Mining

01/02/2022

IPO-Research: Cleantech Lithium

Lithium Disrupter: Meet the Next “Big”, while it is still Small

Indicative IPO Price	£0.40
Indicative Raise	£6M
Pre-Money Valuation	£24.8
12 Month Target	£1.05
3 Year Target	£2.60

Main Shareholders	HOLDING
Jason Baverstock	16.6%
Aldo Boitano	15.6%
Regal Emerging	9.1%
Tim Leslie	8.3%
Luke Jarvis	6.6%
Argonaut Investment Funds	5.8%
Hadron Capital	2.1%

Analyst

Approaching three decades of experience in commodities, primarily in Australia and the UK, including underground and surface mining operations, exploration, corporate finance, mineral economics and as a resource analyst; for WMC, Outokumpu, Mincor, DJ Carmichael, WHI Securities, WH Ireland, HD Capital, Numis, Metalytics, Aegis Equities and Smartkarma

Gaius L.L. King gaius@fox-davies.com

For further information please email Ctlithium@fox-davies.com

Summary

- **81% of global lithium demand in 2022 will be via ion-batteries**
- **Two Chilean-based lithium projects, collectively, >180km^2**
- **Maiden JORC Resource 1.2Mt Li_2CO_3**
- **Substantial resource upgrades inevitable**
- **Direct Lithium Extraction (DLE) Recoveries of 82-90%**
- **Potential 40ktpa producer by 2028**
- **12-month target £1.05ps**
- **3-year target £2.60ps**

The six-fold spike in lithium price over the past 12-months is not due to commodity speculation but is a direct consequence of increased global EV demand. BEV sales in the combined markets of China, Europe, and the US, have surged ~77% over the pcp, accounting for ~7.4% of all vehicles sold in 2021; with battery producers struggling to secure lithium supply at any price, a situation that could easily last until the end of the decade.

CleanTech Lithium (CTL) has a first mover advantage, acquiring several immature salar basins in their entirety, within a world-class lithium producing district. The collective tenement packages (Laguna Verde and Francisco Basin) cover >180km^2, with a maiden resource of 1.2Mt Li_2CO_3. A number that we consider extremely conservative, because (i) the grade was based on diluted surficial waters, (ii) the orebody dimensions followed the outline of the lake, as opposed to the actual basin morphology; and (iii) it was calculated to a maximum depth of 400m, despite geophysics suggesting that the actual value could be far greater.

CTL have a number of in-country industry experts, who are collectively approaching a century of experience, having already worked on virtually every major Andean salar operation in existence. DLE projects don’t require evaporative ponds, saving >30% in capex and construction times, whilst enrichment occurs within tens of hours as opposed to the typical 12-18 months taken by traditional evaporative methods; with higher recoveries, purities, and operating cashflows occurring at least several years earlier.

We strongly believe CTL is the most attractive non-traditional lithium play globally.

Disclaimer This document has been issued by Fox-Davies Capital Limited and Fox-Davies Capital (DIFC) Limited (collectively "Fox-Davies Capital") in consideration of a fee payable by the Relevant Issuer for services that include the production and broad dissemination of a detailed report followed by regular update notes. This is a marketing communication and is not independent. It has not been prepared in accordance with legal requirements designed to promote the independence of investment research and is not subject to any prohibition on dealing ahead of the dissemination of investment research. Disclosures can be found at the end of the document.

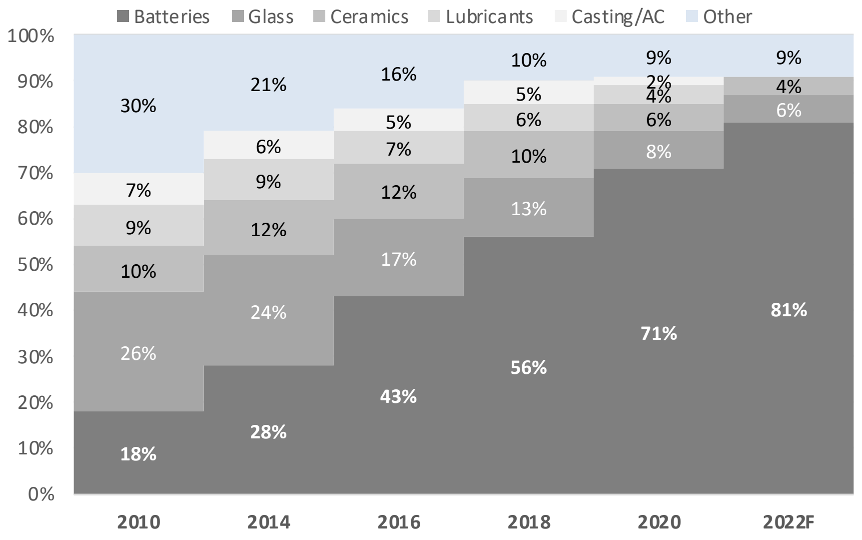
Table of Contents

Investment Thesis

The future of lithium demand is fundamentally tied to the continual growth of EVs/hybrids. We forecast that Li-ion batteries will account for >80% of all lithium consumption in 2022 (see Figure 1), the largest component of demand being EVs themselves. We have forecast that collectively, 7.5% of vehicles sold in 2021 in China, the US, and Europe, will be battery electric vehicles (BEV), not including hybrids or plug-in hybrids (PHEVs). We had, in a previous forecast, suggested that EVs would consume 61% of all battery demand by 2030, although we now believe that estimate to be ultra-conservative (sector update due to early Q222).

The key determinant in understanding future lithium demand, therefore, is to recognise that current shortages are, in fact, a structural deficit, driven by growth in EV construction currently outstripping supplies. Lithium carbonate prices in China have increased more than six-fold since the beginning of 2021, now approaching $50k/t. It is our belief that although current price levels are unsustainable in the long-term, they are >700% higher than most salar operating producer cash-costs, which underlies how profitable this sector has become. Moreover, our macro modelling shows that this structural deficit is unlikely to dissipate any time before 2030.

Figure 1: Growth in Li-ion battery demand, 18% in 2010 to 71% in 2020, with our 2022 forecast using current segmental growth trends.



Source: FD

The pertinent question then becomes: ***"How can I benefit from this shortage"***, and ***"What is the best investment vehicle I could make to gain the greatest upside in capital appreciation?"***

From a global perspective, there is a growing realisation that direct lithium extraction (DLE) technologies now provide the most realistic production path for most of the remaining salar plays. Historically, semi-mature salars were ignored on the basis that evaporation times would be prohibitively expensive capex wise, that the number of ponds and the timeframe needed to gain sufficient evaporation would be exorbitantly expensive. This is why DLE will become transformative, it is cost-competitive and eminently scalable. Efficient because it removes only lithium from brine, with higher recoveries and purities. The enrichment process occurs over a period of days, many orders of magnitude faster than conventional Salars, which even under ideal conditions, still take 12-18 months. Environmentally, DLE technologies have a significantly smaller footprint and does away with the need for large expensive evaporative ponds; allowing the operator to return the brine to the source with no fundamental change in chemistry.

In the lithium space, we believe that CTL is the standout opportunity, offering a compelling investment narrative, with a strategic plan that could transform this company in 12-18 months' time. The confluence of specific advantages include:

- **First mover advantage**: The company acquired two significant semi-mature salar projects, with enormous land packages covering the critical areas of interest. There are very few suitable Andean aquifer projects available, taking into consideration the size and quality of Laguna Verde and the Francisco projects;
- **Geochemistry:** Andean lithium brines contain far lower Mg, Ca and other cation ratios in comparison with other potential salars globally (especially those in Asia), making them eminently suitable for DLE. Several preliminary metallurgical tests (from both projects – see "*DLE Lab Results*" section) have recoveries in the vicinity of 82-90%;
- **Technical team:** Exceptional experience in lithium and relevant processing technology expertise with all the major industry participants;
- **Rapid progress:** Expect completion of scoping study and pre-feasibility study (PFS) on Laguna Verde by the end of 2022, and possibly a second PFS on the Francisco Basin by mid-2024;
- **Governmental applications:** CTL has already submitted a CEOL application to the Ministry of Mining for the Francisco Basin covering 20ktpa, over a period of 41-years. In addition, at the same time, a second application was submitted for the Laguna Verde, also for 20ktpa over a period of 36-years; and
- **Existing infrastructure:** Project access and power infrastructure for both projects are readily available.

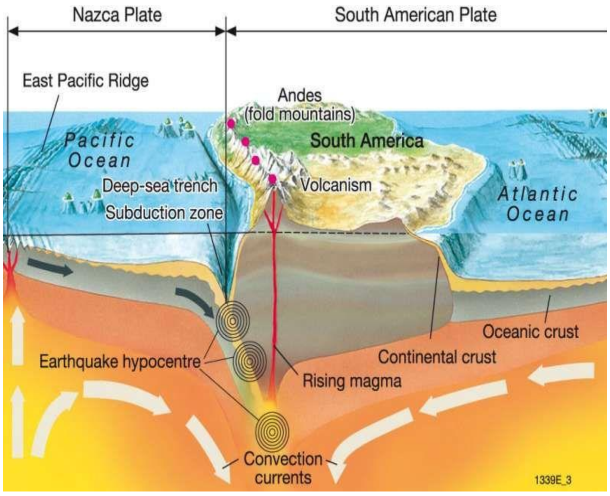
Arguably CleanTech Lithium is the most attractive non-traditional lithium play globally.

Salars and their Geological Formation

Figure 2: Location of CleanTech's Chilean lithium projects, ~120km from mining centre of Copiapo. Licenses total >180km^2, including Laguna Verde 72km^2 and Francisco Basin 110km^2.

Source: CleanTech (2021)

Figure 3: The location and relative direction of movement of tectonic plates.



Source: USGS (2020)

A salar is a salt-encrusted depression, which may or may not be the basin of an evaporated lake. Chile was once a subtropical and humid region, becoming a desert due to crustal movements forming the central Andes (in a north-south orientation) during the Tertiary and Quaternary periods (20-15Ma). The result of two continental plates colliding, the denser oceanic lithosphere of the Nazca Plate[1] was forced under the more buoyant continental lithosphere of the South American Plate (see Figure 2), in a process called subduction. This tectonic confluence resulted in a marked period of volcanism along the coast of Chile and Argentina, along with some internal parts of the Puna. This event also defined the closure of numerous elongated depressions that were typically surrounded by mountains and volcanoes, eventually reaching such a height that they acted as rain barriers, restricting, and in places, completely obstructing precipitation meaning that any water collected within these Andean depressions evaporated over time, leaving different types of salt (depending on the degree of solubility). Modern day salars were formed between the Miocene and the Quaternary period; with their distinct aquifer mineralogies determined (in many cases) by intense nearby volcanics and geothermal activity.

How does the above relate to lithium deposit formation? Globally, lithium is extracted in one of two ways, either pumped from underground salar brine reservoirs then enriched via a series of evaporation ponds; or mined from spodumene rich rocks (as is done with most of Australia's lithium production). At present, there is approximately a 50/50 split between brine and spodumene rock production (see Figure 6).

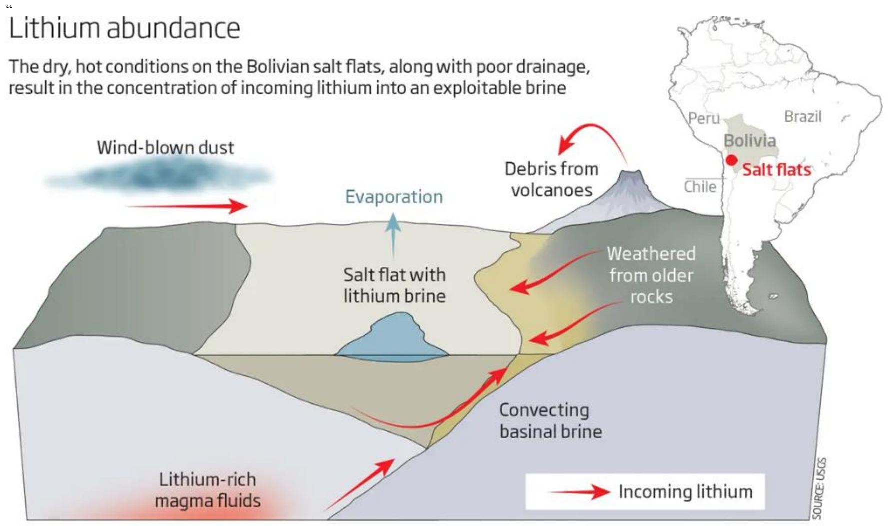
CleanTech have acquired two lithium projects; the Francisco and Laguna Verde projects in the Chilean Altiplano, both are considered immature salars. Looking at South American lithium salars, there are generally two recognised host aquifers: mature halite salars and immature clastic salars. Mature salars have a lower moisture flux and are typically associated with more arid regions, characterised by relatively thick uniform sequences of halite that have been deposited under varying subaqueous to sub-aerial conditions. In contrast, immature salars are characterised by higher frequently and at higher elevations. Moreover, unlike mature

---

[1] Named after the Nazca region of southern Peru, it is an oceanic tectonic plate in the eastern Pacific Ocean basin off the west coast of South America, primarily responsible for the Andean orogeny. Approximately 15.6Mkm^2, it is the fastest moving plate in the Pacific Ocean, averaging 3.7cm per annum over the past 23Ma.

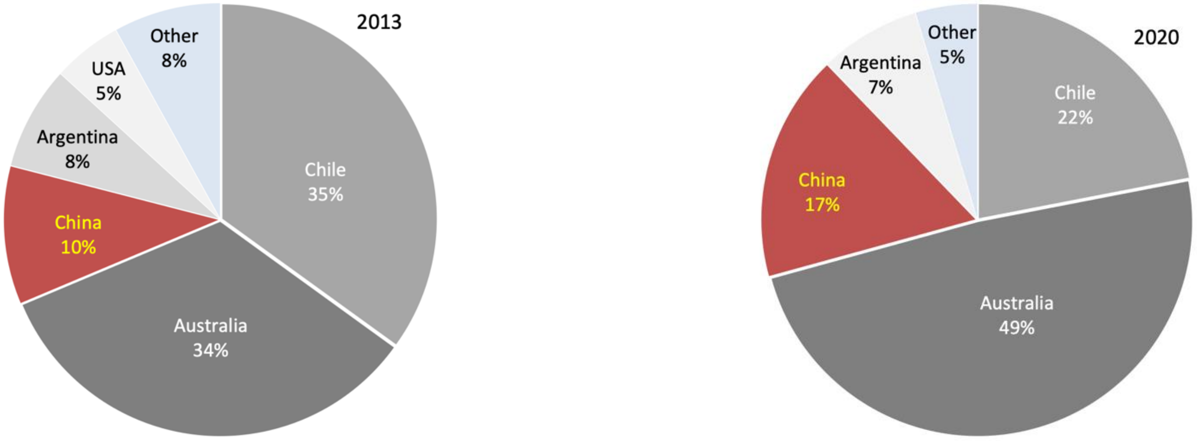
salars, immature salars are dominated by clastic sediments which tend to be inhomogeneous[2] and anisotropic, with the resultant permeability being highly dependent on lithology. However, as a result the brines rarely reach halite saturation because they are not located within a hyper arid environment.

Figure 4: Geological model for the formation of Salar de Uyuni, Bolivia. Not dissimilar to the Francisco and Laguna Basin projects. Both located within a large, fault-bounded, volcanic alluvium-filled basin, adjacent to once active volcanoes, completely encompassing a semi-mature salar, adjacent lagoon and area of adjoining alluvial cover.



Source: New Scientist (2015)

Figures 5 & 6: Global lithium production, comparing relative 2013 (left) with 2020 (right) abundances. Australia is entirely a spodumene producer.



Source: USGS (2014, 2021), FD

---

[2] Typically, they have alternating sequence of fine-grained sediments and evaporitic beds of halite and/or ulexite, representing the waxing and waning of sediment supply under a variable climatic history.

Laguna Verde Project & Resource Summary

Figures 7 & 8: Tenement position covering the Laguna Verde project (top); and the view of the project looking north (bottom). The hypersaline lake cover ~15.2km^2 at an average depth of ~5m; with a deep sediment hosted aquifer situated directly underneath.

Source: CleanTech (2021)

At 4,250m above sea level, Laguna Verde [3] is the company's most advanced project, a salt-encrusted depression located 200km northeast of the regional capital of Copiapo near the Argentinean border. The endorreic basin where the sub-surface brine resource is localised, has a modelled horizontal lens that closely resembles the lagoonal perimeter, covering a total area of approximately 29km^2, with depths ranging from the lagoon bottom (~4m) to 400m in a WNW–ESE orientation (see Figure 7). The catchment [4] is dominated by volcanics, many of which have been altered by hydrothermal fluids associated with volcanism (Late Miocene to Holocene age). Part of the basin is actively fed by hot geothermal springs and is classified by the Chilean Ministry of Energy as a potential site for geothermal energy, which will probably be assessed at Scoping Study stage[5].

The climate is arid with minimum temperatures reaching -20°C during winter, with summer reaching a maximum of ~15°C. With annual precipitation ranging from 100-150mm, with effective evaporation rate from 1-1.2m per annum.

Laguna Verde has a smaller surface area and a much larger sub-surface resource hosted in volcano-clastic sediments directly underneath (see Figure 9). The surficial hyper-saline lagoon resource morphology was calculated using a bathymetry survey, which ranged from 0.4 to 7.2m (averaging 4m) with shore perimeter digitalised using map imaginary. The calculated volume based on this model is 59.5M m^3.

---

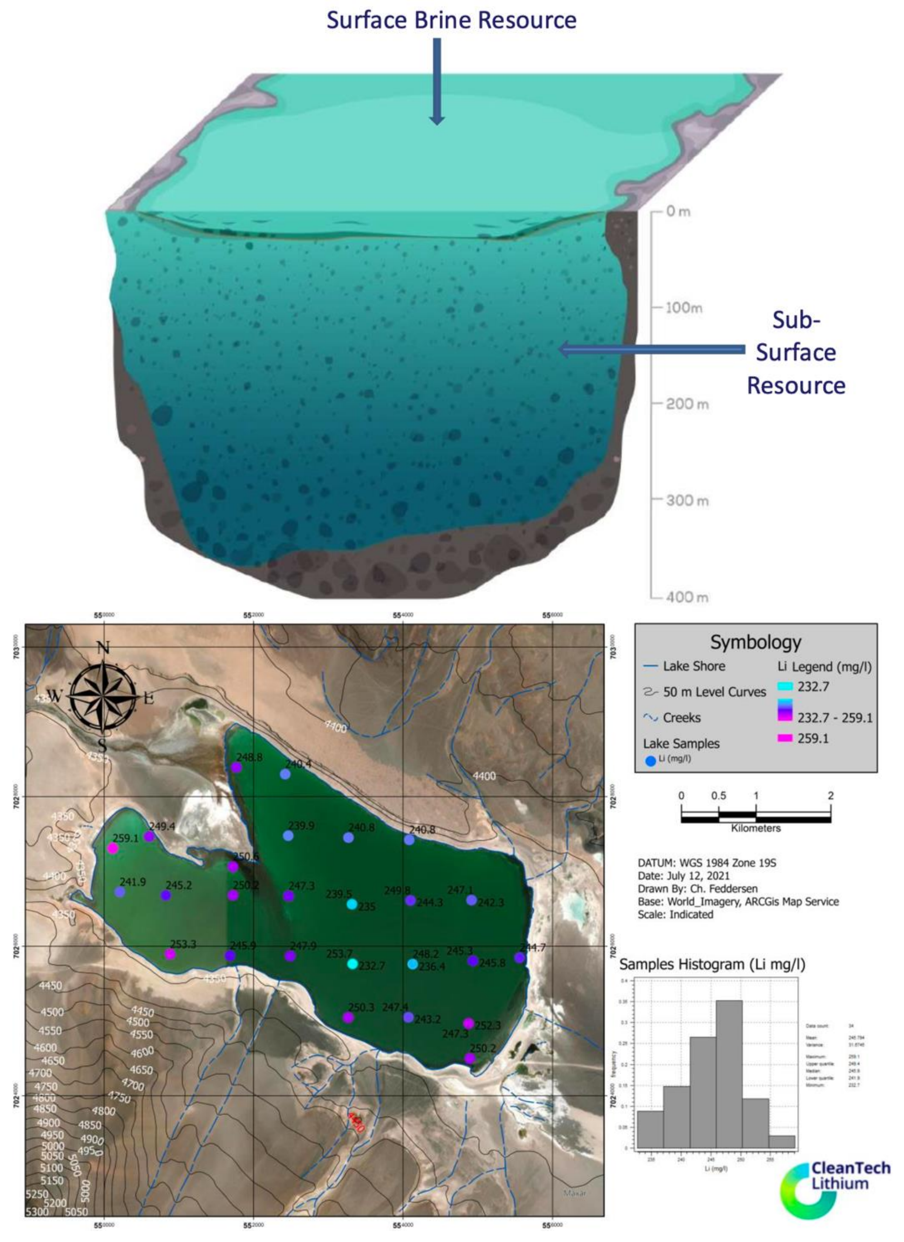
[3] The Laguna Verde option agreement details are included in Appendix C.

[4] Inflow into the lagoon estimated to be approximately a single cubic metre per second, one third surficial, two-thirds via sub-surface infiltration (*pers.com*. Christian Feddersen 4/10/21).

[5] Southeast shore of the lake there is a thermal spring named *Termas de Laguna Verde*.

The sub-surface resource (a sedimentary brine deposit) was interpreted from a TEM (transient electromagnetic) geo-physical study[6]. The cross-sections were then collated into a 3D model; the lagoonal domain interpreted up to the shore (see Figure 11) with some interpreted depths exceeding >400m; with the resultant model having an exploration potential volume of 8.1Bn m^3. The geological units within this "moderately" consolidated basin include tuffs from Laguna Verde Ignimbrite situated over a thick sequence of coarse sands and gravels [7] which, by contrast, have moderate to high porosity; a specific yield of 11%[8] was assigned for the sub-surface unit. Using the lagoon brine average Li content 245.8ppm, the sub-surface resource measures ~1.17Mt Li_2CO_3. Collectively, surficial and sub-surface resources come to 1.2Mt Li_2CO_3 starting from surface.

Figures 9 & 10: X-section of Laguna Verde project demonstrating surface and subsurface aquifers (top); and the Laguna Verde geochemical sample pattern and results (Li mg/l)(bottom).



Source: CleanTech (2021)

In mid 2021 the company undertook a geochemical survey (34 samples) of lagoonal brines utilising an 800m grid pattern (see Figure 10) covering the entire lagoonal area. The results demonstrated substantial homogeneity, averaging 245.8mg/l Li with a small standard deviation[9]. The lower Li values appear to be concentrated around three surface samples taken in the middle lake, probably reflecting seasonal precipitation. The calculated surficial resource measuring 70kt Li.

There is a significant argument that the current resource (based on average surficial assays) is extremely conservative, given that

---

[6] Despite the V-shaped valley sides, the U-shaped basin morphology was interpreted by Kinross using TEM and gravimetry study, and is on public record within an environmental study (*pers.com*. Christian Feddersen 4/10/21). The basin model interpretation is not constrained and is open to depth, estimated to exceed a kilometre deep in places.

[7] Lithological interpretation was confirmed by hydrogeological drilling made outside the concessions area.

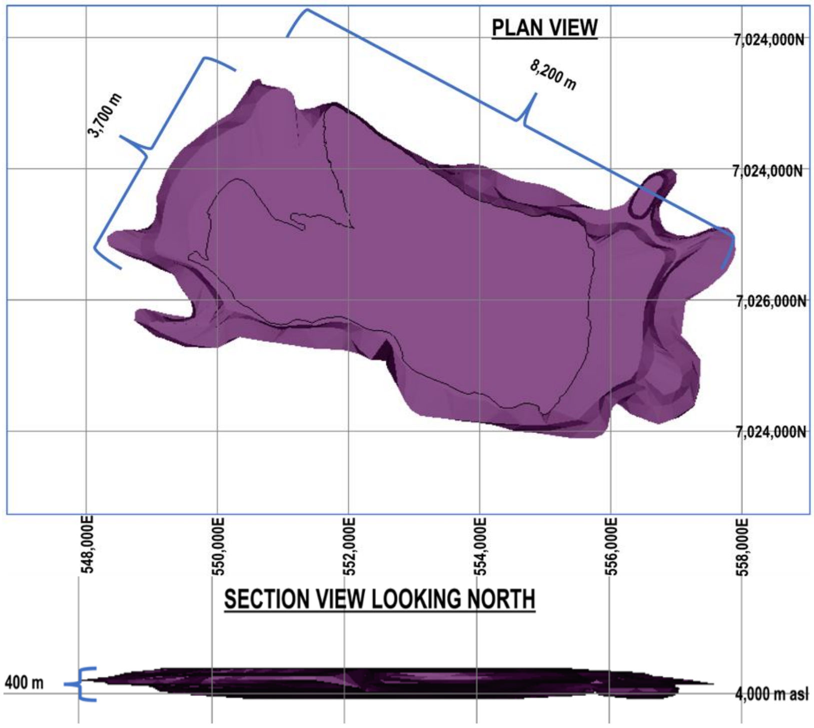
[8] Yield similar to Vulcan Resources (ASX: VUL) 10.9%. Christian Feddersen (*pers.com* 4/10/21) estimated that overall basin lithological column porosity to be >30%, with likely extraction to be <36% due to a confluence of factors; including ionic attraction, sorting, cementation, overburden stress (related to burial depth), grain shape, recharge rates, etc.

[9] Displaying a normal Gauss distribution, the minimum Li value 232.7mg/l and the maximum 259.1mg/l Li.

subsurface resistivity values decline with depth (see Figure 12) are typically correlated with higher brine concentrations (*i.e*. containing higher lithium grades). Surface grades are strongly influenced/diluted by seasonal precipitation events; the implication being that even without increasing the dimension of the modelled orebody, if the resource grades were to be upgraded to levels approaching what were estimated for the Francisco Basin *(i.e*. ~400ppm) LCE tonnages would increase by >60%. Clearly a hypothesis that can be proved once drilling commences.

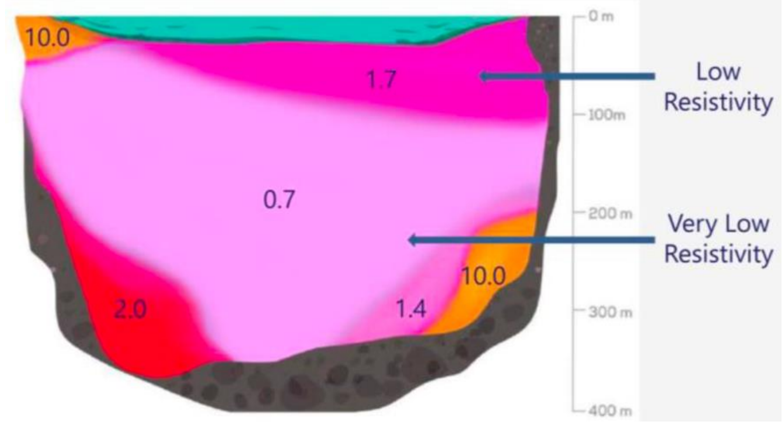
Figure 11: Sub-surface resource dimensions, with lens closely restricted to the lagoon perimeter (29km^2) and with depths ranging from the lagoon bottom to 400m.

“



Source: CleanTech (2021)

Figure 12: Sub-surface resource brines could present substantially higher lithium concentrations with depth, corresponding with decreasing resistivity values.



Source: CleanTech (2021)

Francisco Basin – Not Just the Second-best Project

Figures 13 & 14: Tenement position covering the Francisco Basin, potentially a larger and higher-grade project than Laguna Verde (top); and the view looking south (bottom).

Source: CleanTech (2021)

The Negro Francisco Basin project is located 100km southeast of Copiapo, a closed basin at the termination of three fluvial systems. Total licence area of 110km^2, 60km^2 resides within the Tres Cruces National Park, which is excluded from CleanTech's future exploration efforts. Prior to its tenure, previous work was limited to government-funded, regional scale, hydrological studies around the basin. Sampling and a TEM survey identified two zones: both a shallow (-120m) and deep (-560m) brine target to the south of the salars beneath the alluvium. The possibility of a deep basin interpreted from gravity results was confirmed by hole FB-03-18, recorded with the aquifer beginning at 102m to a depth of 222m.

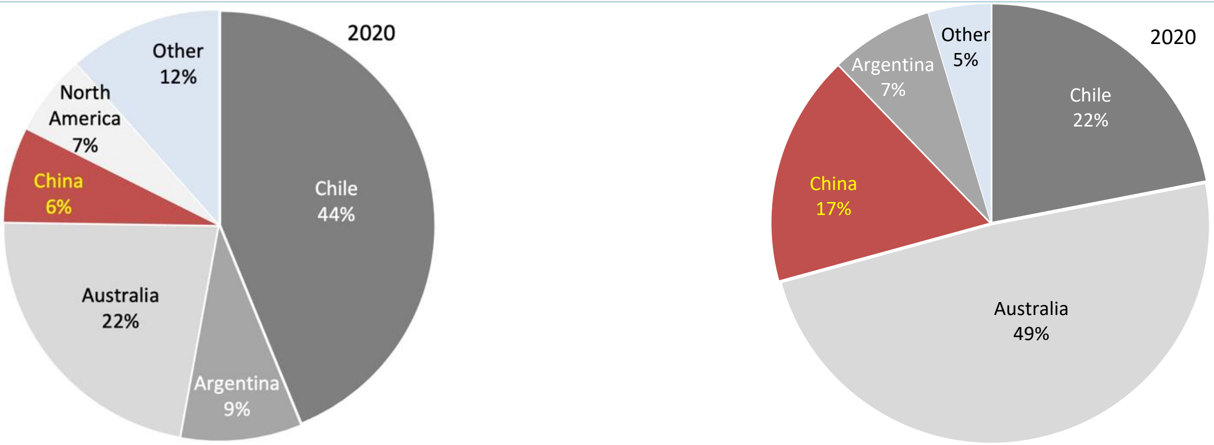
Critical to the prospectivity of the project, is that it sits within a large, fault-bounded, volcanic alluvium-filled basin to the immediate south of the Copiapo Volcano, which, though dormant, still has active fumaroles. Previous testing of lithium grades appear to have been diluted (between six and eight times) by overlying freshwater, when back-calculated it has been estimated that the deeper brine aquifer may actually grade 400-670mg/L, substantially higher than previously assumed at the Laguna Verde project (~240-250mg/L).

The current exploration target over the Francisco Basin project has an estimated range of 0.25-1.2Mt LCE. The current resource drill programme aims to upgrade toward a JORC Inferred resource estimate, with current thinking that an interpreted radius around each drill hole could be extrapolated for ~2km (dependent on the level of consistency between the first and second drill holes). Although Laguna Verde may be a deeper (gravity indicates in places >1km) reservoir, and at an earlier stage than the Francisco Basin, it is potentially a larger and higher-grade project.

Direct Lithium Extraction (DLE) Background

Globally, the largest Li and K rich continental brine occurrences are in the Andes of Chile, Argentina, and Bolivia, and in western China and Tibet. A number of arid salars have been exploited commercially for decades and are responsible for a very large percentage of the current world lithium supply (see Figure 15). In processing terms, the Asian group of brines have challenging chemistry[10], in that it has been found that the economic extraction of lithium remains difficult[11]. This is not the case with South American brines from the Atacama region where a DLE plant has been in operation at the region's second largest lithium production base, Hombre Muertos salar in Argentina, for several decades. The potential widespread adaptation and dispersment of this technology among Andean semi-mature salars could, theoretically, supply much of the forecast demand growth expected from EV adoption over the coming decades. Which if anything, underlies the current race by many lithium producers and explorers to secure suitable projects in anticipation of DLE's future rollout.

Figures 15 & 16: Global lithium Reserve distribution from 2020 (left); and Global lithium production in 2020 (right).



Source: USGS (2021), FD

---

[10] The Mg/Li ratio of Atacama is regarded as the benchmark of Salt Lake resources around the world, at only 6/1. According to Pedro Torres (*pers.com* 5/10/21), Mg only becomes a problem once it crosses 15x the in-situ lithium content. To demonstrate why Chinese DLE operations remain an economic challenge, the ratio of magnesium to lithium halide within the Chaerhan Salt Lake is 1,577/1 (with low lithium grades); Dongtai Jinai 35/2; Xitai Jinai 61/1; Yiliping 90/1; Dachaidan 134/1. https://news.metal.com/newscontent/100911546/decryption-of-chinas-four-major-salt-lakes-five-major-refining-technical-routes-everything-about-lithium-extraction-from-the-salt-lake-is-here/

[11] The Qinghai Mg-rich brine projects were initially aiming to extract 50kt lithium carbonate per annum, however, Mg and Ca levels are critical using an ion technology. First using American technology (Livent?) that proved to be unsuccessful, then adapting similar Russian-based expertise, the purported production volumes never materialised and bankruptcy ensued. The project still produces ~15kt of lithium carbonate (although not battery grade material, is successfully upgraded). Failure appears to be a confluence of Qinghai magnesium-rich brine chemistry, and misapplication of technology.

Economic Advantages

At present, approximately 45 consortia are pursuing various DLE technologies, globally. Direct extraction technologies hold the promise of both extracting lithium from brines cost-effectively (compared with current salar and hard rock spodumene sources) with the added environmental benefit of being able to return the processed brines back to recharge the reservoir, and vastly minimising the disturbance footprint. When comparing a DLE with an equivalent salar operation, there are several important economic differences:

- DLE operations require neither extensive site construction nor the development of numerous evaporation ponds, thereby significantly lowering upfront capex requirements.
- From a cashflow perspective, sellable product is produced in tens of hours as opposed to 12-18 months waiting for sufficient evaporative enrichment. This reduces working capital requirements.
- Operating costs for operating a DLE are substantially more energy intensive and require substantially more reagent (depending on who you read up to ~60-75% total costs), with substantially higher ongoing plant opex.

Main DLE Process Routes

The most well-known hybrid DLE operation is the *Salar de Hombre Muerto*, ~1400km northwest of Buenos Aires; the operation[12] has been producing lithium since 1997 and according to Livent has a mine life of >75 years. Situated in the southern Puna de Atacama at ~4000m above sea level, the region receives just enough precipitation to occasionally be covered by a thin layer of water which makes it the domain of a semi-mature salar[13].

Historically, there are 73 variants[14] of DLE technology that have been tried, but in general they can be broadly grouped into three main categories: absorption, ion exchange, and solvent extraction techniques (see Figure 16). Of these technologies, those currently advancing to pilot and near commercial scale demonstrations use absorption and ion exchange systems.

- **Absorption** utilising a porous material that physically absorbs LiCl molecules onto the surface of a sorbent, which can be stripped later using water. FMC in Hombre Muerto, and Soquimich and Chemetall in the *Salar de Atacama* have been utilising an absorptive DLE process for almost two decades;

---

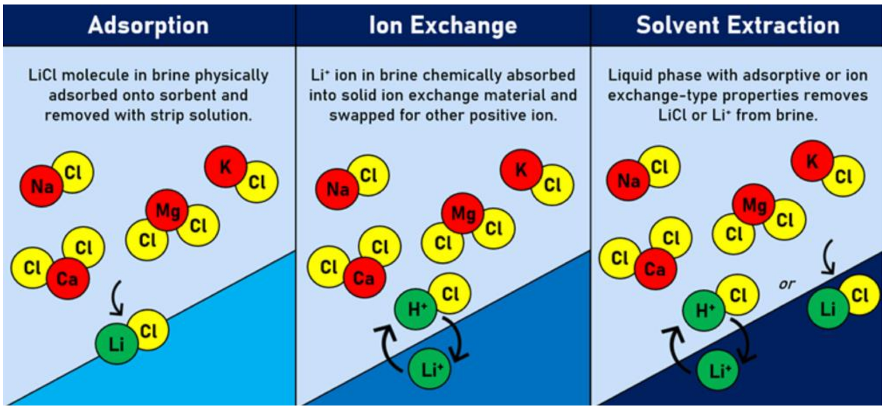
[12] Accounts for the vast majority of Argentina's lithium production; the lithium salts produced on site are transported 99km by road to the *Salar de Pocitos* station, with the railway line to the port of Antofagasta on the Pacific coast.

[13] The brines contain 744mg/L Li, 7,404mg/L K, 1,020mg/L Mg, 636mg/L Ca and 420mg/L B; although only the lithium is extracted.

[14] https://www.jadecove.com

- **Ion-exchange** trades lithium ions for protons or other cations within the sorbent's structure. An acid (rather than a water) is typically used to recover the lithium; and
- **Solvent extraction** exchanges LiCl molecules and/or lithium ions between the brine and an organic liquid phase.

Figure 17: Direct lithium extraction processes.



Source: NREL[15] (2021)

The obvious challenge for any new DLE operation is the ability to preferentially (either alone, or in combination, with additional process steps) extricate high concentrations of gangue ions in solution, which may include Na, K, Ca, Mg, B, Si, Fe, Mn, etc. Critically, there is widespread appreciation that no matter what technology combination is employed, as previously mentioned, it will have to be modified/adapted to specifically target the geochemical profile of the initial resource. Although our belief is that the above statement is probably not as difficult as the statement implies, simply because the commonality among Andean salars will mean adaptation will be relatively minor.

Energy Requirements

Moreover, because the DLE process is far more industrial and energy intensive than the traditional evaporative pond route, energy security and the cost is a critical determinant in any future project's economic success.

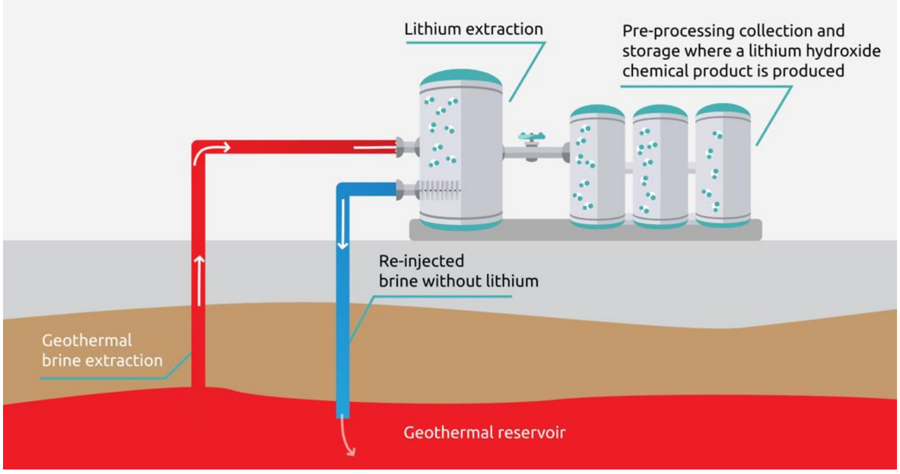
CleanTech have addressed this concern by stating their aim to establish a large renewables-based industrialisation platform, highlighting that both of their projects are located in one of the world's best solar regions. Moreover, this proposition is given added gravitas in that the incoming managing director, Aldo Boitano has demonstrable expertise in this area, described as a pioneer in Chile's solar industry, having been involved in establishing >800MW of installed capacity in a variety of projects.

---

[15] Warren, I. (2021) *Techno-Economic Analysis of Lithium Extraction from Geothermal Brines*. National Renewable Energy Laboratory, 39 p. NREL/TP-5700-79178. https://www.nrel.gov/docs/fy21osti/799178.pdf

Not ignoring the fact that both projects (Laguna Verde and Francisco) have localised high-heat flow geothermal potential. According to IRENA, the total geothermal resource capacity of the Andean region is approximately 12GW, which is 75% of the total installed global geothermal capacity in 2020. The main financial challenge to establish geothermal power is the significant upfront costs associated with geophysical studies and drilling. However, once it is established, it generates baseload power for decades, at a cheaper operating cost than virtually any alternative, possibly negating the need for battery storage; with the added benefit of being able to be switched off and on at short notice allowing it to work in conjunction with a solar array if needed.

Figure 18: Both the Laguna Verde and the Francisco projects have nearby geothermal activity; underlies the potential for co-production of lithium utilising (in-part) geothermal energy.



Source: Cornish Lithium (2021)

Concentrating on cheap and renewable energy sources, if able to be harnessed, fulfils a number of key objectives:

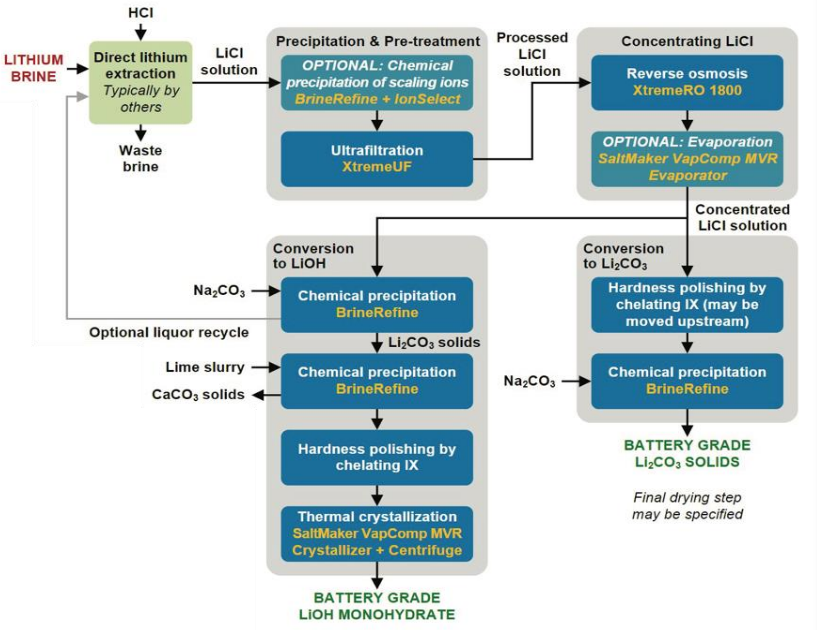
- Firstly, the ability to generate and supply power in a region (>4,350m altitude) where little or no nearby power infrastructure exists;
- Power is the second largest cost component in running a DLE plant. The ability to generate low-cost electricity will drive production costs down; and
- The possibility of low (or even net zero) carbon by-product resulting from the production of lithium represents an ESG benefit that could be increasingly monetised either in the form of green credits sold, or access to markets which will, in the future, be constrained by carbon intensity benchmarking (*e.g*. European car industry).

DLE Lab Results – Promise of Widespread Adoption?

The pace of technological development and innovation for DLE is accelerating. Subsequently, their commercialisation has the ability to open up an entirely new swath of immature Andean based salars, which were previously rejected as “uneconomic” due to the industry mindset of relying on solar ponds, the necessity for arid conditions, very high evaporation rates, and time to reduce brines over a period of time, typically ranging from 12 to 18 months. Only when the brine has reached an ideal lithium concentration, would the solution go through a lithium recovery facility for extraction. CleanTech’s own technical expert, Pedro Torres (under the guise of Beyond Lithium LLC) tested raw brine from the *Tolillar Salar* (Alpha Lithium Corp. - TSX.V: ALLI) and yielded a solution concentrate of 9,474mg/L[16] with significant rejection of impurities. The process uses secondary ion exchange and reverse osmosis to selectively extract lithium ions via a number of stages:

- STAGE 1 - Removal of divalent sulphates + 30% Ca & Mg (nano or ultrafiltration of particles, plus membranes cleaned);
- STAGE 2 - Selective adsorption for lithium (aluminate or manganese derived solvent);
- STAGE 3 - First concentration with reverse osmosis
- STAGE 4 - Concentration with forced evaporation via steam boiler (using gas and electricity); or alternatively, an evaporation pool (25,000tpa requiring ~100 hectares); and
- STAGE 5 - Ionic exchange to remove traces of Ca, Mg and B.

Figure 19: DLE technology is capable of producing either a lithium hydroxide or carbonate.



Source: Saltworks (2021)

---

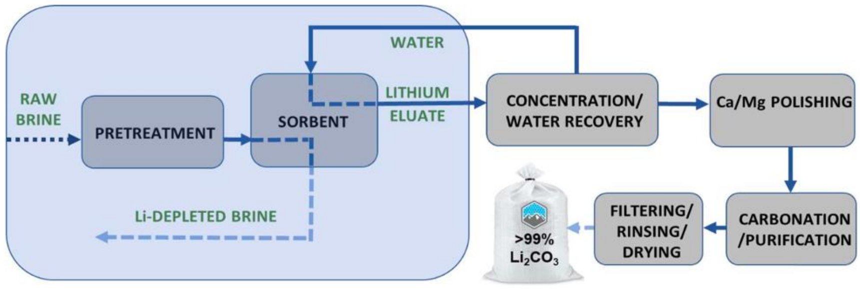
[16] Results: 9,474mg/L Li, 567mg/L Mg, 1,696mg/L K, 251mg/L B, 19,370mg/L Na, 700mg/L sulphates.

To determine their suitability, CleanTech have undertaken a number of metallurgical processing assessments to investigate recoveries, the highlights are summarised below:

Laguna Verde – The Summit Nanotech study focussed on assessing the feasibility of isolating lithium chloride from a surface brine resource, with a lithium concentration of ~200ppm. Brine recoveries were ~90%, with Mg levels reduced by 86%, Na by 91%, and sulphate ~94%.

Figure 20: Overview of Summit Naotech's denaLi process. The case-study only investigated the process that produced lithium eluate (the shaded region below)

“



Source: Summit Nanotech (2021)

Francisco Basin – Testing by Lilac over a six-hour period increased the lithium grade from 847 to 3,000mg/L (similar to an evaporative pond operation) with overall recoveries at ~82%. Feedback suggesting that these set of results were among the best from a number of lithium projects that they evaluated globally. In addition to this, SunResin undertook a three-stage trial utilising surface samples (averaging 847mg/L) to 20,000mg/L by the end of the third stage; providing the company data on probable reagent consumption, temperature range and water quality that will be used in refining future test work. Underlining the fact that the success of developing a lithium project capable of utilising DLE is very much dependent upon the geochemical profile of the resource.

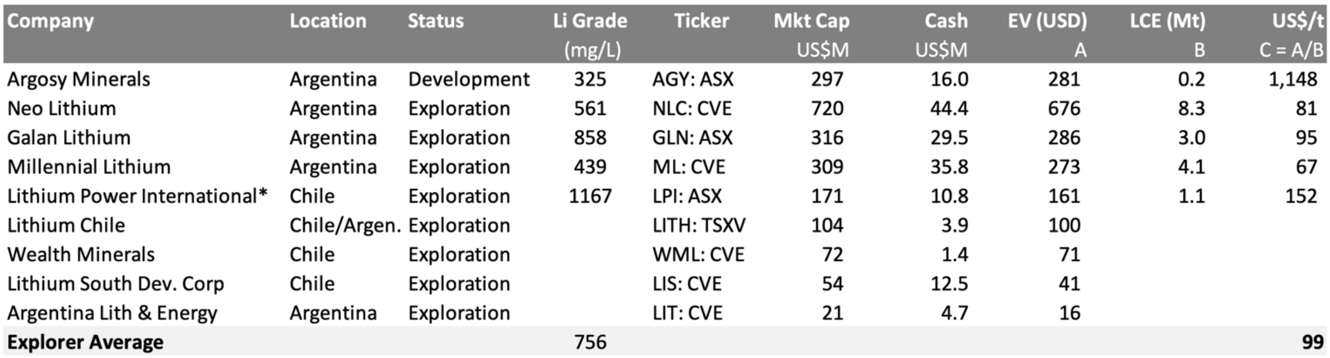
Conclusion – Both Laguna Verde and the Francisco projects appear to be geochemically amenable to DLE extraction. The different starting mg/L abundances (in each of the above geochemical tests) merely reflect the time of year the sample was taken, and the relative time interval to the most recent precipitation event. Following due diligence, research and discussions with the company's own experts, without sounding definitive, we remain quietly confident that a suitable DLE extraction process will eventually be established.

Peer Comparison – An Attractive Entry Point

In a recent development, the ASX is forcing junior mining companies to retract promotional materials containing "peer comparison information"; in particular, comparing the relative size and potential of projects with other listed companies. We are not averse to this new development, which is bound to be expanded to other mining dominated exchanges. Peer analysis has historically been as a standardised metric and is widely used among bulge bracket banks utilised as a valuation instrument to compare various mining operations, cost of extraction, resource base, etc.

For exploration companies with non-producing assets, it is a far more difficult proposition to get a standardised basis to accurately compare disparate projects; hence the ASX's objection. The process has historically been abused with a resource (*e.g*. lithium spodumene resources, in-situ value per tonne) over market capitalisation, typically favouring those with large, often low-grade deposits, with no reference to either project economics, or likelihood of development. Despite our reservations, looking at the valuation metrics (US$/t LCE) in Table 1 among traditional brine explorers, as a company transitions from being an explorer to an emerging producer, the in-situ valuation increases dramatically. For example, LPI with the larger and highest-grade resource, has an enterprise value worth only approximately half that of the highest in-situ valuation of AGY.

Table 1: Peer comparison of listed lithium brine-based explorers (prices correct as at the close 28th January, 2022, AUD 0.70, CAD 0.78)



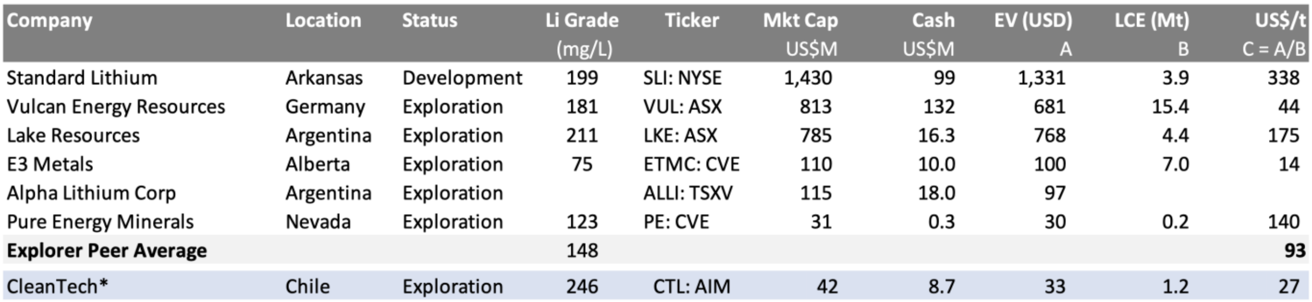
Company	Location	Status	Li Grade (mg/L)	Ticker	Mkt Cap US$M	Cash US$M	EV (USD) A	LCE (Mt) B	US$/t C = A/B
Argosy Minerals	Argentina	Development	325	AGY: ASX	297	16.0	281	0.2	1,148
Neo Lithium	Argentina	Exploration	561	NLC: CVE	720	44.4	676	8.3	81
Galan Lithium	Argentina	Exploration	858	GLN: ASX	316	29.5	286	3.0	95
Millennial Lithium	Argentina	Exploration	439	ML: CVE	309	35.8	273	4.1	67
Lithium Power International*	Chile	Exploration	1167	LPI: ASX	171	10.8	161	1.1	152
Lithium Chile	Chile/Argen.	Exploration		LITH: TSXV	104	3.9	100		
Wealth Minerals	Chile	Exploration		WML: CVE	72	1.4	71		
Lithium South Dev. Corp	Chile	Exploration		LIS: CVE	54	12.5	41		
Argentina Lith & Energy	Argentina	Exploration		LIT: CVE	21	4.7	16		
Explorer Average			756						**99**

Source: Company Reports, FD *Lithium Power's Blanco project is a JV with Minera Salar Blanco and Bering (49%). Note that no value has been attributed to other company projects held (*i.e*. Greenbushes, Pilgangoora and Tabba Tabba).

When comparing specific DLE explorers and development projects (see Table 2), again, there appear to be disparate values ranging from Standard Lithium ($338/t) all the way to E3 Metals ($14/t), with Pure Energy in between (with potential, but little in the way of resources and capital). Standard Lithium's market capitalisation can be explained, in part, by its direct connection to an already existing "tail brine" stream of Lanxess, which already processes and extracts bromine. The MOU and JV agreements allow Standard Lithium to add lithium-extraction operations, saving significantly on both time and infrastructure costs. Moreover, upon proof of concept, Lanxess has committed to providing funding toward commercial development.

E3, on the other hand, had previously intonated that they were going to extract lithium brines from old oil wells, thereby saving substantial capex. In recent discussions with company management, they now intend to drill new wells, ranging between 2 and 2.5km in depth, to reach the underlying reservoir. Over the past 18 to 24 months, the company has completed a lab prototype, successfully run the pilot plant, and now intend to build a field pilot plant to demonstrate the process at scale. This extended timeline in "proof of concept" merely illustrates to the investor potential delays in any cashflows, which is being reflected in the share price; in addition, to the requisite C$820m (and/or a strategic partner) to finance the project.

Table 2: Peer comparison of listed lithium brine DLE based explorers, in which of course we are more interested (close 28th January, 2022, AUD 0.70, CAD 0.78, EURO 1.11, GBP 1.34).



Company	Location	Status	Li Grade (mg/L)	Ticker	Mkt Cap US$M	Cash US$M	EV (USD) A	LCE (Mt) B	US$/t C = A/B
Standard Lithium	Arkansas	Development	199	SLI: NYSE	1,430	99	1,331	3.9	338
Vulcan Energy Resources	Germany	Exploration	181	VUL: ASX	813	132	681	15.4	44
Lake Resources	Argentina	Exploration	211	LKE: ASX	785	16.3	768	4.4	175
E3 Metals	Alberta	Exploration	75	ETMC: CVE	110	10.0	100	7.0	14
Alpha Lithium Corp	Argentina	Exploration		ALLI: TSXV	115	18.0	97		
Pure Energy Minerals	Nevada	Exploration	123	PE: CVE	31	0.3	30	0.2	140
Explorer Peer Average			148						**93**
CleanTech*	Chile	Exploration	246	CTL: AIM	42	8.7	33	1.2	27

Source: Company Reports, FD *Post IPO

What is most interesting when comparing traditional brine explorers with the up-coming DLE project valuations, is that they are so similar ($99/t vs $93/t). Ordinarily, we would have expected DLE projects to be trading at a hefty discount, given on-going questions regarding extraction capabilities. The market, however, seems to be accepting that DLE explorers have an equal or even greater chance of commercialisation than many of their traditional evaporative salar counterparts. We think that this is due to the realisation that all the key high Li-value South American salar projects have already been acquired and/or are under production – hence the relative brevity of Tables 1 and 2. What lithium projects remain (if reliant upon traditional evaporative methods), would inevitably suffer long-lead times, require large numbers of ponds and inventory to garner sufficient dehydration. Capex and working capital requirements, in the long-term, would be pushing the boundary of being prohibitively expensive, and would therefore, be inefficient.

It is our belief that over the next three years, DLE will become the new salar norm, the reasons are varied, but compelling. It's efficient because it removes only lithium from brine, with higher recoveries and purities. The enrichment process occurs over a period of days, many orders of magnitude faster than conventional salars, which under ideal conditions take 12-18 months. Importantly, it is cost competitive and eminently scalable. Environmentally, DLE is compelling because it has a significantly smaller footprint, and does away with the need for large evaporative ponds (significant reduction in up front capex); allowing the operator to return the brine to the source with no fundamental change in its overall chemistry. This should help with the governmental environmental approvals process for both projects. From a cashflow perspective, sellable product is produced in tens of hours as opposed to 12-18 months by traditional salars (or two to four years for lower-grade salars), substantially reducing working capital requirements.

From this we make the observation that the majority of listed brine projects not yet in production, contain grades too low to be cost efficient via conventional methods, with evaporative time-frames of three to four years required; and are, therefore, unlikely to get into production as is.

Salient Tale of Two Disparate DLE Projects

We think it would be constructive to compare Vulcan Energy (VUL) with Lake Resources (LKE), two very disparate DLE projects. VUL's project is based around Europe's largest lithium resource in the Upper Rhine Valley of Germany, and was recently targeted by a US-based short-seller, J Capital, claiming that the company had mislead investors issuing a positive PFS with key assumptions provided by management-owned consulting companies. The report further claimed that management had understated costs, overstated the lithium resources, and cited those previous projects had been blocked by a militant NIMBY populace. Despite the Australian Federal Court issuing an order banning any further research on VUL, and for J Capital to publicly apologise, it appears that some of the concerns and challenges raised in the report have resonated with investors, with the share price falling a substantial >40% since.

Contrast that with LKE, which is applying DLE to a Andean semi-mature salar, and recently confirmed that its production base-case for Kachi will increase to 50ktpa LCE in the Definitive Feasibility Study (DFS) and in the Final Investment Decision (FID), almost double its previous base case of 25.5kt. Reasons given include growing demand from prospective offtake partners, a willingness by financiers to grant debt (est. ~70% debt/30% equity), and the fact that their technology partner, Lilac Solutions[17], highlighted that their DLE process was both scalable and cost effective.

The Rhine Valley project is home to a large population of ~10 million, the region is highly developed and industrialised, with cities, significant buildings and infrastructure going back well over a millennium (*i.e*. susceptible to micro-earthquakes which are typically a by-product of geothermal operations). Moreover, it is very technically challenging, requiring substantive capex and, we suspect, a long period of significant community consultations. LKE's Kachi Project, on the other hand, is located in the sparsely populated Catamarca Province, Argentina, within the southern end of the Lithium Triangle, currently responsible for 40% of global lithium production. Following a traditional modular salar plant, the DLE front end process merely does away with solar evaporation ponds, lowering upfront capex substantially, enriching the Li-rich

---

[17] 22nd September, 2021, LKE and Lilac announced a partnership whereby Lilac will progressively earn-in to a maximum 25% interest in the Kachi project.

brines to the point whereby it can be processed conventionally. LKE's PFS forecast EBITDA margin of 62%, assuming forecast prices at $11k/t CIF; as opposed to current prices approaching $50k/t.

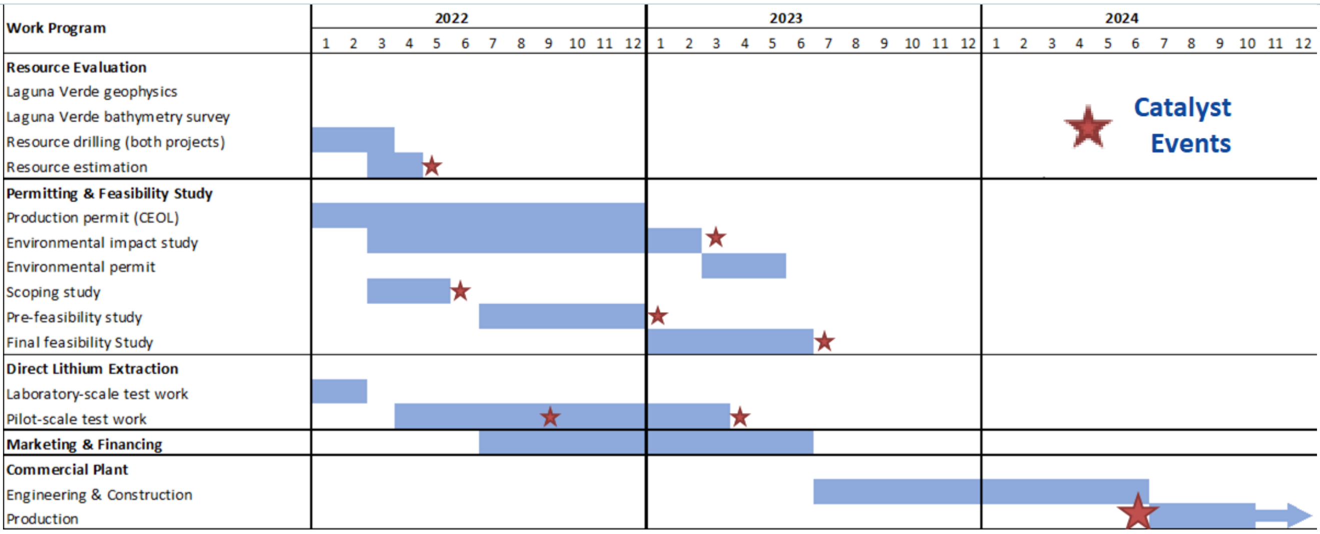
We believe that CleanTech's Laguna Verde and the Francisco projects are remarkably similar to LKE's, with similar geological settings, grade, region, but with an arguably better, more stable regulatory environment. We are of the strong opinion that investors in the lithium sector are better served participating in relatively simple, well understood project types, using proven technologies; hence, the reason why we think LKE and CTL are directly analogous, just at different stages of the timeline. We believe that it is not unreasonable to project peer valuations if certain events and targets transpire, using LKE as a template to benchmark CTL.

Recent M&A activity in the lithium sector around the world, particular by Chinese interests, are primarily targeting and acquiring large, undeveloped spodumene resources in Africa and South American salars; highlighting how few advanced projects remain in the hands of independent companies, and even more critically, how even fewer still are uncommitted in respect to offtake. CTL acquired (in the midst of a sector nadir) several of the last remaining South American salar resources; making the company a unique global investment proposition.

One-Year Price Target

Our one-year target is primarily based on resource drilling confirming the estimated JORC compliant of 1.2Mt LCE at Laguna Verde. Other key events include production approval and the awarding of a CEOL extraction contract (initially ~10ktpa LCE), completion of front-end metallurgical work by various providers; pilot plant (10tpm of battery grade lithium for three consecutive months) and completion of a PFS over Laguna Verde. Using the DLE explorer average in (see Table 1) of $93/t LCE on an EV basis (which we consider conservative, given that there are several companies in that list that we consider unlikely to be developed in the near to medium term), would imply an approximate market capitalisation of around $112m (or ~£83m using a 1.34 GBP/USD). Equating a post IPO 12-month target of ~£1.05ps (see Table 3). We assign no in-situ value to Francisco Basin in this instance.

Figure 21: Critical event timeline for Laguna Verde project over the coming three years.



Source: CTL (2022)

Three-Year Price Target

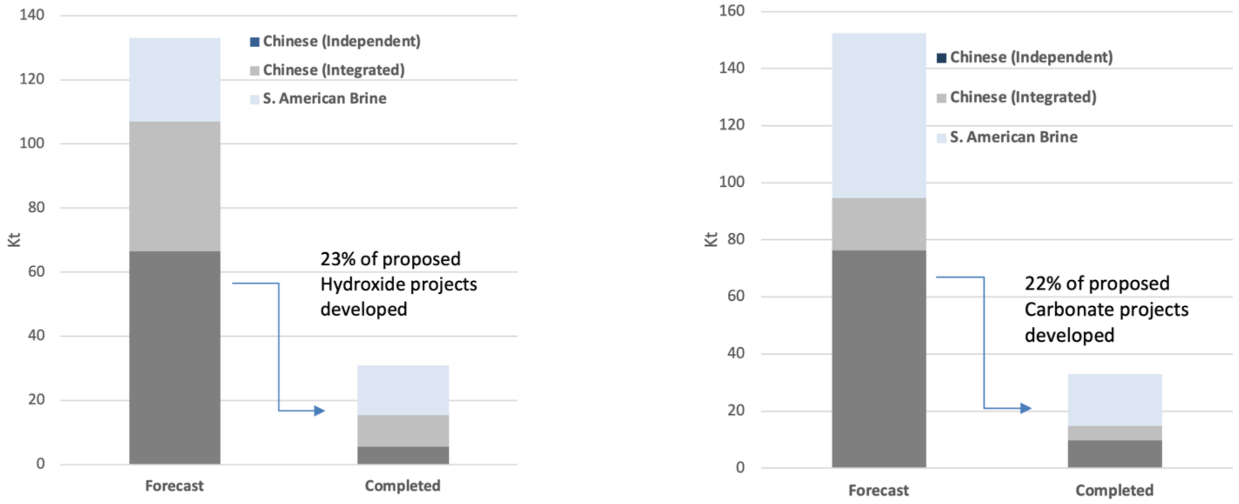
Management guidance on the Francisco Basin is 12-24 months behind, given they want to fully focus on advancing Laguna Verde; are two very similar projects with disparate timelines. By the end of 2024, we expect the environmental permitting to be approved for the Francisco Basin project - assuming a similar 1.2Mt LCE resource, the completion of production approvals, scoping study, PFS, and an awarded CEOL extraction contract (>10ktpa LCE). Although it will be substantially more advanced than that of our one-year target of Laguna Verde, to be conservative we have still allocated an in-situ-valuation ~£83m at the end of year three.

Assuming confirmation of the Laguna Verde resource, given its size, during optimisation we expect that production will eventually be increased to 20ktpa. Current guidance suggests production could commence H224, in our experience is that there is always an element of timetable slippage, assuming another 12-months. In addition, like LKE, CLT could gain a significant investment partner inside the next three years, divesting 25% of the projects but gaining sufficient capital to cover both the Laguna Verde option agreement and avoid having to revisit equity markets until after FID at Laguna Verde. Despite the current levels of global M&A, and product shortages, which we believe will continue for at least a decade, our relevant LKE benchmark uses a lithium carbonate price of ~30% of current spot (slightly above consensus numbers - July 2021), accounting for differences in production rates, implying an in-situ value of ~£131m. Collectively, the two projects imply a conservative 3-year target of ~£2.60ps. Although it has to be mentioned that we fully expect this target number to be exceed, as NPVs from projected cashflows become possible.

Valuation Drivers – Expect Substantial Re-rating within 12-months

From a historical perspective, the largest and most economically important continental Li brine occurrences are located in the Andes of Chile, Argentina, and Bolivia; these have been exploited commercially for decades, relying on conventional evaporative enrichment. We believe, however, that this *status quo* is about to be challenged over the coming decades as the widespread adaptation and dispersment of DLE technology among Andean semi-mature salars increases. The number of potential projects could, theoretically, supply much of the forecast demand growth expected from EV adoption over the coming decades.

Figures 22 & 23: Hydroxide-lithium forecast vs 23% actual delivery of plant/project expansions (left); and carbonate-lithium forecast vs 22% actual plant/project expansions (right).



Source: Source: ORE (2019), FD

Looking at the above peer comparisons (Tables 1 & 2), one would be tempted to believe that there is an enormous "wave"[18] of potential Lithium supply about to engulf the market. To demonstrate how unlikely an event this is, we have enclosed Figures 22 & 23 generated by Orocobre back in 2019. It covers the last lithium boom from 2016 onwards demonstrating how, on average, only 20-25% of slated capacity ever came into fruition. Moreover, this *Bow-wave* relationship can be observed in virtually any other commodity (*e.g*. copper, iron ore, zinc, etc.).

The key takeaway for the long-term investor, therefore, is to select companies that are more likely than their peers to enter production inside the investment timeframe (*i.e*. the period defined where demand exceeds supply). In this instance, we believe that global demand for lithium is, and will continue to be, driven by EV adoption; and, as a result, will likely be in shortfall for the ensuing decade (see section titled *EV Sales driving underlying Lithium Demand*).

The biggest difference between the last lithium construction boom in 2015/16, and the current period, is that although various DLE technologies have been utilised at *Salar de Hombre Muerto* among other sites for well over a decade; it's general absence within the lithium industry, historically, was the result of sufficient availability of productive South American mature salars. This is no longer the case, and even more importantly, product quality/purity specifications for LCE have increased dramatically. It is now increasingly obvious that the long-term price assumptions (long-term consensus numbers are still averaging ~$15kt LCE) are too bearish.

The implication being, that when comparing construction and resultant production times for traditional spodumene (with relatively long lead times) and conventional brines (typically > four plus years from FID to first commercial production), compared to that of the new generation DLE projects; their ability to get into production is going to be substantially shorter. DLE could be a disrupter technology, with the ability to create large volumes of relatively low-cost, high-quality LCE in a far shorter time frame, potentially replacing other sources, and becoming the dominant brine extraction method.

CleanTech has a number of clear strategic and project specific advantages from an investment perspective, namely:

- The company has a first mover advantage, in that it has acquired two significant semi-mature salar projects, with enormous land packages covering the critical areas of interest. There are a limited number of these Andean aquifers available, taking into consideration the size and quality of the Laguna Verde and the Francisco projects;
- It is currently our understanding that Andean brines are eminently suitable for DLE, with several preliminary metallurgical tests (from both projects – see "DLE Lab Results" section) indicating recoveries in the vicinity of 82-90%;

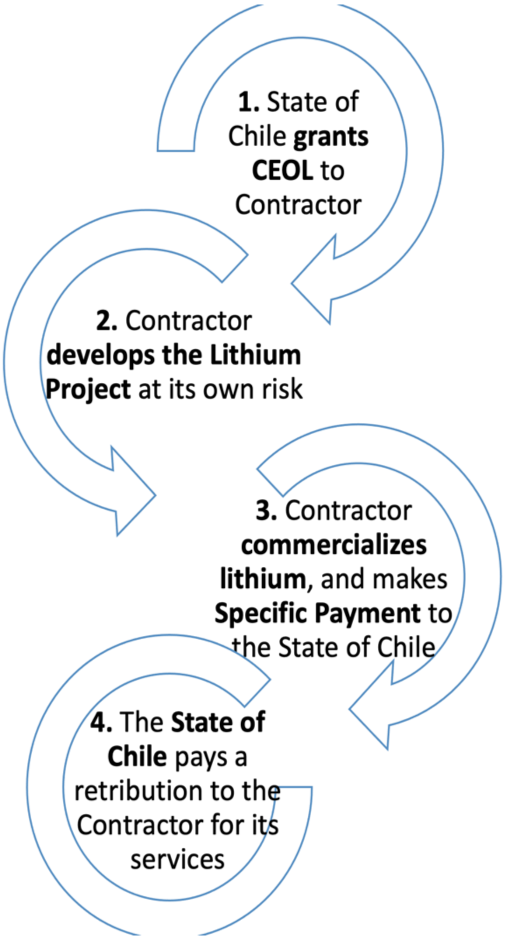
---

[18] We have previously written about "Bow-wave Effect" describing the pattern behind the addition of productive capacity for any commodity (with the exception of gold), which bears little or no relation to the underlying quantity in Resource base. As the analogy implies, the boat that follows behind never quite catches the "bow-wave".

- The assembled technical team have exceptional experience in the commodity and relevant processing technology expertise which joined together provide the great opportunity of making both of these projects an economic proposition;
- Both Laguna Verde and Francisco Basin projects have substantial nearby infrastructure, including roads and power which we have summarised in Appendix E. We have previously highlighted that the DLE process is far more industrial and energy intensive than the traditional evaporative route. For many other aspiring DLE projects, the inability to access baseload mains could be a serious developmental impediment; and
- Lithium demand is fundamentally tied to the continual growth of EVs/hybrids. We currently forecast that batteries are to make up >80% of all lithium demand by the end of the year 2022; with demand likely to largely outstrip supply for the following decade.

CEOL Application – Awaiting Governmental Approval

Figure 24: CEOL is a contract signed between the State and a private company (the "Contractor"), where the State commands/allows the Contractor exploration, exploitation and commercialisation of lithium at its own risk; in exchange for a Retribution [Retribution = (Total Gross Sales - VAT) – (Specific Payment)] and subject to a Specific Payment [Specific Payment = (% Gross Sales - VAT) + (% Utilities)].



Source: CleanTech (2021)

CleanTech have ambitiously stated that they want to complete a PFS over Laguna Verde by the end of 2022; if achieved, we suspect an additional PFS could be completed over the Francisco Basin by the close of 2023. Critical to the commercialisation of these projects, however, is the awarding of a CEOL contract (see Appendix G), which is essentially an agreement between the State and the Company to exploit a certain resource over a certain period of time. Critically, CleanTech is the first non-state-owned lithium exploration company to submit a CEOL in Chile. Key events include:

- In early January this year, a CEOL application was submitted to the Ministry of Mining for the Francisco Basin project (>50km^2, including the lithium target zone of 10–25km^2), excluding the Tres Cruces National Park.
- The quota applied for was 20ktpa, over a period of 41-years[19];
- In addition, a second CEOL application was submitted for the Laguna Verde project (covering >50km^2, with the lithium target zone of 15–20km^2), following the procedural process defined by the Government. The quota applied for was 20ktpa, over a period of 36-years[20];
- Approval's process is expected to take between six to 12 months;
- The variable royalty is dependent on profitability (see payment provisions in Figure 24), with final terms still under negotiation; but expect 7-12% [21] royalty rate over total operating margin; and
- The terms of the CEOL take legal precedence for the life of the operation, including any potential changes to future royalty rates if revisions are made under the Chilean Constitution.

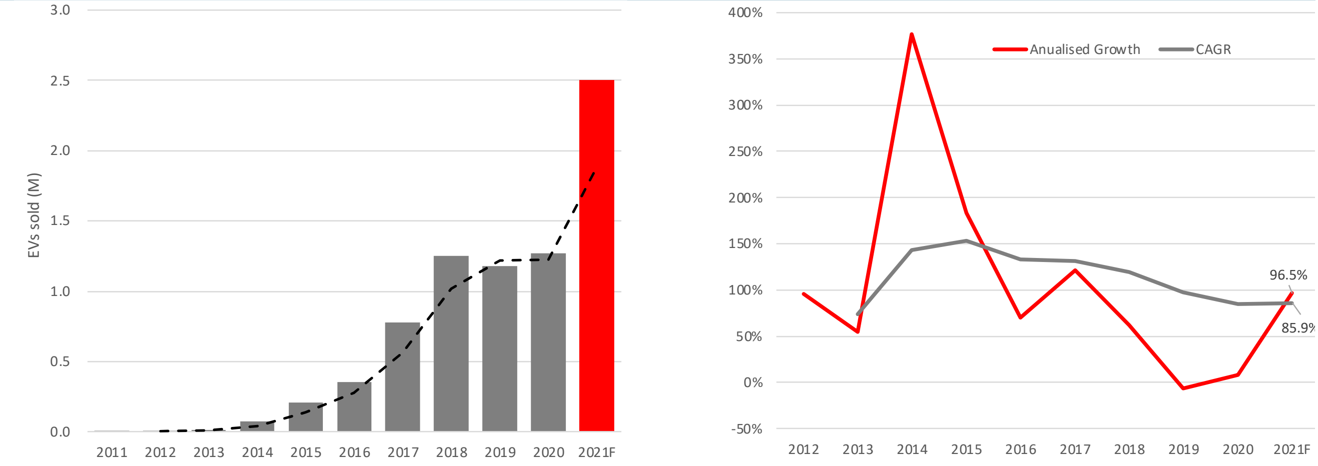
---

[19] Aldo Boitano (*pers.com* 30/01/22).
[20] Aldo Boitano (*pers.com* 30/01/22).
[21] Aldo Boitano (*pers.com* 30/01/22).

EV Sales Trends (China, Europe & US)

Despite a number of years with zero growth (see Figure 25), Chinese consumers reputedly purchased 3.3m EVs in 2021, up 158% over the pcp (against a backdrop of a 4% growth in overall vehicle sales). The top-selling model being the Hongguang Mini EV (JV between GMC and the state-owned SAIC Motor), with a quoted range of 120km and an asking price of ~£3,250 per unit. This underscores the point that comparing BEV sales from China with the West is almost impossible (*e.g.* size, specifications, range, pricing, powerplant, *etc*.); highlighting the danger of over-simplification and making industry wide generalisations.

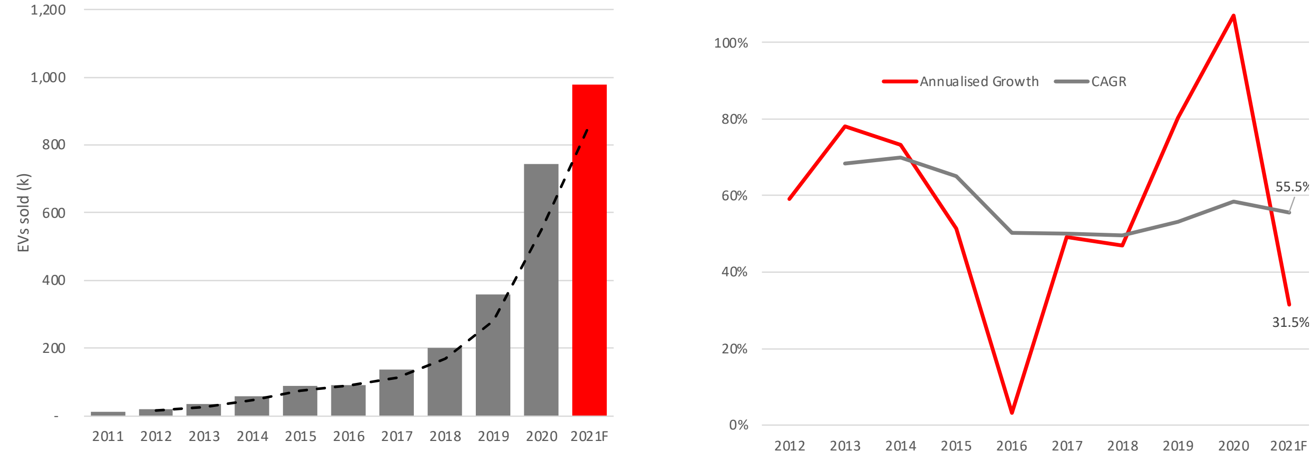
Figures 25 & 26: Number of newly registered EVs in China from 2011 to 2021E (seven months then annualised) (left); and comparing annual versus CAGR growth rates over the same period (right).



Source: CAAM (2021), S&P Global (2021), SCMP (2020), FD

Approximately 221k of European BEV vehicles were registered in November 2021 (up 33% over the pcp), against a backdrop of overall sales falling 18%. Figure 28 demonstrates the consistency of BEV CAGR in Europe.

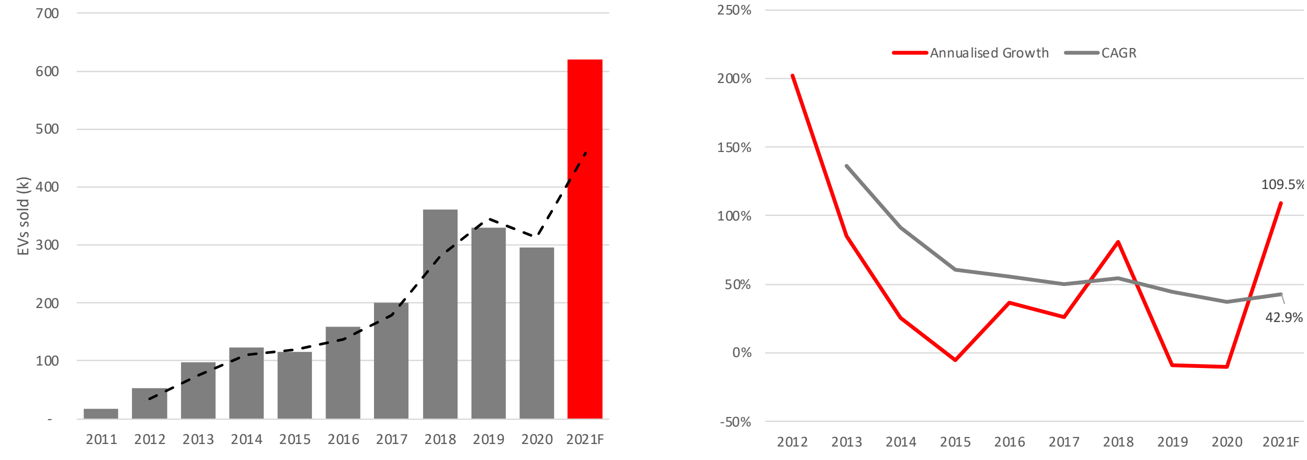
Figures 27 & 28: Newly registered EVs (including plug-in hybrids) in Europe from 2011 to 2021E (to July then annualised) (left); and annual versus CAGR growth rates over the same period (right).



Source: InsideEVs (2021), CAAM (2021), Bellona (2021), FD

As seen in Figure 29, US sales have more than doubled (see Figure 30) during the first half of the year, a remarkable turnaround given that EV purchases had declined for several years in absolute terms, both in 2019 and 2020. We are yet to find a sufficient reason to explain this spike: in early September, the Democrats proposed an expansion of tax credits (up to $12k per unit sold), but this has not yet been implemented and so cannot be the cause.

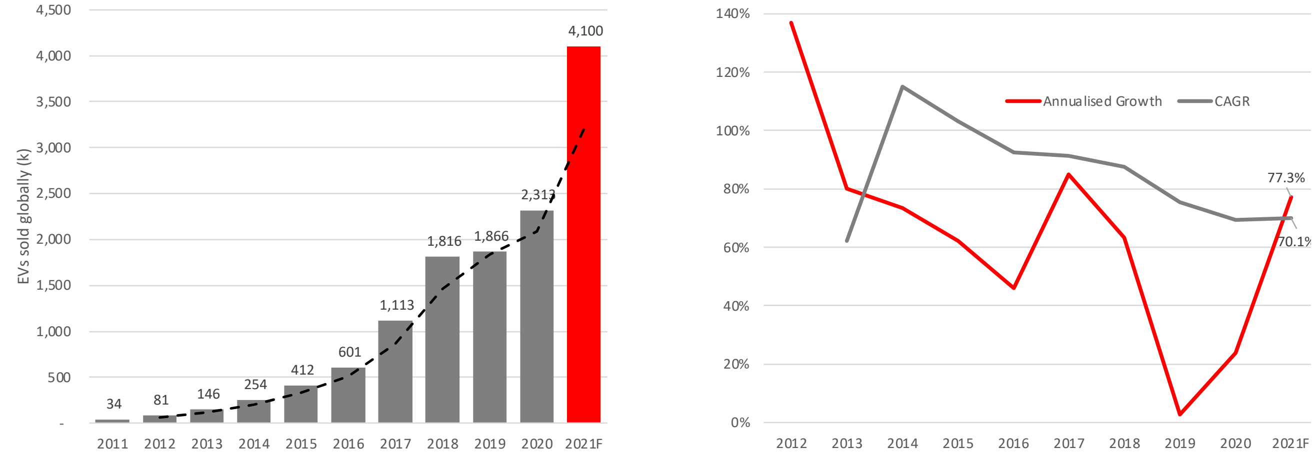
Figures 29 & 30: Number of newly registered EVs in US from 2011 to 2021E (to June then annualised) (left); and the rapid annual 110% increase in sales in 2021 (right).



Source: S&P (2021), EV volumes (2021), Inside EVs (2020), FD

As observed in Figure 32, it appears that, collectively, 2021F EV sales (from China, Europe and the United States) have jumped by ~77%. Sales in the West are dominated by higher-end models, bought by those with large, disposable incomes, and in part related to the euphoria of post covid lockdown release. Chinese BEV sales, on the other hand, have been strongly influenced by a temporary increase in allocated car ownership licences nationally, with sales dominated by smaller, cheaper, limited range runabouts.

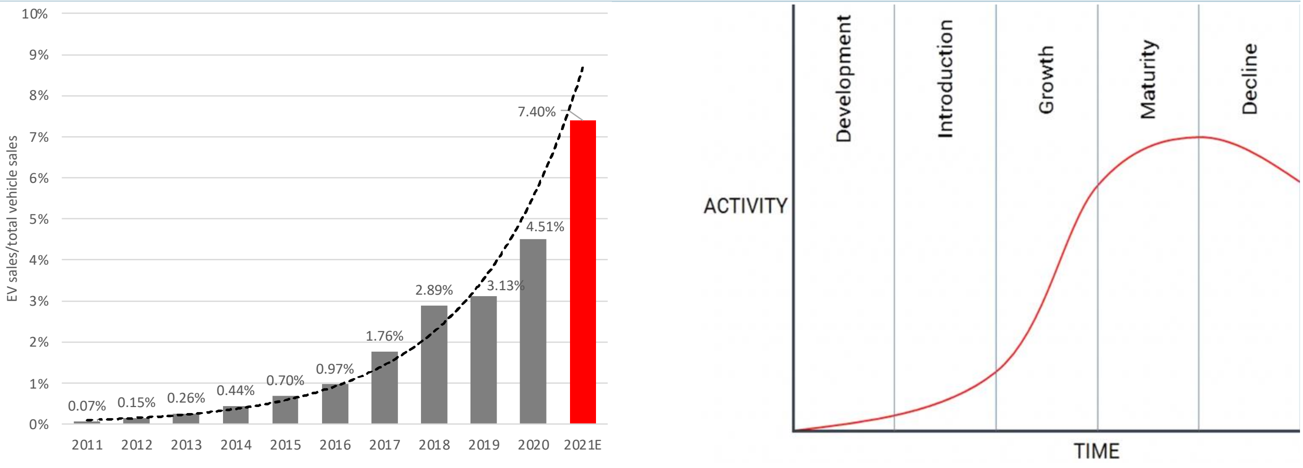
Figures 31 & 32: Newly registered EVs from China, EU and US, collectively (left); (right).



Source: FD. NB: Total market for China, Europe and US ~51.383m in 2020.

The collective volatility (*i.e.* within China, Europe and the US) of EV sales (Figure 31), may in fact be a data artefact reflecting the variation of total unit purchases. If we divide the number of EVs sold over total vehicles purchased, the purported volatility diminishes significantly; and when we plot EV sales against an exponential growth curve (see Figure 33), it mimics the sigmoidal adoption model accurately (see Figure 34). The fact that the CAGR and annualised growth rates are remarkably similar, running at >70% pa (see Figure 32), it suggests that we are at the mid-point in the “Growth Stage” of the overall adoption cycle, which in turn implies that the current EV growth rates will taper substantially inside the next three years.

Figures 33 & 34: Collective EVs sales over total Chinese, EU and US vehicle sales against an exponential growth curve inclusive from 2011 to 2021E (left); a closer fit to our “Growth” stage of our generic sigmoidal model (right).



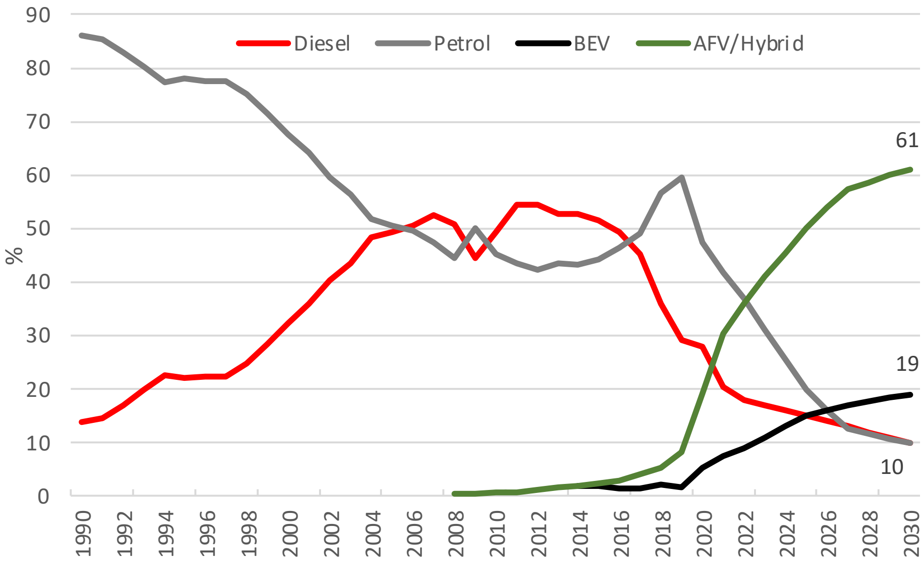
Source: Cimpl (2018), FD

Incidentally, that is not to say that EV growth will not continue to increase numerically on an absolute basis as the existing internal combustion engine (ICE) inventory slowly gets replaced by EVs. With greater than 130 fully or part BEV, PHEV and hybrid models for sale (or lease) in the UK, in addition to nearly 100 electrified models slated to arrive before the end of 2022, most mainstream car makers now offer a selection of electric models. The overall growth in EVs, for the large-part, seems irreversible among developed nations, the only question being, at what level will they stabilise?

EV Sales driving underlying Lithium Demand

If we assume that the EU is a microcosm of future EV developments/trends, our investment narrative is guided by economic dogma that if a technology offers more efficient production of superior goods and/or services (*e.g.* refrigeration, motorised transport, personal computing or even modern telephony), then general adoption by the consumer is rapid.

Figure 35: EU car registration by fuel-type, updated to July 2021. We forecast that hybrid sales will be 50% higher than diesel sales, and could overtake petrol sales within three years. From 2022 onwards, projected European car registration by fuel-type assuming BEV CAGR 10%.



Source: FD. Source: ACEA (2021), JATO (2021), Auxiliaire de L'Automobile (2020), Cargreencongress (2020), FD. NB: In 2030, we have attempted to separate BEV and plug-in-hybrid numbers, attributing the latter to overall hybrid sales, believing it's a closer definition fit. NB: Assume that 10% of all transportation will remain diesel. That hybrid adoption has a primary sigmoidal morphology.

In Figure 35 we have plotted EU car registration type; a number of relationships jump out immediately, namely:

- Growth (1990 to 2008) in diesel vehicle adoption was primarily driven by increased fuel efficiency with a 25-40% saving over their petrol equivalents;
- From 2010 onwards, despite the fact that diesel engines produce >15% less CO_2, consumers became aware that they produced >400% NO_2 and 22x times more particulates than their petrol counterparts. After which, even without government intervention, diesel sales began to decline on a relative basis (initially replaced by petrol sales); as buyers became aware of detrimental environmental effects;
- BEV sales have risen ~295% since 2014, supported by substantial Government incentives in many EU jurisdictions. Moreover, these standards are calculated to encompass the entire car makers range, on a weighted-average sales basis to generate an average emissions number. The aim is to provide a punitive incentive for manufacturers to produce larger numbers of lower emission vehicles; with penalties

imposed on car manufacturers for not meeting these increasingly strict emission standards[22];

- Hybrid[23] sales, by comparison, have increased ~1,415% over that same period without a single subsidy. It follows our investment narrative that if a technology offers more efficient production of superior goods and/or services (*e.g.* refrigeration, motorised transport, personal computing or even modern telephony), then general adoption by the consumer is rapid. It would seem that this is the greatest untold story of EV adoption; and
- According to our 2021 forecast, EU hybrid sales (including PHEVs) could outsell diesel vehicles by upwards of 50%. These relationships are not universal, for example, in China, hybrids are not even available; whilst many domestically-made BEVs have very limited operational ranges and are unsuitable for sale in any Western jurisdiction, making the two markets almost impossible to compare.

In making forward projections about the future breakdown of BEV, PHEV and Hybrid sales, a number of assumptions have to be made. Why is this important? Our analysis suggests that the variation between different types of EVs using current capacity averages can have up to a 640% difference in the theoretical quantum of underlying lithium demand. To create an accurate projection up to 2030, we have modelled each segment separately:

- We assume that diesel vehicles will continue to make up 10% of all unit sales at a similar level at the beginning of our data series in 1990 (see Figure 35). Based on the reality that the transport sector needs to retain a low-cost, high torque vehicle, with the ability to travel significant distances;
- In contrast to many of our peers, it is our belief that it is hybrid/PHEV vehicles, not BEVs, that the consumer/market has selected (despite substantial subsidies on offer in various jurisdictions). We have assumed that hybrid vehicles will continue to dominate the EV transition, applying a sigmoidal growth to the segment;

- Assuming a 10% CAGR from current levels, BEVs will account for 19% of all units sold by 2030; and
- We recognise that prevalent vehicle technologies are strongly shaped by government policy. Many European governments currently have a policy that will ban hybrids (but will still allow PHEVs to be sold[24]). For

---

[22] Starting in 2020 (collectively within a manufacturer brand stable), new passenger cars sold in Europe are permitted to emit no more than 95g CO_2/km. This is legislated to fall another 15% by 2025 (80g CO_2/km), decreasing again to 60g CO_2/km by 2030. Technologically, these targets appear almost impossible to reach in the short-term.

[23] Hybrids increase fuel economy by >25%, with most newer models allowing a pure EV for short distances (<20km). Best suited for city driving, they are at their most efficient when stopping and starting regularly; although, over long-distances, their electrical systems add little to the efficiency of the engine.

[24] Average output from a number of pure hybrid vehicle ranges varies dramatically (13 to 50km), with battery capacities ranging from 4-15kWh. The mean/median from our compilation appears to be ~4 to 6kWh. Plug-in hybrid (PHEV) output is typically 25% that of a BEV (which we estimate average ~39kWh), implying 10kWh capacity.

example, BEV sales in Norway for September reached 77.5%, with PHEVs included, market share reached 91.5%, leaving only 8.5% for non-rechargeable cars. We believe that Norway is an outlier, its particular sales mix the result of its punitive tax system, imposing a significant impost on ICEs. Norwegian BEV motorists who purchase an EV are exempt from substantial import duties, avoid 25% VAT, eschew all road taxes, tolls, qualify for half-price ferries, get free municipal parking and are typically allowed to use bus lanes. Norway's significant current account surplus funds this level of government largesse[25] is absent elsewhere; as a result, we don't believe it is a prescient guide for near-term EV adoption. We agree that legislative impetus will, in the future, strongly dictate which types of vehicles will dominate our roads, but it is our observation that despite a decade after BEV introduction, uptake is modest: primarily, we believe, as a result of shortcomings (*e.g*. recharge times, cost and range) that cannot be overcome by either subsidies or legislative mandates.

In deriving our previous lithium forecast, we had previously suggested that demand would double inside the next decade; using the extremely conservative assumption that lithium demand would be zero in every other sector other than Li-ion battery growth for EVs. We now believe that we may have under-estimated long-term growth by upwards of 50%, and intend to undertake regression analysis using new forecast EV projections before updating future lithium demand numbers early Q222.

---

[25] Funded by hydrocarbon exports accounting for 14% of GDP and 39% of total exports.

Appendix A - Directors

STEVE KESLER (Non-executive Director and Chairman) - 35 years' experience as CEO, director and senior executive with a variety of majors and juniors. Experience includes operations, exploration, feasibility, project development, construction, restructuring, financing and marketing in numerous commodities – including lithium, uranium, copper, nickel, zinc, coal/lignite, gold/silver and iron ore. Direct lithium experience as CEO/Director European Lithium and Chile experience with Escondida and as the first CEO of Collahuasi.

ALDO BOITANO (Managing Director) – Cofounder of CleanTech, Aldo has 25 years of management roles in the US & Chile. Past general manager of Drillco Tools USA, board member of the International Leadership Association. Pioneer in Chile's solar industry with >800MW of projects deployed.

JONATHAN MORLEY-KIRK (Non-executive Director) - Specialist in corporate governance, onshore and offshore investment structuring, taxation financial and litigation issues. Fellow of the Institute of Chartered Accountants, a Member of the Society of Trust and Estate Practitioners, a Fellow of the Charted Institute of Securities and Investments.

GORDON STEIN (CFO) – 30-years' experience in energy, natural resources, both in executive and non-executive roles. A chartered accountant, he has worked with start-ups to major companies, including board roles of six LSE companies.

Management

JASON BAVERSTOCK (Executive Strategy & Development) – Cofounder of CleanTech, he has 20 years of finance sector experience. Founder & formerly executive director of Salt Lake Potash, Australia's first potash producer which grew from A$10m in enterprise value to >$250m during the period of directorship to 2017.

LUKE JARVIS (Chief Commercial Officer) - 30 years of senior roles in Helm Chemicals and Nutrien. Specialist in bankable off-take agreements and structured finance for new entrants in the resource sector.

Appendix B – Technical Team

PEDRO TORRES - Metallurgical engineer 35 years of experience, including 17 in research in concentration/hydrometallurgical plants. Engineer for SQM (8ktpa) producing battery grade lithium hydroxide; expansion of a SQM lithium carbonate plant (42 to 53ktpa); development of Salar de Cauchari; development of the Salt Life Project (Galaxy Resources) ~25ktpa pa of grade battery lithium carbonate; and the Sal de Vida project – among others.

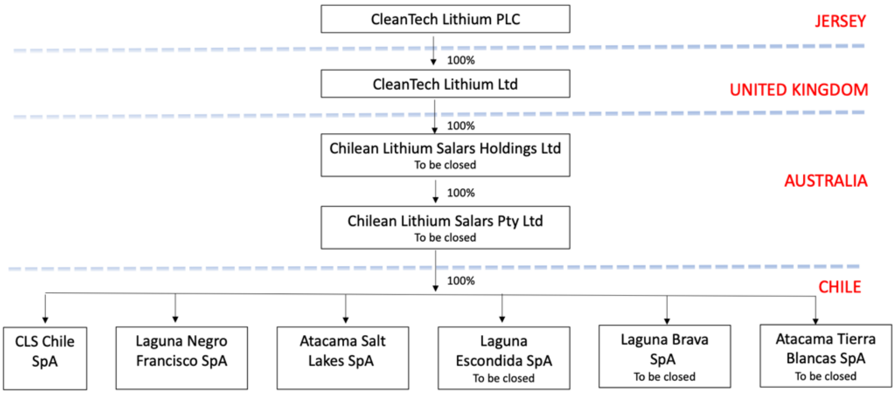
MARCELO BRAVO – Civil engineer with a masters in mineral processing (engineering sciences), R&D of potassium, sulphate and lithium carbonate processes. Consultant to FMC Lithum at *Salar de Hombre M*uerto; for Orocobre at *Sales de Jujuy*; Rockwood Lithium at *Salar de Atacama*. Lithium Americas process engineer manager (2011-2013); EXAR-Cauchari chief process engineer (2010-2011); and SQM head of processes (2007-2010).

CHRISTIAN FEDDERSEN – Variety of roles up to Chief Geologist level, with more than two decades of experience, ranging from project geologist including BHP, in a variety of commodities, including copper, molybdenum, cobalt, titanium and lithium.

Appendix C - Company Structure

Established in Australia in 2017, CTL was incorporated in the UK in 2019 to undertake exploration and development in Chile, with approximately $2.5m of equity having been invested into exploration (to date). Now incorporated in Jersey, the company has recently begun to streamline its corporate structure, which is anticipated to be complete by the end of Q122 (see Figure 36).

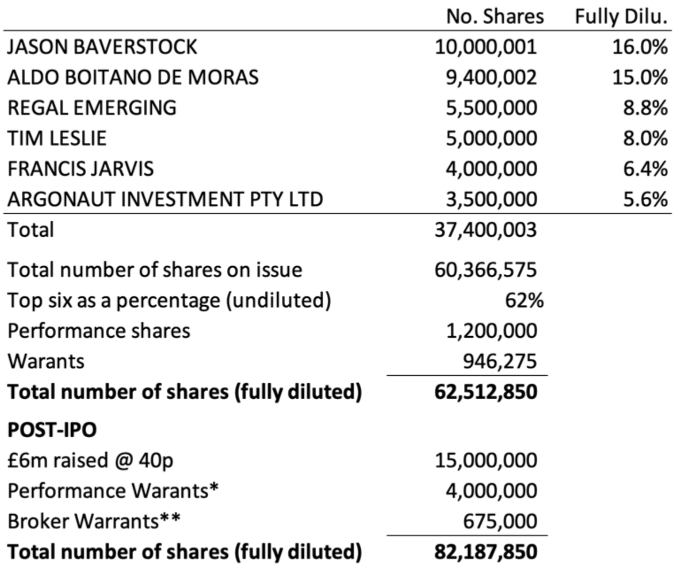
Figure 36: Proposed company structure post IPO.



Source: CleanTech (2022)

Total issued share capital (as of 25 October 2021) is ~62.5m shares. We expect this to rise to around 82m shares within six months post IPO. Other than the exercise of the Laguna Verde Option (see Appendix D – the details of which cannot be accurately ascertained until nearing production), we think that funds raised during the IPO process should be sufficient enough to complete at least several rounds of drilling, resource estimations and a PFS on Laguna Verde by the end of 2022, and possibly a second PFS on the Francisco Basin by the close of 2023.

Table 37: Top six CleanTech shareholdings (*i.e.* those above >3%).



	No. Shares	Fully Dilu.
JASON BAVERSTOCK	10,000,001	16.0%
ALDO BOITANO DE MORAS	9,400,002	15.0%
REGAL EMERGING	5,500,000	8.8%
TIM LESLIE	5,000,000	8.0%
FRANCIS JARVIS	4,000,000	6.4%
ARGONAUT INVESTMENT PTY LTD	3,500,000	5.6%
Total	37,400,003	
Total number of shares on issue	60,366,575	
Top six as a percentage (undiluted)	62%	
Performance shares	1,200,000	
Warrants	946,275	
Total number of shares (fully diluted)	**62,512,850**	
POST-IPO		
£6m raised @ 40p	15,000,000	
Performance Warrants*	4,000,000	
Broker Warrants**	675,000	
Total number of shares (fully diluted)	**82,187,850**	

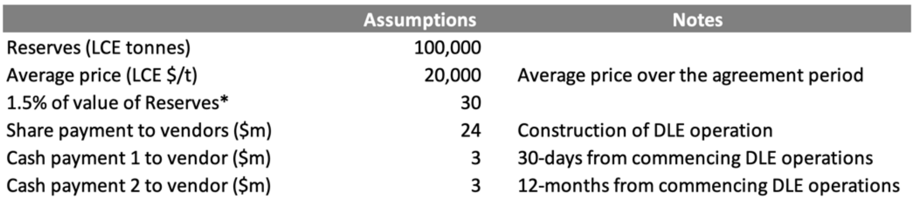
Source: CleanTech (2022), FD. *Exercisable at 120% of the IPO listing price. ** Est. number of broker warrants post IPO

Appendix D - Laguna Verde Option Details

Details enclosed are based on documents and communication with Jason Baverstock (*pers. com*. 29th Sept. 2021). The key points of the Methodology used (80/10/10)[26] to calculate the final payment include:

- 1.5% projected sales NPV (discount rate undisclosed) of which 80% would be paid in equity upon beginning plant construction;
- 10% in cash within 30-days of commercial production; and
- 10% in cash 12-months from initial commercial production calculated as 1.5% of "*in ground*" value JORC reserves at the final payment date.

Table 4: Option agreement example. The average lithium price used for the calculation above is calculated between daily closing price between option execution date and final payment date.



	Assumptions	Notes
Reserves (LCE tonnes)	100,000	
Average price (LCE $/t)	20,000	Average price over the agreement period
1.5% of value of Reserves*	30	
Share payment to vendors ($m)	24	Construction of DLE operation
Cash payment 1 to vendor ($m)	3	30-days from commencing DLE operations
Cash payment 2 to vendor ($m)	3	12-months from commencing DLE operations

Source: CleanTech (2021), FD

There is some question as to the quantum of Reserves at the time of production, we feel it unlikely that the company would pursue more than 10-years which should be more than sufficient to justify the requisite capex. Moreover, lithium projects are highly scalar, with first stage commercial production being possibly 5ktpa then ramping up to 20ktpa over time.

The minimum final payment is set in the option agreement as US$3.5m.

---

[26] Not including the $334k of time-based cash payments.

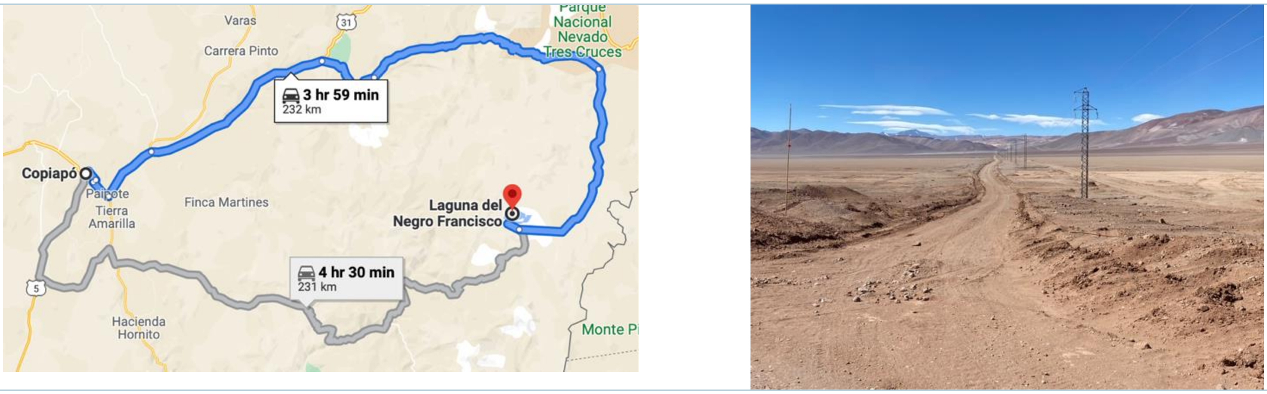
Appendix E – Infrastructure associated with Laguna Verde & Francisco Basin

- At an altitude of ~4,350m above sea level, development of the Laguna Verde project will initially notionally require 8MW of power, which can be easily accessed by connection to a 23kV (originally built with 66kV capacity by Kinross) transmission line located at the La Coipa mine;
- The Francisco basin (at ~4,200m above sea level) would also require 8MW of power, but with the added benefit that it is located within 2km of the 110kV Kinross Refugio substation, which, reputedly, has substantial unused capacity;
- Access is reliant on the Chilean Electric Coordinator, who have the authority to grant up to what is initially required, with additional capacity added at a later date if needed utilising the existing grid; and
- Cleantech intends to contract out a 100% renewable Power Purchase Agreement (PPA)[27] that includes changes to the existing transformers at the substation at the La Coipa and Refugio substations.

Figures 38 & 39: Distance 265km by road from Copiapo to Laguna Verde accessed via the International Route CH-31 (Left); and La Coipa substation 52km distant (Right).

Source: CleanTech (2021)

Figures 40 & 41: Distance 235km by road from Copiapo to the Francisco Basin project, access to the project is via main two routes (Left); and roads and power lines cross to the south of the project campsite. (Right).



Source: CleanTech (2021)

---

[27] Typically an arrangement in which a third-party developer installs, owns, and operates an energy system on a customer's property. The customer then purchases the system's electric output for a predetermined period.

Appendix F - Chilean Mining Legislation

Chile accounts for approximately a third of global primary copper, in addition to being the world's second largest producer of lithium and molybdenum, it is also largest producer of iodine and rhenium, the sixth largest producer of silver, the seventh largest producer of salt, the eighth largest producer of potash, and the 13th largest producer of sulphur and iron ore globally.

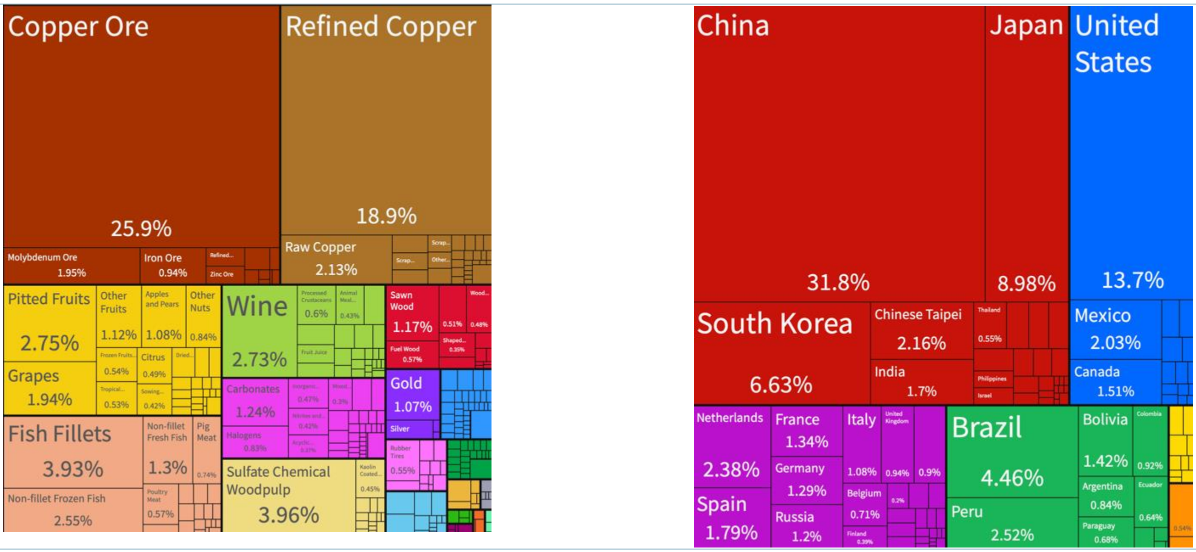
Chilean legislation does not in any way restrict foreign investment and/or ownership of mining concessions, however, the state does have exclusive and inalienable rights over all mineral deposits which do not lapse with time. Any person/company can obtain exploration and exploitation mining concessions, regardless of who owns the land; meaning that there is a distinction between the surface and ownership of the mining concession underneath.

Chilean mining legislation allows two types of mining concessions:

- **Exploration licence -** last for two years starting from the date of grant, although they can be renewed for another two years; and
- **Exploitation concession** – which do not expire, provided that the holder pays applicable annual taxes. If they fail to do so, the concession is typically auctioned off to the highest bidder.

In regards to royalties, Chile's current tax regime for miners includes a corporate tax of 27% and a special tax or royalty of up to 14% on operating profits, depending on production rates. Being politically stable (see Appendix I), historically, Chile has been one of the best countries to invest in, from 2010 to 2016, Chile ranked even higher than the UK. CTL's emphasis on a large portion of its energy being sourced from renewables, and the fact that the DLE process minimises environmental disturbance, will appeal strongly to the newly elected centre-left government, who have placed particular emphasis on lowering CO_2 production.

Figures 42 & 43: Proportional Chilean exports in 2019 (Left); and Destination of Chilean exports in 2019 (Right).



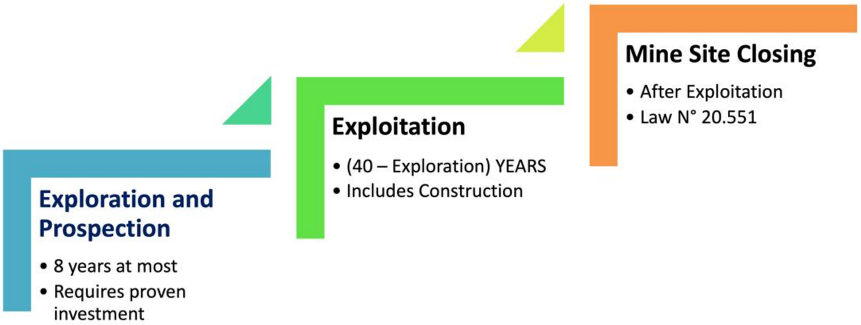
Source: OEC (2021)

Appendix G - CEOL & CCHEN Application Process (Lithium specific permits)

As a direct consequence of the Castle Bravo hydrogen bomb test, the resultant yield was 150-200% greater than was thought theoretically possible. It quickly became evident that the discrepancy was the result of both δ^{6}Li and δ^{7}Li producing tritium in the midst of a thermonuclear reaction, which greatly enhanced the device's output. In 1979, Chile declared that lithium was a "*strategic resource*", due to its potential application in the process of nuclear fission; the result being, that it became ineligible to be granted as a mining concession. Since then, lithium production has been managed via four separate mechanisms: (i) on its (Government's) own account; (ii) a Lithium Special Operating Contract (*Contrato Especial de Operación de Litio*, or CEOL); (iii) through state-owned companies; or (iv) through administrative concessions.

Private companies, such as CleanTech, which do not have a concession granted under 1932 Mining Code, can only extract lithium through a CEOL. When granted, the legal entity exploits the resource on behalf of the Chilean State to which it has to pay a royalty. The approval's process includes a detailed description of the company's experience in the field of exploration/exploitation of lithium; investments and minimum works committed for each exploration period; the legal entity that will act as operator of the area; and specific regions of interest for further exploration and exploitation. We expect a number of definitive decisions to be announced over the next upcoming months.

Figure 44: CEOL phases and timelines.



Source: CleanTech (2021), FD

According to management, once the CEOL has been approved, the CCHEN[28] becomes almost a formality and is typically issued within weeks compared with the six-month process associated with a CEOL, but is the point where commercialisation quotas are formalised. Although the process officially considers issues such as the commercial and technical viability of the project; estimated resources; and existing exploitation rights; these points are also valuated during the CEOL process, and therefore, management doubt it will be a barrier.

---

[28] Due to its nuclear association, the *Chilean Nuclear Commission* (CCHEN) is the public entity tasked with the development of nuclear energy policies; and, in particular, to supervise and permit the commercialisation of lithium production.

Appendix H - Chilean Background

Figure 45: Map of Chile

Source: CIA (2021)

Geographically, Chile stretches over 4,300km (north to south), but is only 350km at its widest point (east to west); located between the Andes to the east and the Pacific Ocean to the west, bordering Peru to the north, Bolivia to the northeast an Argentina to the east. Unsurprisingly, it has a diverse climate, ranging from the Atacama Desert (the world's direst desert) in the north, a Mediterranean climate in the centre, humid, subtropical in Easter Island, oceanic climate, including alpine tundra and glaciers in the east and south.

Stone tools and implements suggest sporadically human activity as far back as 16.5k years BC, with permanent settlements occurring approximately 10k years ago. The Incas briefly extended their empire into northern Chile, but the Mapuche/Araucanians successfully resisted subjugation. Modern history commenced in 1535 when Diego de Almagro and a band of Spanish conquistadors landed in Peru seeking gold. Five years later, in 1541, Pedro de Valdivia founded the city of Santiago.

After Napoleon enthroned his brother Joseph, as the Spanish King in 1808, the Chilean colony sued for independence from Spain; forming an autonomous republic (within the Spanish monarchy) on the 18th September[29], 1810, becoming an independent republic in 1818.

Chile enlarged its border in 1826 after the Tantauco Treaty, when the archipelago of Chile was incorporated. The Magallanes region joined the country in 1843. The "War of the Pacific" with Peru and Bolivia (1879–83) expanded its territory northward by almost a third; whilst the "Boundary treaty" of 1881 between Chile and Argentina confirmed sovereignty over the Strait of Magellan. Chile also controls the Pacific islands of Juan Fernández, Isla Salas y Gómez, Desventuradas, and Easter Island (incorporated in 1888). It also has a recognised claim covering ~1.25m sqkm of Antarctica under the Chilean Antarctic Territory.

According to the CIA, the country is largely urbanised at ~88%, with the rate of urban growth at ~0.9%pa. The country's capital (and largest city) is Santiago, with its national language being Spanish.

---

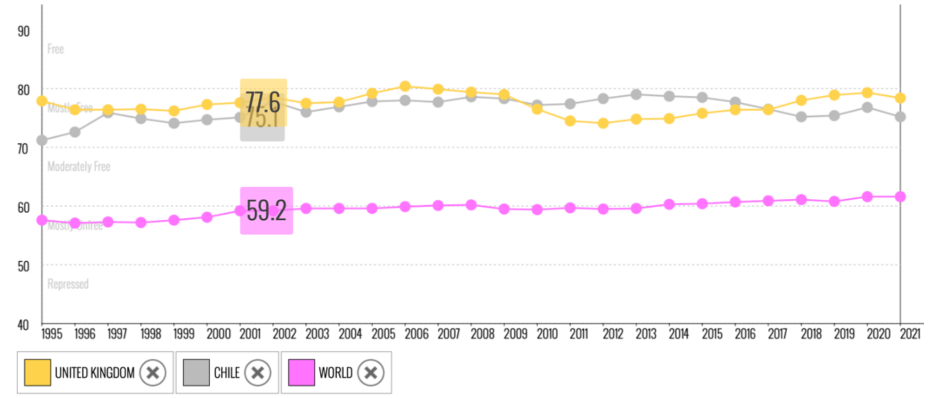
[29] September 18th is the Chilean national holiday, and for some, up there with Christmas in terms of its importance.

Appendix I - Chilean Economic Freedom & Transparency

According to the *World Bank*, Chilean GDP growth has experienced significant volatility due to the covid pandemic (economy contracted by 6% in 2020), with poverty increasing from 8.1 to 12.2% (based on ~US$4 per day). Economic growth in 2021 is forecast to be 5.1% on the back of stimulus and a rapid vaccination rollout. Exports have benefited from higher copper pricing, although Chile is not expected to reach pre-covid GDP levels until 2022.

According to the *Index of Economic Freedom* (2021), Chile's collective score of 75.2 was behind that of Luxembourg, but ahead of the United States at 74.8, making it the 19th freest country globally; well above regional and global averages (see Figure 46). Property interests are recognised and enforced; with any kind of expropriation being very rare. The judiciary is independent, able to enforce property and contractual rights, while being free from political interference.

Figure 46: Chilean economic freedoms over time (1995 to 2021) – at very similar levels to that of the UK.



Source: Hertitage.org (2021)

The top personal income tax-rate is 40%, with the corporate tax rate at 27%, with the overall tax revenue as ~21.1% of GDP. Total domestic government expenditures have averaged ~25.5% of GDP over the past three years, with budget deficits averaging 2.2% and with overall public debt ~ 27.9% of GDP. In June 2021, the top exports of Chile were copper ore ($2.01Bn), Refined Copper ($1.66Bn), Fish Fillets ($253m), Iron Ore ($219m), and Raw Copper ($204m) (see Figure 42). Chile exported mostly to China ($2.7Bn), United States ($1.1Bn), Japan ($510m), South Korea ($389m), and Brazil ($295). Chile primarily imported from the United States ($1.68Bn), Switzerland ($436m), China ($372m), Germany ($323m), and Panama ($281m) (see Figure 43).

Transparency International's *Corruption Perceptions Ind*ex has Chile equal 25th (with the United States) out of 180 nations; remaining the second least (behind Uruguay) corrupt country in Latin America.

Research Disclosures

Research disclosure as of 1st February 2022

Company Name (the Relevant Issuer)	Disclosure
Cleantech Lithium PLC	1, 2, 3, 7

Investment Research Disclosure Legend:

1. In the past 12 months, Fox-Davies Capital Limited or its affiliates have had corporate finance mandates or managed or co-managed an offering of the Relevant Issuer's securities or received compensation for Corporate Finance services from the Relevant Issuer.

2. Fox-Davies Capital Limited expects to receive or intends to seek compensation for Corporate Finance services from this company in the next six months.

3. The Investment Analyst or a member of the Investment Analyst's household has, or expects to receive, a long position in the shares or derivatives of the Relevant Issuer.

4. The Investment Analyst or a member of the Investment Analyst's household has a short position in the shares or derivatives of the Relevant Issuer.

5. As of the month end immediately preceding the date of publication of this report, or the prior month end if publication is within 10 days following a month end, Fox-Davies Capital Limited and / or its affiliates beneficially owned 1% or more of any class of common equity securities of the Relevant Issuer.

6. A senior executive or director of Fox-Davies Capital Limited or a member of his or her household is an officer, director or advisor, board member of the Relevant Issuer and / or one of his subsidiaries.

7. Fox-Davies Capital Limited acts as a corporate broker for the Relevant Issuer.

The Investment Analyst who is responsible for the preparation of this Investment Research is a consultant to Fox-Davies Capital, a securities broker-dealer.

The Investment Analyst who is responsible for the preparation of this Investment Research has received (or will receive) compensation linked to fees generated by Fox-Davies Capital from the Relevant Issuer.

Research Disclaimers

Disclaimer - Important Information

This document is not independent and should not be relied on as an impartial or objective assessment of its subject matter. Given the foregoing, this document is deemed to be a **marketing communication** for the purpose of the European Markets in Financial Instruments Directive (MiFID), the Financial Conduct Authority's Rules and Dubai Financial Services Authority's Conduct of Business Rules and as such has not been prepared in accordance with legal requirements designed to promote the independence of investment research and Fox-Davies Capital is not subject to any prohibition on dealing ahead of dissemination of this document as it would be if it were independent investment research.

In Fox-Davies Capital's view this document is considered as "acceptable minor non-monetary benefit" under MiFID II as it is either: (i) "non-substantive short-term market commentary"; and/or (ii) making a brief reference to existing Fox-Davies Capital research and, as such, is in-and-of-itself non-substantive; and/or (iii) paid for by a corporate issuer or potential corporate issuer as part of a contractual engagement with Fox-Davies Capital.

This document is protected by international copyright laws and is for the recipient's use in connection with considering a potential business relationship with Fox-Davies Capital only. This document and any related materials are confidential and may not be distributed or reproduced (in whole or in part) in any form without Fox-Davies Capital's prior written permission.

This document should not be construed in any circumstances as an offer to sell or solicitation of any offer to buy any security or other financial instrument, nor shall it, or the fact of its distribution, form the basis of, or be relied upon in connection with, any contract relating to such action.

This document is not based upon detailed analysis by Fox-Davies Capital of any market; issuer or security named herein, has not been independently verified and does not constitute a formal research recommendation, either expressly or otherwise. This document has no regard for the specific investment objectives, financial situation or needs of any specific entity. Fox-Davies Capital and/or connected persons may, from time to time, have positions in, make a market in and/or effect transactions in any investment or related investment mentioned herein and may provide financial services to the issuers of such investments.

The information contained herein is based on materials and sources that we believe to be reliable, however, Fox-Davies Capital makes no representation or warranty, either express or implied, in relation to the accuracy, completeness or reliability of the information contained herein. Opinions expressed are our current opinions as of the date appearing on this material only. Any opinions expressed are subject to change without notice and Fox-Davies Capital is under no obligation to update the information contained herein or to correct any inaccuracies in this document which may become apparent. Neither Fox-Davies Capital nor any of its directors, members, advisers, representatives, officers, agents, consultants or employees makes, or is authorised to make any representation, warranty or undertaking, express or implied, with respect to the information or opinions contained in it and none of them shall have any liability whatsoever for any indirect or consequential loss or damage arising from any use of this document. This document is being provided to you for information purposes only. This document has been prepared by the author based upon information sources believed to be reliable and prepared in good faith.

All statements of opinion and/or belief contained in this document and all views expressed and all projections, forecasts or statements regarding future events or possible future performance represent Fox-Davies Capital's own assessment and interpretation of information available to it as at the date of this document. This document and any related materials may include certain forward-looking statements, beliefs or opinions. By their nature, forward-looking statements involve risk and uncertainty because they relate to events and depend on circumstances that will occur in the future. There can be no assurance that any of the results and events contemplated by the forward-looking statements contained in the information can be achieved or will, in fact, occur. No representation is made or any assurance, undertaking or indemnity given to you that such forward looking statements are correct or that they can be achieved.

This report has been approved in the UK by Fox-Davies Capital Limited solely for the purposes of section 21 of the Financial Services and Markets Act 2000. In the UK, this report is directed at and is for distribution only to persons who (i) fall within Article 19(1) (persons who have professional experience in matters relating to investments) or Article 49(2) (a) to (d) (high net worth companies, unincorporated associations, etc.) of the Financial Services and Markets Act 2000 (Financial Promotions) Order 2005 (as amended) or (ii) are professional clients or eligible counterparties of Fox-Davies Capital (all such persons together being referred to as "relevant persons"). This report must not be acted on or relied up on by persons in the UK who are not relevant persons. In accordance with the Dubai Financial Services Authority's Conduct of Business Rules, this marketing material is intended only for professional clients and market counterparties, and no other person should act upon it

Neither the information nor the opinions expressed herein constitutes, or is to be construed as, an offer or invitation or other solicitation or recommendation to buy or sell investments.

This document is not intended for distribution to, or use by, any person or entity in any jurisdiction or country where such distribution or use would be contrary to local Jaw or regulation. In particular, the information contained in this document is not for publication, release or distribution, and may not be taken or transmitted into: (i) the United States or its territories or possessions, or distributed, directly or indirectly, in the United States, its territories or possessions or to any U.S. person as such term is defined in Regulation S of the Securities Act; or (ii) Australia, Canada, Japan, New Zealand or the Republic of South Africa. Any failure to comply with this restriction may constitute a violation of United States, Canadian, Japanese, New Zealand or South African securities law. Further, the distribution of this document in other jurisdictions may be restricted by law, and persons into whose possession this document comes are required to inform themselves about, and observe, any such restrictions.

Investments in general involve some degree of risk, including the risk of capital loss. The value of investments contained herein may go up or down. Where investment is made in currencies other than the base currency of the investment, movements in exchange rates will have an effect on the value, either favourable or unfavourable. Securities issued in emerging markets are typically subject to greater volatility and risk of loss. The services, securities and investments discussed in this document may not be available to nor suitable for all investors. Investors should make their own investment decisions based upon their own financial objectives and financial resources and, if in any doubt, should seek advice from an investment advisor. Past performance is not necessarily a guide to future performance and an investor may not get back the amount originally invested. Where investment is made in currencies other than the investor's base currency, movements in exchange rates will have an effect on the value, either favourable or unfavourable. Levels and bases for taxation may change. When we comment on AIM or OFEX shares you should be aware that because the rules for those markets are less demanding than the Official List of London Stock Exchange plc, the risks are higher. Furthermore, the marketability of these shares is often restricted.

Fox-Davies Capital and/or its associated companies may from time-to-time provide investment advice or other services to, or solicit such business from, any of the companies referred to in this document. Accordingly, information may be available to Fox-Davies that is not reflected in this material and Fox-Davies Capital may have acted upon or used the information prior to or immediately following its publication. In addition, Fox-Davies Capital, the directors and employees thereof and/or any connected persons may have an interest in the securities, warrants, futures, options, derivatives or other financial instrument of any of the companies referred to in this document and may from time-to-time add or dispose of such interests. Neither the whole nor any part of this material may be duplicated in any form or by any means. Neither should any of this material be redistributed or disclosed to anyone without the prior consent of Fox-Davies Capital. Fox-Davies Capital Limited is authorised and regulated by the Financial Services Authority and is a member of the London Stock Exchange. Fox-Davies Capital (DIFC) Limited is authorised and regulated by the Dubai Financial Services Authority.

Fox-Davies Capital may distribute research in reliance on rule 15a-6(a)(2) of the Securities and Exchange Act 1934 to persons that are major US Institutional investors, however, transactions in any securities must be effected through a US registered broker-dealer. Any failure to comply with this restriction may constitute a violation of the relevant country's laws for which Fox-Davies Capital does not accept any responsibility.

Please note that unless otherwise stated, the share price used in this publication is taken at the close of business for the previous day. This document has been prepared on the basis of economic data, trading patterns, actual market news and events, and is only valid on the date of publication.

This document may contain information obtained from third parties. Reproduction and distribution of third party content in any form is prohibited except with the prior written permission of the related third party. Third party content providers do not guarantee the accuracy, completeness, timeliness or availability of any information, including ratings, and are not responsible for any errors or omission (negligent or otherwise), regardless of the cause, or for the results obtained from the use of such content. Third party content providers give no express or implied warranties, including, but not limited to, any warranties of merchantability or fitness for a particular purpose or use. Third party content providers shall not be liable for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees or losses (including lost income or profits and opportunity costs or losses caused by negligence) in connection with any use of their content.

By accepting or accessing this document or any related materials you agree to be bound by the limitations and conditions set out herein and, in particular, will be taken to have represented, warranted and undertaken that you have read and agree to comply with the contents of this disclaimer including, without limitation, the obligation to keep information contained in this document and any related materials confidential.

Cleantech Lithium

Fox-Davies Capital Ltd
12 Hay Hill, Mayfair
London W1J 6DQ
United Kingdom

Member of the London Stock Exchange.

Authorised and Regulated by the Financial Conduct Authority.

Registered in England and Wales with company number 10165213 and registered address 5 Technology Park, Colindeep Lane, Colindale, London, United Kingdom NW9 6BX

Fox-Davies Capital (DIFC) Ltd.
Emirates Financial Towers, N1702D
Dubai International Financial Centre
P.O. Box 507268, Dubai
United Arab Emirates

Authorised and Regulated by the Dubai Financial Services Authority.

Registered in the Dubai International Financial Centre with commercial license number CL2950