

# Economy of Scale – A Misused Metric in Mining

written by Jack Lifton | January 27, 2023

I was surprised earlier this week to see an article in the Wall Street Journal in which the rule of “economy of scale” was mistakenly used with regard to the output of a mine to predict that the price of lithium would fall as mine output increased. The author did not seem to understand, and his quoted “experts” didn’t seem to care, that mines are not organic, they don’t continuously renew their ore bodies, nor are concentrations of hard rock minerals uniform, so that such mines have limited useful lifetimes. The concentrations of the minerals first sought out for extraction are always the highest in the deposit, so that as the extraction of the ore continues lower and lower grades are encountered until it becomes uneconomical, at the price then realized for the ore, to continue “mining” it. Economic assessments of the value of the mine describe this metric as the “life of the mine.” The enormous cost of setting up a mining and beneficiating (concentrating) operation assumes that it is unlikely that some new and more economical method of beneficiation will be discovered, and be experimented upon and proven effective, during the life of a mine, so that the life of the mine could be extended economically by enabling the economically effective processing of lower grade ores. Mines are designed with “best practices” at the time of the construction. It is not assumed that new technologies will be discovered during the life of the mine that will extend its life.

Yet, on the 23<sup>rd</sup> of January, the following sentence appeared in an article about the future supply and price of lithium: “Increasing production, which typically has the effect of reducing unit costs through economies of scale, will likely be

the primary source of growth in the industry this year.”

Mine production decisions will of course be dependent upon the price of the mineral being mined. Gold mines are typically opened and shut down and then reopened, for example, by the price of gold dropping to less than the cost of extracting it and then bouncing back. Note well that gold is often mined in grades of just a few parts per million, because its value is as much as \$2,000.00/oz or more than \$60/gram.

Lithium, today, is produced from two types of “deposits.” One, is hard rock minerals, the best known of which is spodumene and the largest deposits of which are in Australia. The other is from brines typically found in deserts, which may range in “grade” from the 3000+ grams per ton in the vast brine deposits of Chile to, more typically, 300-1000 grams/ton in the more typical desert brines of Chile, Argentina, and Bolivia.

Most of the lithium produced today comes from spodumene mining in Australia. The golden triangle of South American nations contribute less than 40% from their brines due to the enormous costs and time required to dry and process the brine to recover the lithium.

One may ask why are brines, in particular the vast ones in Chile, which have uniform concentration not dominant in the production of lithium. The answer, always, is cost including the cost of time. The brines must be evaporated in order to bring the lithium concentration to 20,000 parts per million (2 percent), at which concentration they can be processed to selectively recover the lithium. The Wall Street Journal writer would probably ask why not just increase production to lower costs? The answer here is cost, and the cost involved is that of time. It takes 18 months for the brine to be evaporated in the sun (the amounts necessary are simply too vast, one million tons

of water must be evaporated to produce 3,000 tons of lithium in Chile's Atacama Desert, for example, to even consider pumping the brines to fossil fuel heated tanks. Note, by contrast, that the production of one million tons of spodumene can recover 60,000 tons of lithium. But again that is an energy and reagent (sulphuric acid at high pressure and temperature) intensive operation, so it is very costly.

I have been told, privately, by the CEO of a large brine operation that his judgement is that lithium production may double by 2025, but that even holding that level of production, economically, depends entirely on the market price of lithium and the price of energy, so that the very high prices of today, a response to the law of supply and demand caused by the lithium industry's inability to keep up with the surging demand for EV and stationary storage batteries, are, as always, the driver of supply. Should the price of lithium drop as precipitously as it has risen, or if the cost of energy rises too much, that part of the lithium supply dependent on high prices will close (at least in the capitalist "free market" economies).

Economy of scale does not apply here. It is an inapplicable metric in mining. Miners always want the prices of minerals to rise, not decline!

---

**The 'closeology' textbook  
suggests we all enjoy a**

# Lithium Ionic read

written by InvestorNews | January 27, 2023

Because the world isn't already confusing enough, I thought I'd share my latest trip down the rabbit hole. Today I'm writing about a lithium explorer, so one of the things I thought I'd review was the underlying commodity price. I knew it had surged to record levels recently but was taking a bit of a breather, I wanted to know if the price had come off a little or a lot. The first number I got when I googled the price of lithium was US\$0.0007898. That seemed like a weird number so I figured I'd better see what measurement that was based on. Maybe some exchange started tracking lithium in milligrams or something. Nope, some marketing genius decided to hop on the rocketing global demand for lithium by creating a crypto coin called [lithium](#) that is part of the decentralized NFT valuation protocol. Do not be concerned, the actual commodity is still trading near all-time record highs which should be exceedingly profitable for any producer that can get it to market.

Now that we've cleared that up, let's move on to a textbook "closeology" example in the lithium world. I find closeology, or proximity to an existing discovery, is often an encouraging starting point. If for no other reason than you can potentially get a decent trade out of it. A great example was the Newfoundland gold rush of 2021 that was sparked by New Found Gold Corp.'s (TSXV: NFG | NYSE-A: NFGC) incredible drill results that lead to a pretty good rally in virtually every gold explorer that declared they had mining claims in Newfoundland. Unfortunately, since then, gold stocks have been abandoned (until the last week or two), and if you didn't start matching New Found Gold's results it turned into a double whammy. However, today's example won't be for lack of trying as the company has a well-stocked treasury and 5 drills turning,

looking for one of the hottest commodities on the planet right now.

That company is [Lithium Ionic Corp.](#) (TSXV: LTH | OTCQB: LTHCF), a Canadian-based lithium-focused mining company with properties covering ~2,000 hectares located in the prolific Aracuai lithium province in Minas Gerais State, Brazil, which boasts excellent infrastructure, including highways, access to hydroelectrical grid power, water, and nearby commercial ports. They have a vision to develop a commercial grade lithium operation economically and responsibly. To do that they have assembled an experienced team with a track record in lithium mining, geology, and capital markets that is ideally suited to execute on a disciplined development plan.

Lithium Ionic is actively drilling two prospects, its Galvani claims, as well as Bandeira (formerly Area 1) of its [Itinga claims](#). When it comes to close, I'll let the following picture do the talking.





Source: Lithium Ionic [Corporate Presentation](#)

Bandeira is located south of the operating CBL Lithium Mine and directly north of SIGMA Lithium Corporation's (NASDAQ: SGML | TSXV: SGML) Barreiro project. The Galvani property is located less than 4 kilometres from Sigma Lithium's Xuxa deposit. Another picture will give you an example of the Araçuaí Pegmatite District (APD), where more than a hundred pegmatitic occurrences are known and holds the biggest lithium reserves of Brazil.

## PROLIFIC LITHIUM DISTRICT



### CBL MINE (Producer)

Private company, producing lithium since 1993  
Produces both Li-carbonate and Li-hydroxide in its chemical plant in Divisa Alegre (MG)  
36,000 tpy of SPO concentrate @ 5.5%; Spodumene Reserves of +1.3Mt  
33.3% owned by Brazilian private equity firm, Ore Investment



### ITINGA PROJECT, Bandeira + Areas 2-5 (Exploration)

100% interest in +1,300 hectares  
30,000m drilling program underway (focus on Bandeira)

### GALVANI CLAIMS

Claims acquired in Sept. 2022; drill program underway  
Highlights: 1.98% Li2O/25.63m, 1.94% Li2O/20m; 1.71% Li2O/22m; 2.22% Li2O/12.5m



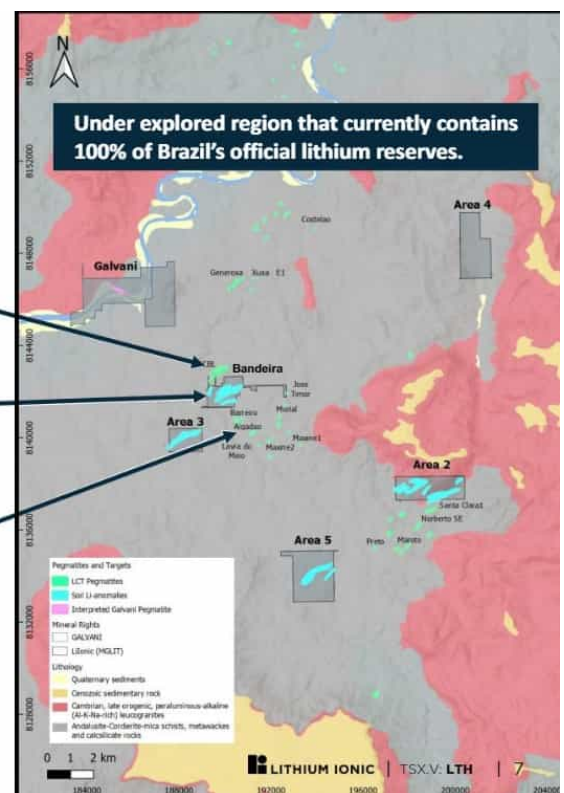
### GROTA DO CIRILO PROJECT (Under Construction)

The largest hard rock lithium deposit in the Americas  
Project under construction; production slated in late 2022  
NI 43-101 resource estimate of 52Mt  
Phased development: initially 33,000 tpy LCE as SPO concentrate; eventually expected to produce 531,000 tpy LCE from 2 deposits



### SALINAS PROJECTS (Exploration)

Bananal Valley: 1,250 ha; Salinas South: 4,088 ha  
Drilling initiated in early 2022  
(~60kms North of Galvani)



Source: Lithium Ionic [Corporate Presentation](#)

The reason I'm fixating on closeology is actually more to do with Sigma Lithium than CBL. The reason being, Sigma now hosts the largest hard rock lithium deposit in the Americas, with proven and probable mineral reserves of 54.8 Mt of lithium spodumene at 1.44% lithium oxide. And they've done this very quickly, going from less than US\$1.50/share in June, 2020 to over US\$35/share currently. That's a market cap of US\$3.5

billion. It's not hard to imagine that if Lithium Ionic can start putting up some significant resource numbers that the market will take notice. Especially those who may have missed out on the tremendous run that Sigma has had.

The question becomes, how can Lithium Ionic get there from here. The Company has roughly C\$35 million in working capital, is in the midst of a 30,000 meter drill program with 5 drills operating along with additional regional exploration work ongoing. They expect to produce an inaugural mineral resource estimate in Q1 2023 with drilling updates coming out every 6-8 weeks. And thus far those updates have been solid with the results [announced in early November](#) that included 1.98% Li2O over 25.63 meters representing the strongest grades in the Galvani area encountered since the Company began drilling earlier this year. In the same press release, Lithium Ionic reported values of 1.99% Li2O over 6.75m, 1.56% Li2O over 3.90m and 1.44% Li2O over 8.33m all located within 50 meters from surface at its Bandeira project.

You can see the potential is there, although Lithium Ionic is not exactly a hidden gem with a current market cap of roughly C\$216 million. However, what I find interesting is that the Company [raised C\\$25 million](#) in October of this year at C\$1.60/share and the stock has traded above that level since the start of November. Additionally, they didn't have to add warrants to this issue to push it out the door, which tends to be a very positive sign of strong support for the stock. Sigma has shown that the sky's the limit, but you'll need a lot more than closeology to get there.

---

# ACME Lithium targets the fuel of the new, green economy – lithium

written by InvestorNews | January 27, 2023

In today's volatile market, one commodity is performing quite well, the fuel of the new, green economy – lithium. Lithium appears to have the greatest leverage for hard rock mining investors right now, likely due to current sentiment, as well as, its long term supply/demand picture. [SIGMA Lithium Corporation](#) (NASDAQ: SGML | TSXV: SGML) is the poster child for lithium explorers having gone from a market cap of next to nothing to roughly US\$4 billion in a little over two years. Lithium prices are high enough now that a small amount of drilling can create a valuable resource fairly quickly. Tack on [security of supply issues](#) and President Biden's [Inflation Reduction Act](#) and one needs to start looking even closer to home than the current sources of the majority of lithium resources like the Salar's of Chile, Argentina and Bolivia (the Lithium Triangle) or Brazil (home of SIGMA's deposit). Even Australia's large hard rock reserves aren't exactly convenient for the burgeoning North American EV market.

It's time to find a legitimate, home grown solution if there is any hope of economically meeting the growth projections for lithium demand. Fortunately, there is no shortage of North American explorers out there trying to fill this need and perhaps [ACME Lithium Inc.](#) (CSE: ACME | OTCQX: ACLHF) could fit the bill. Led by an experienced team, ACME Lithium is a mineral exploration company focused on acquiring, exploring, and developing battery metal projects in partnership with leading technology and commodity companies. The Company has multiple



North American projects in areas known for lithium development and exploration. Two are found in a highly prospective region for lithium production in [Clayton Valley](#) and [Fish Lake Valley](#), Esmeralda County, Nevada, USA, and another three are in the pegmatite fields of the Bird River Greenstone Belt in southeastern Manitoba, Canada.

Today we'll have a quick look at the two most advanced projects for ACME – Clayton Valley and Fish Lake Valley. The Clayton Valley project claims are located directly north of the only lithium brine production operation in North America, Albemarle Corporation's (NYSE: ALB) Silver Peak Lithium mine, which has been in production since 1966. Clayton Valley has the potential to host lithium brines similar to Silver Peak, where samples analyzed up to 228 ppm lithium and concentrations up to +1,000 ppm have been found to occur within specific horizons of fine sediments. In June 2022, ACME commenced its Phase 1 Drill Program in Clayton Valley where the first drill hole (DH-1) was completed at 1,400 feet depth below ground surface to assess lithology, permeability features, clay, sand and gravel content, and lithium brine potential. Results [announced August 17<sup>th</sup>](#) reported lithium was detected from all brine samples at concentrations ranging between 38 and 130 mg/L with the highest concentrations from samples collected in the deep gravels at 1,350 feet and at 1,400 feet. The results strongly indicate the existence of a bicarbonate rich groundwater quality affinity which is typical in the Clayton Valley lithium brine aquifers.

The Company's Fish Lake Valley (FLV) Project is located about four miles west-northwest of Australia-based Pioneer Ltd.'s Rhyolite Ridge Project where a 2020 resource of 146.5 million metric tons at 1,600 ppm lithium and 14,200 ppm boron was reported. On October 11<sup>th</sup> [ACME announced](#) it had mobilized a crew and equipment for a geophysical profile across a newly

recognized conceptual target for mineralized tuff at the property. Field work is expected to be complete in two weeks, with data collected to test the graben concept and to be used to locate drilling test holes. The FLV geology and geomorphology are interpreted as a possible gravel covered graben while scattered outcrop samples assaying up to 600 ppm lithium and 1,270 ppm boron suggesting a mineral system is present.

It's still early days for ACME Lithium but they are well funded to pursue their lithium dreams with approximately C\$12 million in working capital which includes strategic investor Lithium Royalty Corporation and Waratah Capital Advisors Ltd. After all, we've seen what SIGMA was able to convert approximately US\$19 million in exploration expenditures into.

***Disclaimer:** The editor of this post may or may not be a securities holder of any of the companies mentioned in this column. None of the companies discussed in the above feature have paid for this content. The writer of this article/post/column/opinion is not an investment advisor, and is neither licensed to nor is making any buy or sell recommendations. For more information about this or any other company, please review all public documents to conduct your own due diligence. To access the InvestorIntel.com Disclaimer, [click here](#)*

---

## **Can Standard Lithium's DLE**

# technology be the miracle that helps solve the forecast lithium deficits ahead?

written by Tracy Weslosky | January 27, 2023

The widely forecast [lithium deficits](#) this decade and next will need a miracle to solve the problem. Enter 'Direct Lithium Extraction' or DLE for short.

DLE is a promising new set of technologies designed to extract lithium from projects that are considered unconventional or have lower lithium concentrations. There are several types of DLE such as lithium bonding (adsorption), ion exchange, and solvent extraction.

Today we look at the latest progress of arguably USA's leading DLE company, Standard Lithium Ltd.

[Standard Lithium Ltd.](#) (TSXV: SLI | NYSE American: SLI) is a lithium development company using Direct Lithium Extraction ("DLE") at their projects in the USA. The lithium extraction projects are:

- Southern Arkansas Projects (flagship) – LANXESS JV Project and the SOUTH-WEST ARKANSAS Project.
- Mojave Project – Located at the Bristol Dry Lake in the Mojave Dessert, California.

Standard Lithium uses their propriety 'LiSTR' DLE process and typically partners with existing projects where they already have a brine product, such as at the LANXESS Project (where Lanxess already produces bromine from brine, but not lithium). Standard Lithium simply 'bolts' on their DLE technology to extract the lithium and achieve a high purity lithium chloride

solution that can then be converted into battery grade lithium carbonate or hydroxide.

Standard Lithium [state](#) that they have the “most advanced direct lithium extraction technology – industrial scale pre-commercial demonstration plant in installed at the project. Over 5,000 hours of operation.”

**Standard Lithium ‘LiSTR’ DLE technology can be used to bolt onto existing bromine or brine operations to extract the unused lithium**



Source: [Standard Lithium company presentation](#)

As [announced](#) on September 7, 2022 Standard Lithium is now proceeding with a Front End Engineering Design (“FEED”) Study and a Definitive Feasibility Study (“DFS”) for the first commercial plant, at their LANXESS Project. This progress by Standard Lithium is as a result of their successful demonstration plant validating their technology.

Standard Lithium [states](#):

*“This project contemplates processing the brine that is currently being handled by Lanxess at its South Facility, where the Company’s continuously operating pre-commercial Direct Lithium Extraction (DLE) Demonstration Plant is located. The existing brine flow at this location is approximately 3,000 US gallons per minute (usgpm), and using the design criteria of 90% lithium recovery during the DLE process, results in expected annual production of between 5,000 to 6,000 tonnes per annum (TPA) of battery quality lithium carbonate. This first project at Lanxess South, designated as Phase 1A, forms part of a staged development of commercial lithium projects contemplated by Standard Lithium:*

- *Phase 1A Existing brine flow at Lanxess South Plant (design 5-6,000 TPA lithium carbonate);*
- *Phase 1B Expansion at Lanxess South Plant (expected approximately 5,000 TPA);*
- *Phase 2 Lanxess West Plant.....,*
- *Phase 3 Lanxess Central Plant.....“*

Added to this Standard Lithium plan to develop their stand alone South West Arkansas Project (~30,000tpa lithium hydroxide) and others.

The results of the FEED study will be summarized in a NI 43-101 DFS report in H1 2023.

**Elon Musk says the lithium refining business (what Standard Lithium is working towards) is a license to print money**

In July 2022, at Tesla's Q2 Earnings Call (transcript [here](#)), Elon Musk made his famous comment regarding lithium refiners/processors making great money. He explicitly [stated](#):

*“I would like to once again urge entrepreneurs to enter the lithium refining business. The mining is relatively easy. The refining is much harder.....So, it is basically like minting money right now. There is like software margins in lithium processing right now. So, I would really like to encourage, once again, entrepreneurs to enter the lithium refining business. You can't lose. It's licensed to print money.”*



[Source](#): Yahoo Finance

All of this is great news for Standard Lithium investors and good news for the auto manufacturers desperate to get future lithium supply.

Of course all of the above takes time and does not solve today's lithium deficit; however, it could be the miracle we need to help solve the increasingly large lithium deficits forecast post-2025.

Standard Lithium trades on a market cap of [US\\$622M](#).

**Disclaimer:** *The editor of this post may or may not be a securities holder of any of the companies mentioned in this column. None of the companies discussed in the above feature have paid for this content. The writer of this article/post/column/opinion is not an investment advisor, and is neither licensed to nor is making any buy or sell recommendations. For more information about this or any other company, please review all public documents to conduct your own due diligence. To access the InvestorIntel.com Disclaimer, [click here](#)*

---

## Will Sokoman Minerals be Eric Sprott's next Newfoundland gold success story?

written by InvestorNews | January 27, 2023

Every once in a while I find myself scanning through a company's website or press releases and then I have to pause for a moment and go back and re-read something. Instead of the usual content you expect to see, something jumps off the page and you have to make sure you read it correctly and that your eyes weren't playing tricks on you. Today's junior mining stock had me doing



this a couple of times for several different reasons. The company is unusual (in a good way) and not simply because Eric Sprott beneficially owns 25% of the outstanding shares (even more if warrants are exercised). It also had nothing to do with its location, Newfoundland & Labrador, although that's why I was looking at it in the first place as I just happen to enjoy reading and writing about this special part of Canada.

The first thing that jumped off the page for me was "Approximately 48,000 metres remain to be completed in the current 100,000 m drill program". For a junior miner anywhere, that is a giant volume of drilling, which also means there has to be plenty of cash around as well. How about a treasure stocked with C\$13 million? Seems like enough to undertake such an enormous exploration program and as the Company states "sufficient funds to undertake all the exploration activities planned for 2022". The last thing that stood out was the number of projects being actively explored – 5. Most junior mining companies don't have more than 2 or 3 properties to pursue, often only 1, and even more rare is the resources to be working on all these projects over the next 3-6 months.

Needless to say, I was hooked. I had to find out more about [Sokoman Minerals Corp.](#) (TSXV: SIC | OTCQB: SICNF), and let me tell, there is a lot more to learn. The Company's primary focus is its portfolio of gold projects; flagship [Moosehead Gold Project](#), [Crippleback Lake](#) (optioned to Trans Canada Gold Corp.) and [East Alder](#) (optioned to Canterra Minerals Corporation) along the Central Newfoundland Gold Belt, and the district-scale [Fleur de Lys project](#) in north-central Newfoundland. The Company also recently entered into a strategic alliance with [Benton Resources Inc.](#) (TSXV: BEX) through three, large-scale, joint-venture properties including [Grey River](#), [Golden Hope](#) and [Kepenkeck](#) in Newfoundland. Sokoman controls, independently and through the Benton alliance, over 150,000 hectares (>6,000 claims – 1500 sq.

km), making it one of the largest landholders in Newfoundland, in Canada's newest and rapidly-emerging gold districts. The Company also retains an interest in an early-stage antimony/gold project ([Startrek](#)) in Newfoundland, optioned to White Metal Resources Inc., and in Labrador, the Company has a 100% interest in the [Iron Horse \(Fe\) project](#) which has Direct Shipping Ore (DSO) potential.

I'm still trying to figure out what metal or minerals Newfoundland & Labrador doesn't have as it seems the region has an abundance of everything. Along those lines, the Golden Hope JV with Benton made the [first high-grade lithium discovery](#) in Newfoundland in September, 2021. The [first assay results](#) from the drilling program that tested the Kraken pegmatite field returned an average of 0.95%  $\text{Li}_2\text{O}$  over 8.40 m with grades as high as 1.76%  $\text{Li}_2\text{O}$ . Not bad when you are looking for gold. The Alliance has proposed a C\$3 million budget for a summer drill program testing as many of the known pegmatite dykes as possible, with up to 30-40 holes planned. Camp setup and drill mobilization are expected in mid-June.

But as interesting as this is, for today I think will focus on where the bulk of the drilling is being done, and that's the Moosehead Gold Project where visible gold has been intersected in drilling over a 2 km strike length. From 2018-2021 Sokoman completed ~73,000 m of drilling with ~360 holes, leading to the discovery of 4 significant zones, all of which remain open. Highlights from these zones rival some of the findings from their neighbors to the east, New Found Gold Corp. (TSXV: NFG | AMEX: NFGC) another Eric Sprott backed gold miner in Newfoundland:

Western Trend • MH-18-08 • 1.05 m @ 207.5g/t Au from 8.5 m; and 2.28 m @ 42.36 g/t Au from 33.1 m

Eastern Trend • MH-18-01 • 11.9 m @ 44.96g/t Au, including 5.65 m @ 93.56 g/t Au from 115.2 m

75 Zone • MH-21-23 • 44.8 m @ 17.56g/t Au, including 2.75 m @ 30.59g/t Au from 44.75 m

South Pond • MH-20-12 • 35.0 m of 26.87 g/t Au, including 2.15 m @ 60.59 g/t Au from 47.0 m

Heading into 2022 is where things get really exciting. [Results last week](#), some of the first holes from the 100,000 m 2022 program, expanded the 75 Zone and essentially linked it with the main Eastern Trend/Footwall Splay mineralization (see picture below). In addition, MH-22-418, completed last week (assays pending) intersected the deepest occurrence of visible gold to date on the property at a downhole depth of 352 m.



Source: Sokoman Minerals [May 19, 2022 Press Release](#)

It would appear there will be a steady stream of drilling results coming from Sokoman Minerals over the following weeks and months, not only from Moosehead, but Golden Hope and Grey River with JV partner Benton Resources Inc. There is a lot going on at this well funded, junior gold (and now lithium) explorer. With a market cap of C\$66 million it's not hard to imagine plenty of upside when one of your comparables is New Found Gold at a market cap of C\$1.2 billion.

---

# With lithium demand skyrocketing here are 5 early-stage lithium junior miners to watch

written by InvestorNews | January 27, 2023

With lithium demand projected to increase [10-11](#) fold this decade, there is a huge opportunity for successful lithium junior miners to prosper. Last year Rio Tinto was [quoted as saying](#) that “filling the supply gap will require over 60 Jadar projects”.

Then just last month Tesla CEO Elon Musk said (Tesla Q1 2022 earnings call [transcript](#)): “...can more people please get into the lithium business? Do you like minting money? Well, the lithium business is for you...” Musk also [said on Twitter](#): “Price of lithium has gone to insane levels! Tesla might actually have to get into the mining & refining directly at scale unless costs improve.”

Of course, industry experts have been warning of EV metals supply deficits for some years, but it appears these warnings mostly fell on deaf ears. With this background in mind, today we take a look at some early-stage lithium junior companies with the potential to help fill the lithium supply gap in the second half of this decade.

**China lithium carbonate spot prices – up about 6x over the past year due to lithium shortages**



Source: [Trading Economics](#)

## 5 early-stage lithium junior miners to watch out for in 2022 (in no particular order)

1. Essential Metals Limited (ASX: ESS)
2. Green Technology Metals Limited (ASX: GT1)
3. Metals Australia Ltd. (ASX: MLS)
4. Lithium South Development Corporation (TSXV: LIS | OTCQB: LISMF)
5. Winsome Resources Limited (ASX: WR1)

### Essential Metals Limited (ASX: ESS)

Essential Metals is an Australian exploration company with 9 projects (lithium, gold, gold JV, and nickel JV) all in Western Australia (WA). Three of the projects are 100% owned and 6 are JV's with other companies, with ESS retaining a 20-30% interest (see below).

Essential Metal's flagship project is their 100% owned [Pioneer Dome Lithium Project](#) in WA. The Project is located in a known lithium corridor and the gold-rich Eastern Goldfields region of WA, which contains the Mt Marion, Bald Hill and Buldania lithium mines/projects. The Project has a reasonable sized JORC compliant [Total Resource of 11.2Mt at 1.21% Li2O](#), still with exploration upside. The Resource starts from or near surface. Drill assay results from the recent campaign are due out by the [end of May 2022](#).

Essential Metals also has two other 100% owned gold projects in WA, namely the [Golden Ridge Project](#) (100% owned), 20kms from the Kalgoorlie super pit and the [Juglah Dome Project](#), 60km east-southeast of Kalgoorlie. In addition, the Company has numerous JV projects including [Acra Gold Project JV](#) (25% interest), [Kangan Gold Project JV](#) (30%), [Balagundi Gold Project Farmin/JV](#)

(25%), [Larkinville Gold Project Farmin/JV](#) (25% gold interest) (hosts a JORC Resource of 19,700 t @ 3.02 g/t for 11,600 oz. Au), [Blair-Golden Ridge Nickel Farmin/JV](#) (25% nickel interest) and [Wattle Dam Nickel Joint Venture](#) (20% nickel interest).

Essential Metals trades on a market cap of [A\\$162 million](#).

**Essential Metals summary showing the Pioneer Dome Lithium Project location near other successful lithium mines and projects in WA**



Source: [Essential Metals company presentation](#)

**[Green Technology Metals Limited](#) (ASX: GT1)**

Green Technology Metals (GT1) has multiple lithium projects (options to acquire, some at 80% interest others at 100% interest) spread over [39,982](#) hectares in Ontario, Canada. GT1's most advanced project is the Seymour Lithium Project with a JORC Total Mineral Resource of [4.8Mt @ 1.25%](#). Within the Seymour Project, drill results include an impressive [40m @ 1.54% Li2O](#). When combining all GT1's Ontario Lithium Projects the target resource is 50-60 MT @ 0.8-1.5% Li2O.

An updated resource estimate is targeted for Q2, 2022. Management is top tier and highly experienced.

Green Technology Metals trades on a market cap of [A\\$212 million](#).

**GT1's portfolio of multiple lithium projects in Ontario Canada**



Source: [GT1 website](#)

**[Metals Australia Ltd.](#) (ASX: MLS)**



Metals Australia is an Australian junior miner with several projects. Their most advanced project is the [Lac Rainy Nord Graphite Project](#) in Quebec, Canada with an Indicated and Inferred Resource of [13.3Mt at 11.5% TGC for 1.529M tonnes of contained graphite](#).

With regards to lithium, Metals Australia 100% owns the promising Manindi Lithium and Zinc Project in WA. The Project has several lithium-cesium-tantalum (LCT) pegmatites spread over a total [3km strike length](#). Individual pegmatites have strike lengths of over 300m and widths of up to 25-30m. Past drilling includes intersections of [15m @ 1.2% Li<sub>2</sub>O, 117 Ta<sub>2</sub>O<sub>5</sub> from 34m](#). Drilling is ongoing notably at the Foundation pegmatite where consistently high grade lithium grab samples ([1% Li<sub>2</sub>O and >0.4% Rb](#)) have been detected over the entire 500m strike length. Assay results are expected shortly. Manindi also has an existing JORC 2012 Resource estimate of [1.08Mt at 6.52% Zn, 0.26% Cu and 3.19g/t Ag](#).

Metals Australia trades on a market cap of [A\\$54 million](#).

[Lithium South Development Corporation](#) (TSXV: LIS | OTCQB: LISMF)

Lithium South Development Corporation (Lithium South) is already quite advanced at their 100% owned Hombre Muerto North Lithium Brine Project in Argentina. The Project lies near several billion-dollar projects such as Livent's lithium mine, Allkem's Sal de Vida project, and POSCO's quite new project purchased for US\$280 million. Hombre Muerto is the premiere salar in Argentina, known for very high grade lithium and very low impurities.

The Hombre Muerto North Project has an [M&I Resource of 571,000t contained LCE](#), with an excellent grade of 756mg/L, and a very low Mg/Li ratio of 2.6:1. [Drilling is about to begin](#) at their Alba Sabrina claim with results to follow most likely later in

Q2, 2022. The Resource has potential to grow significantly from here.

Lithium South trades on a market cap of only [C\\$68 million](#).

### [Winsome Resources Limited](#) (ASX: WR1)

Winsome Resources is a lithium explorer focused on their 4, 100% owned, projects spread over [50,000 Ha](#) in Quebec, Canada. The Projects are Cancet, Adina, Sirmac-Clappier, and Decelles (option to acquire 100%).

The flagship Cancet Lithium Project has had outstanding previous drilling success and boasts a JORC [Exploration Target of 15-25Mt @ 1-2% Li2O + 100-250ppm Ta2O5](#). The past drilling includes 59 holes for 5,216m averaging ~70m drill depth defining a shallow high-grade lithium deposit. Drilling will continue in 2022 with a substantial maiden Resource estimated expected later this year.

Winsome Resources trades on a market cap of [A\\$66 million](#).

### **Summary of Winsome Resources 4 lithium projects in Quebec, Canada**



Source: [Winsome Resources company presentation](#)

### **Closing remarks**

Investing in early-stage lithium juniors carries higher risk and reward.

Of the 5 companies discussed in this article three (Essential Metals, Green Technology Metals, Lithium South Development Corp.) already have a lithium resource, one (Winsome Resources) has defined a lithium deposit with a resource estimate due later

in 2022, and the other (Metals Australia) has a graphite and a zinc-copper-silver resource with an exciting lithium project with drill results out soon.

I could also include [Avalon Advanced Materials Inc.](#) (TSX: AVL | OTCQB: AVLNF) in this group, but I already wrote on them recently [here](#), discussing their lithium projects, lithium resource, and plans for a JV lithium refinery in Thunder Bay which were given a huge boost recently as you can read [here](#).

Finally to answer Elon's question: "Can more people please get into the lithium business?" The problem is it takes at least 5-10 years to build a lithium mine from scratch. I will finish with two key quotes last month from lithium market experts:

- Benchmark Mineral Intelligence [was quoted stating](#): *"Battery capacity is currently growing at twice the speed of lithium raw material supply."*
- Mr. Lithium, Joe Lowry [was quoted stating](#): *"I believe there will be a day in the future when lithium is in oversupply, but it won't be in this decade....You can build a battery factory in two years, but it takes up to a decade to bring on a lithium project."*

*Disclosure: The author is long ALL the lithium companies mentioned in this article and intends to hold long term.*