



VULCAN ENERGY
ZERO CARBON LITHIUM™



**ZERO
CARBON
ENERGY**



**ZERO
CARBON
LITHIUM**



OFFICIAL PARTNER



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To achieve the outcomes of Vulcan's Pre-Feasibility Study, initial funding in the order of €700m (including contingency) will be required, and a further €1,138m will be required for Phase 2. It should be noted that, as with any project at this stage, the ability to develop the Project may depend on the future availability of funding and while the Company believes it has a reasonable basis to assume that future funding will be available and securable, this is not guaranteed. However, the Board believes that there is a "reasonable basis" to assume that future funding will be available and securable through a combination of syndicated senior debt, export credits, industry related hybrid debt, equity and forward sales at the Project level for a number of reasons, including the following; (a) Vulcan's Board has considerable project finance experience, and the Company recently appointed BNP Paribas, one of the largest financiers of renewable energy and resources projects in Europe, as its financial advisor towards financing the Project (b) the Company has significantly advanced discussions with traditional debt and equity financiers in Europe, including some of the largest European-Union backed, state-owned and private development banks in Europe; and (c) the Project benefits from being one of only two lithium projects financially and administratively supported by EU-backed group EIT InnoEnergy, which is the founder and steward of the European Battery Alliance, that counts among its members the most significant financiers of battery metals, battery and electric vehicle projects in Europe including the European Investment Bank.

Please refer to the ASX Announcements dated 15 December 2020 and 15 January 2021 which refer to the Company's Mineral Resources and Ore Reserve respectively, 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 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 have not been materially modified from the original market announcements.

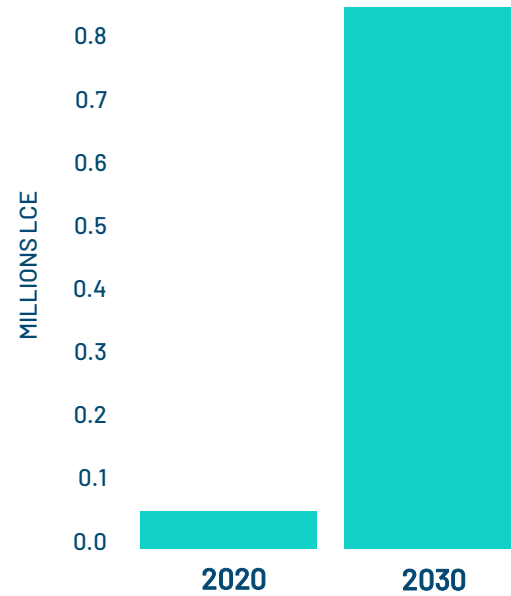
How to support 30 million EVs by 2030 in the EU?

1,000GWh Lithium-ion Battery Capacity By 2030¹



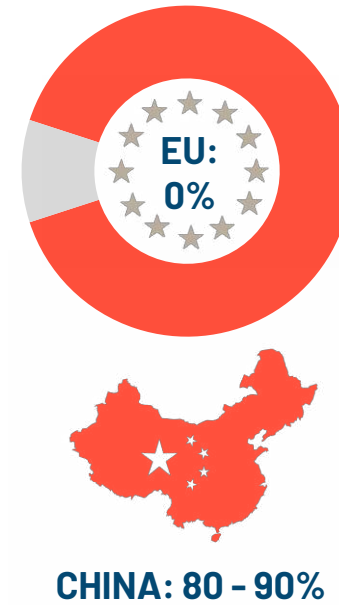
Source: Public announcements

EU: Fastest Growing Lithium Market In The World²



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

Zero Local Supply Of Lithium Hydroxide

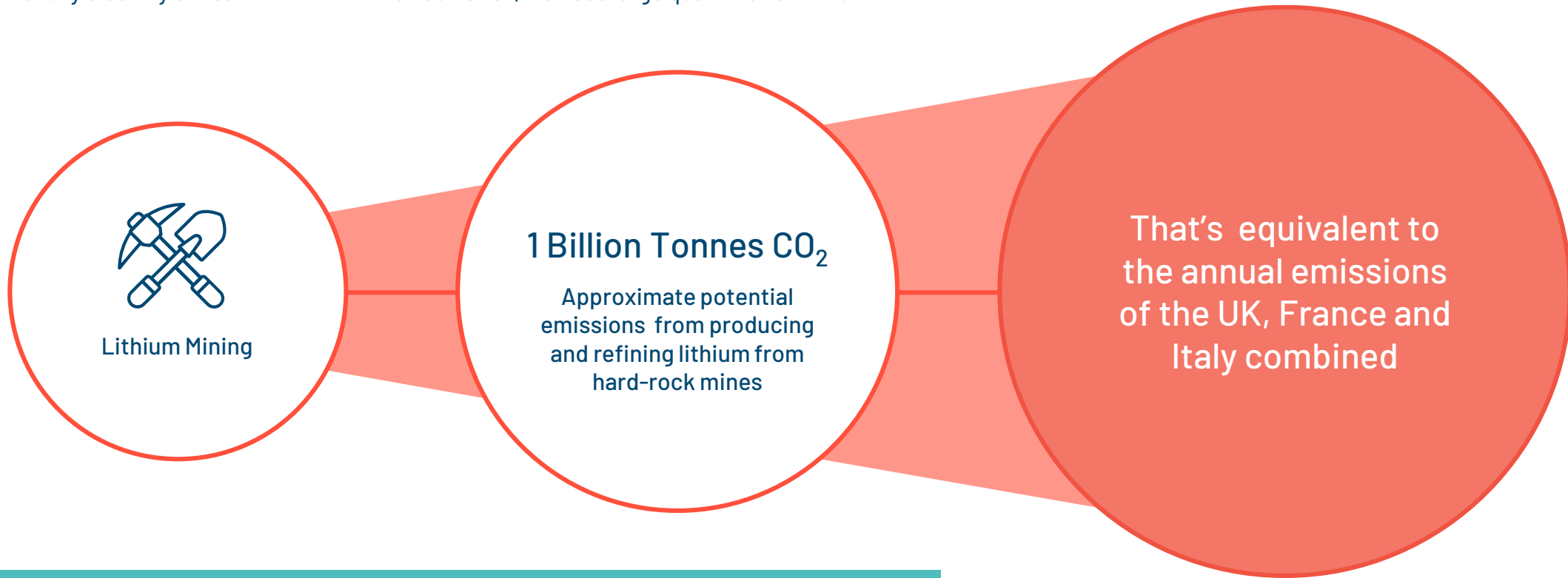


Source: Bloomberg

Note 1: Refer to Appendix 3 for further details on EU lithium-ion battery capacity
Note 2: Based on electric vehicle sales and lithium-ion battery production growth

High environmental footprint of existing supply chain

Lithium is a critical resource for batteries and electric vehicles.
To fully electrify our cars with lithium-ion batteries, we need large quantities of lithium.



Using the current main source of producing and refining lithium, from hard-rock mines, will emit approximately 1 billion tonnes* of CO₂ to fully electrify the world's passenger vehicles.

**Based on 50 kWh average lithium-ion battery size, with average of 0.9 kg LCE/kWh across different cathode chemistries. Total 1.4B vehicles in use worldwide (carsguide.com.au). Carbon footprint per tonne of LiOH production from hard-rock mining calculated as 15t CO₂ per tonne LiOH (The CO₂ Impact of the 2020s Battery Quality Lithium Hydroxide Supply Chain, Minviro Ltd.)*

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'

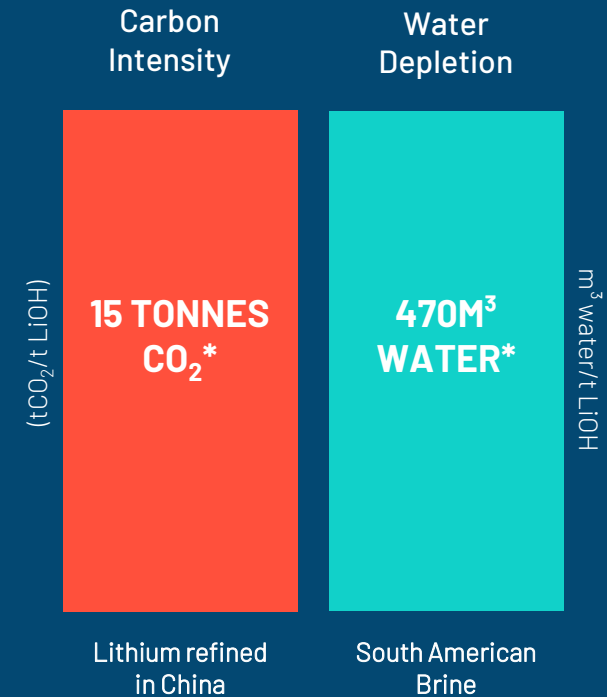


'Road to carbon neutrality: With our suppliers, we work in partnership to implement responsible procurement practices, to ensure sustainable progress throughout the entire supply chain, with specific emphasis wise use of natural resources and reduced environmental impacts'



'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'

Lithium production has a significant environmental footprint:



*Source: Minviro

The EU stepping in to support and regulate the industry

Green Supply Chain



New EU Battery Regulation



Carbon Border Adjustment Mechanism



Battery Passport



ISO/TC 333 Lithium

Local Supply Chain



European Battery Alliance



Critical Raw Materials List



EIB new energy lending policy



European Raw Materials Alliance



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. – **Thierry Breton - EU commissioner**



Vulcan: Goal to become world's first Zero Carbon Lithium™ & renewable energy development company



Goal to become world's first Zero Carbon Lithium™ Company



Geothermal & Lithium production in Germany



Proposed dual revenue Green energy & lithium



In the heart of the fastest growing lithium battery market in the world¹



Largest JORC lithium Resource in Europe²



Potential for very low OPEX operation



Strong cash position



Team of leading experts



Project supported by the EU



ENERGY BUSINESS
74MW
Renewable
Electricity



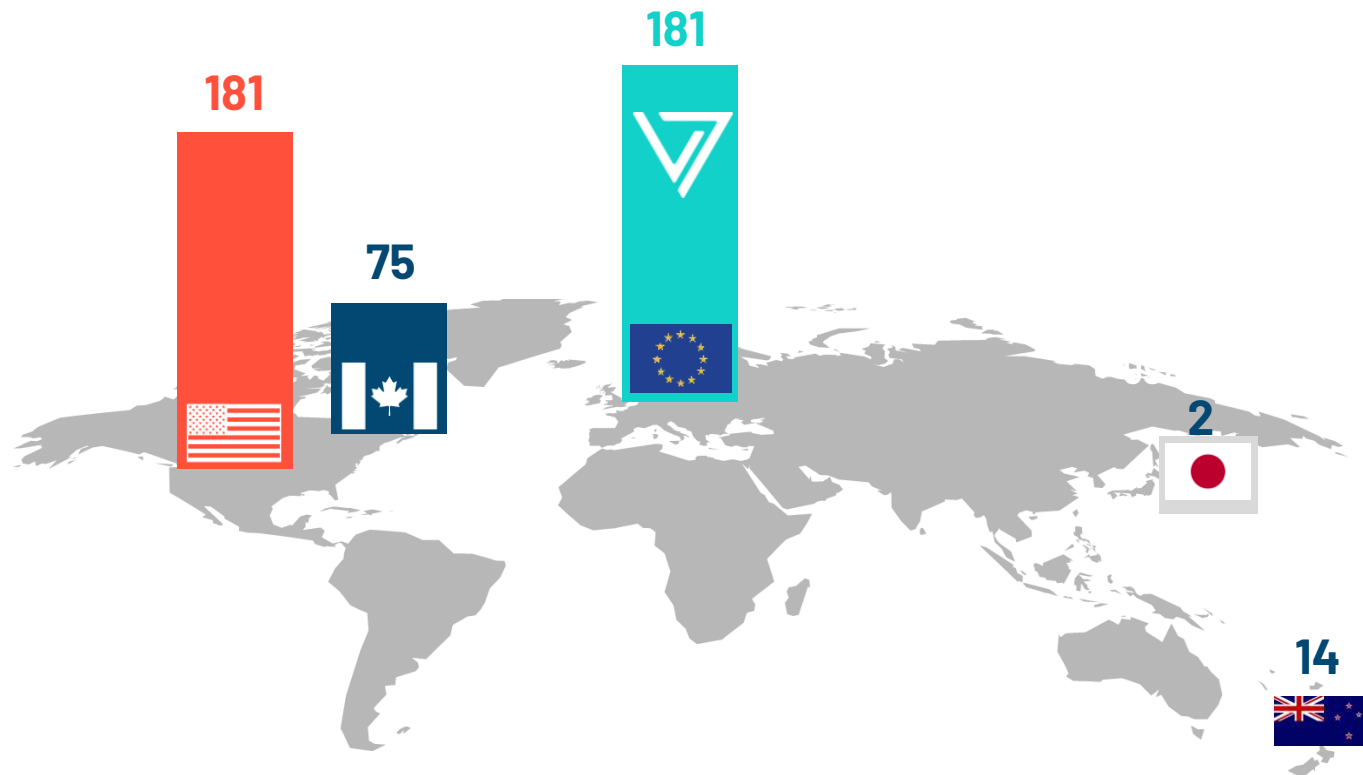
LITHIUM BUSINESS
40,000 tonnes
per year
Lithium
hydroxide



Note 1: Based on electric vehicle sales and lithium-ion battery production growth
Note 2: Refer to Appendix 7 and 13 for further details

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

Lithium concentration
In brine (mg/L Lithium)



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:

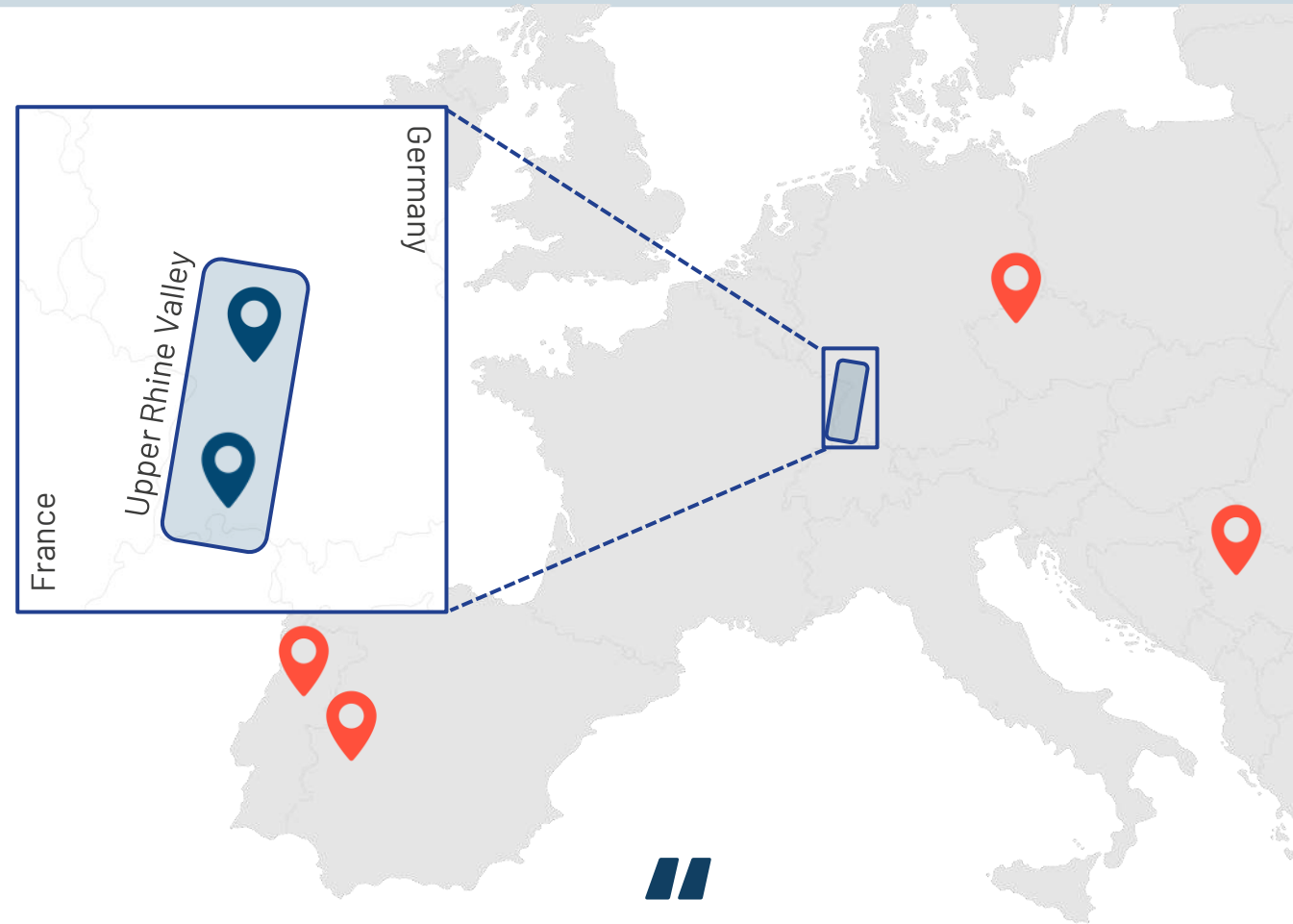
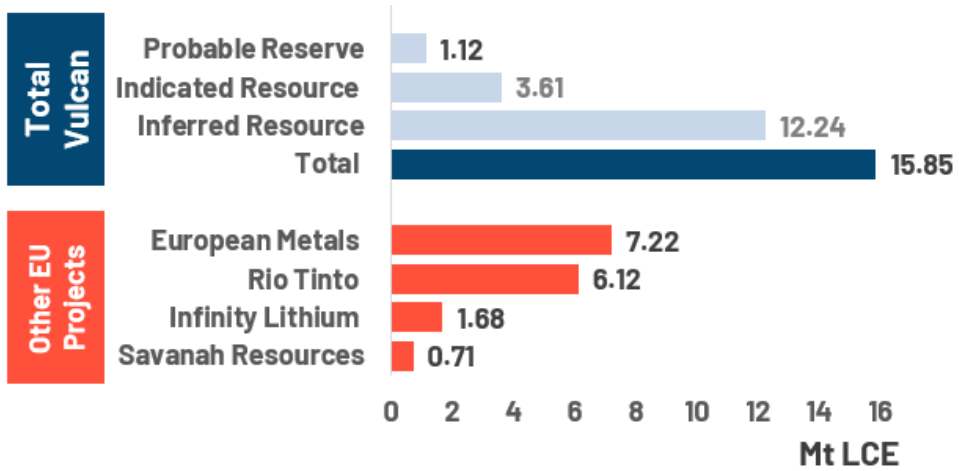
- 1 Renewable heat
- 2 High lithium grades
- 3 High brine flow rate potential

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.

We've defined the largest JORC lithium resource in Europe

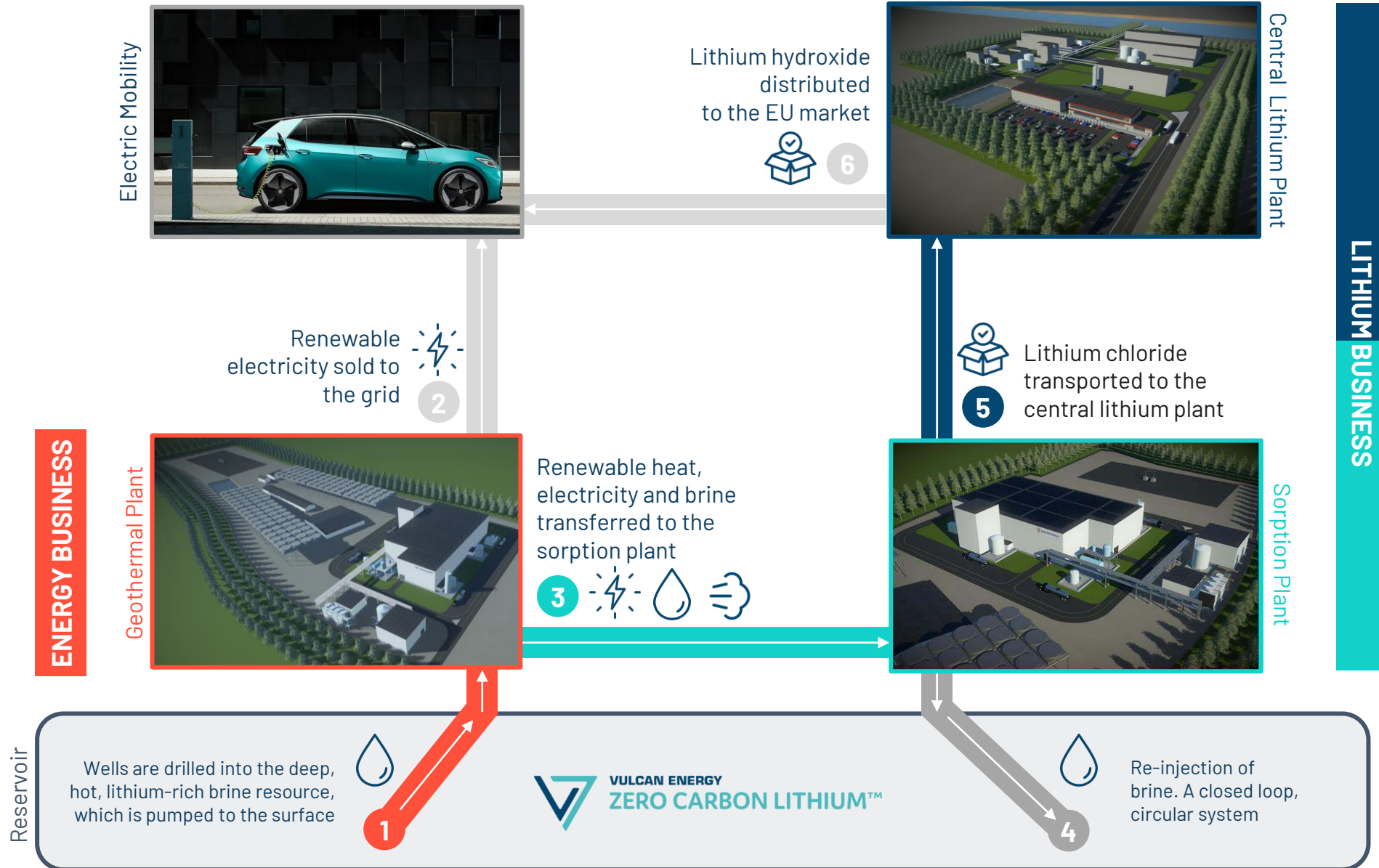


- Large license package
- Largest lithium resource in Europe: 15.85Mt LCE
- Significant potential to scale up production as market grows: advantage over mined sources



Large enough to supply millions of EVs as the market scales up

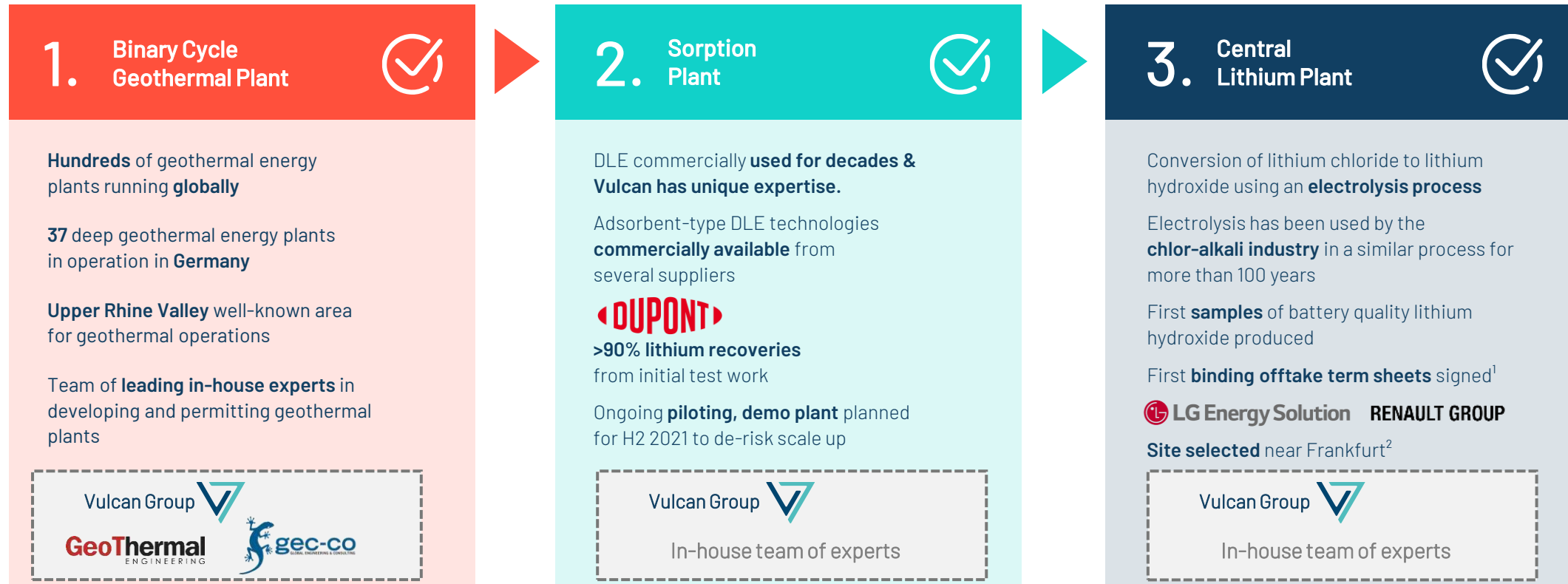
Vulcan's renewable energy & lithium chemicals project



Commercially available technologies combined & 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.**



Note 1: Refer to slide 18 for further details regarding the Company's offtake arrangements

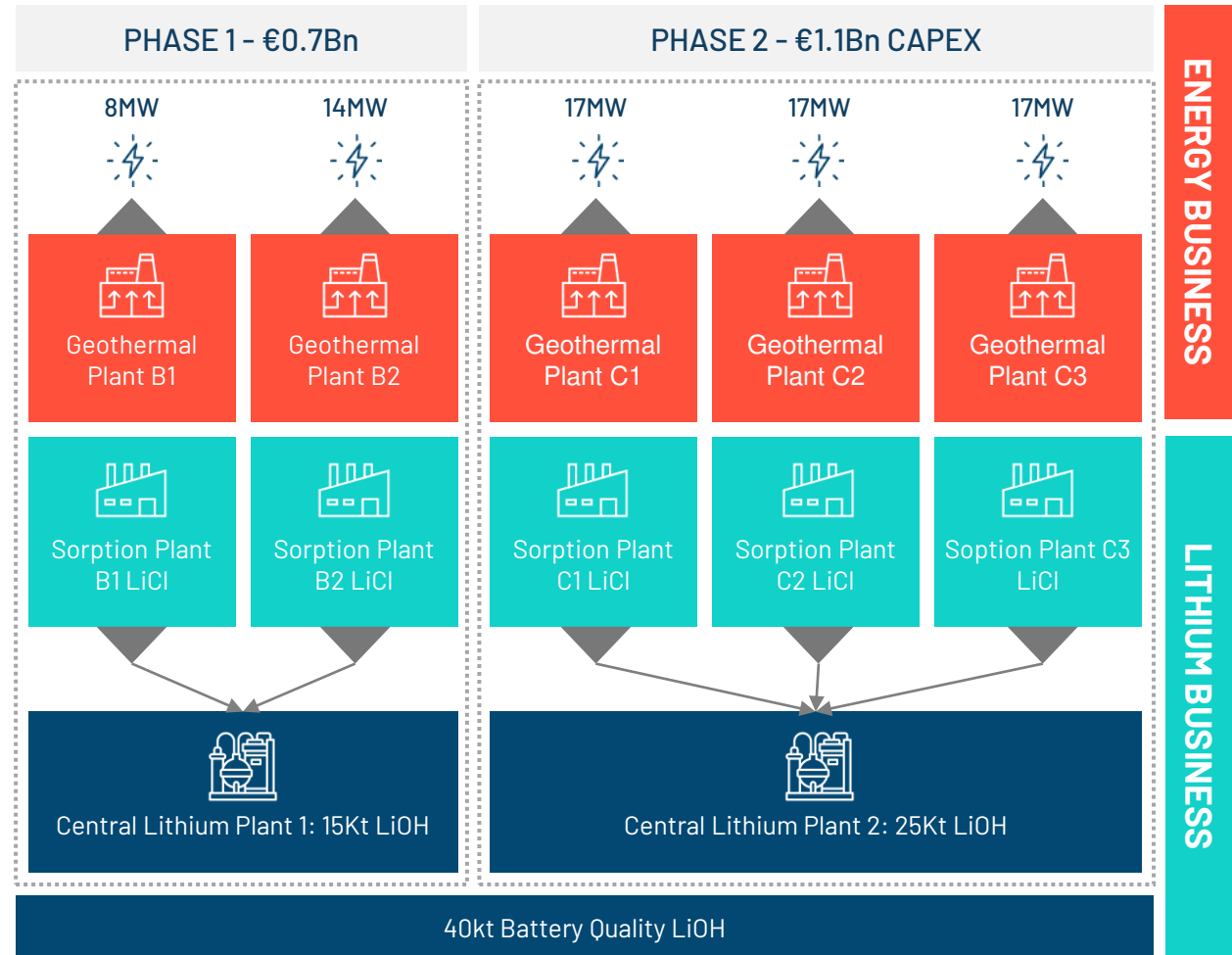
Note 2: Refer to Appendix 12 for more information on the location of the CLP

Proposed dual purpose renewable energy and battery chemicals project

Energy Business, Zero Carbon Lithium™ Business:



Target metrics from Pre-Feasibility Study:



ENERGY BUSINESS

Decarbonizing the grid

Grid

Coal phase-out in Germany

Industries

Bans for fossil heating systems

Cities

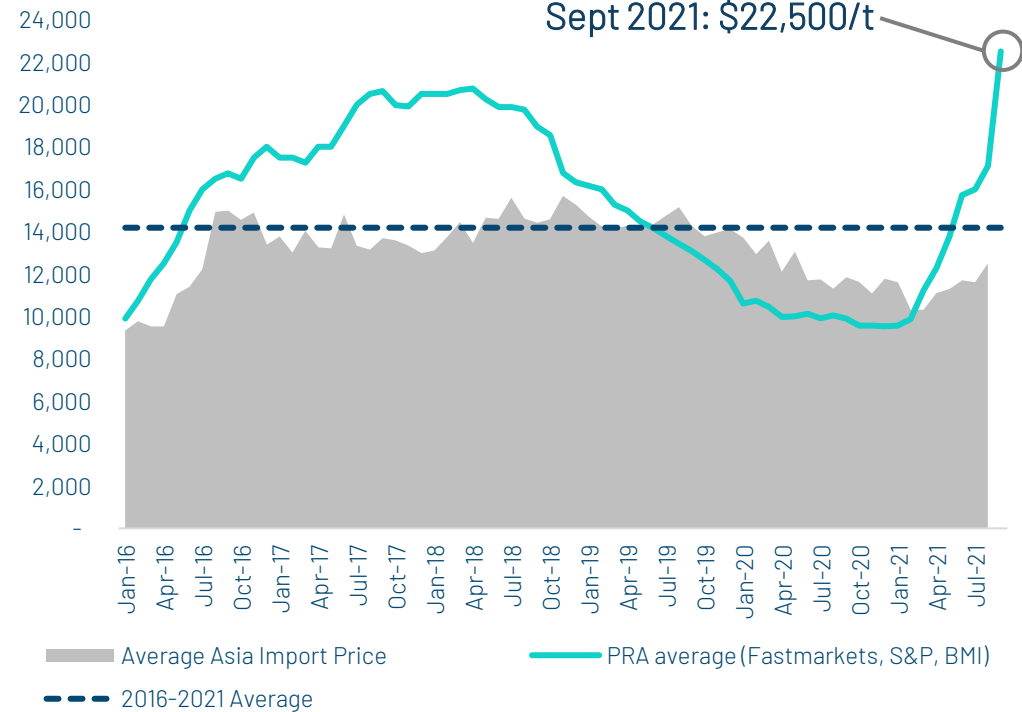
Renewable Electricity: Geothermal energy in the form of electricity is sold to the grid

Feed-in Tariff €25.2c /KWh	Guaranteed for 20 years
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Renewable Heat: Energy in the form of heat can be sold to several public and private customers via pipes, proximity is a requirement

LITHIUM BUSINESS

Lithium hydroxide prices

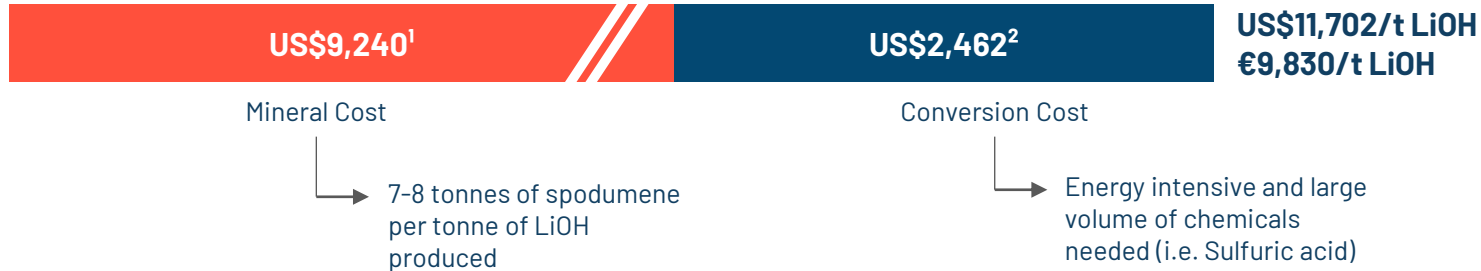


Source: Trade statistics compiled from Global Trade Atlas®, Benchmark Minerals (2016-2017), Fastmarkets (2017-2021)

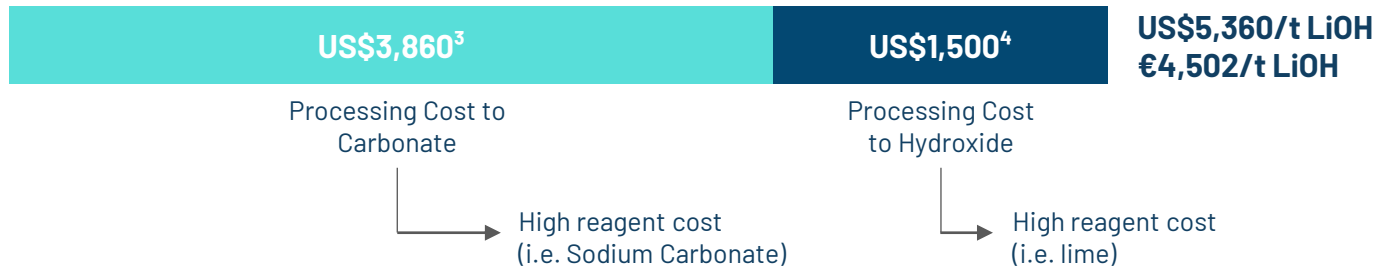
Potential for very low OPEX operation

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

LiOH VIA HARD-ROCK PROCESSING



LiOH VIA BRINE PROCESSING



VULCAN'S PROCESS⁵



Note 1: S&P Global Platts, 27 August 2021, 6% Spodumene Concentrate FOB Australia: \$1,320/mt

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 1-3 for further details regarding the Project economics and production targets

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. Refer to "Risk Factors" in Appendix 7

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.



It doesn't need to cost more to be green



ENERGY BUSINESS



74MW Power

€0.7Bn NPV Pre-tax

€0.5Bn NPV Post-tax

16% IRR Pre-tax

13% IRR Post-tax

€226M CAPEX Phase I

€0.066/KWh OPEX

Payback: **6 years**

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**



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

Leading environmental credentials

Per tonne of lithium hydroxide produced



 **Hard rock mining**
60% of world lithium production

 **Evaporation ponds**
40% of world lithium production

 **VULCAN ENERGIE**
ZERO CARBON LITHIUM™



Goal to have the lowest environmental footprint of any lithium project globally

Materially improving the global battery chemicals supply chain



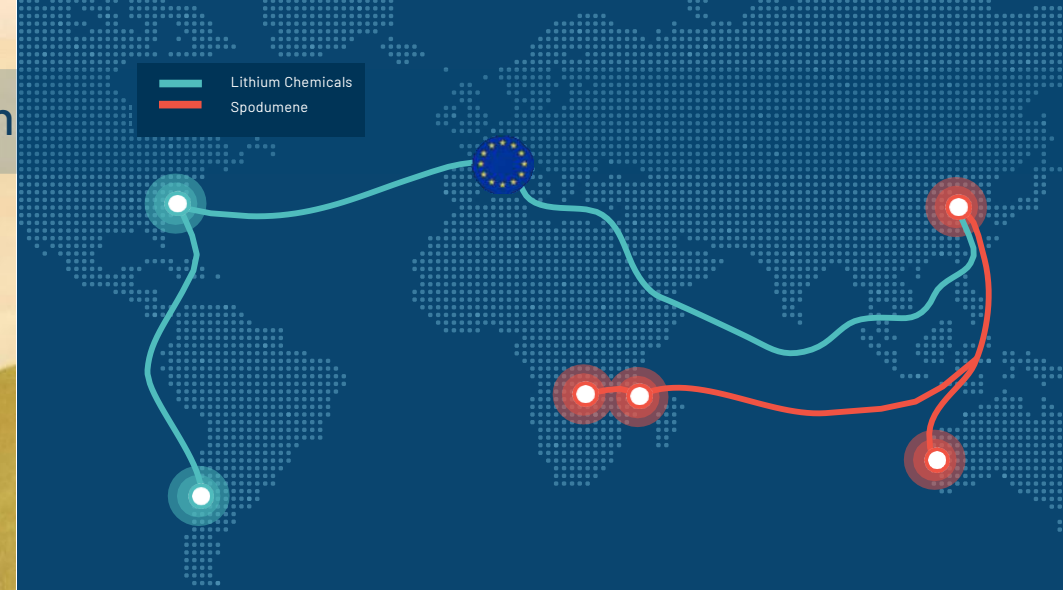
Process development and R&D development of world's first lithium and renewable energy co-production process in Pre-Feasibility Study: Zero Carbon Lithium™.

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

Working with Circular to achieve world's first lithium traceability and dynamic CO₂ measurement across supply chain.

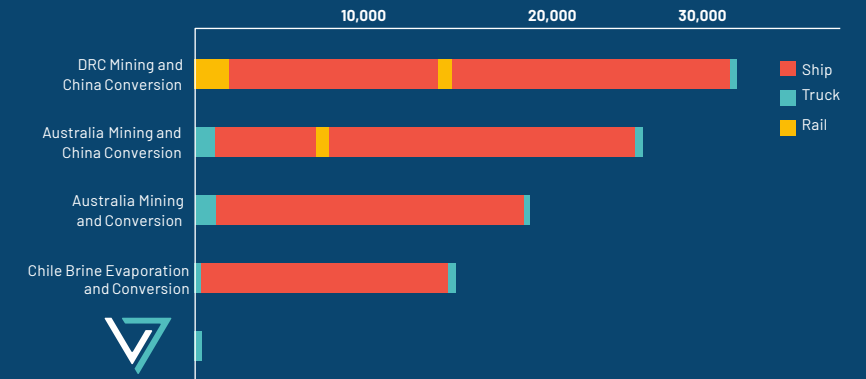
Admission to Global Battery Alliance toward advancing battery materials traceability and transparency.

CARBON NEUTRAL NOW, NOT IN THE FUTURE.



Transport Distances for Different Lithium Chemicals

Transport Distances for Different Lithium Chemicals

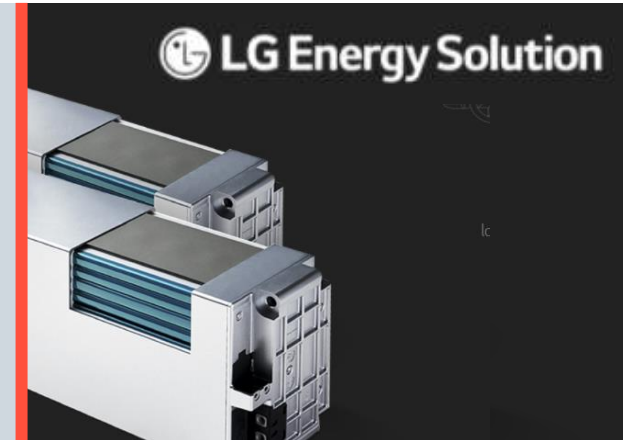


As well as having a carbon neutral process, the Vulcan Zero Carbon Lithium™ Project also intends to reduce the transport distance of lithium chemicals into Europe to almost zero, compared with Europe's current options which are geopolitically undesirable and/or have a large carbon footprint of transport.

Securing long term lithium supply contracts

LG ENERGY SOLUTION 19TH JULY 2021

- **Binding lithium hydroxide offtake term sheet** signed with **LG Energy Solution**
- Initial **5-year term** which can be extended by further 5 years
- Start of commercial delivery set for **2025**
- LGES to purchase **up to 10,000tpy** of battery grade lithium hydroxide
- LGES is the **largest producer of lithium-ion batteries for EVs in the world**
- LGES is operating a **6GWh LIB factory in Poland**, and planning to increase this capacity to 65GWh



RENAULT GROUP: 1ST AUGUST 2021

- **Binding lithium hydroxide offtake term sheet** signed with **Renault Group**
- Initial **5-year term** which can be extended if mutually agreed
- Start of commercial delivery set for **2026**
- Renault to purchase between **6,000 and 17,000tpy** of battery grade lithium chemicals
- In line with Renault Group's strategy to offer competitive, sustainable and '**made in Europe**' EVs
- Renault Group will be able to **avoid from 300 to 700 kg of CO₂** for a 50-kWh battery.



Lithium market dynamics



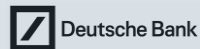
Technology & Costs



"We expect **DLE technology to dominate** the future lithium mining sector. Fitch posits **geothermal lithium extraction** techniques to rise in popularity among Western consumers¹



"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 globally²



"**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 resource³



Sustainability



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



"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



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



Market Balance



"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



"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



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



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



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

Vulcan – Zero Carbon Lithium™ Board



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.



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. 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..



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. Horst Kreuter
Co-Founder, Board Advisor
& Exec 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.



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.



Julia Poliscanova
Special Advisor

Senior Director with the EU's Transport and Environment. Instrumental in shaping policies around EU vehicle CO₂ standards & sustainable batteries. On the steering committee for the Battery CO₂ Passport program of the Global Battery Alliance. Previously worked for the Mayor of London and in the European Parliament following EU legislation on renewables, energy efficiency and sustainable transport.



Vulcan is leading the way with a 67% female Board composition

Vulcan – Zero Carbon Lithium™ Team – Australia and International



Vincent Ledoux-Pedailles
Vice President
– Business Development

Vincent has over 10 years of commercial experience in the chemicals and mining industry. Vincent was previously Executive Director – Corporate Strategy at Infinity Lithium Corporation, where Vincent led the project to become the first to secure EU funding. Vincent was also appointed as a Lithium Expert by the European Commission. He previously worked at IHS Markit where he led the lithium and battery materials research team covering the entire industry’s supply chain from raw materials to E-mobility. Vincent holds a Business Masters in Risk Management and International Purchasing from ESDES Business School in France.



Daniel Tydde
Company Secretary &
In-House Legal Counsel

Daniel is an experienced corporate lawyer with over 15 years’ experience across a wide range of corporate, commercial and finance areas including initial public offerings; equity and debt capital raisings; corporate regulatory compliance; asset and share sales and purchases; corporate governance; corporate restructuring and re-organisations; and litigation. Most recently, Daniel held a senior position at Steinepreis Paganin and prior to that, worked at Clayton Utz and Phillips Fox (now DLA Piper).



Rob Ierace
Chief Financial Officer
– Australia

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 and a Graduate Certificate of Applied Finance and Investment.



Jess Bukowski
Public & Investor
Relations Manager

Jess has extensive experience advising top 20 ASX companies on communications, media and investor relations including six years with Fortescue Metals Group as Senior Media and Corporate Affairs Specialist. Jess was previously an adviser to Prime Minister Kevin Rudd working across government and international organisations. She brings academic qualifications in social policy and community development from the University of Queensland and post-graduate qualifications in public relations and investor relations.



Our team of leading experts in geology, chemistry and engineering is supported by a Board with significant leadership and expertise in renewable energy, project finance, chemicals and the lithium-ion battery industry.

Vulcan – Zero Carbon Lithium™ Team - Germany



Thorsten Weimann
Chief Operating Officer

Expert in geothermal and drilling technology, with more than 25 years of professional experience. Thorsten is Technical Manager of the German Geothermal Association (Bundesverband Geothermie e.V.) and he is well connected in the German geothermal industry. Diploma in Engineering (Technical University of Munich) and an MBA (Universities of Augsburg and Pittsburgh).



Markus Ritzauer
Chief Financial Officer - Germany

Markus has over 20 years' experience in finance roles within the chemicals industry. His previous role was as Head of Finance at Currenta, a chemical park service provider in Germany formerly part of Bayer, with ~EUR 1.7bn turnover, ~5,300 employees and ~EUR 250m EBITDA. Markus was also CFO of the Bayer Group of companies in South Korea and Head of Corporate M&A in the APAC region for Bayer.



Dr Stephen Harrison
Chief Technical Officer

CTO of Simbol Materials for seven years (2008-2015), where he led the scientific and engineering teams through a rapid process development, taking less than one year to develop a process to extract lithium from geothermal brine. As CEO of Rakehill Technology LLC, Dr. Harrison has since consulted to the lithium industry on various lithium extraction technologies including sorbents.



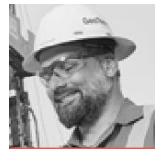
Beate Holzwarth
Chief Communication Officer

Beate has over 20 years' experience in various communication and marketing roles within Mercedes-Benz Cars and Daimler Trucks. As a direct report of the divisional Board of Mercedes-Benz Cars Operations she was responsible for national and international ground-breaking events of new production sites with the involvement of state representatives and local politicians.

Renewable Energy Business



Markus Ruff
CEO Global
Engineering &
Consulting Company



Tobias Hochschild
CEO GeoThermal
Engineering GmbH



Engineering company focused on deep geothermal projects at surface: power plant, heat stations, drill pads, and permitting. More than 300 years engineering knowledge of Gec-Co's team. Created in 2012.



Planning and Engineering company for deep geothermal energy projects, based in the Upper Rhine Valley, Germany. Highly credentialed scientific team with >100 years of combined leading expertise. Created in 2005.

Lithium Chemicals Business



Dr Thomas Aicher
Lead Chemical
Engineer



Dr Angela Digennaro
Lab
Manager

Chemical Engineering & Piloting Team

Laboratory Team



VULCAN ENERGIE
ZERO CARBON LITHIUM™

Project Development team based in Germany. World-leading experts in the fields of lithium chemistry, sorption and chemical engineering.



70+ People




**Leading
Engineering
Team**



**40% Female
Workforce**

We have developed a success-driven culture orientated towards delivering our Zero Carbon Lithium™ Project utilising the best technologies and leading experts.

The story so far: progress to date

2019		2020		2021			
Full Year		Full Year		Q1	Q2	Q3	Q4
Acquisition of EU focused Vulcan Lithium Project	Positive Scoping Study published	Positive Pre-Feasibility Study published		EU sustainable battery & CO ₂ policy expert, Former Tesla Head of Battery Supply Chain, Former senior EY Global Renewables Partner and Evonik Senior executive join Board		New exploration license granted	
Agreement with major German utility to access operational geothermal plant	Start of lithium extraction test work	\$120 million placement		Agreement with Circular to develop world's first lithium traceability & product CO ₂ measurement		Vulcan signs binding lithium offtake term sheet with LG Energy Solutions 	
Largest JORC lithium resource in Europe identified ¹	\$4.8m institutional and ESG investor equity placement	Acquisition of world-class geothermal sub-surface development team - GeoT		Vulcan pilot plant for sorption on Upper Rhine Valley brine operational		Renault Group and Vulcan Energy: five-year strategic partnership and binding lithium offtake term sheet RENAULT GROUP	
	Investment agreement signed with EU-backed EIT InnoEnergy	Agreement with DuPont to advance sorption process		Vulcan doubles size of technical team with acquisition of leading German geothermal engineering business		LCA updated: negative 2.9t of CO ₂ emitted per tonne of LHM, lowest planned in the world	
	New exploration license granted	High lithium grades from bulk brine sampling		Lithium process expert Dr Stephen Harrison appointed as Chief Technical Officer		Vulcan announces intention to apply to dual list on the FSE	
	Increased lithium resource, reaching 15.85 Mt LCE					BNP Paribas appointed as Financial Advisor toward project financing	
						\$200 million placement	
						First battery quality lithium hydroxide from pilot operations	
						Vulcan secures German site for its planned commercial lithium hydroxide site	

Next steps will be stepwise project execution, whilst examining ways to further grow our business



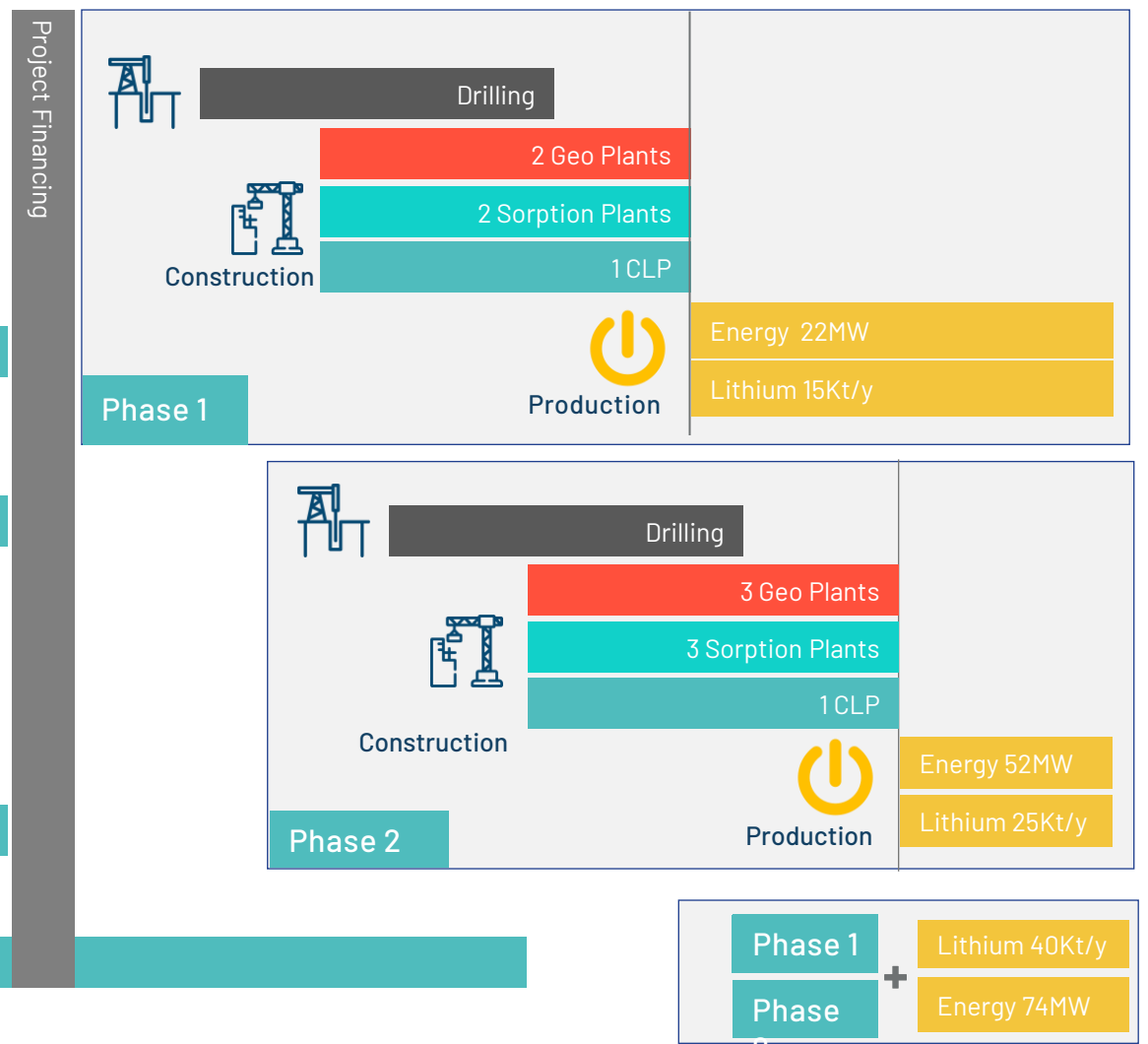
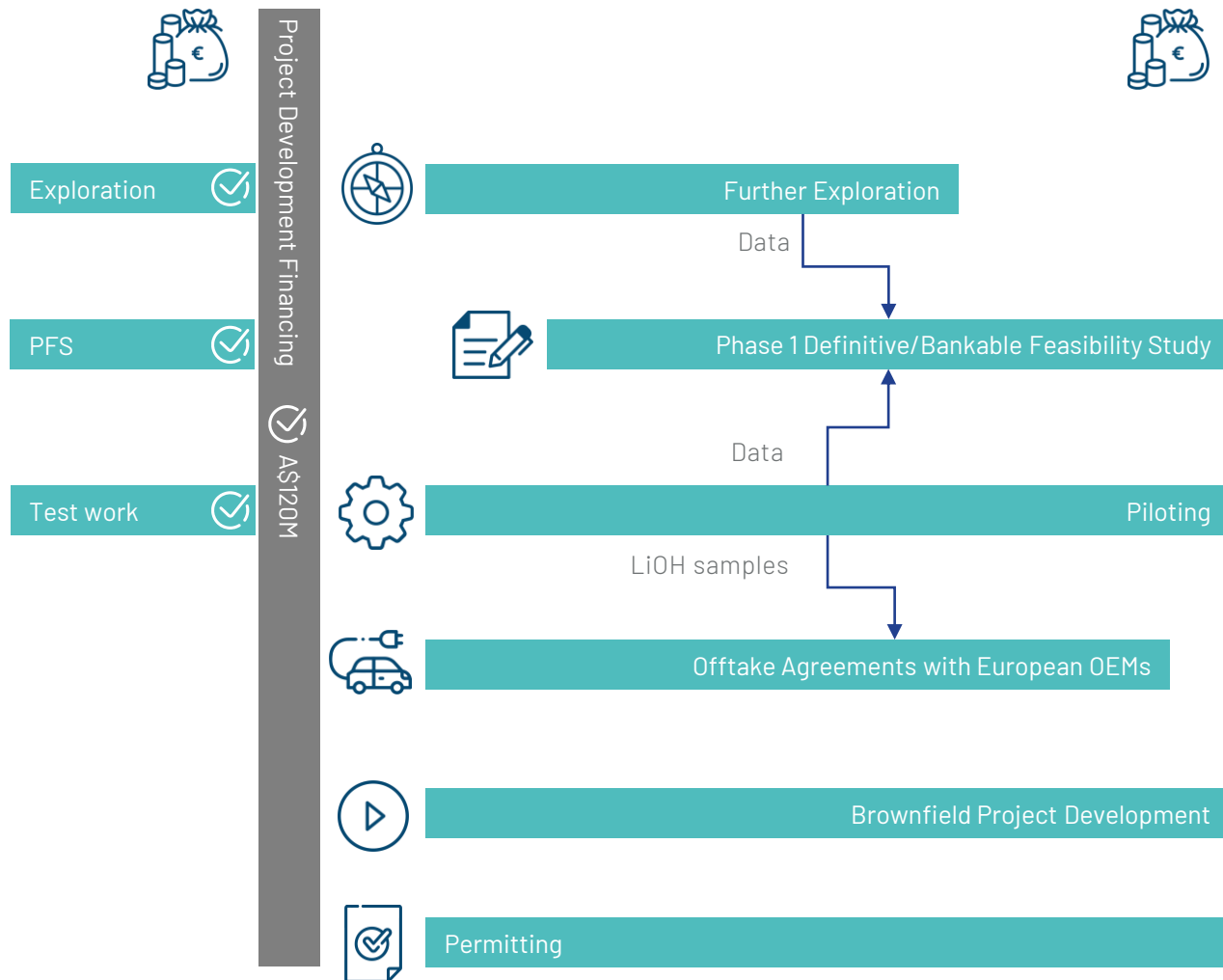
I am from Syria and I have been living in Germany for 6 years. I finished my education as a chemical lab technician in Germany. My hobbies are painting, sports and reading.

As a chemical technical assistant in Vulcan's laboratory, I am working with lithium extraction and ICP-OES instruments. I am a part of the Vulcan team because I like new challenges: exploring how to extract and produce lithium optimally so that in the future we can supply many European countries with lithium and reduce our climate and land of as much CO₂ as possible.

Aziz Mohadeen | Technician

Note 1: Refer to Appendix 7 and 12 for further information

Target project timeline





Share price and capital structure

ASX : VUL

Shares on Issue	123,606,179
Performance Milestone Shares*	4,491,174
Performance Rights*	11,238,688
Market Capitalization at \$12.90 (undiluted)	~\$1.59B
Enterprise Value at \$12.90 (undiluted)	~\$1.29B
Cash Position	~\$302M
Top 20 Shareholders	~52%
Management (undiluted)	~19%

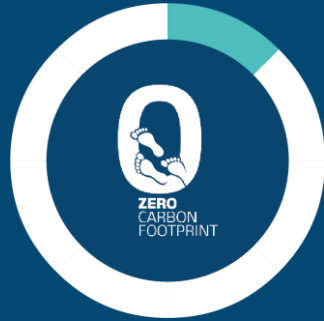
Frankfurt: 6K0

Key Shareholders

Dr. Francis Wedin	11.95%
HancockProspecting Pty Ltd	6.66%
Mr. Gavin Rezos	5.58%



*Refer ASX Announcement 10 July 2019 for further details.



Goal to become world's first Zero Carbon Lithium™ Company



Europe's largest lithium Resource¹



Location centre of fastest growing market²



Supported By EU funding, regulation & initiatives



Low cost & resilient financials



Strong cash position



The right team for the job



Rapidly advancing lithium project

Note 1: Refer to Appendix 4 and 5 for further information

Note 2: Based on electric vehicle sales and lithium-ion battery production growth



VULCAN ENERGY
ZERO CARBON LITHIUM™



Appendices

Appendix 1: Vulcan's renewable project description

Germany

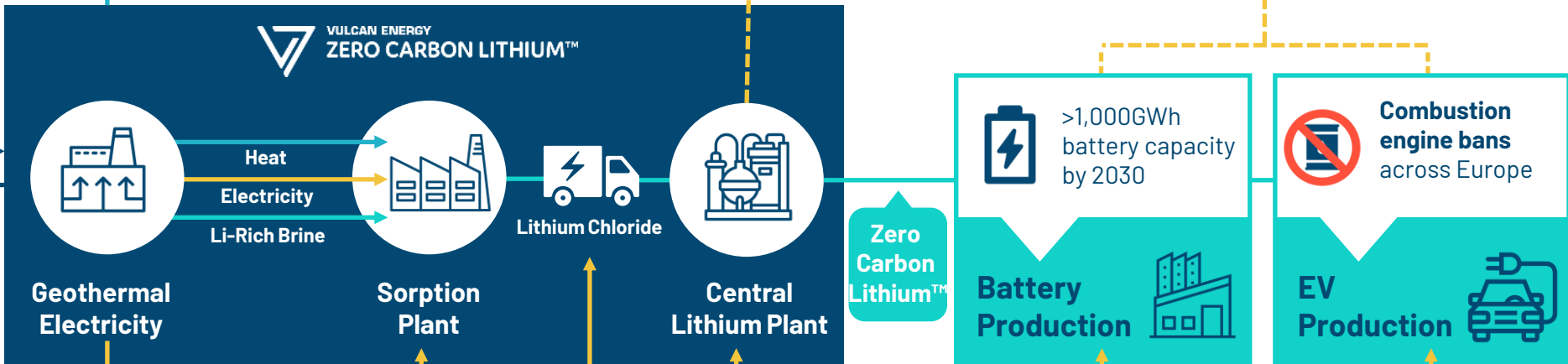


Zero Carbon Heat

European Union



Lithium-Ion Battery Supply Chain



Feed-In Tariff

Regulations & Initiatives



- EU New Battery regulation
- European Battery Alliance
- EU Recovery Plan
- EU Green Deal

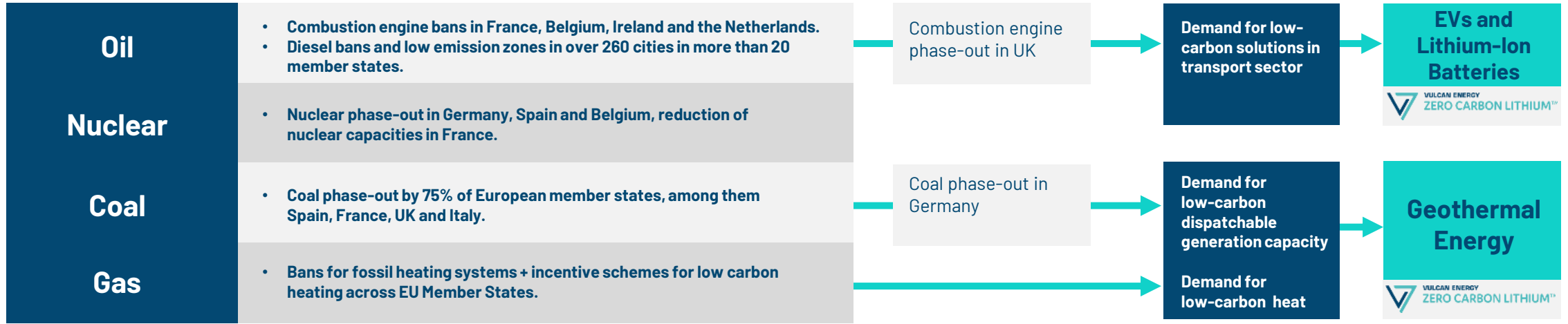
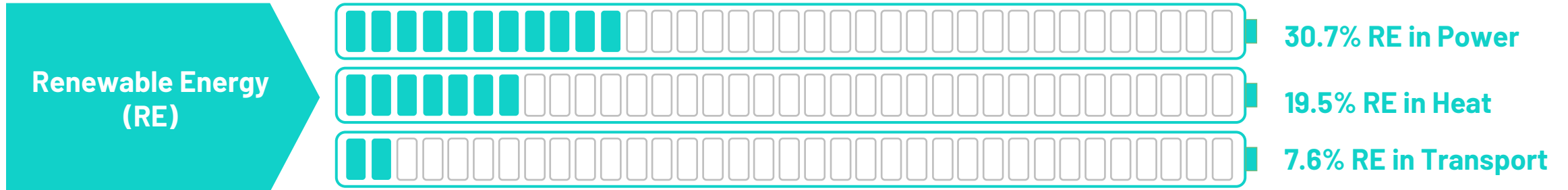


Upper Rhine Valley Reservoir

Appendix 2: The fossil-nuclear era in Europe is coming to an end

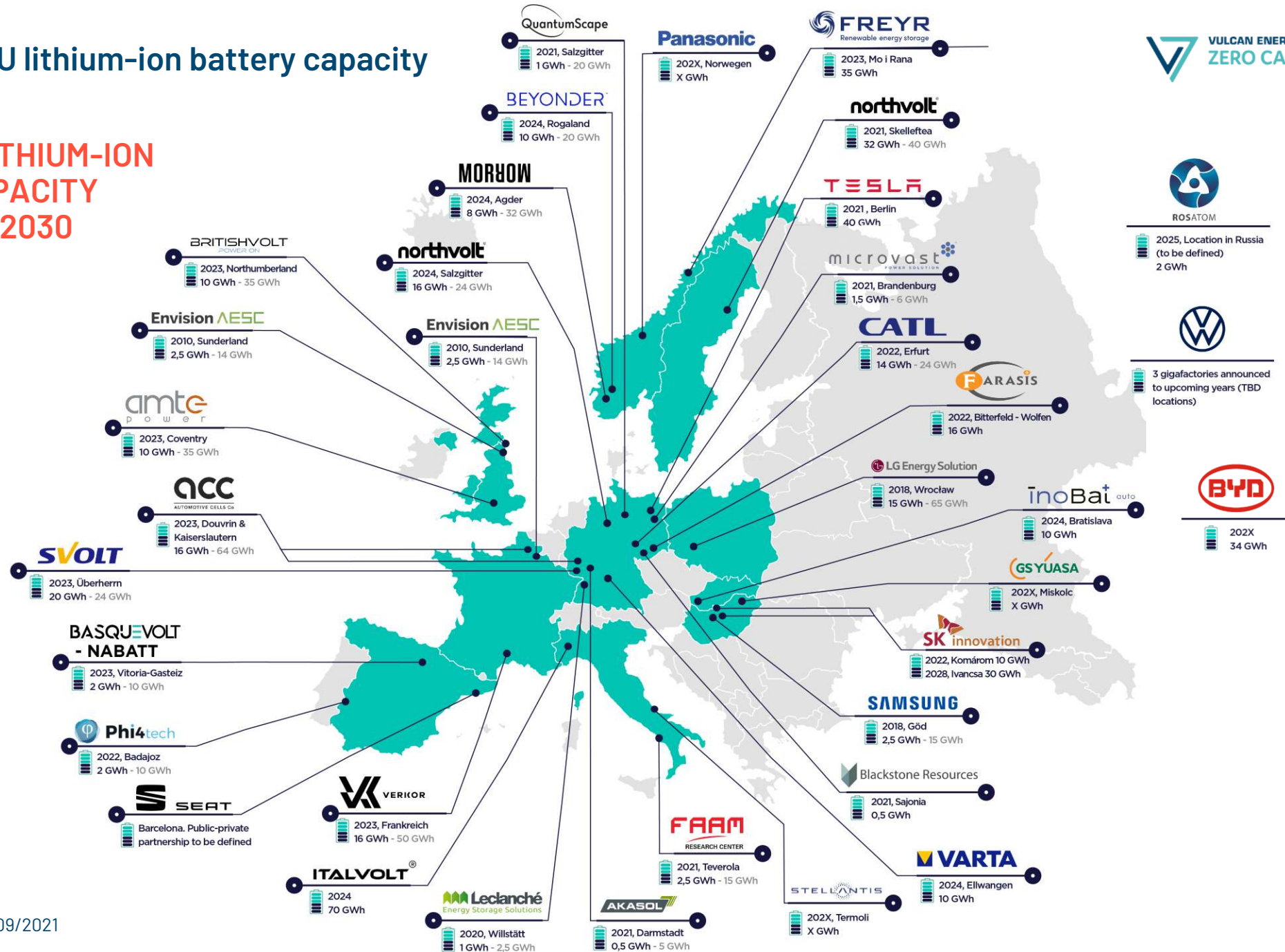


Europe is aiming for carbon neutrality, but the EU's energy transition is far from being complete:



Appendix 3: EU lithium-ion battery capacity

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



Source: CIC energiGune 09/2021

Appendix 4: 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. CO₂ 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 5: 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.



May '20

Agreement signed with EU-backed body to launch Vulcan Zero Carbon Lithium® Project.



Appendix 6: Vulcan & Circular to establish world-first full lithium traceability & transparency across the EU supply chain

Circular offers a software solution that enables customers to track raw materials and CO₂ emissions through supply chains to demonstrate responsible sourcing and sustainability.

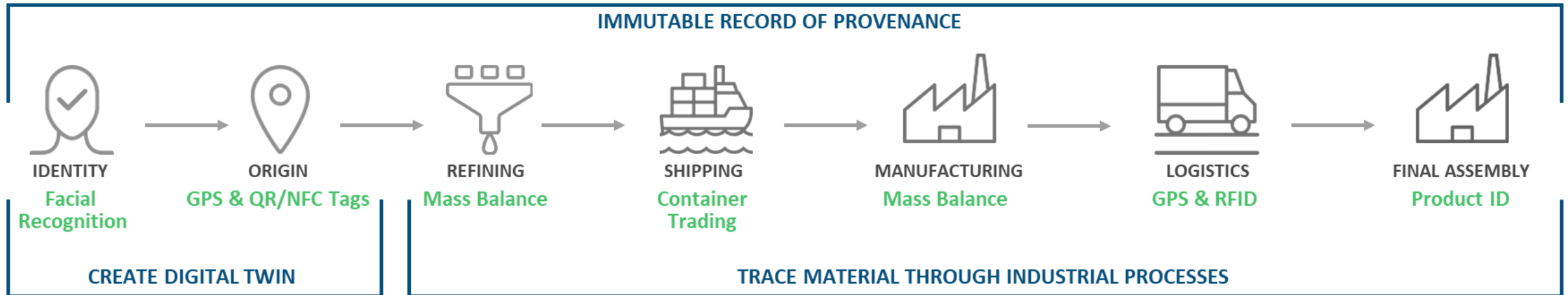
By applying blockchain, artificial intelligence, machine learning, facial recognition, mass balancing and other technologies Circular makes sure that the digital twin is reliably linked to the physical resource through out its entire journey. This enables:

1. Reputational Protection

2. Proof of compliance with guidelines and regulations

3. Dynamic carbon tracking

4. Reducing due diligence, audits and reporting costs



Example applied to the cobalt supply chain

Circular's existing customers:



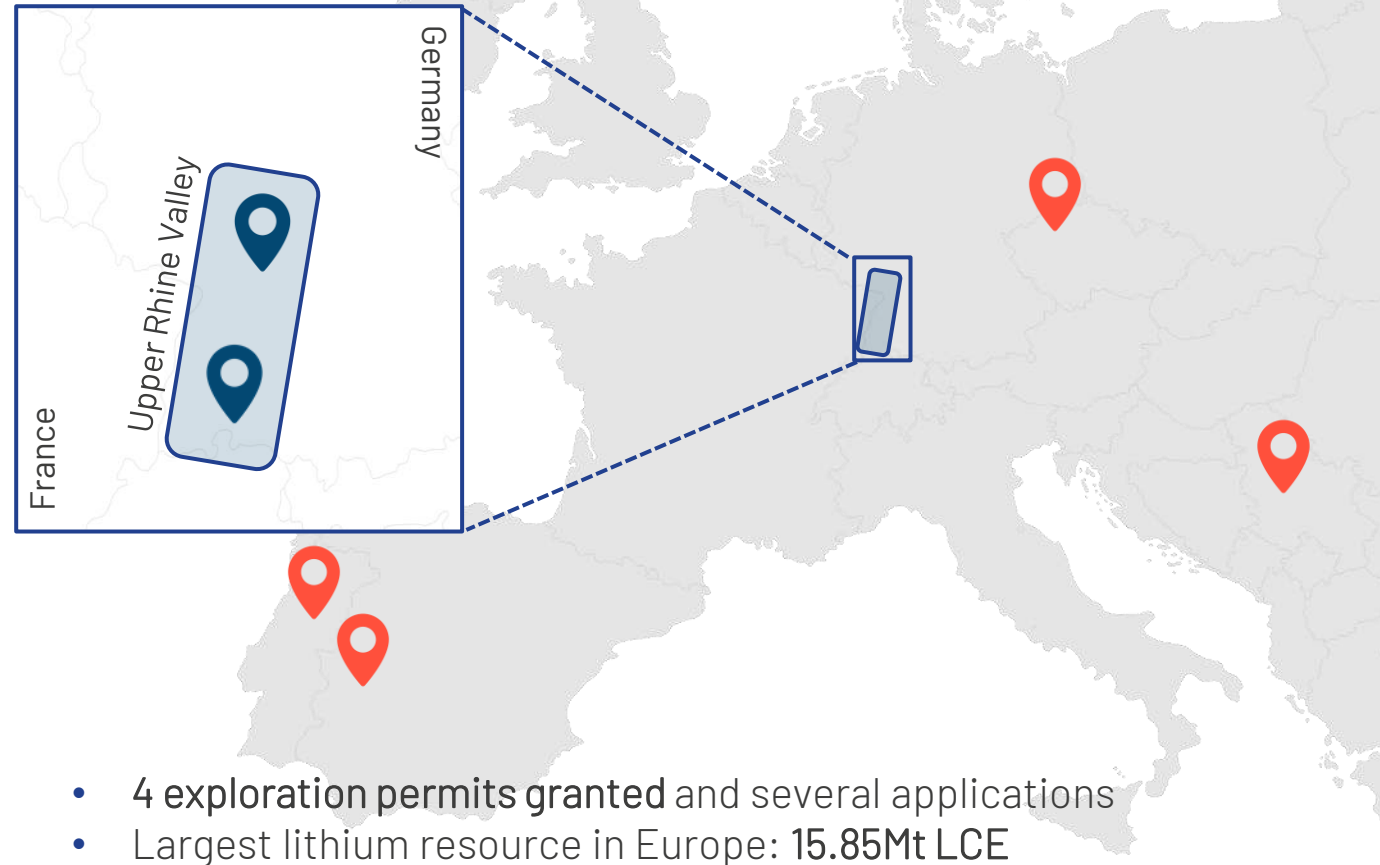
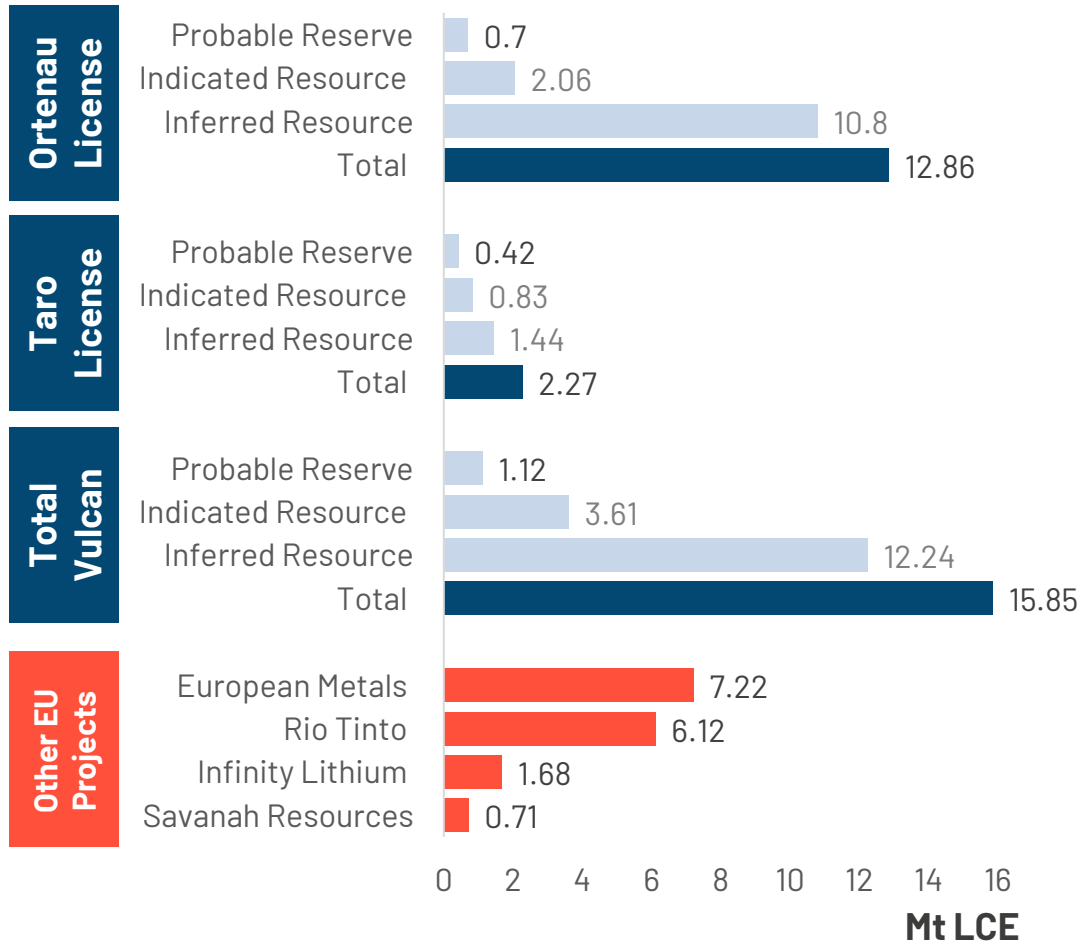
CATL



POSCO
CHEMICAL



Appendix 7: Largest JORC lithium resource in Europe



Notes: Vulcan's URVP Li-Brine resource and reserve area in Europe. Mineral resources are not mineral reserves and do not have demonstrated economic viability.

The preceding statements of Reserves conforms to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) 2012 edition. 100% of the material in the PFS project schedule is based on the Probable Ore Reserves category. The Probable Ore Reserves were calculated assuming the production and processing methods determined for the PFS. Sources for other company data, which have all at the stage of having completed a Pre-Feasibility Study, with varying mixes of Inferred, Indicated and Measured Resources: ASX:EMH 10/2020 presentation, ASX:RIO: 12/2020 release, ASX: INF: 06/2020 presentation, AIM:SAV: 11/2020 presentation.

Appendix 8: 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	

The Salton Sea in California



The Upper Rhine Valley in Germany

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 9: Target project economics from PFS - CAPEX



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.

Appendix 10: Target project economics – possible structures

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									
	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
	CLP					CLP					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							
<i>CAPEX Geo</i>											<i>226</i>		<i>474</i>			<i>438</i>		<i>700</i>							
<i>CAPEX Sorption</i>						<i>751</i>							<i>291</i>					<i>460</i>							
<i>CAPEX CLP</i>	0.066					<i>322</i>							<i>182</i>					<i>240</i>							
OPEX €/KWh or LiOH€/t						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 11: Target project economics – possible structures

Full project developed at the same time and integrated under one business.

Phase 1 developed first and is an integrated business

Phase 2 developed second and is an integrated business

FULL PROJECT NO PHASING 2024 Start				
INTEGRATED BUSINESS				
GB1	GB2	GC1	GC2	GC3
SB1	SB2	SC1	SC2	SC3
CLP1		CLP2		
74MW & 40Ktpy LiOH				

PHASE 1 2024 Start				
INTEGRATED BUSINESS				
GB1	GB2	GC1	GC2	GC3
SB1	SB2	SC1	SC2	SC3
CLP1		CLP2		
21MW & 15Ktpy LiOH				

PHASE 2 2025 Start				
INTEGRATED BUSINESS				
GB1	GB2	GC1	GC2	GC3
SB1	SB2	SC1	SC2	SC3
CLP1		CLP2		
52MW & 25Ktpy LiOH				

Revenues €M/y	652
Net Op. Cash Fl. €M/y	507
NPV Pre-tax €M	3,443
NPV Post-tax €M	2,250
IRR Pre-tax	26%
IRR Post-tax	21%
Payback (year)	5
CAPEX €M	1,738
<i>CAPEX Geo</i>	<i>665</i>
<i>CAPEX Sorption</i>	<i>751</i>
<i>CAPEX CLP</i>	<i>322</i>
OPEX €/KWh or LiOH€/t	2,640

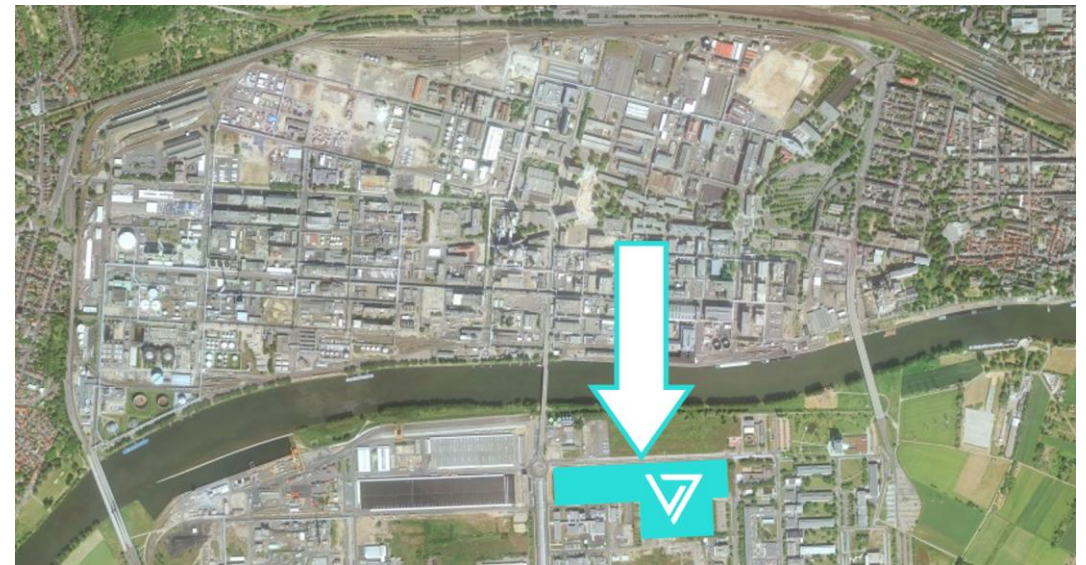
Revenues €M/y	232
Net Op. Cash Fl. €M/y	171
NPV Pre-tax €M	1,114
NPV Post-tax €M	703
IRR Pre-tax	23%
IRR Post-tax	18%
Payback (year)	5
CAPEX €M	700
<i>CAPEX Geo</i>	<i>226</i>
<i>CAPEX Sorption</i>	<i>291</i>
<i>CAPEX CLP</i>	<i>182</i>
OPEX €/KWh or LiOH€/t	3,139

Revenues €M/y	420
Net Op. Cash Fl. €M/y	324
NPV Pre-tax €M	2,145
NPV Post-tax €M	1,403
IRR Pre-tax	27%
IRR Post-tax	22%
Payback (year)	6
CAPEX €M	1,138
<i>CAPEX Geo</i>	<i>438</i>
<i>CAPEX Sorption</i>	<i>460</i>
<i>CAPEX CLP</i>	<i>240</i>
OPEX €/KWh or LiOH€/t	2,792

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

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

- Vulcan signed an agreement with chemical park management company Infracore, 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: Information for slide 8 & 9

Company ¹	Code	Project	Stage	Resource Category	Resources M tonnes	Resource Grade(Li ₂ O)	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 Minières 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 Acta Vol. 57, 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 14: Partnership with Nico Rosberg & Rosberg X Racing Extreme-E Team

- Vulcan Energy Resources Ltd. and Mr. Nico Rosberg and the Rosberg X Racing (RXR) electric racing team in the Extreme-E competition have signed a partnership and sponsorship agreement
- Mr. Rosberg, a German national who was Formula One World Champion in 2016, is a prominent sustainability entrepreneur, and founder of the popular Greentech Festival, as well as the RXR Extreme-E team.
- Extreme E's five-race global voyage, spanning four continents, was created to highlight the impact of climate change and human activity on some of the world's most remote locations while promoting sustainability and the adoption of electric vehicles to help protect the planet.
- Based in Neustadt, Germany, Team RXR is an evolution of Team Rosberg, founded in 1994 by Nico's father and 1982 F1 World Champion, Keke Rosberg. RXR has an Australian female driver, Molly Taylor, and a Swedish male driver, FIA World Rallycross Champion Johan Kristoffersson.
- Extreme E includes other top racing names include seven-time Formula One World Champion Lewis Hamilton's X44 team, 2009 Formula One World Champion Jenson Button and world-class drivers including rally legends Carlos Sainz Snr. and Sébastien Loeb.



OFFICIAL PARTNER



Thank You

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EU/Germany

Media & Investor Relations

Australia