Ion Energy Ltd. (TSXV: ION) – Lithium Explorer with Opportune Project Location

COULOIR CAPITAL

Investment Highlights

- Ion Energy Ltd. ("Ion", "company") is a lithium exploration company targeting a prospective brine project in Mongolia. The project would represent the first lithium brine mining license award in Mongolia's history.

- **Baavhai Uul:** The project is located in the arid Gobi desert, with high evaporation rates and low precipitation rates that are considered optimal for lithium brine extraction. Early assay results returned an average grade of 426 ppm.

- **Strategic Location:** Located in the southeast of Mongolia, Baavhai Uul is situated in an infrastructure-rich region, and is 24 km away from the Chinese border. China is host to the majority of the world's lithium processing capacity.

- **Upcoming RTO:** Ion expect to list on the market by undertaking an RTO, which will be followed by a planned $2 million equity financing.

- **Long-term Lithium Demand:** Driven by electric vehicle battery demand, the growth in demand for lithium compounds is expected to increase at outsized rates moving forward.

- We are foregoing a fair value estimate and action rating at this time given that the company's project does not have an established resource and the capital structure has yet to be finalized. **However, we calculate Ion would hold a valuation of $37.02 million on an EV/ hectare basis.**

Rob Stitt, CAIA

May 11, 2020

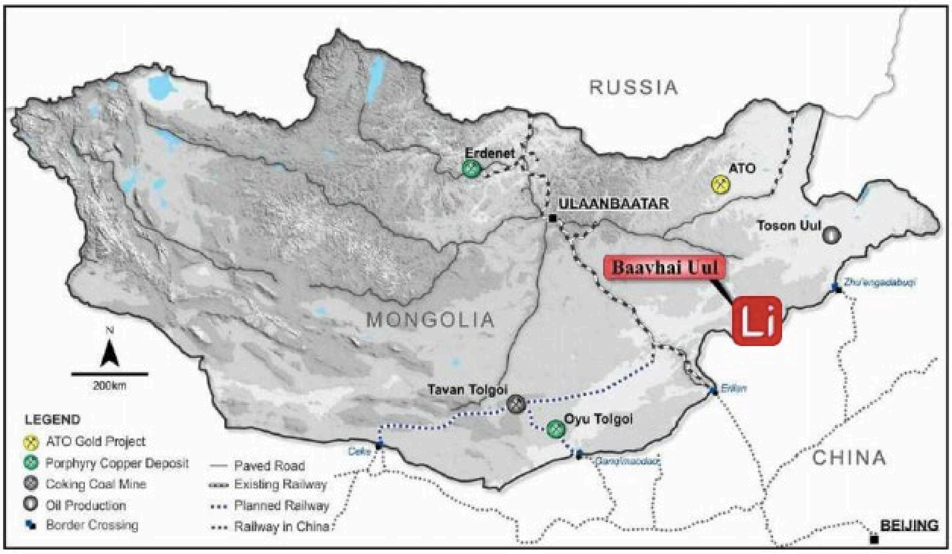
With one of the largest mining exploration licenses in Mongolia, Ion is an emergent exploration company with a focus on early-stage lithium brine projects. The company's project, Baavhai Uul, is a property comprising over 80,000 hectares in the southeast of Mongolia, in close proximity to China. This is a significant potential advantage to the company – one of the largest and fastest growing demand drivers for lithium is the usage of lithium compounds (sometimes referred to as lithium salts) as electrolytes in lithium ion batteries, which in turn are being utilized in electric vehicle ("EV") batteries. At current the vast majority of the world's downstream lithium processing capacity is located in China, and Baavhai Uul is conveniently located in close proximity to the China-Mongolia border, in an infrastructure-rich zone.

At current, the company is in the early exploration phase, and Ion intends to complete a reverse takeover ("RTO") transaction with shell company Spirit Banner Capital Corp Q2, 2020. As part of the transaction, the company is expecting to raise $2 million, which we expect will then be used largely for exploration activities. As stands today, Ion is on track to become Mongolia's first lithium brine miner, and may stand to benefit from broader electrification megatrends that we expect to intensify whilst the company builds out its brine asset.

Baavhai Uul Lithium Brine Project

The Baavhai Uul project is a license comprising 81,759 hectares in Mongolia's Sukhbataar province, in the southeast of the country. It is approximately 800 km from Mongolia's capital, Ulaan Bataar, and 200 km from the provincial centre. It is also 24 km from the Chinese border, and two townships are located 30 km to the north and 40 km to the south. The project lies in the Gobi Desert region, an arid environment with high evaporation rates and low precipitation rates year-round.

Baavhai Uul Site Location



Source: Company

Upon completing the RTO mentioned earlier, the company intends to acquire the Baavhai Uul mining license for $1.2 million and complete a two-phased exploration program that will culminate in the verification of the presence of lithium at the Baavhai Uul salar. Based on our discussions with management, we believe that the company intends to complete the planned exploration program within six months of completing its RTO.

Geology and Mineralization

The project is approximately 1.2 km above sea level and is situated on the Dariganga platform, an area characterized by dry, wide valleys, volcanic craters, hills, sand dunes and small lakes. These small lakes (which are saline and therefore applicable for industrial uses like drilling) are largely distributed in quaternary sediments. Generally, though, there is little running water in the region. Furthermore, the region also exhibits a low precipitation rate and a high evaporation rate – two conditions ideal for a lithium brine project, since higher evaporation rates allow for quicker concentration/ production of lithium concentrate, and less rain implies lower frequency of evaporation disruption. Moreover, early geological work indicates shallow aquifers, implying less depth of liquid requiring evaporation and less drilling to access the brine reservoirs.

To date, geological exploration work done on the project includes sampling done by geoscientists from the Technical University of Mongolia. The sampling work consisted of 2 pits drilled by hand auger in dry lake areas of the Baavhai Uul project, and collected in 20 cm intervals. The team collected 11 samples from 2 dry lakes, and the samples were sent to and assayed by an independent certified assay lab Khanlab LLC, located in the capital.

The assay results are shown in the table below, with the coordinates, descriptions, intervals and mineral concentrations outlined. Regarding the lithium concentration, a range of lithium grades between 211 parts per million ("ppm") and 810 ppm was observed, with the average lithium grade of the samples sitting at 426 ppm. In addition to the notable lithium concentrations, the assay results indicate low potassium and magnesium ratios.

Baavhai Uul Assay Results

Sample location	Coordinate UTM-49N		Sample ID	Interval, m		Assay results				
	Easting	Northing		from	to	Na, %	K, %	Ca, %	Mg, %	Li, ppm
Li-8	682171	4986982	Li-8-1	0.0	0.2	1.95	2.87	0.96	0.47	211
			Li-8-2	0.2	0.4	2.25	2.43	2.95	2.12	605
			Li-8-3	0.4	0.6	2.28	2.42	2.93	2.13	601
			Li-8-4	0.6	0.8	1.09	2.52	4.68	1.97	810
			Li-8-5	0.8	1.0	1.85	2.09	3.59	1.76	618
Li-11	642374	5001157	Li-11			1.21	3.13	0.73	1.26	433
			Li-11-1	0.0	0.2	1.04	3.01	1.30	1.14	380
			Li-11-2	0.2	0.4	1.10	2.85	1.28	0.98	341
			Li-11-3	0.4	0.6	0.82	2.93	0.81	0.90	352
			Li-11-4	0.6	0.8	0.73	3.13	0.34	0.87	422
			Li-11-5	0.8	1.0	1.30	2.75	0.40	0.84	311

Source: Company

In terms of infrastructure, the company states that the project is connected to the provincial centre of Baruun-Urt by gravel roads, which Ion states take about 4 hours (reflecting approximately 200 km of travel) of driving to traverse. From there, paved roads connect Baruun-Urt to the capital, allowing for swift all-seasons travel. Given the proximity of roads and population centres to the project, Ion believes that the nearest townships could provide for the basic needs of its exploration program (food, labour, supplies), whilst more advanced needs (heavy machinery such as drill rigs) could be sourced from Ulaan Baatar.

Exploration Program and Development Trajectory

Upon completion of the RTO transaction and the receipt of equity financing, the company plan to embark on a two-phased exploration program. The program is outlined as below:

Phase 1A:

- Surface geochemical sampling of sediments and brine using auger drilling on a 200m x 200m grid.
- Geological mapping at scale of 1:25,000.
- Geophysical survey to define the basin shape, geological formations and structural features.

Phase 1B:

- Geochemical sampling in 400x400m spaced grid to verify the presence of lithium.

Phase 1B will largely be dependent on positive results of stage 1A's brine sampling activities, and will involve deeper drilling in order to establish a more extensive characterization of the basin's geometry as well as the brine chemistry. Hydrological features of the property as also expected to be explored via pumping tests through wide diameter holes. As drilling is the name of the game in brine exploration, the company own a truck mounted auger rig with the capacity to drill down to 20m, allowing the sampling of shallow lithium brine.

Ion's Auger Rig

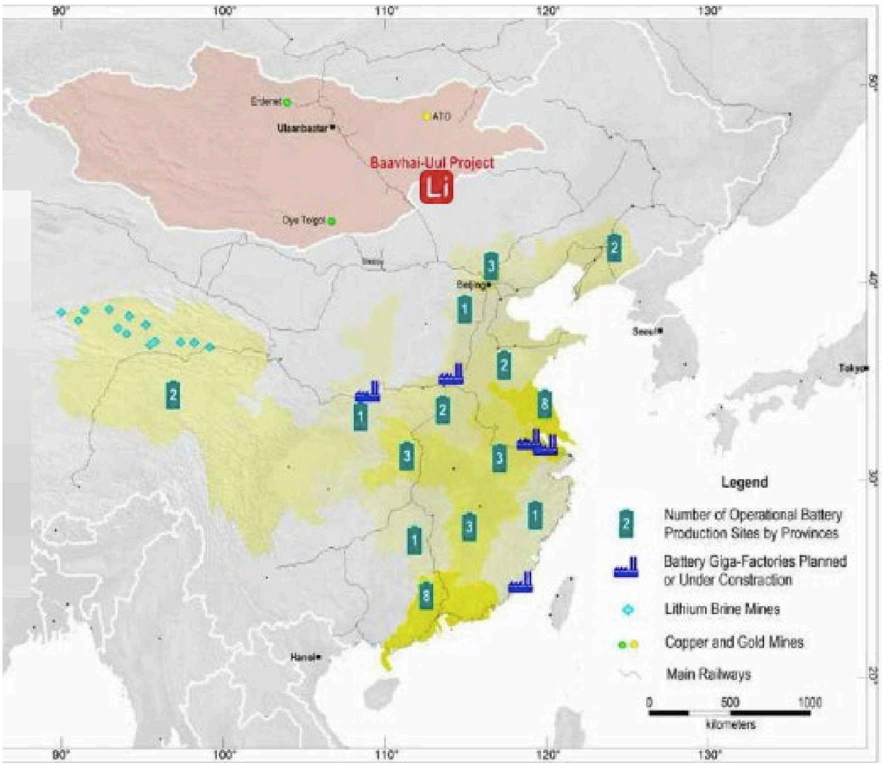
Source: Company

The company has not disclosed a timeline in which they expect to complete planned exploration activities, but based on our discussions with management, projects of similar stage and undergoing similar exploration activity typically require a time frame of 6 months.

Location Advantage and Proximity to China

As mentioned earlier, one of the key advantages of the Baavhai Uul project is the project's location. Baavhai Uul is located 24 km from the Chinese border with Mongolia, and this is a significant advantage for Ion given that the vast majority of the worlds lithium processing is located in China. As we will discuss in depth in a section further below, one of the key demand drivers for lithium is the rise of EVs and EV batteries, with lithium ion batteries being used as cells in conventional EV batteries. In order to provide the electrolytes for use in EV batteries, lithium concentrates need to be processed in to a commercially saleable lithium salt, such as lithium carbonate or lithium hydroxide. Whilst most brine operators are able to produce lithium carbonate directly from the lithium concentrate produced via solar evaporation by utilizing inhouse processing and adding chemical reagents, the process is expensive and forms the bulk of operating costs for global brine operators.

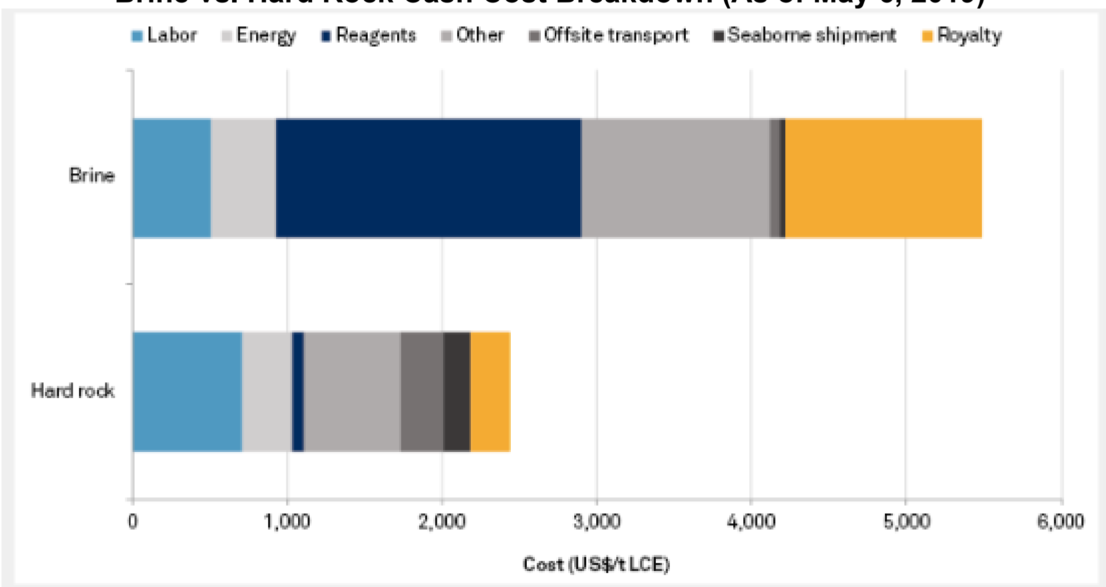
Baavhai Uul Site Location



Source: Company

However, because Baavhai Uul is located in close proximity to such a large portion of the global lithium processing capacity, we speculate that if the property proves to be economically viable the advantage of the project's location may allow the company to enjoy significant cost benefits relative to other brine producers. Whilst this may come at the cost of a higher price (since Ion would be selling lithium concentrates versus more valuable lithium salts), the costs of reagents used in lithium brine processing are so high that the trade-off may be beneficial in the long run.

Brine vs. Hard Rock Cash Cost Breakdown (As of May 6, 2019)



Source: S&P Global Market Intelligence

Preliminary Valuation Insights

Because the company is currently in the early exploration stage, there is little in the way of a de-risked, concrete asset-base or expected cash flow schedule upon which to base a valuation. For this reason, we forgo a fair value estimate and action rating in this report. However, for the benefit of outlining certain metrics upon which Ion can be compared against peers, in the below table we stack up the EV/ hectare of Ion vs. similar companies:

EV/ Hectare for Comparable Lithium Companies

Company	Location	Stage	Hectares	Enteprise Value (C$)	EV/ Hectare (C$)
Pure Energy Minerals Ltd. (TSXV: PE)	U.S. & Argentina	Exploration	23,522	6,336,791.00	269
Millennial Lithium Corp. (TSXV: ML)	Argentina	Development	23,619	36,084,665.00	1,528
Neo Lithium Corp. (TSXV: NLC)	Argentina	Development	35,000	18,837,449.00	538
Wealth Minerals Ltd. (TSXV: WML)	Chile	Exploration	67,200	28,628,243.00	426
Advantage Lithium Corp. (TSXV: AAL)	Argentina	Development	50,600	29,507,173.00	583
Lake Resources N.L. (ASX: LKE)	Argentina	Exploration	189,000	16,694,209.00	88
Dajin Lithium Corp. (TSXV: DJI)	U.S. & Argentina	Exploration	48,772	3,225,369.00	66
Ion Energy Ltd.*	Mongolia	Exploration	81,759	10,070,908.10	123
Average					**453**

**Assumes management's projection of the post-RTO capital structure of Ion.*
Source: Couloir Capital, Public Disclosures

Based on the above metrics, Ion would hold a valuation of $37.02 million on an EV/ hectare basis. Note that as we mentioned previously, this does not count as our formal fair value estimate and is merely a framework for assessing the company's value as stands today against other similar peer companies. Furthermore, the per hectare valuation metric is highly sensitive to the higher valued constituents in the sample, which have projects much farther along in the development process than Ion.

RTO and Qualifying Transaction

In order to finance the acquisition of the Baavhai Uul mining license, fund exploration work and necessary corporate expenses, Ion intend to list on the TSX Venture index under the ticker ION, whilst subsequently completing an equity financing for $2 million. To do so, the company will complete an RTO with shell company Spirit Banner Capital Corp., and soon after will attempt to raise $3 million via the issue of 10 million units priced at $0.30 (containing one common share and a warrant exercisable at $0.40 per share). Whilst the dating of the transaction is yet to be confirmed, the company is eyeing a date within Q2-2020, depending on market conditions and investors' appetite. The details of the transaction, the resulting capital structure of Ion post-transaction and the expected use of proceeds are outlined in the below tables:

Ion's Cap Table Post-RTO

Capital Structure	Shares / $
ION Energy Private Co.	29,720,970
Spirit Banner Capital Corp.	9,515,390
RTO/Merger Raise ($3M @ 30c)	6,666,667
Basic Common Shares	45,903,027
Fully Diluted*	54,021,233
Cash Post RTO/Merger	˜$3M

*Options and Warrants	Shares
Spirit Banner Director Options (5 years)	951,539
Spirit Banner Agent Options (2 years)	500,000
RTO/Merger Warrants $.40 (2 years)	6,666,667

Ion's Intended Use of RTO Proceeds

Use of Proceeds		C$
Exploration	$	550,000
Structural Work	$	520,000
Additional License Acquisition Costs	$	1,200,000
G&A	$	730,000
Total	**$**	**3,000,000**

Source: Company

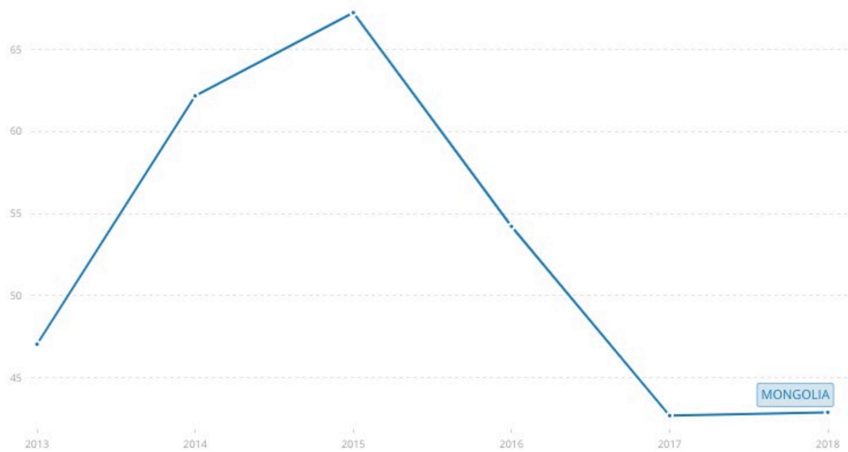
Jurisdiction Brief: Mongolia

With a population of 3.17 million, a 2018 GDP of $13.01 billion and a 2018 GDP per capita of $4104, Mongolia ranks in the bottom half of East Asian nations for GDP per capita, according to the World Bank. Some of the major challenges facing Mongolia include drawing in foreign direct investment ("FDI") and economic diversification. To this end, the emergence of the Mongolian mining sector has helped to address both these issues as the growth of mining in Mongolia has diversified its traditionally agrarian economy and attracted foreign interest and investment in the country's extensive mineral deposits.

Foremost amongst Mongolia's mining prospects is the Oyu Tolgoi mine, one of the largest known copper-gold deposits and expected to be a major contributor to Mongolia's economy upon completion, with expectations of the mine providing thousands of jobs to the local populace and a making up a large portion of the country's economic output. The impact of Oyo Tolgoi is expected to be large given the longevity and reserves of the mine, which based only on currently identified deposits is expected to have a mine life in excess of 50 years and produce up to 3% of the world's annual copper output upon reaching scale. Though the mine's ownership has switched hands since its discovery in 2001, at current it is a 66%/ 34% venture between Turquoise Hill Resources (majority owned by Rio Tinto (ASX: RIO)) and the Mongolian government.

In 2018, Mongolia had merchandise exports of $7.01 billion, with 42.89% of these exports being ores and metals, according to the World Bank. The graph below outlines the contribution of mining products to merchandise exports between 2013 and 2018 (note that the Y axis is measured in percentage terms):

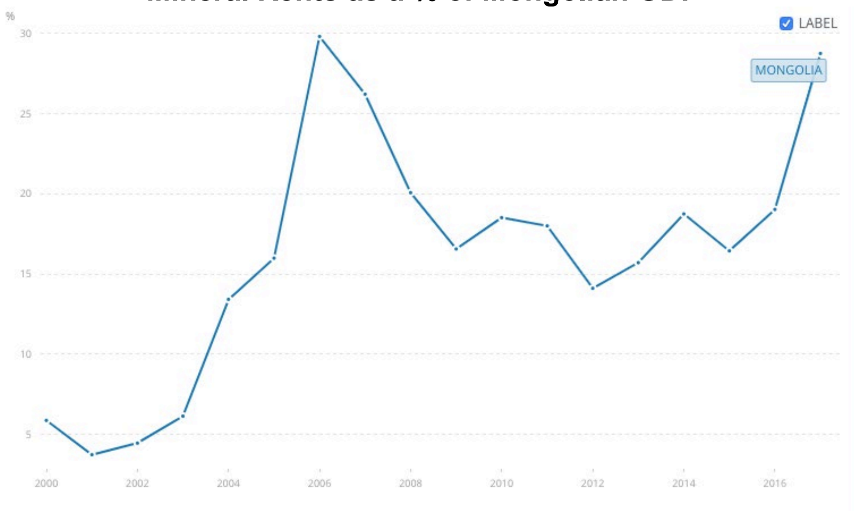
Ores and Metals % of Mongolian Exports



Source: World Bank

In addition, a large part of Mongolia's GDP is derived from mineral rents. As the chart below shows, in 2017 28.77% of Mongolia's GDP was derived from natural resources. More recent data from the World Bank is unavailable, but it can be assumed that the percentage remains high.

Mineral Rents as a % of Mongolian GDP



Source: World Bank

Lithium Outlook

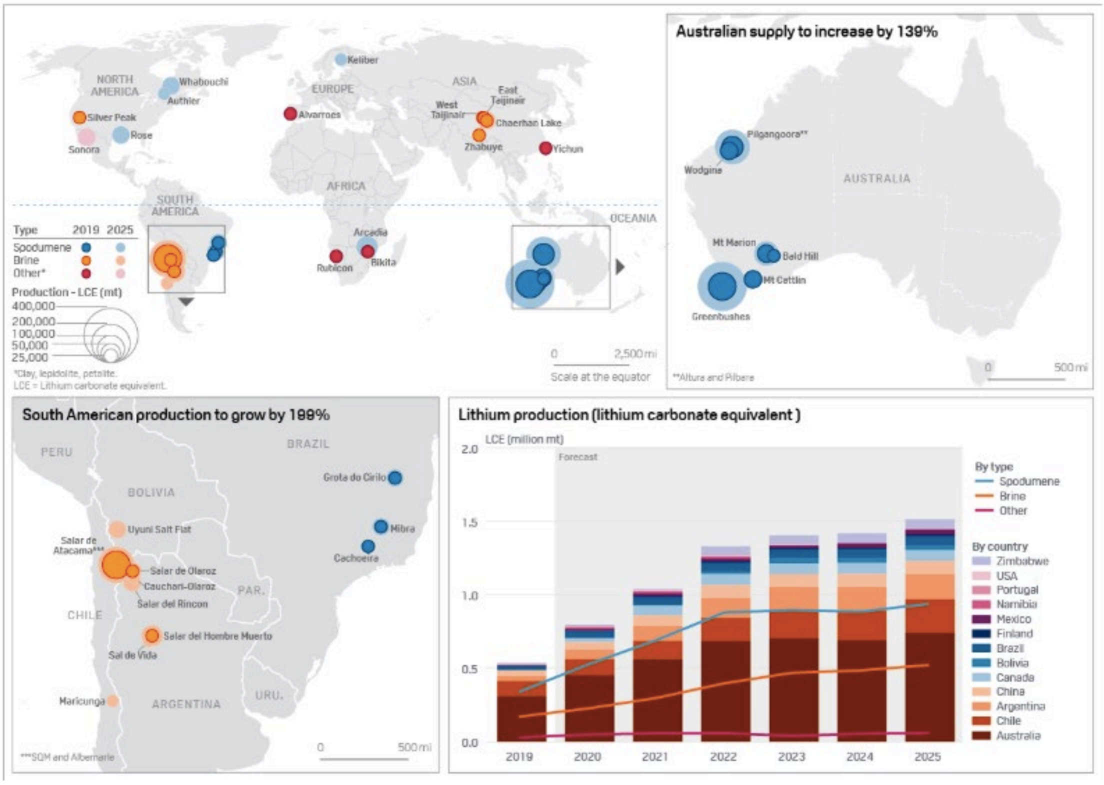
The subject of lithium's growth trajectory (without accounting for the particulars of hard rock vs. brine) is a hotly discussed topic that has been debated for some time. Lithium as a commodity has been subject to major price volatility as a result, with highs in late 2017 (which was a period of lithium reaching near-fad interest levels) since plunging to new lows. Various reasons and events have contributed to softness in the lithium price, including the rollback of Chinese EV subsidies as well as supply-side factors and previously aggressive production leading to sustained periods of over supply. Using peak pricing of CNY171,000 per ton in December 2017 as a base point, lithium prices are now down approximately 71.35% at CNY49,000 per ton as of February 2020.

Lithium Carbonate Prices (99.5% Li2CO3 min, battery grade, traded in China)

Source: Trading Economics

Though prices have plunged significantly, many industry observers consider the weakness temporary, as short-term roadblocks and oversupply are expected to make way for longer-term lithium demand. Demand projections of LCE quantities required to service various growing end-uses differ by source, often by large margins. However, despite the variance of projections, almost all sources expect large annual increases in the quantity of lithium demanded. The main point of contention between industry pundits lies in where the demand-supply dynamics will stand in the future, with bulls outlining outsized EV battery demand, evolving battery chemistry and supply-side risks of miners as factors underpinning a future supply gap, whilst more skeptical observers believe current nameplate production and announced plant expansions of current lithium producers will surpass any realistic future demand.

Lithium Supply to Triple by 2025



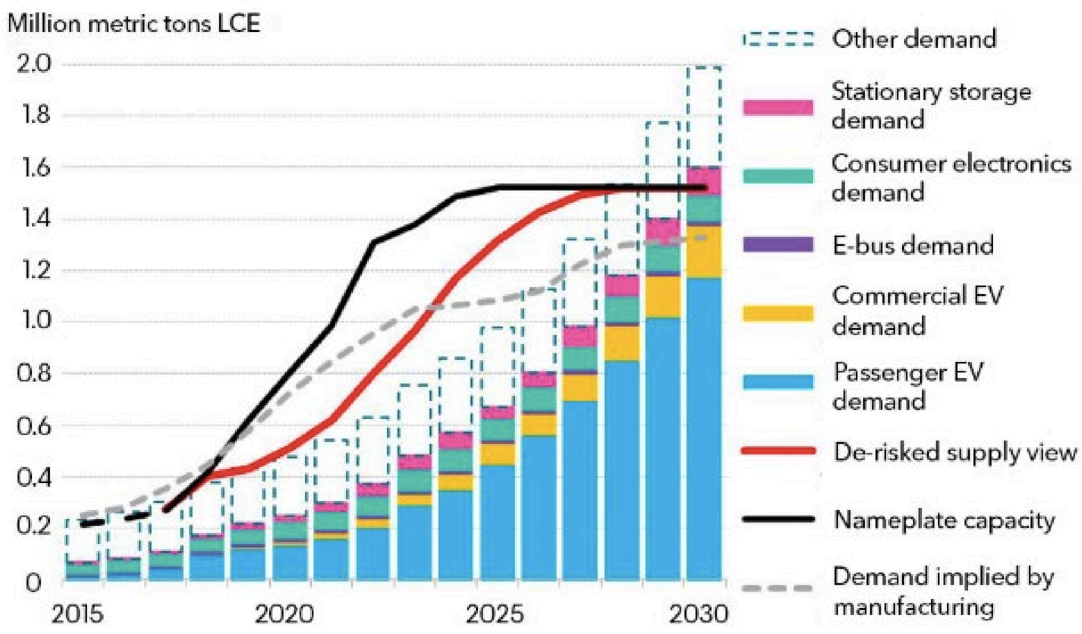
Source: S&P Global Platts

The industry consensus regarding lithium demand in the future typically falls between 1-1.5 million metric tons of lithium carbonate equivalent ("LCE") for 2025, with supply estimates based on announced capacity increases falling between 1.2-1.6 million metric tons of LCE for the same period. Given these estimates, the inference is that the industry expects over-supply (or at the very least demand-supply equilibrium) for the years leading up to 2025. This is assuming only the current supply-base and associated capacity expansions come online by then, without factoring in additional entrants in the period.

The tight supply dynamics are typically forecasted to relax by the time 2030 rolls around, as supply growth is projected to taper whilst demand growth maintains its sharp upwards trajectory. Whilst the industry expects a prolonged supply overhang, we note that projections provided to the market from the supply-side are generally optimistic and based largely on estimates from feasibility studies and production schedule planning. They do not (and realistically cannot) predict disruptions to operations posed by averse weather conditions, the impact of geological roadblocks, regulatory tightening, declining grades, deviations in recovery rates relative to feasibility studies, forced processing plant shut downs and other factors that impact production. These events, whilst not frequent, can significantly impact production profiles and lead to bottlenecks in the supply chain.

Another factor that is not frequently considered is whether or not the current concentrate supply coming in for processing at the main downstream processing facilities in China is battery grade. This is very important to consider given that EV batteries are by and large considered the number one growth driver for lithium demand moving forward. This is because lithium usage in lithium-ion batteries is significant, and the growth of EV demand is almost unanimously predicted to take a steep upward trajectory for the foreseeable future. This has been further accentuated by support from governments targeting increased electrification and de-carbonization of their economies.

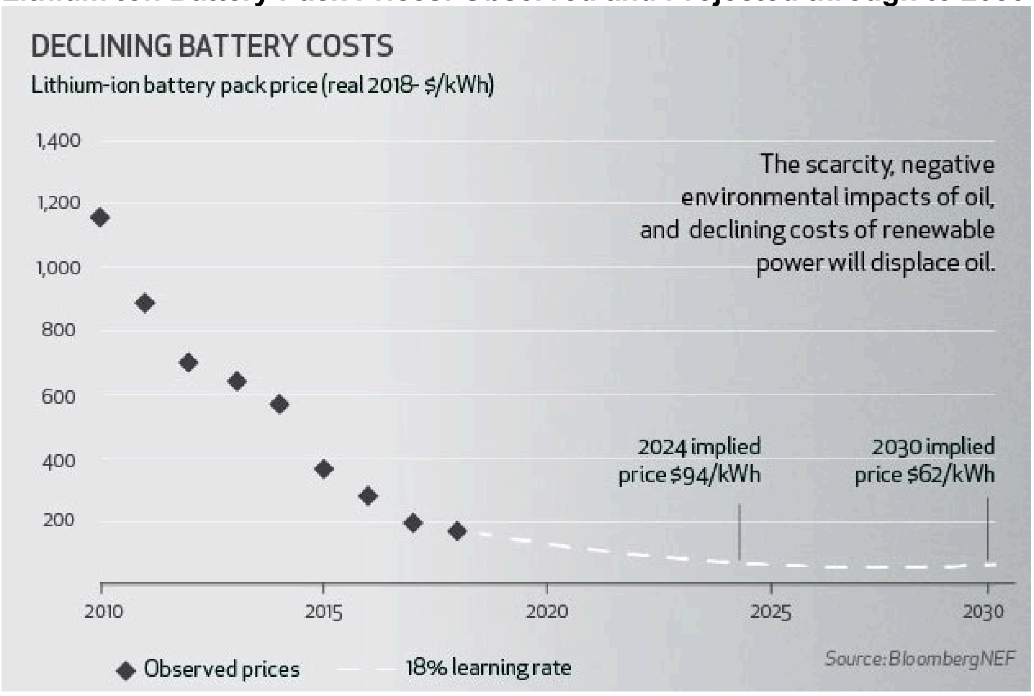
Figure 1: Global lithium supply and demand forecast, comparing methodologies



Source: BloombergNEF, Avicenne

As EV demand grows, we expect demand for EV batteries to expand at an accelerated rate, as the science of EV batteries is still in its youth and constant evolution in battery technology in turn changes the raw material demand. As ESG considerations grow as well, increased focus and investment will go toward improving the efficiency of EVs such that they grow their penetration amongst drivers. To this end, we view the constant and significant drop in lithium-ion battery costs as a bullish factor, as we believe a move towards cost parity with carbon-fuelled vehicles will lead to outsized demand for EVs, their batteries, and therefore the raw materials which form the basis for the battery packs so necessary to power these new age vehicle fleets.

Lithium-Ion Battery Pack Prices: Observed and Projected through to 2030



Source: BloombergNEF

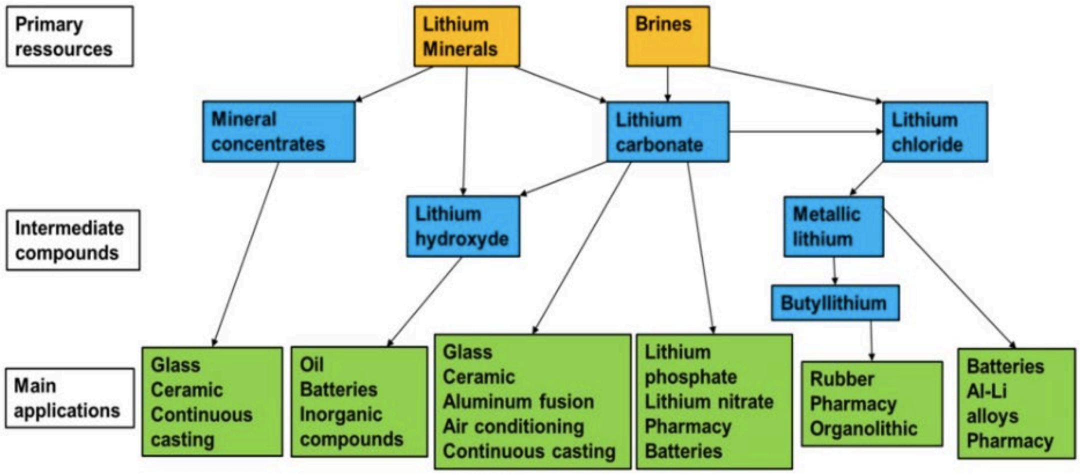
Brine vs. Hard Rock: Process and Economic Comparison

Lithium is an important input for a number of processes and end-uses, including:

- **Electronics:** Because of its high electrode potential, lithium is used as a major component of battery electrodes and electrolytes. It is found in both rechargeable and disposable batteries, which in turn make their way into various products, including EVs, power tools, and other devices.
- **Ceramics and Glass:** Lithium oxide (often obtained by heating lithium carbonate) is used as a flux for processing silica and yields glazes with robust physical properties.
- **Lubricating Greases:** Lithium hydroxide is often used to produce all-purpose lubricating grease.
- **Metallurgy:** Lithium is used for a number of purposes, including the absorption of impurities in welding or soldering activities.

The chart below clearly outlines the various lithium primary sources, intermediate lithium salts, and typical end-uses for said lithium salts.

Lithium, Lithium Compounds and Typical End-Uses



Source: Dessemond, C.; Lajoie-Leroux, F.; Soucy, G.; Laroche, N.; Magnan, J.-F. Spodumene: The Lithium Market, Resources and Processes. Minerals 2019, 9, 334.

Because of its reactivity, pure lithium is usually not encountered naturally and is usually found as a component in the make up of some other compound. These include salts as well as mineralized rocks. With regards to the lithium compound most frequently encountered in the market, lithium carbonate is most often referred to in commercial settings, as it is a compound that is both stable and easily convertible into other chemicals. As a result, when discussing lithium output or market demand, LCE demand is the common metric used.

Because of its various ways of manifesting naturally in different forms, there are multiple methods of extracting lithium. Regardless of the process, extracting lithium requires a series of chemical processes to separate lithium from other elements and convert it into a commercial form of lithium, such as lithium carbonate or lithium hydroxide. The two most common commercial processes currently used include brine mining and hard rock mining. Whilst there are other forms of extraction in existence, such as lithium extraction from clays, these alternative methods are not as economically viable as brine and hard rock mining.

Brine mining involves the extraction from liquid brine reservoirs located beneath salt flats (salars), geothermal wells and oil field brines. Geographically, most identified brine resources are located in South America and China. The process of brine extraction begins with drilling at salars to access the underground lithium brine deposits, at which point a miner will then pump brine through to the surface to collect at evaporation ponds, where the brine will remain for period of months (or years) until liquid water content has evaporated. In order to smooth the production process, miners may have numerous evaporation ponds of differing ages, allowing volumes to remain fairly normalized throughout the year.

As earlier mentioned, lithium rarely appears in nature as a purely isolated element, and is often a component in a larger sample containing other elements. In the case of brine, potassium and other metallic byproducts are also often present, and these byproducts can be extracted as the brine evaporates to the optimal lithium content for further processing. Upon reaching optimal lithium concentration, the brine solution is then:

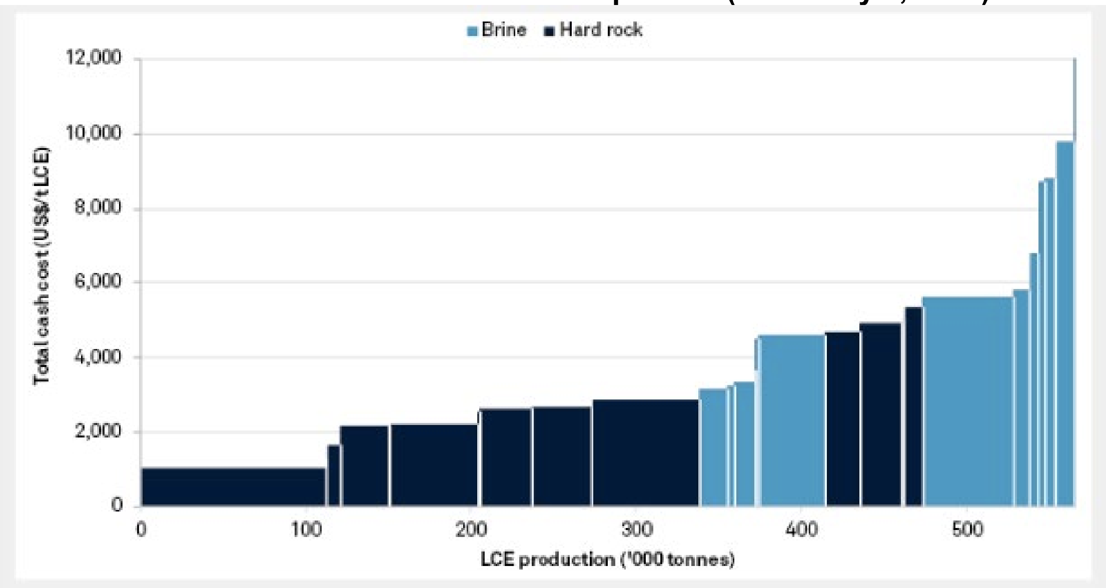
- **Pretreated:** Unwanted components or contaminants are removed via filtration or ion exchange purification.
- **Chemically Treated:** Chemical reagents are added to isolate the brine into desired elements and byproducts.
- **Filtrated:** Solids are filtered out of the brine solution.
- **Turned into a Commercial Lithium Compound:** Depending on the desired lithium compound, a reagent is added before the compound is then further filtered and then dried before being shipped off for sale. Sodium carbonate is a common reagent used to produce lithium carbonate.

By comparison, hard rock mining of lithium more closely resembles traditional metals mining, with miners focusing on pegmatite deposits to extract spodumene, which is the primary lithium-bearing mineral at these ore deposits. Hard rock operations, most of which are located in Australia, typically target spodumene concentrate with 6% lithium content, which is the commercial benchmark grade for spodumene shipments to China. Unlike brine extraction, where lithium carbonate is the end product, hard rock mining requires an additional step of processing before yielding the lithium salts that are used as liquid electrolytes for batteries. As most hard rock miners do not have their own internal processing capacity, spodumene concentrate from hard rock operations is usually sold and shipped to Chinese offtakers with significant processing capacity, who then have the option of converting the spodumene further into a desired lithium salt.

Regarding which extraction process is superior from an economic perspective; both have their pros and cons. Brine is considered the simpler and less capital-intensive process, whilst hard rock operations typically exhibit higher grades, significantly lower operating costs and have the edge on time to market. The much lower capital cost of brine operations is largely due to the geography of salars, requiring less geological exploration and development activity before bankable reserve estimates can be made and the asset can be put through to commercial operation. The CAPEX for necessary infrastructure, processing plants, equipment and other physical assets also tends to be lower for brine relative to hard rock.

However, when it comes to operations and operating costs, hard rock is typically seen as the smoother, less costly process to run. With brine operations, the evaporation process through which the company produces lithium is typically lengthy, with the period of time not necessarily uniform. Furthermore, weather patterns can disrupt the evaporation process, impacting a large proportion of a brine company's production and setting back their sales cycle and cash flows considerably. By comparison, though the capital investment is comparably much larger, once running lithium hard rock mines typically can produce at will on a much more frequent basis than brine operations, and disruptions to the production cycle are more due to economic (low price environment) or internal (i.e plant maintenance shut downs) factors. As demonstrated in the below chart, the average cash costs of brine operations tend to be much higher than those of hard rock mining companies.

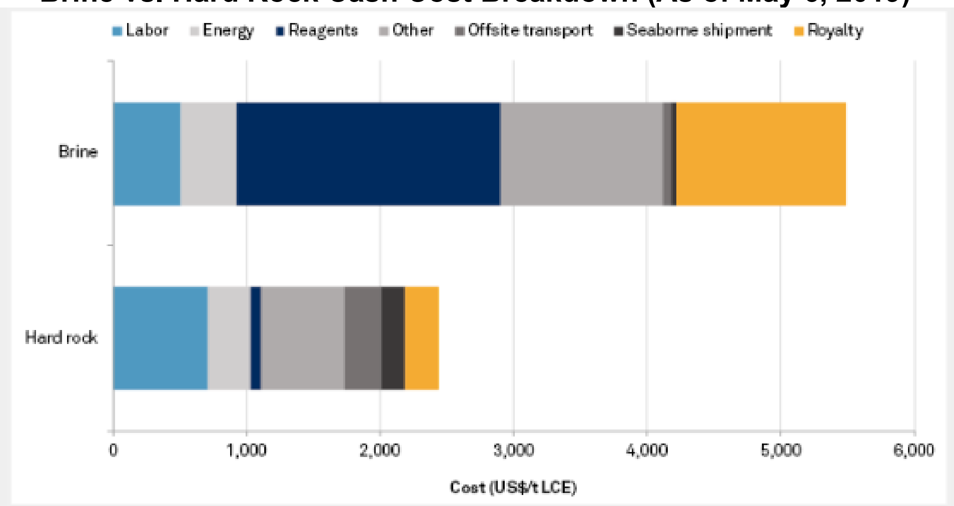
Brine vs. Hard Rock Cash Cost Comparison (As of May 6, 2019)



Source: S&P Global Market Intelligence

The difference in cash costs can typically be attributed to the vast difference in reagent costs. Because brine operations will produce lithium carbonate as an end-product, operators require large amounts of reagents such as sodium carbonate to successfully convert lithium concentrates from the evaporation ponds into commercially saleable lithium carbonate at onsite processing facilities. In addition to reagent costs, which can typically be in excess of a third of all cash costs, royalties in the mining jurisdictions in which brine operations are typically found tend to be much higher than those paid by hard rock operations, and in the first half of 2019, the combination of reagent costs and royalties contributed to almost 60% of brine operators' cash costs, according to S&P Global Market Intelligence.

Brine vs. Hard Rock Cash Cost Breakdown (As of May 6, 2019)

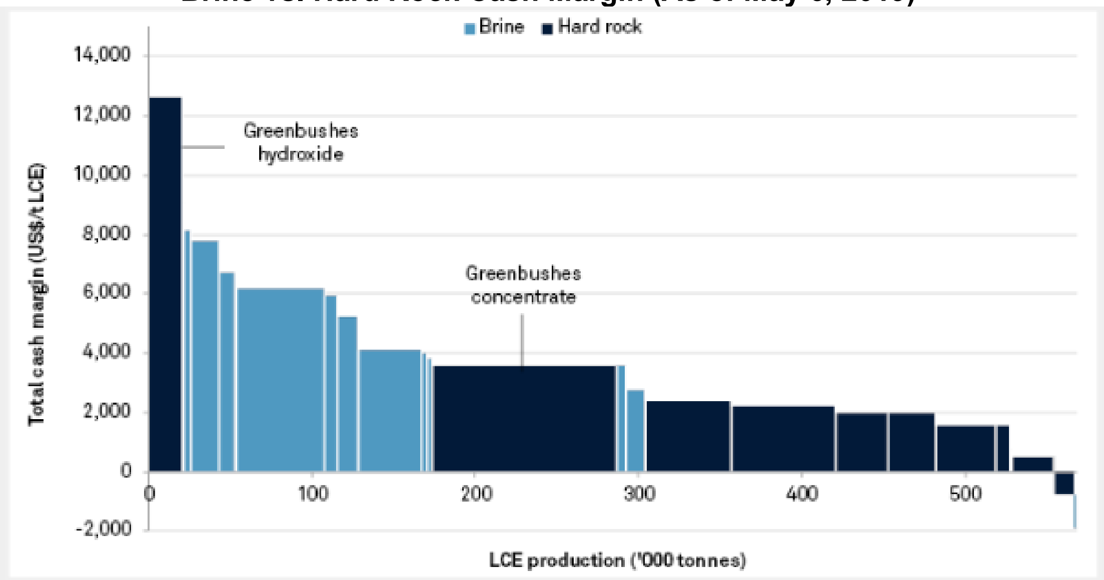


Source: S&P Global Market Intelligence

Regardless of cost base however, the real differentiator in the brine vs. hard rock debate is the end-product pricing received by operators. Since lithium carbonate is the typical end-product of brine mining, and hard rock miners produce spodumene, brine operators will receive LCE contract prices or a price within proximity of market prices. Hard rock miners, however, receive concentrates pricing that typically is far lower than the pricing for top traded lithium salts such as lithium carbonate and lithium hydroxide, and this reflects that spodumene needs to be further processed before it becomes a commercially saleable electrolyte compound. These costs are borne by processors, typically in China, who will factor in their own cost base and targeted returns when offering prices to hard rock miners.

As a result, we see that with the exception of the Greenbushes project, a highly lucrative mine run by an Albermarle Corp. (NYSE: ALB) and Tianqi Lithium corp. (SHE: 002466), brine operators are typically getting cash margins (revenue less cash costs) that far exceed those of hard rock miners. The cash cost differential is offset by the difference in pricing at this point in time, and the result is that in times of lithium market malaise, brine operators can typically outperform hard rock miners from an earnings perspective.

Brine vs. Hard Rock Cash Margin (As of May 6, 2019)

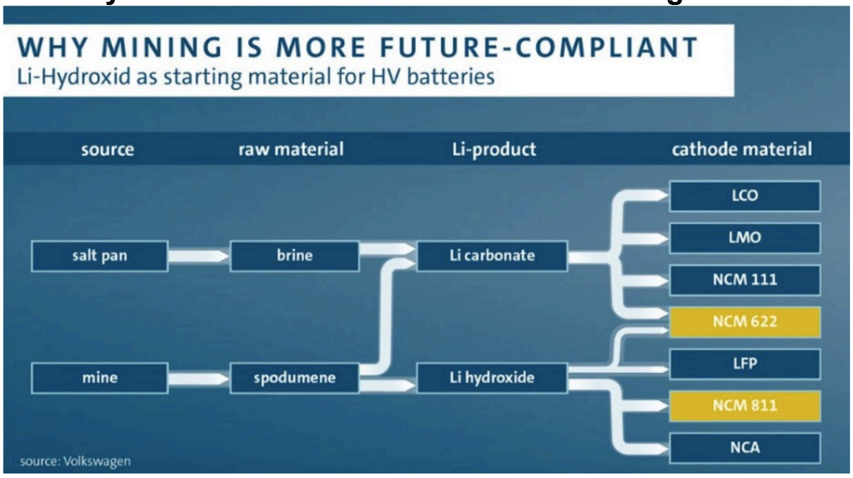


Source: S&P Global Market Intelligence

Brine vs. Hard Rock: A Potential Threat to Brine Dominance

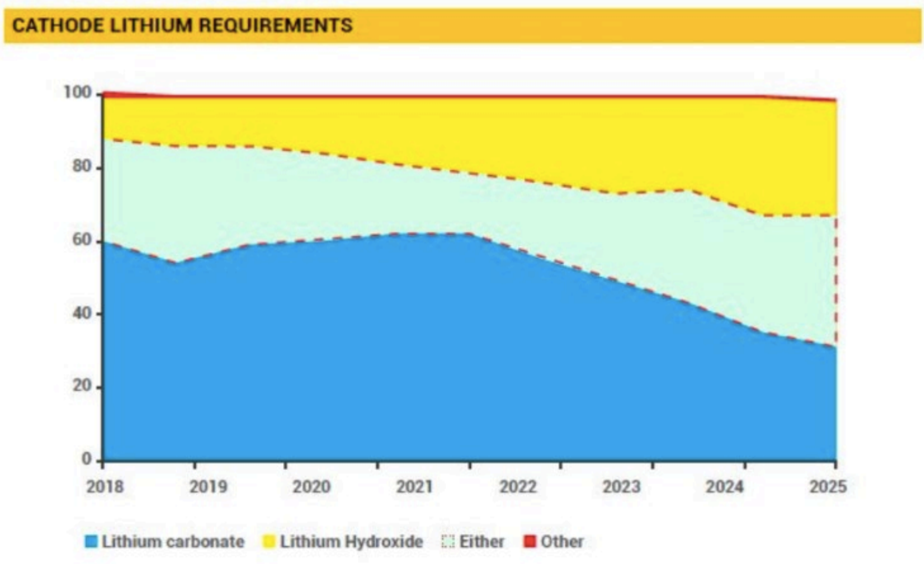
In recent times, the long-term superiority of lithium carbonate as the dominant lithium salt utilized by battery manufacturers has been questioned, as battery chemistries have evolved to utilize different mineral compositions in order to maximize battery performance across various metrics. This has become increasingly necessary over time, for example with the recent rollback of Chinese EV subsidies such that higher energy densities and driving ranges are required to qualify for government payouts. High-nickel content batteries have been highlighted as a potentially dominant battery chemistry for the future, given its superior specific energy, overall good performance across other battery metrics and relatively lower cost compared to other cathode combinations. Specifically, cathodes with 60% nickel or greater, such as NMC622 (60% nickel, 20% cobalt, 20% manganese), NMC811 (80% nickel, 10% cobalt, 10% manganese), and NCA (nickel, cobalt, aluminum) have all been highlighted as superior cathodes which are expected to see increased usage in EV batteries moving forward.

Lithium Hydroxide vs. Lithium Carbonate and Usage in Cathodes



Source: Volkswagen AG (ETR: VOW3)

These high-nickel content batteries more favorably utilize lithium hydroxide compared to lithium carbonate, with S&P Global Platts stating that this is due the required temperature to synthesize higher-nickel content cathodes. With lithium carbonate, high temperatures are required when the nickel concentration is higher than 60%, and this can damage the crystal structure of the cathode, compromising battery performance. With lithium hydroxide, the required temperatures are much lower. As a result, it is expected that with a shift to higher-nickel battery compositions, lithium hydroxide demand should rise at a higher rate than lithium carbonate.



Source: Benchmark Mineral Intelligence

The expected drop in lithium carbonate's relative usage in the market has various implications, one of which is the potential flip in profitability between brine and hard rock operations. As highlighted earlier, brine operations are commonly accepted to be the more profitable extraction process, given the direct processing of lithium concentrated brine into lithium carbonate, and significantly lower capital investment relative to hard rock mining. But if one considers a potential shift to lithium hydroxide as the dominant lithium compound, then the picture becomes less clear.

To produce lithium hydroxide, brine miners typically need to go through a two-step process, first extracting lithium carbonate from brines, before then being able to convert the lithium carbonate into lithium hydroxide. Given that lithium carbonate is the de facto electrolyte at current, brine operators tend to concentrate on lithium carbonate as the first processing step, before then looking at producing lithium hydroxide. In the case of hard rock mining however, spodumene can be immediately converted into lithium hydroxide, skipping a processing step. Furthermore, as we pointed out earlier, hard rock miners tend to have lower operating costs as well as benefitting from higher grade lithium assets, and as a result, when factoring in costs of conversion, we believe that it may in fact be more economic to produce lithium hydroxide from hard rock product relative to brine.

Though a potential shift in lithium compound preference in battery production may lead to a change in market dynamics between brine and hard rock, there are several factors to consider. The first is that depending on the demand-supply dynamics of the future, any shift away from brine operations to hard rock operations due to processing economics may be more a story of the pie getting larger, versus lithium carbonate's slice getting smaller. If demand growth fast outpaces supply, absolute lithium carbonate demand may still rise substantially. Secondly, as pointed out, the switch to lithium hydroxide is most common for battery compositions with nickel content in excess of 60% - and many of these more modern cathodes still have low market penetration despite most market participants agreeing on these cathodes being the battery chemistry of the future.

Adamas Intelligence claims that in April 2019, NCM811 batteries made up only 1% of the market by GWh deployed – reflecting delays in mass adoption despite strong growth. As a result, the shift over to lithium hydroxide as the dominant lithium compound has yet to materialize, with many industry observers anticipating that lithium carbonate will retain its market share through to 2025 at the least. Whilst in the longer-term this may change, we note that battery chemistries are constantly evolving and that there are currently already hypothetical battery technologies, such as solid-state (batteries which use solid electrodes and a solid electrolyte instead of liquid) which could also gain traction due to their superior performance and energy density.

In addition, as readers will have noticed, the key factor in a shift to lithium hydroxide as the dominant electrolyte depends on increased nickel concentration in cathodes, and there are several factors that may make this increased concentration less lucrative than previously thought. As raw materials still make up a significant percentage of EV battery costs, with S&P Global Platts positing that about a third of production costs are due to raw inputs, increases in key battery metal pricing could make a shift to higher nickel NCM chemistries costly. With nickel being paramount to a move to NCM chemistries, events like the upcoming implementation of the Indonesian nickel export ban make a move to NCM chemistries difficult. Indonesia, which is the world's largest producer and exporter of nickel, has implemented an export ban in hopes of capturing a larger part of the EV battery value chain and creating significant domestic downstream nickel processing capacity. The move had the immediate effect of massively boosting nickel prices, as traders the world over expected an upcoming nickel supply shortage. The next largest producer, the Philippines, also exports a large amount of nickel, but the quality and grade of its nickel product is inferior to Indonesia's – resulting in further costs to downstream processors and cathode producers in China. Depending on how this evolves, the pricing trajectory of nickel could make the move to NCM chemistries expensive, and as result, impact lithium hydroxide demand.

Management Overview

Management and directors will own a total of 30.60% of outstanding shares in the post-transaction Ion entity. The table below outlines the projected insider's share holding:

Name	Position	Shares	% of Total
Matthew Wood	Executive Chairman	4,448,333	9.03%
Ali Haji	CEO & Director	3,176,515	6.45%
Peter Schloo	CFO	550,000	1.12%
Aneel Waraich	Director	3,473,333	7.05%
Bataa Tumur-Ochir	Director	3,416,002	6.94%
Enkhtuvshin Khishigsuren	Director	-	0.00%
		-	30.60%

Source: SEDI, Couloir Capital

The biographies of key management individuals and board of director members (as provided by the company) are outlined below.

Ali Haji – CEO & Director
Mr. Haji has extensive knowledge of the financial services sector after having spent over 11 years in the asset management industry performing strategic and process improvement roles. He started his career as a technology analyst at Invesco Ltd. in 2006 and advanced into various roles including technology risk, controls, program management, and process improvement with international assignments involving mergers and acquisitions in Hong Kong, U.S.A and Australia. Most recently, he was also a principal contributor to the creation of a Center of Excellence in London, England for Invesco Ltd.

Mr. Haji currently serves as an advisor to ATMA Capital Markets Ltd. and ATMACORP Ltd., a merchant bank providing advisory services to public companies such as Steppe Gold Ltd. and Five Star Diamonds Ltd., in addition to multiple private companies in the mining space. Mr. Haji currently serves on the board of Antler Hill Mining Ltd. (TSXV: AHM.H) and is the CEO of Spirit Banner II Capital Corp. (TSXV: SBTC.P)

Mr. Haji attended The University of Western Ontario and holds a BSc in Computer Science.

Matthew Wood – Chairman
Mr. Wood is a mineral resource explorer and developer with over 25 years of global industry experience in mining and commodities investments. He has managed investment deals in diamonds, coal, energy, ferrous metals, base and precious metals, and other commodities. His unique skills in technical and economic evaluation of resource opportunities have resulted in a record of nurturing resource deals from early stage, to market listings and exit strategies for his investors.

He was formally the founder and executive Chairman of Mongolian coal company, Hunnu Coal Limited. Hunnu Coal was IPO of the year for all sectors on the ASX in 2010, and its sale for approximately A$500M in 2011 to Banpu PCL was recognized as the Mines and Money 2012 Deal of the Year. Mr. Wood has founded and been involved in many other resource companies and investments through the years.

He has extensive experience and many key relationships in Mongolia, and was recently awarded the Order of the Polar Star, the highest state honour that can be awarded to a non-citizen of Mongolia.

Mr. Wood has an Honours Degree in Geology from the University of New South Wales and a Graduate Certificate in Mineral Economics from the Western Australian School of Mines.

Peter Schloo, CA, CFA – Interim CFO
Over 8 years of progressive experience across various industries including Mining, Insurance, Financial Institutions and Real Estate covering Assurance, Operations, Corporate and Business Development roles. He holds the Chartered Professional Accountant, Chartered Accountant and Chartered Financial Analyst Designations.

Bataa Tumur-Ochir – Director
Mr. Tumur-Ochir is a director of Spirit Banner as well as a director and Vice-President (Mongolia) of Steppe Gold Ltd. Mr. Tumur-Ochir is a Mongolian citizen and will be responsible for new business acquisitions, development and government and community relations. Mr. Tumur-Ochir will be responsible for daily operations in Mongolia. Mr. Tumur-Ochir is currently executive director of ASX listed Wolf Petroleum.

Mr. Tumur-Ochir has relationships at all levels of government in Mongolia and was recently appointed independent advisor to the Ministry of Mining and Heavy Industry responsible for foreign investment and promotion.

Mr. Tumur-Ochir holds a bachelor’s degree in business administration and graduate certificates in international business and marketing from Australia and Singapore.

Aneel Waraich – Director
Mr. Waraich is the President, Chief Executive Officer and a director of Spirit Banner. Mr. Waraich is also Executive Vice-President and co-founder of Steppe Gold Ltd., a listed near-term gold producer in Mongolia, founder of ATMA Capital Markets Ltd. and ATMACORP Ltd. and a financial services professional with experience in both the asset management and corporate finance businesses.

Mr. Waraich focuses primarily on advising public and private companies in the Natural Resources sector. In previous roles at Goodman and Company Investment Counsel and Dundee Capital Markets he worked as an analyst valuing private companies. Most recently Mr. Waraich worked as an investment banker focusing on deal origination, going-public transactions and financings for both public and private companies in the resource and technology sectors.

Mr. Waraich completed his MBA from the Goodman Institute of Investment Management at the John Molson School of Business.

Enkhtuvshin Khishigsuren – Director
Mr. Khishigsuren has over 30 years of Mongolian mineral exploration experience. He has focused his expertise on the precious metals exploration sector resulting in successes for numerous companies. Mr. Khishigsuren spent the first 10-12 years of his career at Central Geological Expedition doing regional geological mapping in various areas of Mongolia, followed by 7 years as senior exploration manager on exploration of precious metal in Mongolia for Harrods Minerals (a privately funded exploration company). Mr. Khishigsuren is currently the executive director of Erdenyn Erel, a mining consulting company.

Mr. Khishigsuren has been responsible for identifying targets and properties based on his knowledge and experience that have resulted in the discovery of several prospective gold and copper deposits in Mongolia; such as the multimillion ounce gold deposit Olon Ovoot, a large molybdenum porphyry deposit Zuun mod and the Shand copper porphyry deposit near Erdenet copper mine.

Mr. Khishigsuren holds bachelor’s degree of Geological exploration from Azerbaijan State University (former Soviet Union) and a master’s degree of Geological Science from Shimane University, Japan

Conclusion

To reiterate, we are foregoing a valuation estimate and action rating in this report, based on the fact that Ion is too early in the development stage of its asset to form an opinion on valuation. We will watch the company's progress over time and will issue updates to this as necessary. However, for now, we expect the following catalysts to materially impact our valuation estimate:

- Completion of the RTO transaction and subsequent equity financing.
- Announcements regarding the beginning and/ or completion of phase 1A of the planned exploration program.
- Announcements regarding the beginning of phase 1B of the planned exploration program, and the confirmation of the significant presence of lithium at Baavhai Uul.
- Favourable developments in the lithium and EV battery markets.

Risks

The following outlines some of the key risk considerations that investors should keep in mind when evaluating Ion as an investment opportunity:

- **Failure of Exploration Efforts:** The company's future exploration efforts may yield insufficient results or otherwise find the company's current asset to be an uneconomic investment. In this case investors are exposed to the sunk costs of exploration as well as the lack of an asset base to produce returns.
- **Development/ Permitting Risks:** Inability to secure the appropriate permitting to develop Baavhai Uil could limit the project's upside.
- **Lithium Pricing Exposure:** Given that the project is at a very junior stage, the company will be exposed to broader market sentiment to a degree likely greater than that of late-stage development/ producing lithium companies. When prices are low, upcoming CAPEX and ongoing overheads without any inbound cash flow mean that investors are quick to sell off on junior miners.
- **Access to Capital and Share Dilution:** The company may fail to execute its RTO, resulting in lack of liquidity, inability of investors to participate in stock ownership, and lack of funds to acquire the Baavhai Uul license and carry out exploration efforts.

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7. *A member of Couloir Capital team or a member's household serves as a Director or Officer or Advisory Board Member of the subject issuer.*

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Each company within an analyst's universe, or group of companies covered, is assigned:

1. *A recommendation or rating, usually BUY, HOLD, or SELL;*
2. *A 12-month target price, which represents an analyst's current assessment of a company's potential stock price over the next year; and*
3. *An overall risk rating which represents an analyst's assessment of the company's overall investment risk.*

These ratings are more fully explained below. Before acting on a recommendation, we caution you to confer with your investment advisor to determine the suitability of our recommendation for your specific investment objectives, risk tolerance and investment time horizon.

Couloir Capital's recommendation categories include the following:

Buy
The analyst believes that the security will outperform other companies in their sector on a risk adjusted basis or for the reasons stated in the research report the analyst believes that the security is deserving of a (continued) BUY rating.
Hold
The analyst believes that the security is expected to perform in line with other companies in their sector on a risk adjusted basis or for the reasons stated in the research report the analyst believes that the security is deserving of a (continued) HOLD rating.
Sell
Investors are advised to sell the security or hold alternative securities within the sector. Stocks in this category are expected to under-perform other companies on a risk adjusted basis or for the reasons stated in the research report the analyst believes that the security is deserving of a (continued) SELL rating.
Tender
The analyst is recommending that investors tender to a specific offering for the company's stock.
Research Comment
An analyst comment about an issuer event that does not include a rating.
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Placing a stock Under Review does not revise the current rating or recommendation of the analyst. A stock will be placed Under Review when the relevant company has a significant material event with further information pending or to be announced. An analyst will place a stock Under Review while he/she awaits enough information to re-evaluate the company's financial situation.

The above ratings are determined by the analyst at the time of publication. On occasion, total returns may fall outside of the ranges due to market price movements and/or short-term volatility.

Overall Risk Rating

Very High Risk: *Venture type companies or more established micro, small, mid or large cap companies whose risk profile parameters and/or lack of liquidity warrant such a designation. These companies are only appropriate for investors who have a very high tolerance for risk and volatility and who can incur temporary or permanent loss of a very significant portion of their investment capital.*
High Risk: *Typically, micro or small cap companies which have an above average investment risk relative to more established or mid to large cap companies. These companies will generally not form part of the broad senior stock market indices and often will have less liquidity than more established mid and large cap companies. These companies are only appropriate for investors who have a high tolerance for risk and volatility and who can incur a temporary or permanent loss of a significant portion of their investment capital.*
Medium-High Risk: *Typically, mid to large cap companies that have a medium to high investment risk. These companies will often form part of the broader senior stock market indices or sector specific indices. These companies are only appropriate for investors who have a medium to high tolerance for risk and volatility and who are prepared to accept general stock market risk including the risk of a temporary or permanent loss of some of their investment capital*
Moderate Risk: *Large to very large cap companies with established earnings who have a track record of lower volatility when compared against the broad senior stock market indices. These companies are only appropriate for investors who have a medium tolerance for risk and volatility and who are prepared to accept general stock market risk including the risk of a temporary or permanent loss of some of their investment capital.*