VULCAN ENERGY RESOURCES
Zero Carbon Lithium®

Zero Carbon Lithium®

Disclaimer & Cautionary Statement

The information contained in this presentation has been prepared by Vulcan Energy Resources Ltd. This presentation is not an offer, invitation, solicitation or other recommendation with respect to the subscription for, purchase or sale of any securities in VUL. This presentation has been made available for information purposes only and does not constitute a prospectus, short form prospectus, profile statement or offer information statement. This presentation is not subject to the disclosure requirements affecting disclosure documents under Chapter 6D of the Corporations Act. This presentation may contain certain forward-looking statements and projections regarding estimated, resources and reserves; planned production and operating costs profiles; planned capital requirements; and planned strategies and corporate objectives. Such forward looking statements/projections are estimates for discussion purposes only and should not be relied upon. They are not guarantees of future performance and involve known and unknown risks, uncertainties and other factors many of which are beyond the control of VUL. The forward-looking statements/projections are inherently uncertain and may therefore differ materially from results ultimately achieved.VUL does not make any representations and provides no warranties concerning the accuracy of the projections, and disclaims any obligation to update or revise any forward-looking statements/projects based on new information, future events or otherwise except to the extent required by applicable laws. While the information contained in this presentation has been prepared in good faith, neither VUL 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. Accordingly, to the maximum extent permitted by law, none of VUL, its directors, employees or agents, advisers, nor any other person accepts any liability whether direct or indirect, express or limited, contractual, tortuous, statutory or otherwise, in respect of, the accuracy or completeness of the information or for any of the opinions contained in this presentation or for any errors, omissions or misstatements or for any loss, howsoever arising, from the use of this presentation.

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 reasonable basis to assume that future funding will be available and securable, this is not guaranteed. Industry best practice exploration for deep geothermal brine occurs using 2D and 3D-seismic data acquisition, analysis and interpretation, which Vulcan has completed. As stated in the text of this announcement, in deep geothermal brine projects, the first well drilled is also the first production well, so it follows that financing for the production well drilling is expected to occur first, after a definitive feasibility study is completed. Vulcan Executive Director Dr. Horst Kreuter is an expert in developing deep geothermal projects in Germany and worldwide, including having started the first geothermal development company in Germany, therefore Vulcan's Board has direct experience and has been involved in examples of how the funding process works in this type of project. There are numerous examples of projects financed in this way, prior to drilling, within the same area as Vulcan in the Upper Rhine Valley. Over the past 16 months, 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. This has resulted in written support already being provided by some of these institutions for the provision of senior debt for the project, based on the project progress to date. The Project further 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. InnoEnergy has placed Vulcan on its Business Investment Platform, through which it is further assisting Vulcan with conversations with European financiers. The size and location of the deposit, together with other strong project fundamentals, in the middle of large end users associated with European electric vehicles that is driving lithium demand makes the project a strategic asset as evidenced by the large interest shown in the Project by public/private banks, financiers, end users and large lithium specialist companies to-date. An improvement in market conditions since work commenced and a perceived high growth outlook for the global lithium market enhance the Company's view of the fundability of the Project. Based on this, the Board is confident the Company will be able to finance the Project through a combination of syndicated senior debt, export credits, industry related hybrid debt, equity and forward sales at the Project level. The size of the Project will necessitate a syndicate of banks and in the current low interest rate European market the Project represents a higher yield opportunity. The Company is also considering the bond market in view of the increasing market and availability of ESG bonds seeking opportunities which meet ESG criteria and have longer term yields. The Board has relevant experience in funding large scale projects with Mr Rezos, the Chairman, having been involved in funding large scale mining projects and energy projects as a former Investment Banking Director of HSBC Holdings with direct project finance, syndicated debt, export credits, bond and equity experience in multiple jurisdictions, including Europe. Mr Rezos was also a non-executive director of Iluka Resources Limited at the time of funding and developing the large-scale Jacinta Ambrosia and Murray Basin projects. Dr Horst Kreuter, has been involved in developing and funding a number of geothermal projects in Germany. For the reasons outlined above, the Board believes that there is a "reasonable basis" to assume that future funding will be available and securable.

VULCAN ENERGY RESOURCES
Zero Carbon Lithium®

COMPETENT PERSON STATEMENT

The information in this report that relates to Mineral Resources is extracted from the ASX announcement made by Vulcan on the 15 December 2020, which is available on www.v-er.com. The information in this presentation that relates to the Pre-Feasibility Study for the Vulcan Lithium Project and Maiden JORC Ore Reserve is extracted from the ASX announcement "Positive PFS & Maiden JORC Ore Reserve: Zero Carbon Lithium® Project ", released on 15 January 2021 which is available on www.v-er.com. The Company confirms that it is not aware of any new information or data that materially affects the information included in the 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.

Lithium Industry Overview

EU: FASTEST GROWING LITHIUM MARKET IN THE WORLD

Industry:
- More investment into EVs in the EU than China
- >500GWh target battery capacity in the EU by 2030
- Almost 400Kt of LiOH required in Europe by 2030

Policy:
- Generous incentives for EV buyers
- Subsidies for battery investments and debt support

SUPPLY CHAIN RISKS LEAD TO REGIONALISATION

Industry:
- Investment to develop a fully integrated supply chain in the EU
- Automakers back integrating themselves into battery and cathode production
- Actively looking to secure lithium produced in Europe

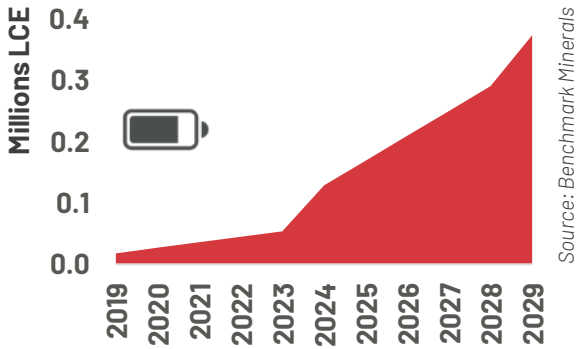
Policy:
- Creating of the European Battery Alliance
- Lithium declared as Critical Raw Material
- EU funds support selected lithium projects

HIGH CARBON FOOTPRINT OF EXISTING SUPPLY CHAIN

Industry:
- VW, Daimler, BMW, etc. aiming for carbon neutrality
- Traceability measures implemented across automakers' supply chain

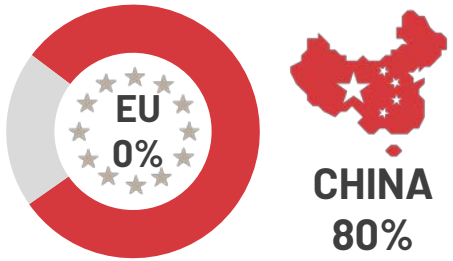
Policy:
- EU's new battery passport to ensure responsible mineral sourcing
- EIB lending policy supporting projects relating to the supply of critical raw materials needed for low-carbon technologies

LIOH DEMAND IN EUROPE



Source: Benchmark Minerals

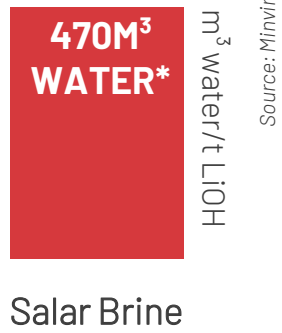
CHINESE CONTROL – LIOH SUPPLY



Source: Benchmark Minerals

CARBON INTENSITY

WATER DEPLETION



Source: Minviro

Vulcan – Zero Carbon Lithium®

ZERO CARBON FOOTPRINT

World-first Zero Carbon Lithium® Project

Geothermal & DLE in Germany

Dual revenue Green energy & lithium

In the heart of the fastest growing lithium market in the world

Largest JORC lithium Resource in Europe

Potential for very low OPEX operation

Agreement with German geothermal operators

Team of world leading experts

Project financially supported by the EU

LITHIUM BUSINESS

€2.8Bn NPV[1] Pre-tax

31% IRR[1] Pre-tax

40Ktpy LiOH[1]

€474M starting CAPEX[2]

€2,640/t LiOH OPEX[3]

ENERGY BUSINESS

€0.7Bn NPV[4] Pre-tax

16% IRR[4] Pre-tax

74MW Power

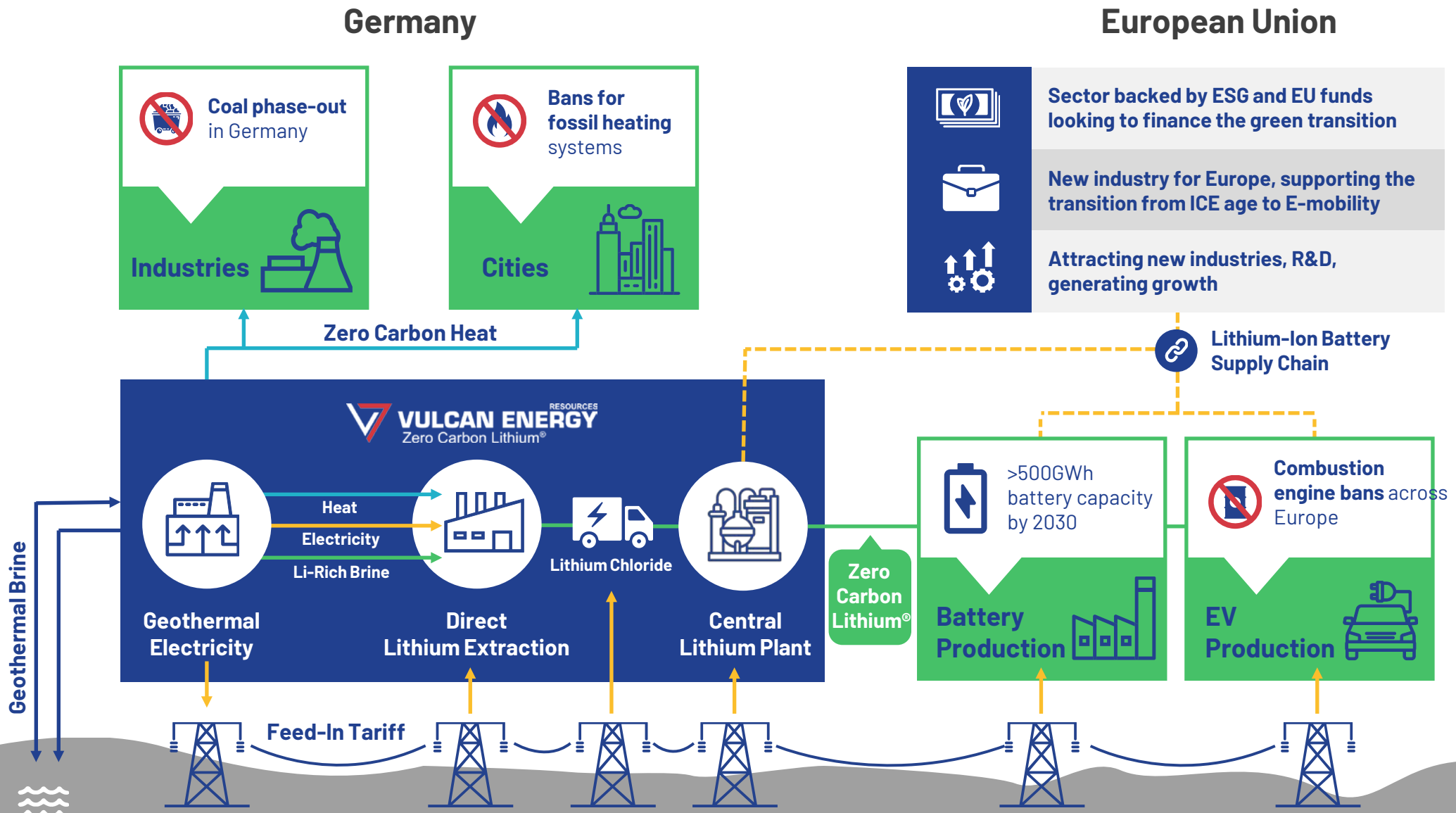
€226M starting CAPEX[2]

€0.066/KWh OPEX[4]

[1]Lithium Business only, 8% DCR [2]Phase 1 only, [3]Excluding royalties, [4]Energy Business only, 6% DCR

VULCAN ENERGY RESOURCES Zero Carbon Lithium®

Vulcan's Renewable Energy & Lithium Project



Environmental, Social and Governance Alignment

Environment

First & only Zero Carbon Lithium project in the world:

- Producing lithium & renewable energy
- Potential for negative carbon footprint
- No fossil fuel burnt
- Supplying E-Mobility
- Supporting the energy transition
- Strategy aligned to the EU Green Deal

Social

Supporting local and European economy with sustainable employment:

- To potentially generate 166 direct jobs and 1,245 indirect jobs for >30 years
- Helping the automotive industry to transition from ICE to E-Mobility
- Developing an ethical and sustainable supply chain
- Reinforcing the position of the EU in the global market
- Supporting the EU Recovery Plan

Governance

Listing, location & implementation of strong measures:

- ASX listed: strong requirements to ensure transparency, accountability & regular reporting to shareholders
- Germany ranks in the Top 10 least corrupt countries worldwide
- Full product transparency, responsibly sourced and traceable lithium in Germany
- Early adopter of RegTech applications to empower compliance through digitization
- Early adopter of ESG Monitoring Tools and Benchmarking Performance

Europe: Fastest Growing Lithium Market

Europe:

- More investment into EVs than in China
- Fastest growing lithium-ion battery production center in the world
- Fastest growing market for lithium hydroxide

ZERO local supply of lithium hydroxide to feed this demand

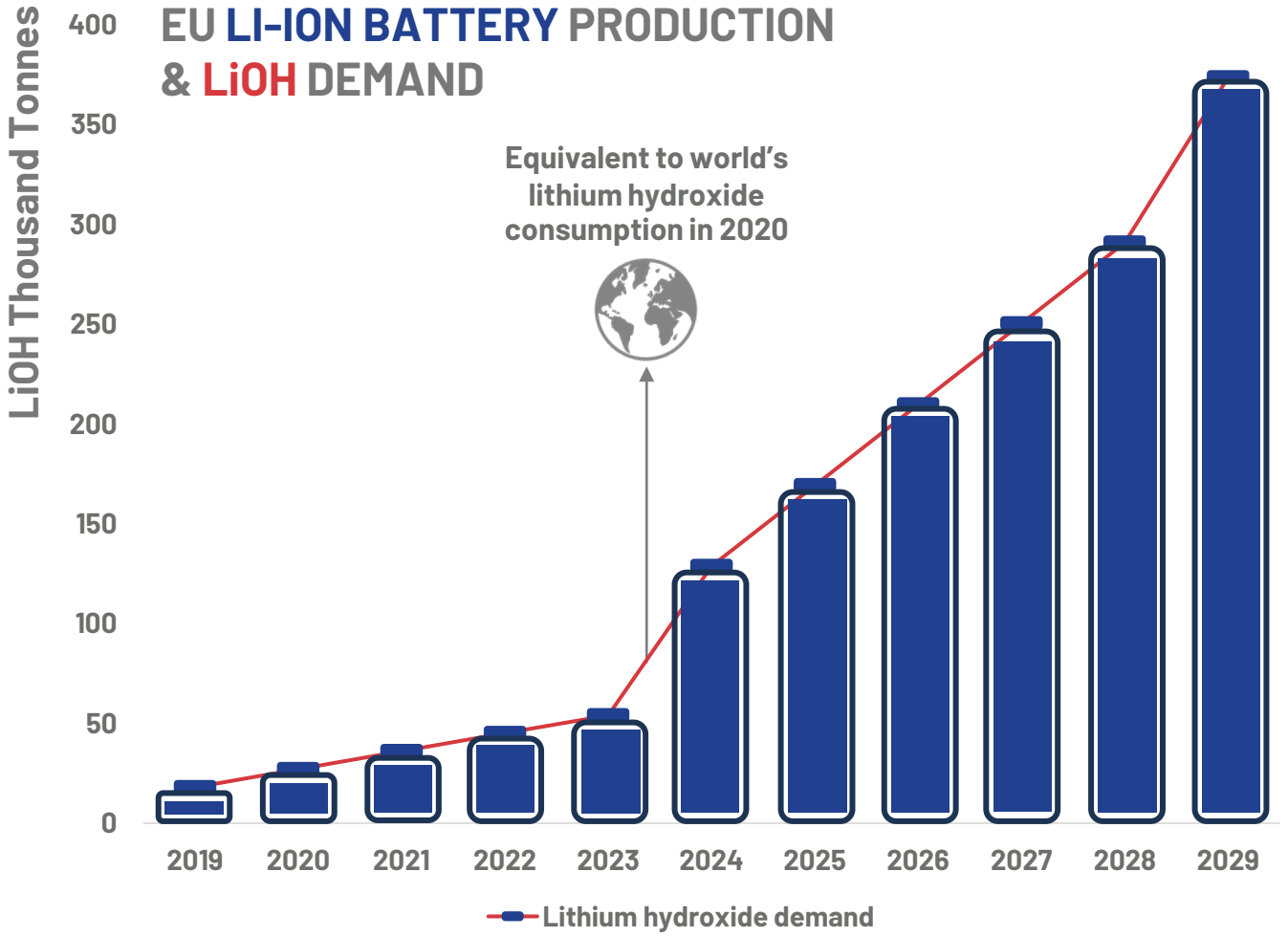
80% of global supply is controlled by China

Linked to two main concerns:

- Supply chain risk
- Environmental impact

Volkswagen promises:
"CO_2-neutral production including supply chain"

Daimler promises to:
"make our fleet of new cars CO_2-neutral"



Benchmark Mineral Intelligence

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

Our Zero Carbon Lithium® Project

We Scoured the Globe to Find the Right Project

We had the lithium expertise to know that **Zero Carbon Lithium®** production was **possible** using **modern extraction methods**, provided a **deep geothermal brine reservoir** could be found that had the following geological conditions:

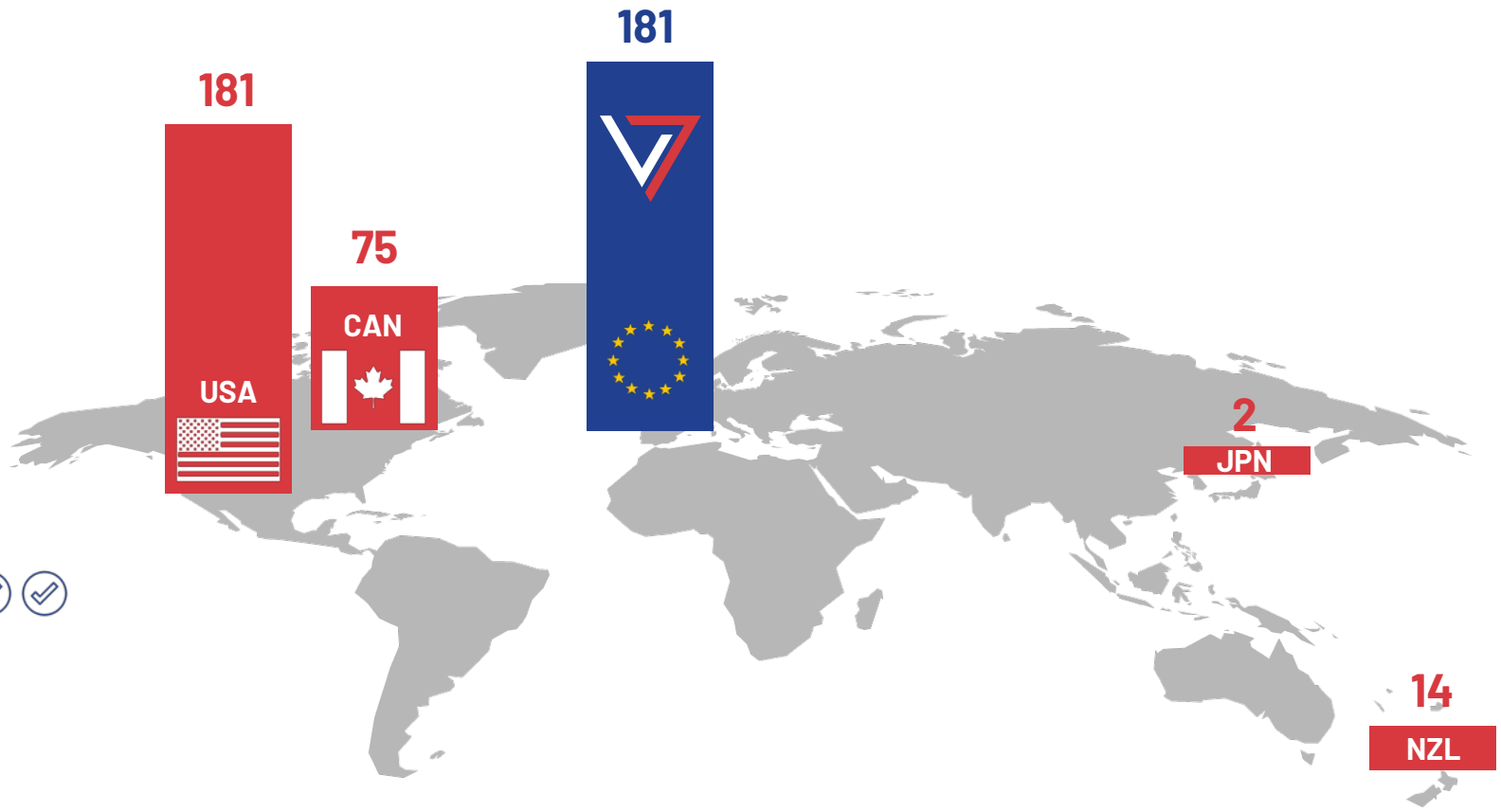
1. Renewable heat
2. High lithium grades
3. High brine flow rate

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

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

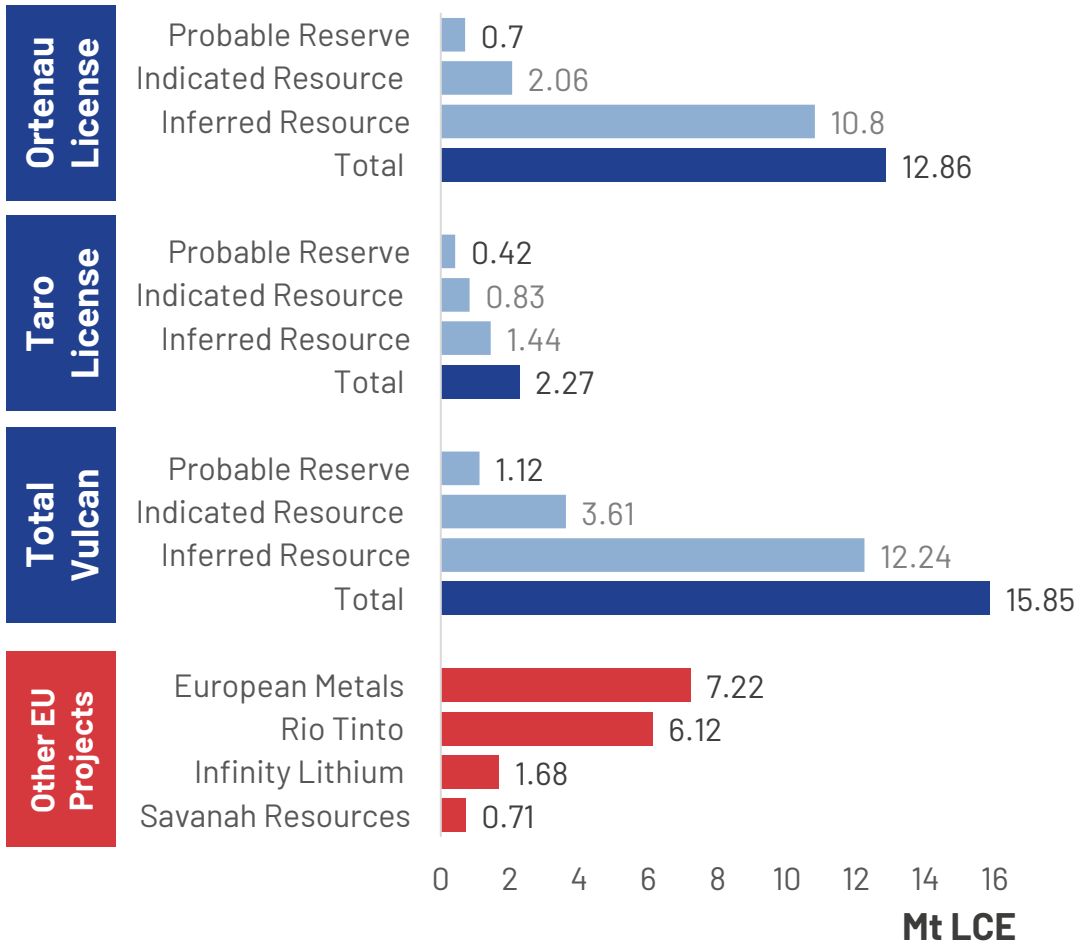
We chose **Germany** and **Europe**.

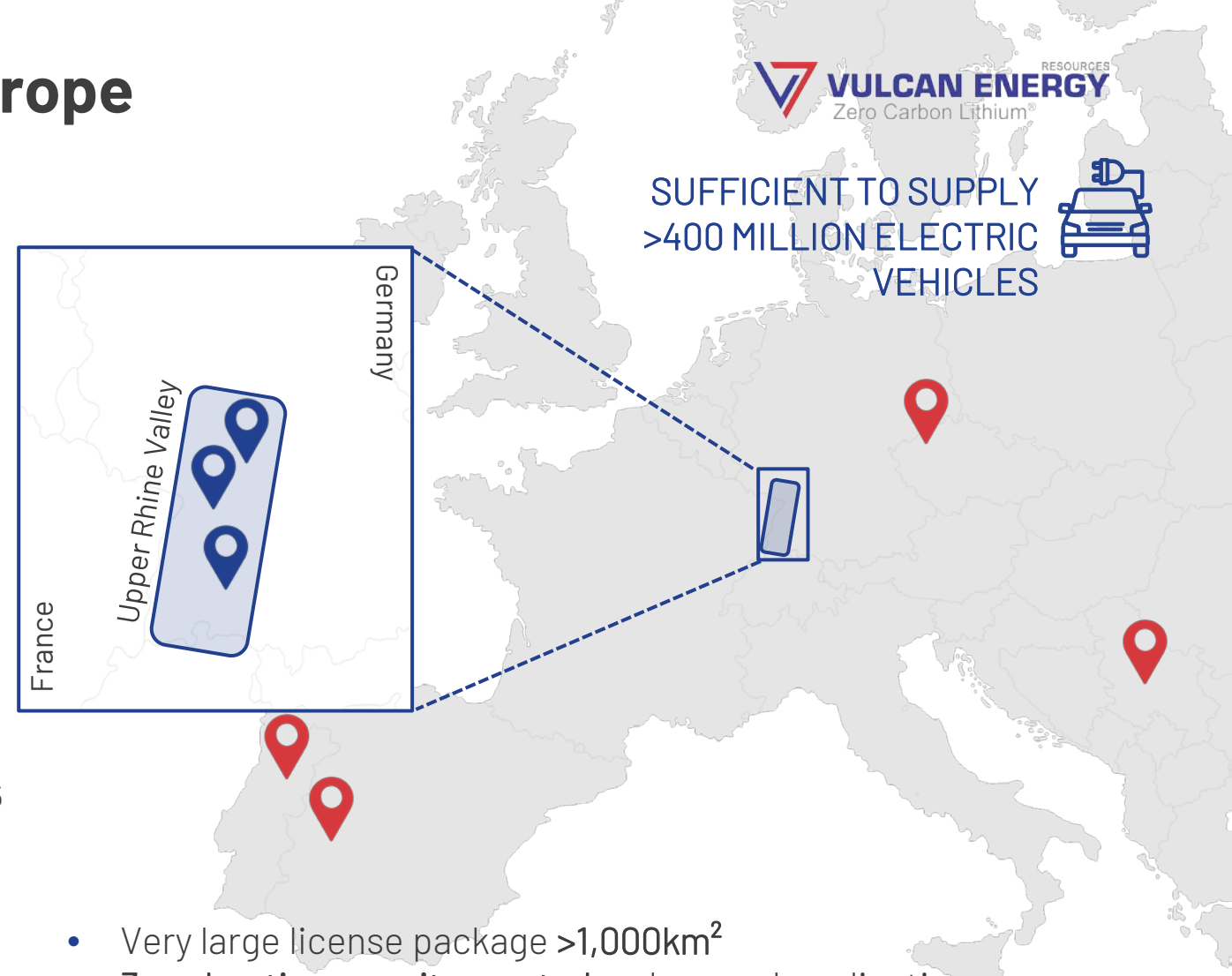
LITHIUM CONCENTRATION IN BRINE (MG/L LITHIUM)



Note: Refer to Appendix 4

Largest Lithium Resource in Europe



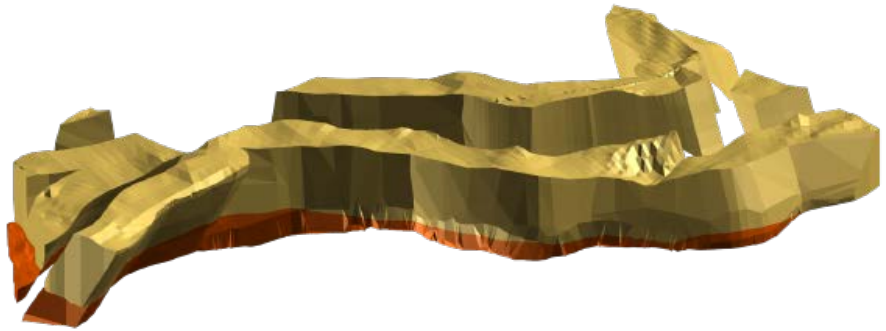


- Very large license package >1,000km²
- **3 exploration permits granted** and several applications
- Largest lithium resource in Europe: **15.85Mt LCE**

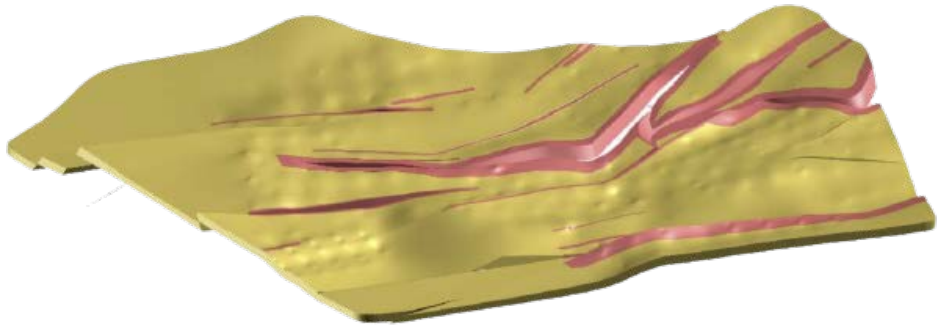
Notes: Vulcan's URVP Li-Brine resource and reserve area in Europe. Mineral resources are not mineral reserves and do not have demonstrated economic viability.
The preceding statements of Reserves conforms to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) 2012 edition. 100% of the material in the PFS project schedule is included in 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. Refer to Appendix 4

Project Resource

Snapshot of 3D geological model from 3D seismic data in the Taro license
Geothermal and DLE plants B1 & B2
2.27Mt LCE Resource



Snapshot 3D geological model from 2D seismic data in the Ortenau license
Geothermal and DLE plants C1, C2 & C3
12.86Mt LCE Resource

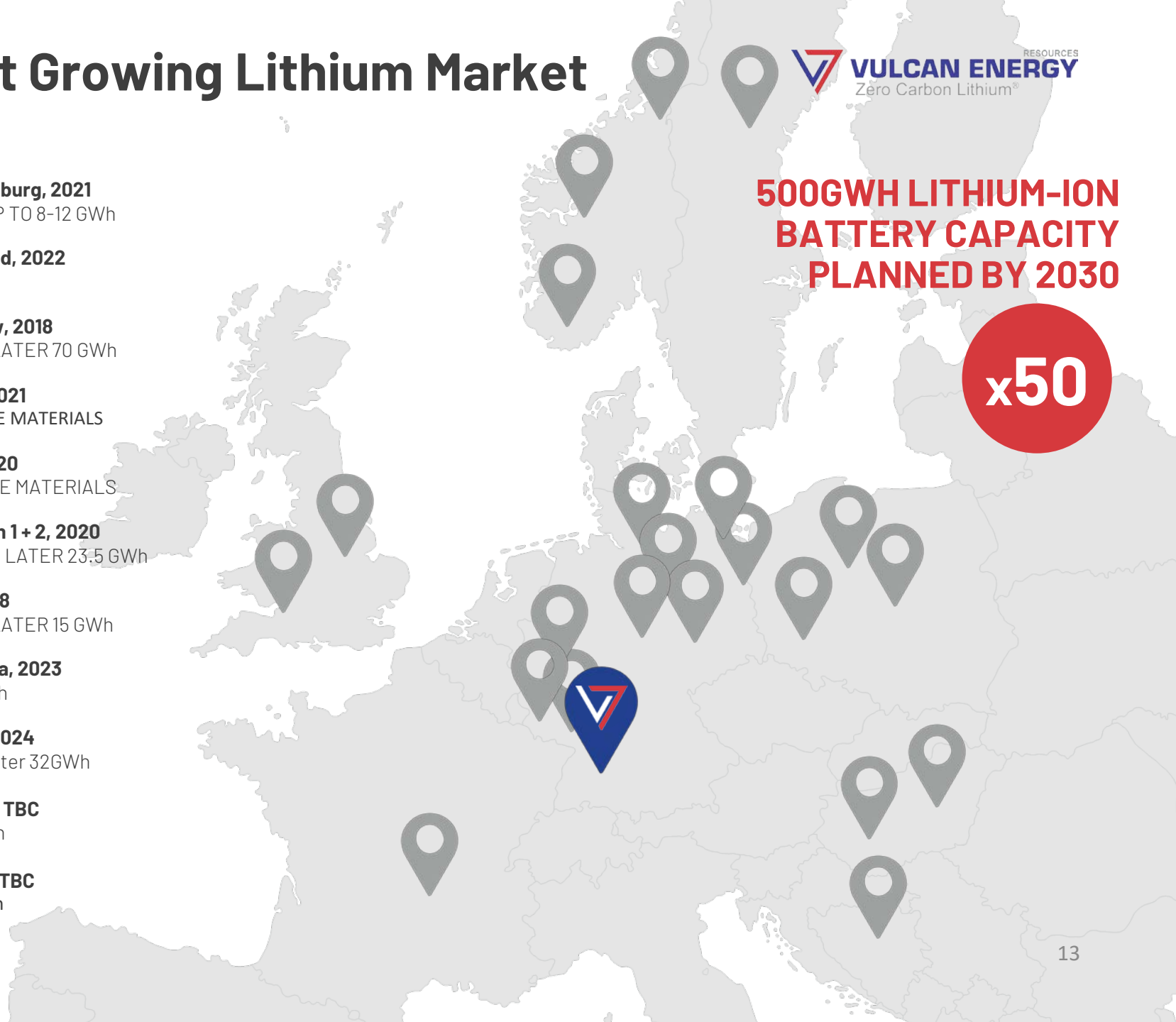


At the Center of Fastest Growing Lithium Market

VULCAN ENERGY RESOURCES
Zero Carbon Lithium®

500GWH LITHIUM-ION BATTERY CAPACITY PLANNED BY 2030

x50



Brandenburg, 2021
At least 20GWh

Salzgitter, 2024
16 GWh, LATER 24 GWh

Erfurt, 2022
14 GWh LATER 100 GWh

Sunderland, 2010
2.5 GWh

Willstätt, 2020
1 GWh

Germany & France, 2022
16 GWh, LATER 48 GWh

Überherrn, 2023
24 GWh

Germany, 202X
4 GWh, LATER 8 GWh

Schwarzheide, 2022
CATHODE MATERIALS

Bratislava, 2024
10GWh

St Athan Wales, 2023
10GWh, later 35Gwh

Skellefteå, 2021
32 GWh LATER 40 GWh

Brandenburg, 2021
RAMP UP TO 8-12 GWh

Bitterfeld, 2022
16 GWh

Wroclaw, 2018
6 GWh, LATER 70 GWh

Konin, 2021
CATHODE MATERIALS

Nysa 2020
CATHODE MATERIALS

Komaron 1 + 2, 2020
7.5 GWh, LATER 23.5 GWh

Göd, 2018
3 GWh, LATER 15 GWh

Mo I Rana, 2023
32+2GWh

Agder, 2024
8GWh, later 32GWh

Norway, TBC
Unknown

Europe, TBC
Unknown

Commercially Mature Technologies Combined

Our process replicates existing operations taking place commercially across the world.
What is unique about us is the combination of those different steps.

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

2 Direct Lithium Extraction Plant ✓

- Direct Lithium Extraction commercially **used for decades.**
- Now operating in **China & Argentina** – accounting for >**10% of global lithium** production
- Adsorbent-type DLE technologies **commercially available** from several suppliers
- We've achieved **>90% lithium recoveries** from initial test work

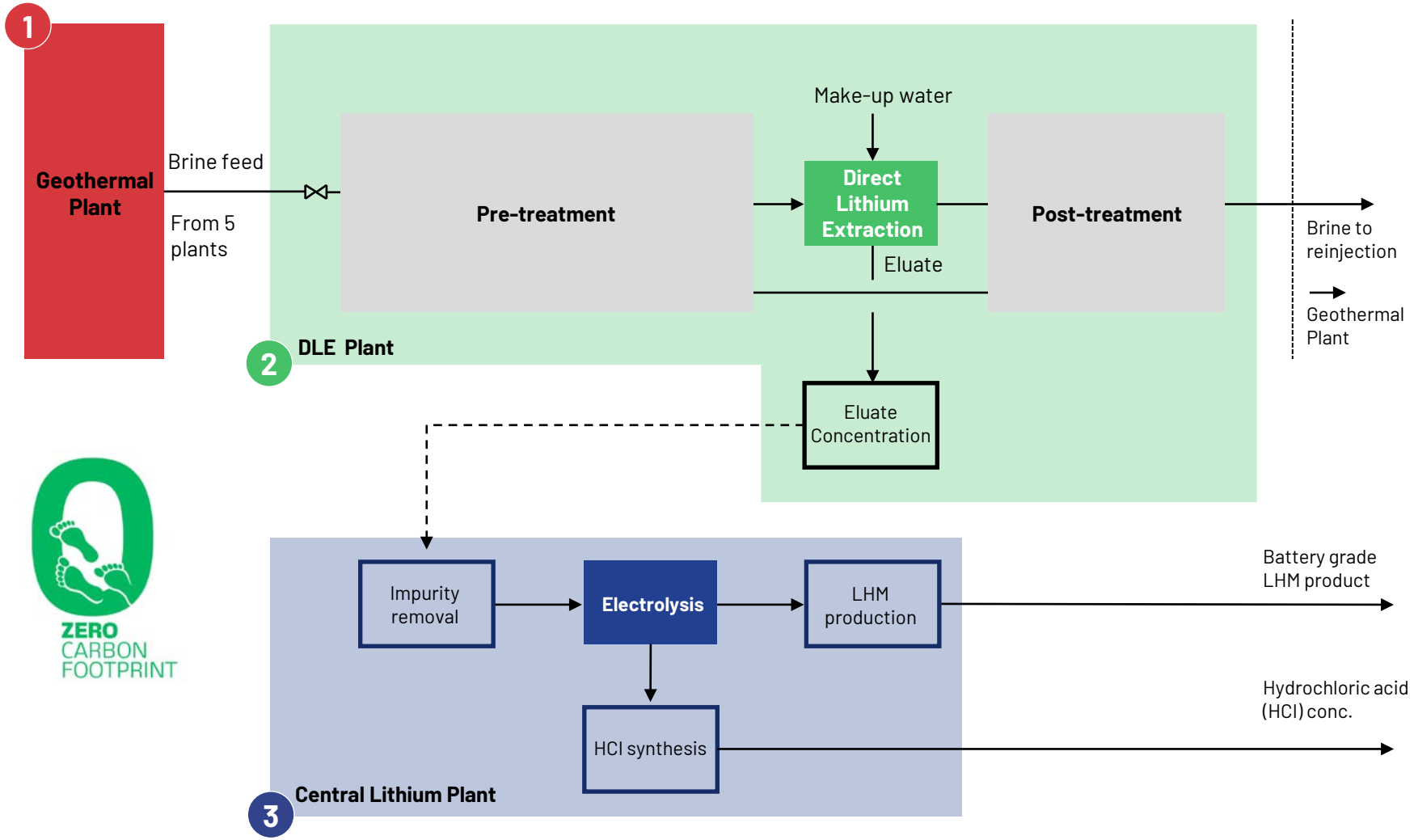
3 Central Lithium Plant ✓

- Conversion of lithium chloride to lithium hydroxide is using an **electrolysis process**
- Electrolysis has been used by the **chlor-alkali industry** for more than 100 years

Our Zero Carbon Lithium® Process

1. Hot brine extracted from the ground and generates steam that powers turbines and produces renewable electricity
   - Standard geothermal production wells successfully implemented for decades on salars
2.
   - Brine flow is diverted, and lithium is extracted from the solution with a Direct Lithium Extraction (DLE) process.
   - Commercially used for decades
3.
   - Lithium chloride sent to lithium refining plant which will be converted LiCl to battery quality LiOH
   - Water is recycled, no toxic wastes, no gases are emitted, heat and power from renewable resources, no fossil fuels are burnt

Vulcan has IP protection around flowsheet



Our Zero Carbon Lithium® Process

Environmental footprint of lithium production routes

Hard rock mining
60% of world lithium production

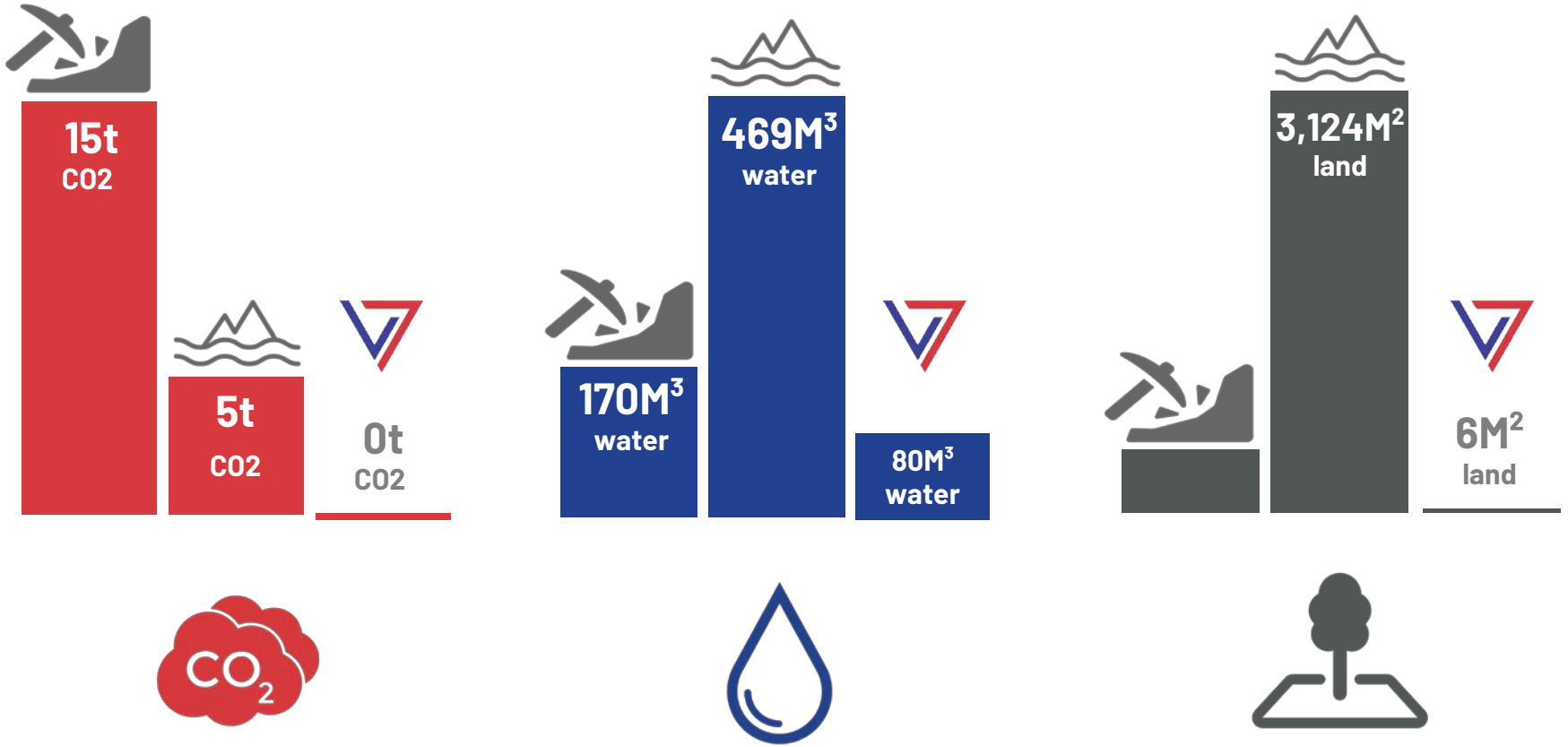
Evaporation ponds
40% of world lithium production

Zero Carbon Lithium®

Vulcan draws on naturally occurring, renewable geothermal energy to power the lithium extraction process and create a renewable energy by-product. This uses no fossil fuels, requires very little water and has a tiny land footprint.

Source: Minviro Life Cycle Analysis 2020 & Vulcan Energy's Pre-Feasibility Study

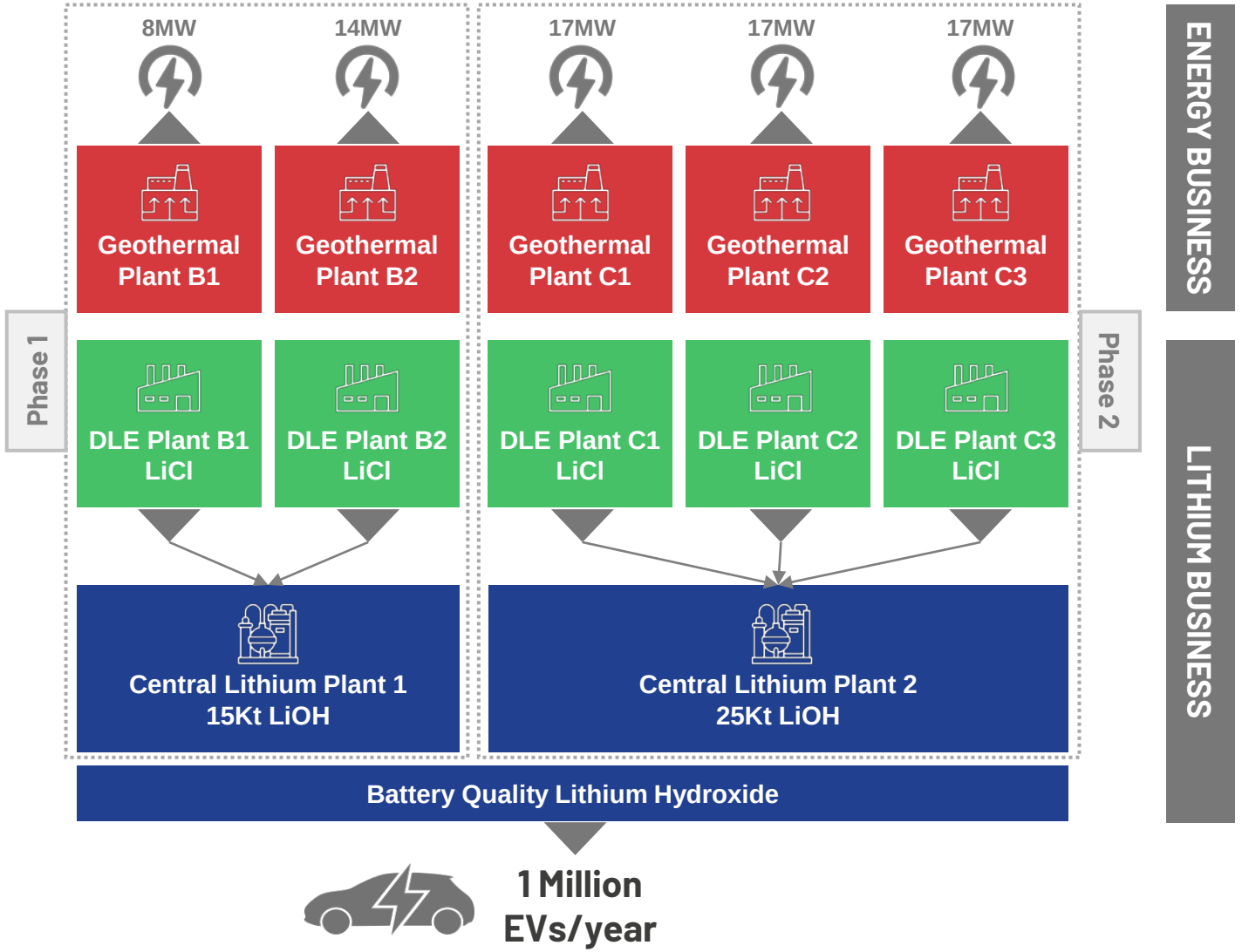
PER TON OF LITHIUM HYDROXIDE



Project Structure: Dual Purpose Renewable Project

Energy Business: Electricity & Heat, Lithium Business: Zero Carbon Lithium®

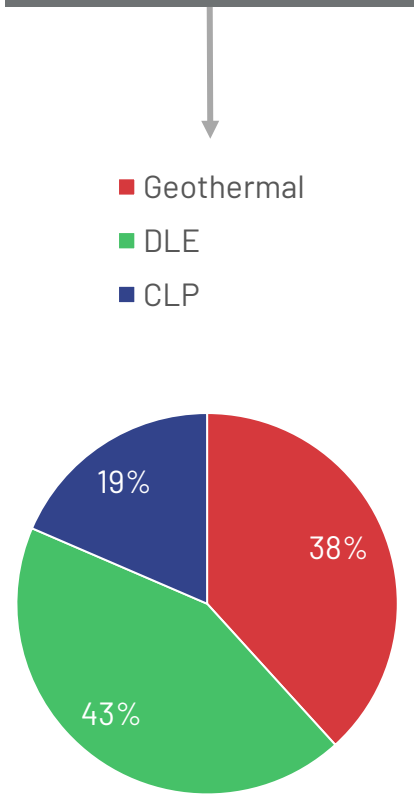
1. Binary Cycle Geothermal Plant ✓
2. Direct Lithium Extraction Plant ✓
3. Central Lithium Plant ✓



Project Economics: CAPEX

	ENERGY BUSINESS	LITHIUM BUSINESS		
	1 Geothermal Plant	2 DLE Plant	3 CLP	
PHASE 1 2024 Start	2 geothermal plants: • GB1 – 8MW • GB2 – 14MW Capex: €226M	2 DLE plants: • DB1 – 8kt LiOH • DB2 – 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 DLE plants: • DC1 – 8kt LiOH • DC2 – 8kt LiOH • DC3 – 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 DLE Plants Capex: €751M	1 Central Lithium Plant • CLP – 40kt LiOH Capex: €322M	€1.1bn
				

FULL PROJECT



Equivalent per ton of LiOH

5. Project Economics: OPEX Comparison

Low-cost South American brine and Australian/Chinese mineral conversion vs Vulcan's process

LiOH via hard-rock processing

$6,855/t LiOH
€5,760/t LiOH

Mineral Cost
- 7-8 tons of spodumene per ton of LiOH produced

Conversion Cost
- Energy intensive and large volume of chemicals needed (i.e. Sulfuric acid)

LiOH via brine processing

$5,872/t LiOH
€4,934/t LiOH

Brine Harvesting

Processing Cost to Carbonate
- High reagent cost (i.e. Sodium Carbonate)

Processing Cost to Hydroxide
- High reagent cost (i.e. lime)

Vulcan's process

$3,142/t LiOH
€2,640/t LiOH

DLE | Electrolysis

ZERO CARBON FOOTPRINT

[1] Galaxy Resources Annual Report FY 2020, $502/dmt spodumene FY 2019
[2] Kidman Resources PFS announcement, October 2018, contingency on Refinery OPEX of 15%. Cash operating cost including royalties.
[3] Cash operating costs lithium carbonate, Orocobre 2020 Annual report
[4] Orocobre 2020 Corporate Presentation – Naraha Lithium Hydroxide plant, Japan

Feedstock

Vulcan's "feedstock" is low cost and has dual purpose: lithium extraction and energy production in the form of renewable electricity.

Processing

Vulcan uses DLE 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 also uses low-cost energy coming from its geothermal operation.

Upgrading

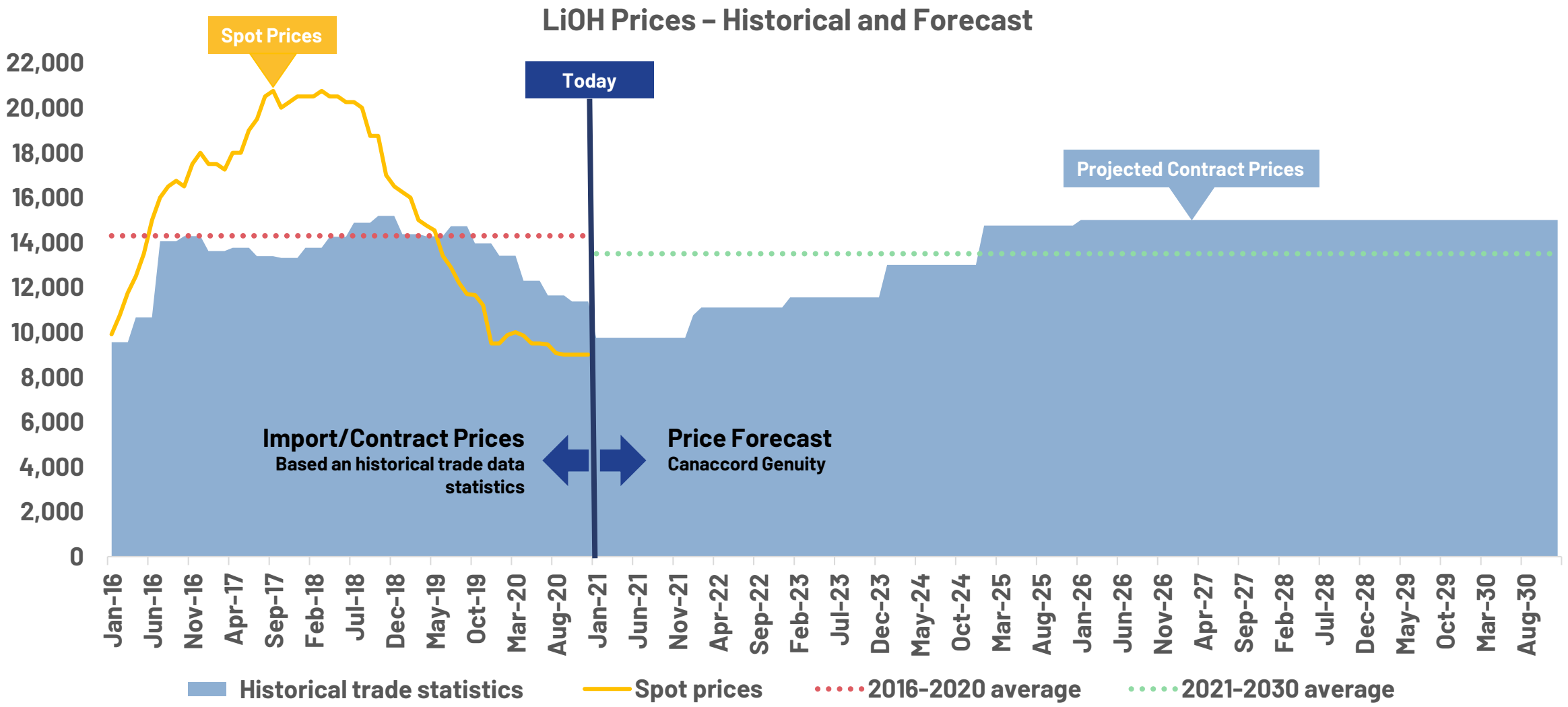
Vulcan uses electrolysis to upgrade chloride into a high purity hydroxide using renewable energy. No heavy reagent usage such as sodium hydroxide or lime.

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.
Vulcan's LHM products will potentially have the lowest carbon footprint in the world, as well as the lowest operating costs per tonne of LHM based on current global operations. This is a unique differentiator for the Vulcan project. Vulcan considers that it is appropriate to compare the estimates from the PFS to actual results from projects currently in production because Vulcan's process is unique and a comparison to other processes for producing lithium hydroxide is important to enable investors to contextualise the PFS results; and actual data from projects currently in production is the best available guide to benchmark the PFS results.

Project Economics: Lithium Prices – Recovery Mode

VULCAN ENERGY RESOURCES
Zero Carbon Lithium®

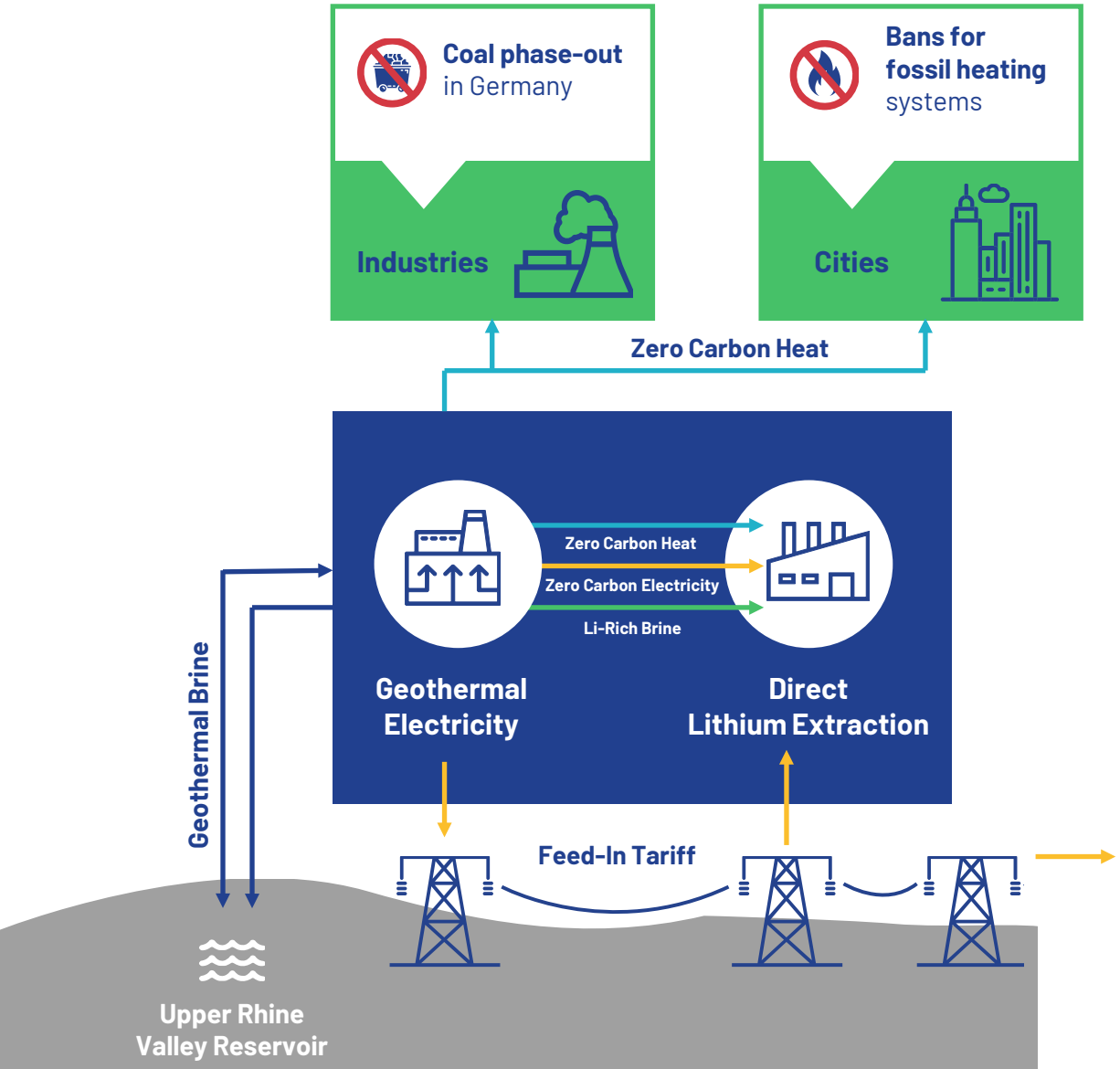
Much more stability in global contract prices than in the spot market specific to china



Source: Trade statistics compiled from Global Trade Atlas®, Benchmark Minerals, S&P Global, Canaccord Genuity

Project Economics: Energy Revenues

Vulcan's Project is expected to generate dual revenue, from lithium sales geothermal renewable energy

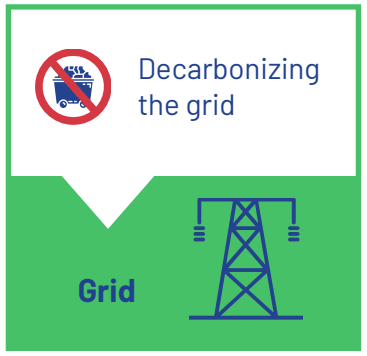


Energy Business Revenues

- **Zero Carbon Heat**: Energy in the form of heat can be sold to a number of public and private customers via pipes, proximity is a requirement
- **Zero Carbon Electricity**: Energy in the form of electricity is sold to the grid. In Germany, geothermal electricity benefits of a Feed-in Tariff guaranteed by the state for 20 years once the project starts, at €25.2c/KWh

Feed-in Tariff €25.2c /KWh → **Guaranteed for 20 years** → **€157M revenues per year***

*Based on 74MW capacity



Project Economics: Possible Structures

VULCAN ENERGY RESOURCES
Zero Carbon Lithium®

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

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

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

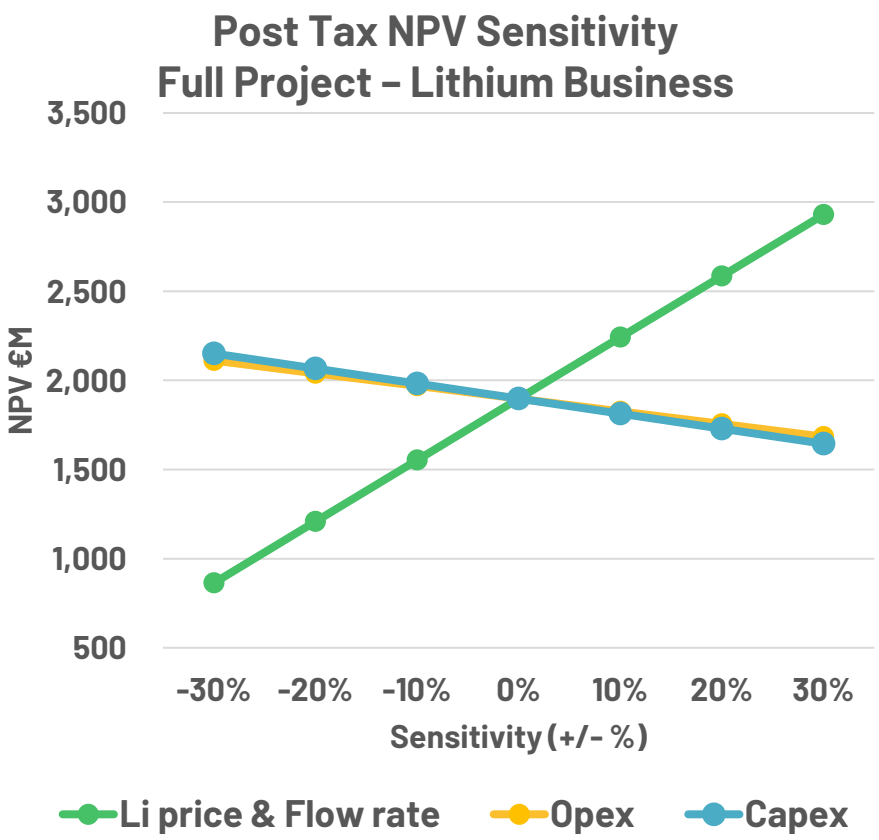
	FULL PROJECT - NO PHASING 2024 Start		PHASE 1 2024 Start		PHASE 2 2025 Start	
	ENERGY BUSINESS	LITHIUM BUSINESS	ENERGY BUSINESS	LITHIUM BUSINESS	ENERGY BUSINESS	LITHIUM BUSINESS
	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3	GB1 GB2 GC1 GC2 GC3
	DB1 DB2 DC1 DC2 DC3	DB1 DB2 DC1 DC2 DC3	DB1 DB2 DC1 DC2 DC3	DB1 DB2 DC1 DC2 DC3	DB1 DB2 DC1 DC2 DC3	DB1 DB2 DC1 DC2 DC3
	CLP	CLP	CLP1 CLP2	CLP1 CLP2	CLP1 CLP2	CLP1 CLP2
	40Ktpy LiOH	40Ktpy LiOH	21MW	15Ktpy LiOH	21MW	15Ktpy 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 DLE		*751*		*291*		*460*
CAPEX CLP	**0.066**	*322*		*182*		*240*
OPEX €/KWh or LiOH€/t		**2,681**	**0.078**	**3,201**	**0.061**	**2,855**

Notes: Lithium Hydroxide Battery Quality at €12,542 or $14,925/t
Phase 1 relates to Taro license, Phase 2 to Ortenau license.
Ortenau license is 100% owned by Vulcan. Vulcan ahs a 51% interest in Taro, with the right to earn at least 80% interest.

Project Economics: Sensitivities Analysis

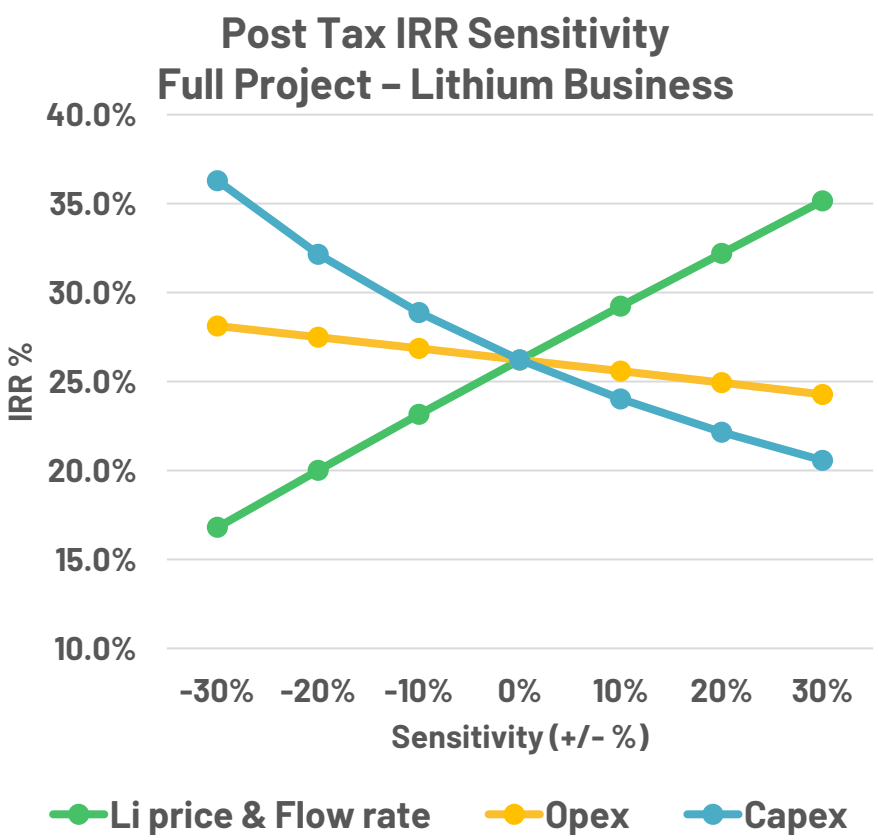
Project economics are exceptionally resilient to extreme case scenarios

Full 40kt/y lithium business (DLE&CLP) developed at the same time with no phasing. Not including geothermal.



LITHIUM BUSINESS				
GB1	GB2	GC1	GC2	GC3
DB1	DB2	DC1	DC2	DC3
CLP1		CLP2		
40Ktpy LiOH				

LiOH Price	$14,925
LiOH Price	€12,542
Revenues (€M/y)	499
Net Op. Cash Fl.	394
NPV Pre-tax €M	2,803
NPV Post-tax €M	**1,897**
IRR Pre-tax	31%
IRR Post-tax	**26%**
Payback (year)	**4**
CAPEX €M	1,073
OPEX LiOH €/t	**2,681**



Notes: LiOH prices -10%: $13,498/€11,343, -20%: $11,998/€10,083, -%30: $10,498/€8,822

The Vulcan Zero Carbon Lithium® Team: Board

Lithium, renewable energy & project finance experience

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.
- Three discoveries of JORC Lithium Resources on two continents including Lynas Find, now part of Pilbara Minerals' Pilgangoora Project in production (ASX:PLS).
- Management & Executive experience in resources sector on four continents; bilingual; dual Swedish & Australian nationality.
- PhD & BSc (Hons) in Exploration Geology & MBA in Renewable Energy.

Dr. Horst Kreuter

CO-FOUNDER & EXECUTIVE DIRECTOR – GEOTHERMAL EXPERT

- 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.

Gavin Rezos

CHAIR – INVESTMENT BANKING EXPERT

- Executive Chair/CEO positions of two 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 and principal of Viaticus Capital.
- Previously Non-Executive Director of Iluka Resources, Alexium International Group and Rowing Australia.

Ranya Alkadamani

NON-EXECUTIVE DIRECTOR – COMMUNICATIONS EXPERT

- 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 then Foreign Minister and former Prime Minister, Kevin Rudd.
- Was personally behind the global launches of the Walk Free Global Slavery Index, which reached more than 1 billion people.

Rob Ierace

CFO / COMPANY SECRETARY

- Chartered Accountant and Chartered Secretary with +20 years experience.
- Experience in financial and commercial management including in corporate governance, debt and capital raising, tax planning, risk management, treasury management, insurance, corporate acquisitions and divestment and farm in/farm out transactions.
- BComm degree from Curtin University, a Grad Dip in Applied Corporate Governance from the Governance Institute of Australia and a Grad Cert of Applied Finance and Investment from the Securities Institute of Australia

Management, Technical Team & Consultants

World-renowned geological, chemical & engineering expertise

Dr Katharina Gerber

LITHIUM PROJECT MANAGER

- Awarded her PhD on lithium chemistry magna cum laude (with great distinction) at the University of Bonn.
- Most recently focused on lithium extraction from geothermal brine at the California Energy Commission (CEC). Participates in "California Lithium Valley" initiative.
- Prior to joining the CEC, she conducted research developing and characterizing new electrode materials for lithium-ion batteries.
- Unique combination of expertise in lithium chemistry and lithium extraction from geothermal brine.

Dr. Thomas Aicher

LITHIUM CHEMICAL ENGINEERING LEAD

- Chemical engineering expert part of Vulcan's team in Karlsruhe. 25 years' experience in chemical process innovation and industrial scale-up across a range of industries.
- Awarded a PhD and MSc in Chemical Engineering from the world-renowned Karlsruhe Institute of Technology (KIT), Dr. Aicher was also a visiting scientist at the Massachusetts Institute of Technology (MIT).
- Dr. Aicher was Head of Group at Fraunhofer Institute, one of the most prestigious organizations of applied sciences in Europe, and Process Engineer at Fortune 500 engineering company Fluor Inc.

Vincent Ledoux Pedailles

VICE PRESIDENT – BUSINESS DEVELOPMENT

- Previously Executive Director at Infinity Lithium, 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.
- 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.
- Earlier in his career, he worked for Talison Lithium located in Perth, Australia. He also worked for Roskill, an international metals & minerals research and consulting company
- Mr Ledoux-Pedailles is a regular speaker at various industry events across the world

Jochen Rudat

ELECTROMOBILITY EXPERT

- Ex-direct report to Elon Musk
- 10 years' experience at Tesla
- Ex-Telsa Director for Central Europe
- Launched Tesla S, 3, X and Roadster
- Ex-Automobili Pininfarina Chief Sales Officer; Launched Electric Hyper-car
- Experience in the Auto industry including BMW, Porsche and Kia

Alex Grant

DLE TECHNOLOGY EXPERT

- Co-founded Lilac Solutions, one of the world's leading direct lithium extraction technology companies, which raised $20M from Bill Gates's Breakthrough Energy Ventures.

Thorsten Weimann

GEOTHERMAL PLANT ENGINEERING EXPERT

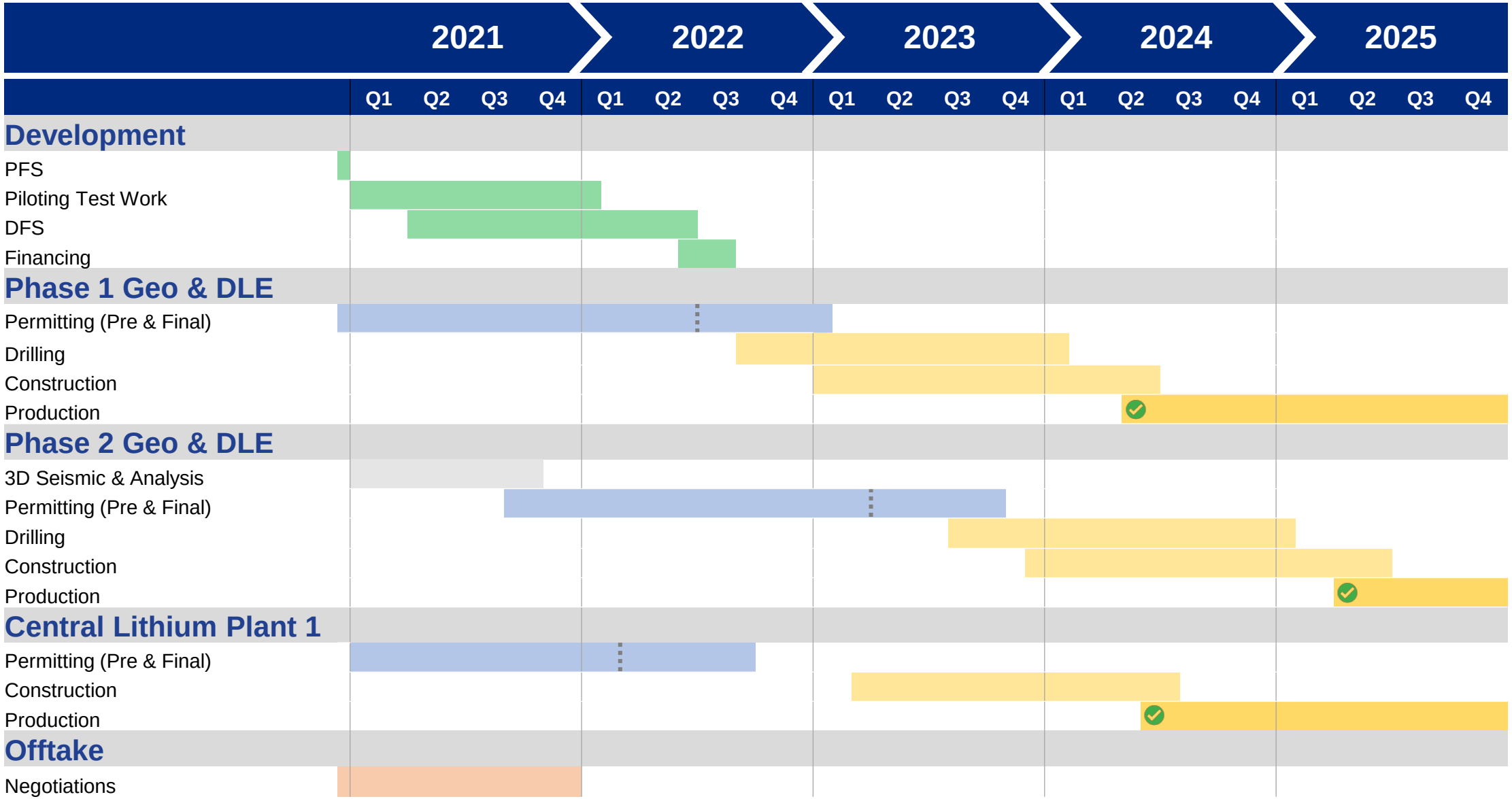
- Expert in geothermal and drilling technology, with more than 25 years of professional experience.

gec-co HATCH APEX Geoscience Ltd. GeoThermal Engineering

Elke Zimmermann
GEOLOGIST
Dr. Dirk Adelmann
SENIOR GEOLOGIST
Dr. Michael Kraml
SENIOR GEOCHEMIST
Dr. Jens Grimmer
SENIOR GEOLOGIST

Tobias Hochschild
SENIOR GEOLOGIST
Prof. Dr. Gerald Ziegenbalg
CHEMICAL PROCESSING EXPERT

Project Timeline

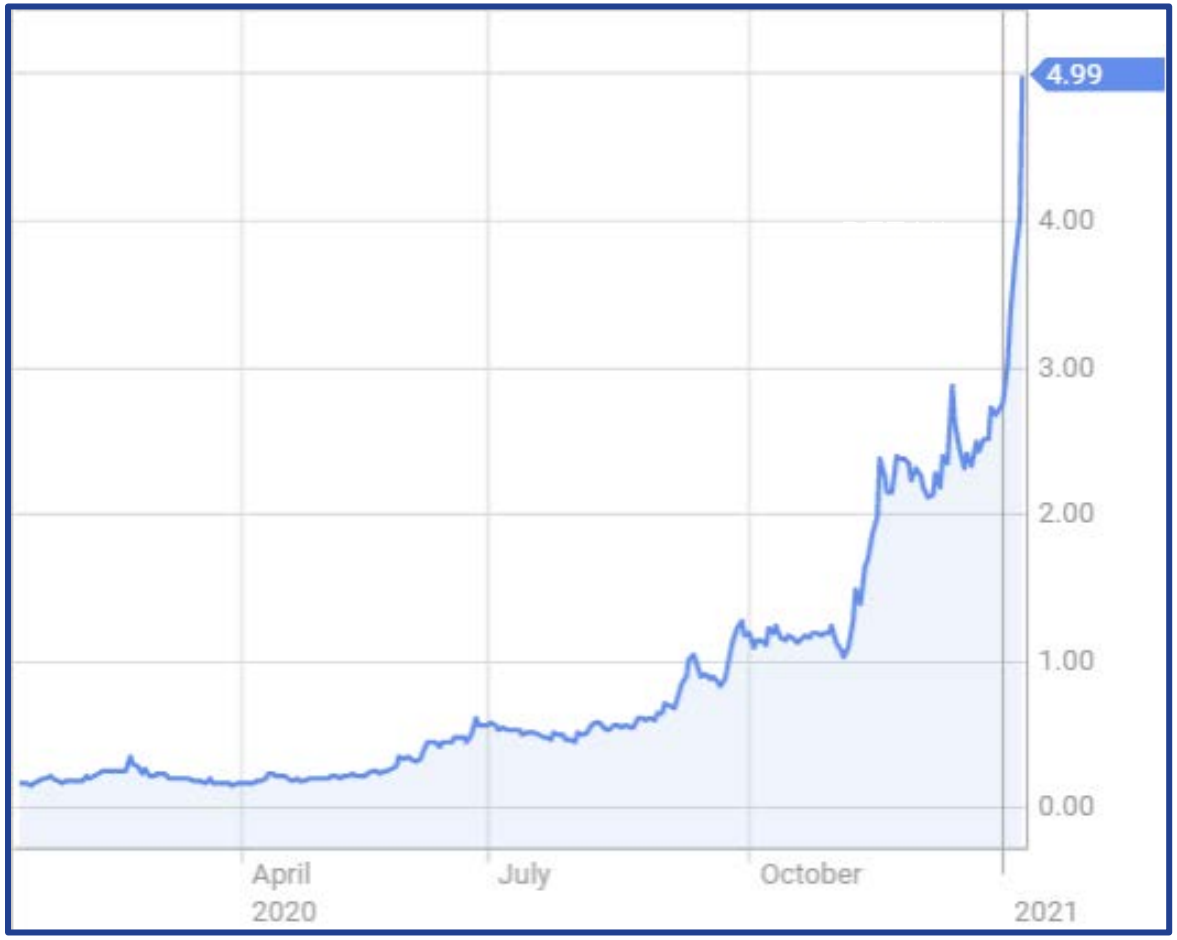


Share Price & Capital Structure

ASX : VUL	
Shares on Issue	**79,880,997**
Options (28.5c expiring in January 2021)	**2,541,767**
Performance Milestone Shares*	**8,800,000**
Performance Rights*	**12,500,000**
Market Capitalization at $4.99 (undiluted)	**~$399M**
Enterprise Value at $4.99 (undiluted)	**~$393M**
Cash Position	**~$5M**
Top 20 Shareholders	**~51%**
Management (undiluted)	**~21%**

Frankfurt: 6KO

*Refer ASX Announcement 10 July 2019 for further details.



Conclusion

1 WORLD'S 1ST & ONLY ZERO-CARBON LITHIUM® PROCESS

- **Purpose-built** process to be **uniquely Zero Carbon**
- Co-generation of geothermal energy from production wells will power lithium extraction
- **Negative CO_2/t** LiOH H_2O, **decarbonising** the grid while producing lithium, compared with **~15 tonnes CO_2 for hard-rock**

2 STRONG & RESILIENT PFS ECOMOMICS

- An approx. 40ktpy **Lithium Hydroxide business** with a **€2.8Bn NPV** Pre-tax, **31% IRR**, and the **lowest OPEX in the world** at €2,640/t
- A 74MW renewable geothermal **power business** with a **€0.7Bn NPV** Pre-tax, 16% IRR, and an OPEX at €0.066/KWh
- Project economics are **resilient to extreme case scenarios**

3 SUPPORTED BY EU FUNDING, REGULATION & INITIATIVES

- Agreement signed in May '20 with EU-backed **EIT InnoEnergy**, the group leading the EBA
- New **EU battery regulation** supporting **sustainable sourcing** and **banning high CO2** emitting batteries
- **Numerous initiatives** put in place in Europe to support the development of lithium production

4 EUROPE'S LARGEST LITHIUM RESOURCE

- JORC Mineral Resource Estimate **15.85Mt** LCE Indicated & Inferred
- **One of the largest lithium resources in the world**
- High Li grades for geothermal brine which has readily available heat & power
- Large enough to be **Europe's primary source** of **battery-quality lithium hydroxide.**

5 LOCATION CENTRE OF FASTEST GROWING MARKET

- EU **fastest growing lithium market** in the world. Unprecedented demand forecast from growth in EVs
- Located in Germany, in the **centre of the industry**
- Zero local supply of battery quality lithium hydroxide
- **Removes dependence on China** for this designated critical raw material

6 LOCAL PARTNERS & WORLD LEADING COLLABORATORS

- MoU with German **geothermal operators**
- Allows for **access to producing wells** to advance pilot processing

7 THE RIGHT TEAM FOR THE JOB

- Expert multi-disciplinary team local to project area in Germany
- **Decades of experience** in developing & permitting geothermal brine projects.
- International project finance, lithium market & direct lithium extraction processing expertise

8 RAPIDLY ADVANCING LITHIUM PROJECT

- PFS published in January 2021
- **Piloting** starting shortly with work in parallel on **DFS, permitting** and **planning**
- **Targeting short-term production start**, in line with lithium supply-demand inflection point.

VULCAN ENERGY RESOURCES
Zero Carbon Lithium®

Appendix

Appendix 1: Vulcan financially supported by the EU

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 2: Vulcan to offset CO2 penalties for automakers

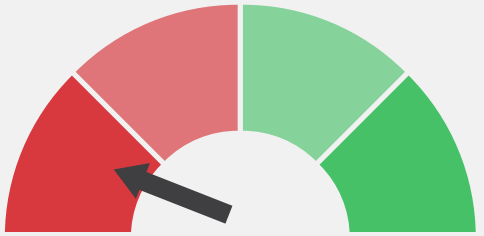
CO_2 emissions linked to lithium production

Hard Rock Mining

675kg CO_2 per EV
From Lithium Production

VW's target: **28M EVs** by 2028

19M tons of CO_2
From Lithium Production



Carbon Footprint

Penalties currently only target vehicles' emissions but not their supply chain.

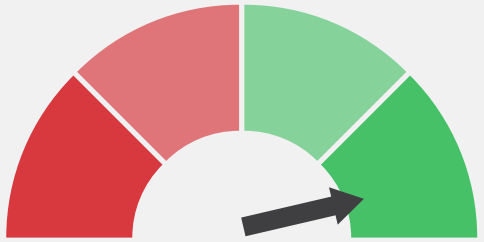
This is likely to change shortly with new EU legislation and lead to **heavy penalties** if carmakers are not sourcing greener raw materials.

Vulcan Zero Carbon

-238kg CO_2 per EV
From Lithium Production

VW's target: **28M EVs** by 2028

-7M tons of CO_2
From Lithium Production



Carbon Footprint

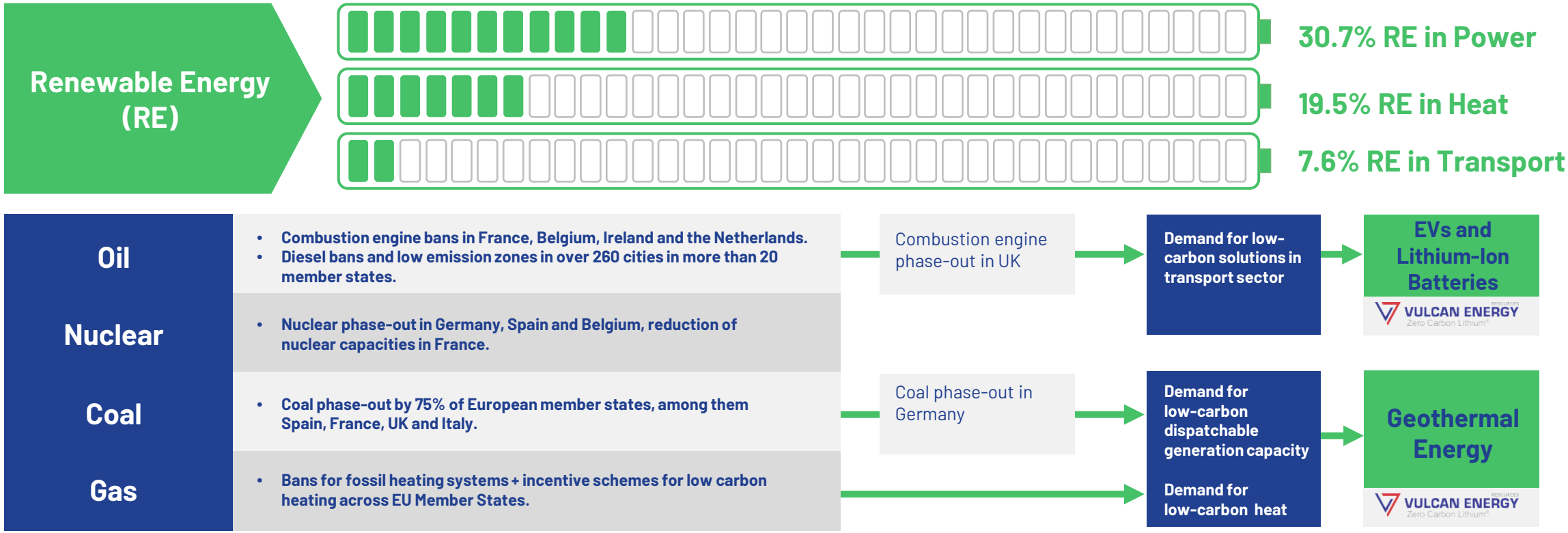
Vulcan's Zero Carbon Lithium® offers a **negative carbon footprint** that will help automakers to reach their sustainability targets by **offsetting CO_2** generated by the rest of their supply chain.

Average Battery Pack: 50KWh, Average LCE per KWh: 0.9kg, Average LCE consumption per EV: 45kg, Vulcan: -5.3t of CO2 per ton of LiOH, Average Hard Rock operation with Chinese Converter: 15t of CO2 per ton of LiOH

Appendix 3: The fossil-nuclear 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:



Appendix 4: Information for slide 10 & 11

Company	Code	Project	Stage	Resource Category	Resources M tonnes	Resource Grade (Li2O)	Contained LCE Tonnes	Information Source
European Metals	ASX: EMH	Cinovec	PFS Complete	Indicated & Inferred	695.9	0.42	7.22	Corporate Presentation Released October 2020
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	ASX Announcement Released 22 August 2019
Savannah Resources	AIM: SAV	Barroso	DFS Underway	Measured, Indicated & Inferred	27.0	1.00	0.71	Corporate Presentation Released November 2020

Company	Project	Stage	Resource Category	Brine Volume	Resource Grade	Contained 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

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 announcement

VULCAN ENERGY RESOURCES
Zero Carbon Lithium®

@VulcanEnergyRes
v-er.com
info@v-er.eu
ASX:VUL
FRA:6KO

Thank You