Centenario-Ratones	Smackover	Zero Carbon Lithium™	Rincon	Hell's Kitchen	ATLiS	Salton Sea	Kachi	Great Salt Lake	Clearwater Lithium
Country														
DLE technology	Sorption	Sorption	Sorption	Sorption	Sorption	IX	Sorption	Sorption	IX	Sorption	IX	IX	IX	Ion Exchange
DLE provider	Proprietary	Undisclosed	Undisclosed	Undisclosed	Proprietary	Proprietary LiSTR	Undisclosed	Axion	Lilac	Proprietary ILiAD	Proprietary	Lilac	Undisclosed	Proprietary
Stage	Production	Production	Production	Production	Construction	Demo	Pilot	Pilot	Offsite pilot	Pilot	Pilot	Offsite pilot	Pilot	Pilot
Resource (Mt LCE)	Undisclosed	Undisclosed	Undisclosed	Undisclosed	10	3	16	12	3	Undisclosed	Undisclosed	4	2	7
Geothermal	✗	✗	✗	✗	✗	✗	✓	✗	✓	✓	✓	✗	✗	✗
Start date	1998	2017	2018	2019	2024	tbc	2024	2025	2024	2024	tbc	2024	tbc	2025
Capacity (ktpa LCE)	20	20	20	7	24	21	40	50	20	20	90	25	20-25	20
Ownership	Public	-	-	-	Public	Public	Public	Public	Private	Private	Public	Public	Public	Public
Significant Investments					Tsingshan $375M 11/2021	Koch $100M 11/2021	Institutional Investors $320M 2021	Rio Tinto $825M 12/2021	GM $?M 07/2021			Lilac Up to $50M 09/2021		
Offtakes (announced publicly)	TESLA, BMW	✗	✗	✗	✗	✗	VOLKSWAGEN GROUP, STELLANTIS, GROUPE RENAULT, umicore, LG Energy Solution	✗	gm	✗	✗	✗	✗	✗

Note 1: Resources are rounded to 0p.
Refer to Appendix 7: DLE Projects and Assets - References

Appendix 7: DLE Projects and Assets - References

Livent	https://s22.q4cdn.com/453302215/files/doc_presentations/2021/11/Livent-Investor-Presentation_for-website.pdf
Lanke Lithium	https://www.linkedin.com/pulse/from-catamarca-qinghai-commercial-scale-direct-lithium-alex-grant/ http://www.asianmetal.com/news/1665421/Lanke-lithium-plans-to-launch-commercial-production-of-battery-grade-lithium-carbonate
Zangge Lithium	https://www.linkedin.com/pulse/from-catamarca-qinghai-commercial-scale-direct-lithium-alex-grant/
Jintai Lithium	https://www.linkedin.com/pulse/from-catamarca-qinghai-commercial-scale-direct-lithium-alex-grant/
Eramet/Tsingshan	https://www.eramet.com/sites/default/files/2021-11/IR%20presentation_Lithium_VF.pdf
Standard Lithium	https://www.standardlithium.com/projects/arkansas-smackover
Vulcan Energy	https://v-er.eu/wp-content/uploads/2021/12/2021-AGM-MD-presentation.pdf
Rio Tinto	https://www.rinconmining.com/wp-content/uploads/2021/10/Rincon-FINAL-E-210921-FINAL.pdf
CTR	CTR's NI 43 101 inferred mineral resource estimate contains ~2.7 million
Berkshire Hathaway	https://www.ft.com/content/c9760a4e-1a76-11e9-9e64-d150b3105d21
Lake Resources/Lilac	https://lakeresources.com.au/wp-content/uploads/2021/11/lke_noosa-presentation_12-nov-21.pdf http://lilacsolutions.com/2021/09/lake-resources-partners-with-lilac-solutions-for-technology-and-funding-to-develop-the-kachi-lithium-brine-project-in-argentina/
Compass Minerals	https://investors.compassminerals.com/investors-relations/investor-news/press-release-details/2021/Compass-Minerals-Identifies-Approximately-2.4-Million-Metric-Ton-Sustainable-Lithium-Resource/default.aspx
E3 Metals	https://www.*e3metalscorp*.com/_resources/presentations/corporate-presentation.pdf?v=0.084

Appendix 8: Vulcan supported by EU-backed group

EIT InnoEnergy will marshal its ecosystem and significant EU-wide resources to launch the Zero Carbon Lithium Project forward:

- **Securing project funding**, including the use of applicable **EU, national or regional grant schemes**, and liaising with EU project finance and development banks.
- Driving relationships with European lithium offtakers, aimed at entering into of binding offtake agreements.
- **Obtaining and fast-tracking necessary licenses.**
- All services are entirely success-based, with no upfront cost to Vulcan.

Appendix 9: Lithium market dynamics favour sustainable lithium production

Technology & Costs

Fitch Solutions

'We expect **DLE technology to dominate** the future lithium mining sector. Fitch posits **geothermal lithium extraction** techniques to rise in popularity among Western consumers'[1]

Bloomberg NEW ENERGY FINANCE

'We could have a European producer [Vulcan] producing at **one of the lowest costs globally**. These are the kind of initiatives we expect Europe to take in order to compete on raw material globally'[2]

Deutsche Bank

'DLE could offer many benefits including faster speed to market, as well as lower material costs and water usage. In Germany, Vulcan is pursuing this capability in the Upper Rhine Valley, Europe's largest lithium resource'[3]

Sustainability

Fitch Solutions

"Geothermal lithium extraction has a much lower carbon footprint than both hard rock and brine extraction methods, as well as reduced water usage" [1]

Deutsche Bank

"The more **sustainable lithium producers will become the suppliers of choice** and be seen as less risky by customers and lenders. Country specific sustainability regulation is increasing and will likely lead to restrictions and higher production costs for producers that are less environmentally friendly" [3]

FT FINANCIAL TIMES

"The drive for **greener cars must be matched by cleaner lithium**"[5]

Market Balance

MACQUARIE

"Incorporating the stronger demand outlook combined with limitations on the supply response due to rising product quality requirements is expected to see the lithium market shift from a small surplus in 2021 to a **deficit in 2022 and remain in tight for 2023-2025**, deficits widening each year"[6]

cg/Canaccord Genuity

"Beyond 2025, we continue to forecast **significant market deficits**, noting a ~7x increase is required to meet our 2030 demand forecast"[7]

"We continue to expect significant demand growth for LiOH as high-performance ternary cathodes move to **market dominance** in the EV battery sector. We estimate demand to increase by **>850%** by 2030 (from 2021) to 1.1Mt LiOH" [9]

Prices

Fitch Solutions

"Lithium prices are likely to be impacted by **green premiums** due to heightened **priority of sustainable lithium** extraction techniques"[1]

MACQUARIE

"Long term Lithium Hydroxide Prices are expected to be around **$16,000 per tonne**"[1]

cg/Canaccord Genuity

"Our long-term assumptions for Li2CO3/LiOH remain at ~**US$15,000**/t" [9]

[1]Fitch Ratings, Fitch Solutions Country Risk & Industry Research, 21 May 2021 [2]BNEF, BNEF Summit, Europe's Formula for Winning the Lithium Battery Value-chain [3]Deutsche Bank, Sustainability Tracker, 17 May 2021 [5]Financial Time, 9 September 2020 [6]Macquarie, Lithium Market Outlook, 12 April 2021 [7]Canaccord Genuity – 10 February 2021 [8]HSBC – 9 February 2021 [9]Canaccord Genuity – 12 August 2021

45

Appendix 10: The new EU Battery Regulation

New measures announced in December 2020 including:

1. Responsible sourcing : New mandatory procedures to ensure sustainable and ethical sourcing of raw materials such as lithium.

2. CO_2 footprint : All batteries sold in Europe must declare their carbon footprint. This will come in 3-step approach : 1/ Declaration (2024), 2/ Classification (2026), 3/ Threshold (2027). Batteries with the highest carbon footprint will be banned in Europe.

3. Traceability: All raw materials used in batteries to be procured according to OECD recognized guidelines for sustainable sourcing. Thanks to blockchain technology, each battery will have a digital passport tracking all components upstream.

Maroš Šefčovič – European Commission VP : *"The new EU battery CO2 regulation will have an immediate impact on the market, which up until now has been driven only by price".*

Thierry Breton – EU commissioner: *"We are 100% dependent on lithium imports. The EU, if finding the right environmental approach, will be self-sufficient in a few years, using its resources".*

Other EU measures and initiatives supporting lithium:

EU list of Critical Raw Materials & European Raw Materials Alliance

EIB new energy lending policy supporting projects relating to the supply of critical raw materials

European Battery Alliance

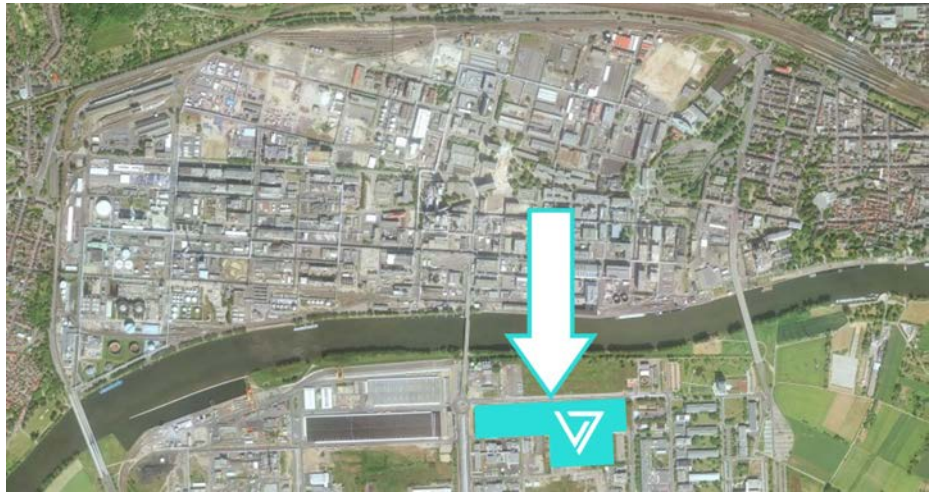
Appendix 11: Geothermal brine composition comparison

		Upper Rhine Valley Brine	Salton Sea Brine	URV vs SS
Salts (Cations)	Analyte	Mg/kg Value	Mg/kg Value	%
Lithium: Source of revenue	Li	214	213	+1%
	Na	22,231	59,600	-63%
	K	4,878	18,126	-73%
	Rb	30.0	-	
	Cs	16.0	-	
	Mg	99	54	+83%
	Ca	5,195	31,714	-84%
	Sr	276	475	-42%
	Ba	14.4	139	-90%
Anions				
	Cl	60,567	145,000	-58%
	SO4	172	127	+35%
	F	4.7	24	-81%
	Br	288	-	
Metals (Cations)				
Requires additional purification step if high	B	47	401	-88%
	Be	0.0207	0.2	-91%
Can negatively affect DLE if high	Si	67.2	550	-88%
Can negatively affect DLE if high	As	20.3	8.8	+131%
Can negatively affect DLE if high	Mn	24.5	1,563	-98%
Can negatively affect DLE if high	Fe	37.4	664	-94%
Can negatively affect DLE if high	Zn	5.2	492	-99%
	Pb	0.156	108	-100%
Can negatively affect DLE if high	Al	0.014	16	-100%
	Ni	0.188	0.5	-61%
Can negatively affect DLE if high	Co	0.015	8	-100%
	Sb	0.717	6.5	-89%
	Ti	<0.1	-	
	V	0.165	0.6	-71%
	Cr	0.181	2	-89%
	Cd	0.0205	3	-99%
	Mo	0.0124	8	-100%
	Tl	0.328	2	-86%
pH		5.828	4.9	

Note: Refer to ASX announcement of 10 March 2021 "High grade lithium, low impurity results from Vulcan's 2021 Upper Rhine Valley bulk brine sampling". Comparison of Vulcan's January 2021 Upper Rhine Valley sample result analysed at KIT (n=1), compared to Salton Sea brine results (n=unknown) as recorded in publicly available literature (https://gdr.openei.org/submissions/499 for all multi-element results except silica; US Patent 4429535 for pre-flash silica values). Salton Sea values adjusted by the density 1.25 -> from mg/kg to mg/l.

Appendix 12: Vulcan secured site for its planned commercial lithium hydroxide plant

- Vulcan signed an agreement with chemical park management company Infraserv, to secure a site for its planned **Central Lithium Plant** (CLP) at the **Höchst Chemical Park**, located just outside of Frankfurt.
- Höchst is **one of Europe's largest chemical sites** and hosts more than 22,000 personnel and 90 companies including Nobian, Clariant, Sanofi and Celanese.
- The CLP is intended as a **processing hub**, processing lithium chloride from multiple combined geothermal and lithium sorption plants into lithium hydroxide monohydrate.
- From the CLP, the lithium hydroxide monohydrate is intended to be transported to Vulcan's European customers in the battery and electric vehicle industry, dramatically **lowering the transport footprint** of the current lithium supply chain.
- The Höchst site features **key advantages** for the project including:
  - proximity to Vulcan's project areas where the integrated geothermal and sorption operations are proposed to be built;
  - multiple low carbon transport modes available (barge, train);
  - availability of renewable power onsite; and
  - the required space and utilities for future phased expansion of the CLP

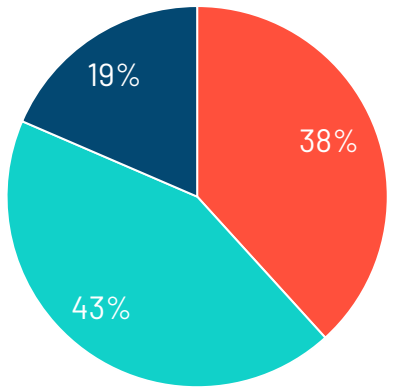


Appendix 13: Target project economics from PFS - CAPEX

	ENERGY BUSINESS	LITHIUM BUSINESS		
	1 Geothermal Plant	2 Sorption Plant	3 CLP	
PHASE 1 2024 Start	2 geothermal plants: • GB1 – 8MW • GB2 – 14MW Capex: €226M	2 Sorption plants: • SB1 – 8kt LiOH • SB2 – 7kt LiOH Capex: €291M	1 Central Lithium Plant • CLP1 - 15kt LiOH Capex: €182M	€473M
PHASE 2 2025 Start	3 geothermal plants: • GC1 – 17MW • GC2 – 17MW • GC3 – 17MW Capex: €438M	3 Sorption plants: • SC1 – 8kt LiOH • SC2 – 8kt LiOH • SC3 – 8kt LiOH Capex: €460M	1 Central Lithium Plant • CLP2 - 25kt LiOH Capex: €240M	€700M
FULL PROJECT NO PHASING 2024 Start	5 geothermal plants 74MW Capex: €665M	5 Sorption Plants Capex: €751M	1 Central Lithium Plant • CLP – 40kt LiOH Capex: €322M	€1.1bn

FULL PROJECT

- Geothermal
- Sorption
- CLP



Equivalent per tonne of LiOH

Note 1: Refer to the Company's ASX announcement entitled "Positive Pre-Feasibility Study" dated 15 January 2021, available on the Company's website and www.asx.com, for further details.
Refer to the Company's ASX announcement entitled "Positive Pre-Feasibility Study" dated 15 January 2021, available on the Company's website and www.asx.com, for further details. The Company confirms that all material assumptions underpinning the production targets, and the forecast financial information derived from such production targets, in this Presentation, continue to apply and have not materially changed.

Appendix 14: Target project economics – possible structures

Numbers are based on the PFS published in 2021 and are subject to change

Full project developed at the same time but **separated** in two different businesses: Energy and Lithium.

Phase 1 developed first, **separated** in two different businesses: Energy and Lithium.

Phase 2 developed second, **separated** in two different businesses: Energy and Lithium.

	FULL PROJECT – NO PHASING 2024 Start		PHASE 1 2024 Start		PHASE 2 2025 Start	
	ENERGY BUSINESS	LITHIUM BUSINESS	ENERGY BUSINESS	LITHIUM BUSINESS	ENERGY BUSINESS	LITHIUM BUSINESS
	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3
	SB1 SB2 SC1 SC2 SC3	SB1 SB2 SC1 SC2 SC3	SB1 SB2 SC1 SC2 SC3	SB1 SB2 SC1 SC2 SC3	SB1 SB2 SC1 SC2 SC3	SB1 SB2 SC1 SC2 SC3
	CLP	CLP	CLP1 CLP2	CLP1 CLP2	CLP1 CLP2	CLP1 CLP2
	74MW	40Ktpy LiOH	22MW	15Ktpy LiOH	52MW	25Ktpy LiOH
Revenues €M/y	157	500	46	187	111	312
Net Op. Cash Fl. €M/y	114	394	31	140	83	242
NPV Pre-tax €M	685	2,802	155	971	530	1,647
NPV Post-tax €M	470	1,897	99	644	371	1,111
IRR Pre-tax	16%	31%	13%	27%	18%	32%
IRR Post-tax	13%	26%	11%	22%	15%	26%
Payback (year)	6	4	4	4	7	5
CAPEX €M	665	1,073	226	474	438	700
CAPEX Geo			*226*		*438*	
CAPEX Sorption		*751*		*291*		*460*
CAPEX CLP		*322*		*182*		*240*
OPEX €/KWh or LiOH€/t	0.066	2,681	0.078	3,201	0.061	2,855

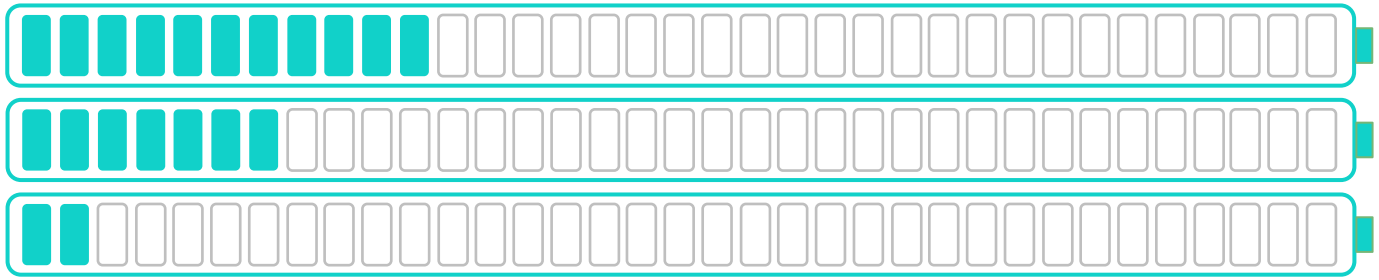
Note 1: Lithium Hydroxide Battery Quality at €12,542 or US$14,925/t (assumes exchange rate of €0.84/US$1.00)
Note 2: Phase 1 relates to Taro license, Phase 2 to Ortenau license
Note 3: Ortenau license is 100% owned by Vulcan. Vulcan has a 100% interest in Taro
Note 4: Refer to the Company's ASX announcement entitled "Positive Pre-Feasibility Study" dated 15 January 2021, available on the Company's website and www.asx.com, for further details.

Appendix 15: The fossil fuel era in Europe is coming to an end

2020 → 2030 → 2040 → 2050

Europe is aiming for carbon neutrality, but the EU's energy transition is far from being complete:

Renewable Energy (RE)



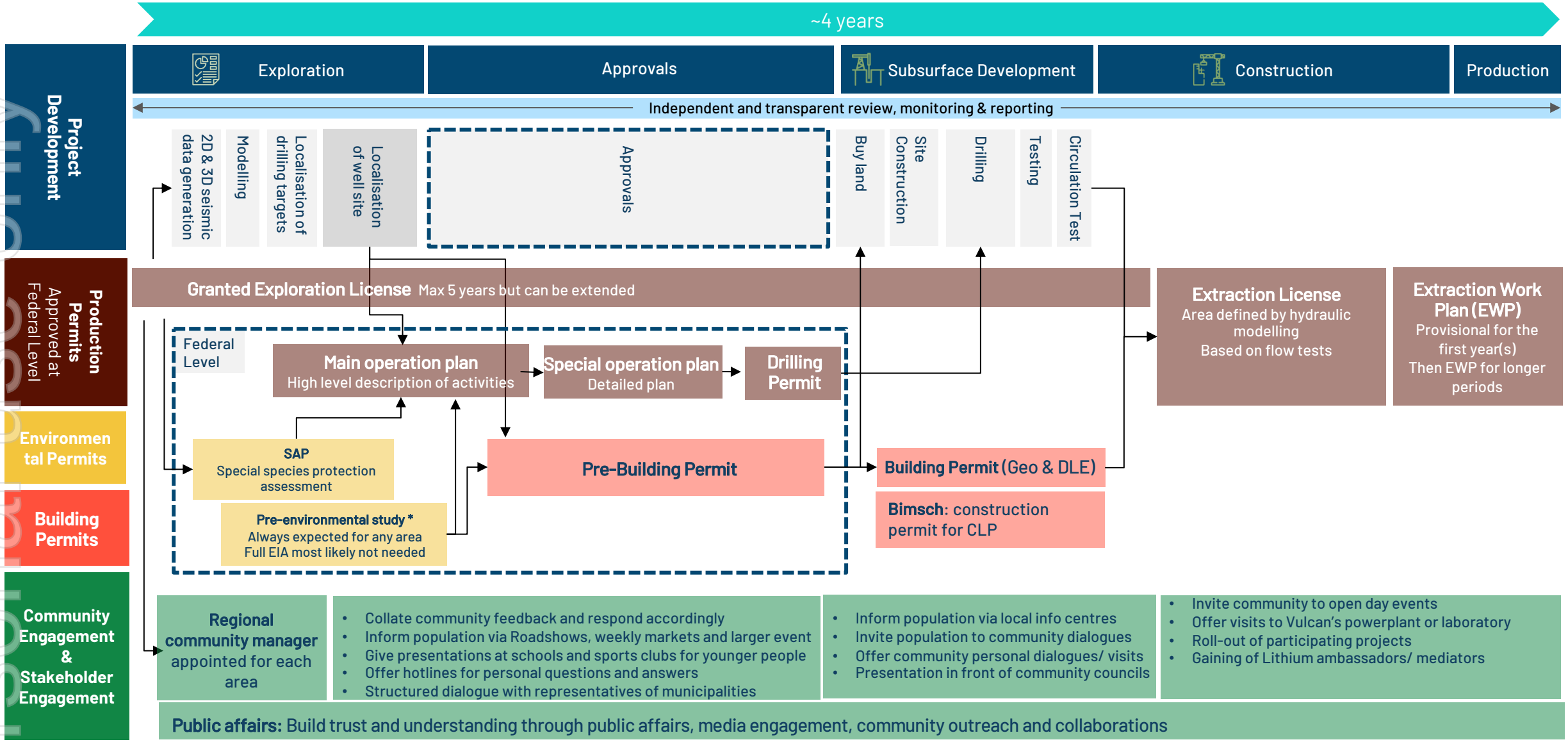
- **30.7% RE in Power**
- **19.5% RE in Heat**
- **7.6% RE in Transport**

Oil	• Combustion engine bans in Germany, UK, France, among others. • Diesel bans and low emission zones in over 260 cities in more than 20 member states.	Combustion engine phase-out in UK	**Demand for low-carbon solutions in transport sector**	**EVs and Lithium-Ion Batteries**
Coal	• Coal phase-out by 75% of European member states, among them Spain, France, UK and Italy.	Coal phase-out in Germany	**Demand for low-carbon dispatchable generation capacity** **Demand for low-carbon heat**	**Geothermal Energy**
Gas	• Bans for fossil heating systems + incentive schemes for low carbon heating across EU Member States.			

VULCAN ENERGY ZERO CARBON LITHIUM™

VULCAN ENERGY ZERO CARBON LITHIUM™

Appendix 16: Project development timeline: example for one project area



Notes: Not at scale, e.g., at scale approval would be shorter and drilling would be longer. Each project area is unique, timing and plans will vary for each area *Full Environmental Study only required in protected areas

Appendix 17: Brine flow rates

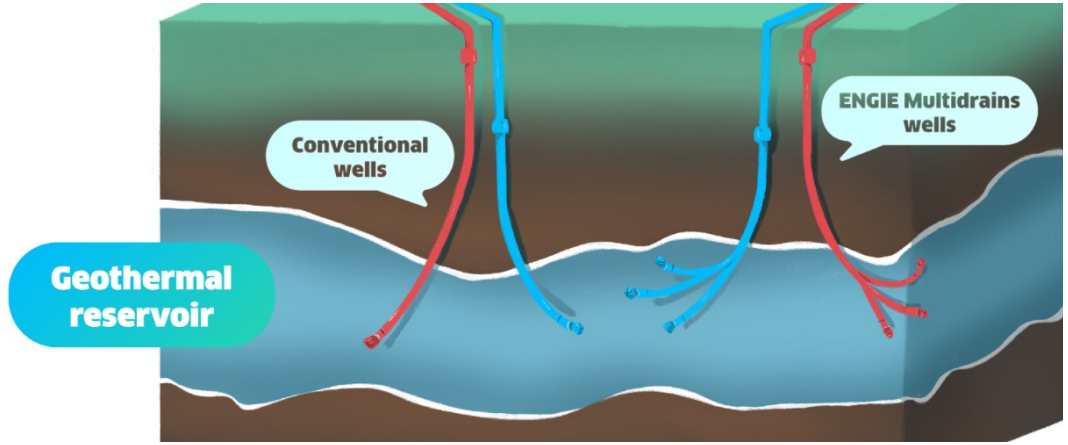
Until we drill our first wells, risks around flow rate will remain. However, Vulcan believes it has an appropriate level of confidence around its flow rates assumptions, based on the experience of its team, and state-of-the-art scientific tools, data and studies.

1. Vulcan is targeting high-flow fault zones within its sedimentary reservoir units, which are predominantly the Bunter Sandstone, using state-of-the-art seismic data. When exploration for geothermal brines first began in the Upper Rhine Valley, no seismic data was used, or the data was 2D seismic only, to get a picture of the sub-surface. The industry has seen a steady progression of understanding and improvements in exploration over time, including the **use of 3D seismic**, and a corresponding increase in flow rates, as would be expected. 3D seismic is now a standard for geothermal exploration in the Upper Rhine Valley and elsewhere.
2. In our estimation of flow rates, we have conducted detailed studies using modelling information derived from seismic data in our areas. The Upper Rhine is a sedimentary graben system, geologically similar to hydrocarbon systems with **permeable formations confined by impermeable rock**. This differs to other types of geothermal plays, such as volcanic-hosted, where the systems are more complex, in general less permeable and seismic data is less useful.
3. We also factor in techniques well known in the oil and gas industry to increase flow, such as **double completion of wells** and **multi-reservoir completion** as recently promoted by Schlumberger and Engie.

Vulcan has, based on its detailed analysis and the various factors mentioned above, used between 100 and 120l/s as assumed flow rates for its projects in its PFS.

A public list of flow rates achieved at deep geothermal wells in and around Germany can be found in a 2014 report compiled for the German Federal Ministry of the Economy (BMWi) at the following link: https://www.grs.de/sites/default/files/pdf/grs-316_teilb.pdf.

Wells displaying flow rates at greater than 100l/s are common in the list, including at Brühl in the Upper Rhine Graben, with some projects reaching up to 150l/s.



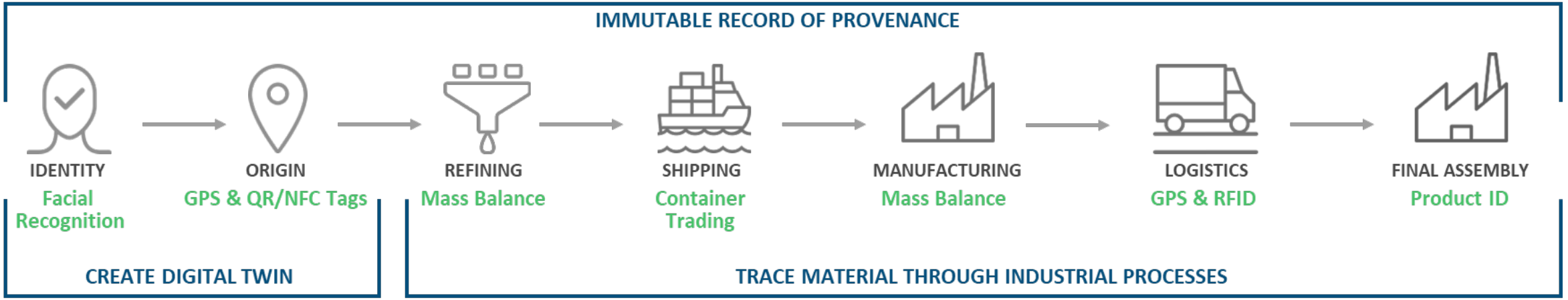
Source: Engie

Appendix 18: Vulcan & Circulor to establish world-first full lithium traceability & transparency across the EU supply chain

Circulor offers a software solution that enables customers to **track raw materials and CO_2 emissions** through supply chains to **demonstrate responsible sourcing and sustainability**.

By applying blockchain, artificial intelligence, machine learning, facial recognition, mass balancing and other technologies Circulor makes sure that the digital twin is reliably linked to the physical resource through out its entire journey. This enables:

1. Reputational Protection
2. Proof of compliance wi guidelines and regulations
3. Dynamic carbon tracking
4. Reducing due diligence, audits and



Example applied to the cobalt supply chain

Circulor's existing customers:

Appendix 19: R&D projects

GEC CO
GLOBAL ENGINEERING CONSULTING

Effeo
Increasing efficiency of geothermal power plants
via Project Management Jülich

GreGeo
Aims to develop a new well completion strategy that aims to establish a corrosion-resistant alternative to steel.

GEORISK project
Aims to develop financial schemes and mitigate the impact of the resource risk

GeoThermScaling
Development and evaluation of advanced iron boride-based anti-corrosion coating with high resistance to corrosion and scaling for deep geothermal applications.

GEOTHERMAL ENGINEERING

CROWDTHERMAL
Empowering the European public to directly participate in the development of geothermal projects with the help of alternative financing schemes (crowdfunding) and social engagement tools.

MEET
Multidisciplinary and multi-context demonstration of EGS exploration and Exploitation Techniques and potentials

DGE-Rollout
Roll-out of Deep Geothermal Energy in Northwest Europe

Thank you

Media and Investor Relations

Germany
Beate Holzwarth
Chief Communication Officer
bholzwarth@v-er.eu

Australia
Jessica Bukowski
PR & IR Manager
jbukowski@v-er.eu

@VulcanEnergyRes | www.v-er.eu | info@v-er.eu
ASX:VUL
FSE:VUL