

Technology Metals Report (03.15.2024): U.S. Makes a \$2.6B Lithium Loan while Australia Invests \$840M into Rare Earths

written by Tracy Weslosky | March 15, 2024

Welcome to the latest issue of the Technology Metals Report (TMR), brought to you by the [Critical Minerals Institute](#) (CMI). In this edition, we compile the most impactful stories shared by our CMI Directors over the past week, reflecting the dynamic and evolving nature of the critical minerals and technology metals industry. Among the key stories featured in this report are the Biden administration's massive \$2.26 billion loan to Lithium Americas Corp. for the Thacker Pass mine in Nevada, aiming to boost domestic lithium production for electric vehicles; the Australian government's significant A\$840 million investment in Arafura Rare Earths Limited to secure a sovereign supply of rare earth elements; and the Canadian federal government's investment in Saskatoon's Saskatchewan Research Council to enhance its Rare Earth Processing Facility. These developments underscore a global effort to secure critical mineral supplies, reduce dependence on foreign sources, and advance the transition towards cleaner energy and technology.

This week's TMR Report also highlights several other important developments in the critical minerals sector. Notable stories include the criticism from the Canadian Automobile Dealers Association regarding Quebec's decision to phase out electric vehicle purchase incentives, adjustments in electric vehicle

strategies by major automakers amid shifting market dynamics, and the UK's trade pact with Texas aimed at boosting the green industry. Additionally, the report covers POSCO International's significant deals to supply rare earth permanent magnets to North American and European automakers, signs of recovery in the global lithium market after a massive downturn, geopolitical competition for the Democratic Republic of the Congo's mineral wealth, Greece's emergence as a significant source of critical minerals, the U.S. Department of Defense's initiative to establish a "mine-to-magnet" supply chain, challenges and opportunities in Canada's mining industry, and the call by global miners for the London Metal Exchange to introduce a green premium for nickel. These stories provide a comprehensive overview of the current state and future prospects of the critical minerals and technology metals industry, reflecting its importance to technological advancement, national security, and the global transition to green energy. To become a CMI member, click here (<https://criticalmineralsinstitute.com/join>)

Biden Jump-Starts Electric-Vehicle Push With Massive Lithium Loan (March 14, 2024, [Source](#)) – The Biden administration is energizing the U.S. electric vehicle (EV) sector with a \$2.26 billion loan to [Lithium Americas Corp.](#) (TSX: LAC | NYSE: LAC) for its Thacker Pass mine in Nevada, aiming to fortify domestic lithium production for EV batteries. This investment, part of a broader initiative to secure half of new vehicle sales as EVs by 2030, will fund a refining plant critical for producing battery-grade lithium. Despite a recent slowdown in EV sales and a plunge in lithium prices, the project seeks to reduce U.S. dependence on foreign battery minerals, notably from China. Expected to start in 2027, the Thacker Pass mine will significantly contribute to the domestic EV industry, promising to supply lithium for up to 800,000 EVs annually. This move aligns with efforts to transition towards cleaner energy and

reduce reliance on international sources.

The Australian Government Steps into the Critical Minerals Supply Chain Ring (March 14, 2024, [Source](#)) – The Australian government's backing of Arafura Rare Earths Limited (ASX: ARU) with A\$840 million underscores a strategic push to lessen reliance on Chinese critical mineral sources, aiming to secure a sovereign supply of rare earth elements vital for electric vehicles and renewable technologies. This investment signals Australia's intent to lead in the global rare earth market, enhancing private sector confidence as evidenced by rising values in related investments, including those by Gina Rinehart's Hancock Prospecting. The move highlights Australia's ambition to not only overcome immediate financial challenges in the mining sector but also to establish itself as a crucial player in renewable energy technology, fostering global supply chain resilience and advancing the green energy transition.

Ottawa invests \$6M in Saskatoon rare earth processing facility (March 14, 2024, [Source](#)) – The Canadian federal government is investing \$6 million in Saskatoon's Saskatchewan Research Council to boost its Rare Earth Processing Facility, marking a significant step in processing critical minerals for high-tech uses like electric vehicle batteries and wind turbines. This funding will commercialize a process for extracting rare earth oxides from waste and develop an automated smelting process for commercial-quality metals, aiming to enhance sustainable and efficient production. The investment reflects a collaboration between federal and provincial governments, highlighting the national importance of establishing a domestic rare earth supply chain. It promises economic growth and job creation, positioning Saskatoon as a key player in meeting global demand for critical minerals and supporting the transition towards a greener economy.

A Step Backwards for Quebec's Automotive Electric Transition (March 13, 2024, [Source](#)) – The Canadian Automobile Dealers Association (CADA) criticizes the Quebec government's 2024 Budget decision to phase out electric vehicle (EV) purchase incentives amid an affordability crisis. This move is seen as detrimental to Quebec's leading position in EV adoption, fueled by an effective incentive program. CADA refutes the government's claim of a narrowing price gap between EVs and traditional vehicles, highlighting that price parity is not expected until 2033. The association warns that removing incentives could slow EV adoption, contrasting with the successful examples of Quebec and British Columbia, which offer substantial financial incentives. CADA urges the government to reconsider, emphasizing the importance of incentives in achieving environmental goals and maintaining affordability for Quebecers.

EV euphoria is dead. Automakers are scaling back or delaying their electric vehicle plans (March 13, 2024, [Source](#)) – Automakers are adjusting their electric vehicle (EV) strategies amid fading EV euphoria, scaling back or delaying plans despite initial optimism. Industry giants like Ford, General Motors, Mercedes-Benz, Volkswagen, Jaguar Land Rover, and Aston Martin are shifting towards a more balanced vehicle offering, incorporating gas-powered, hybrid, and electric vehicles. This approach reflects a slower transition to an all-electric future, diverging from previous ambitious EV growth targets. Despite a reduction in growth expectations, the demand for EVs continues to rise, albeit at a slower pace, with sales still predicted to increase significantly. The industry acknowledges the necessity of hybrid models to bridge the transition to electrification and meet emission standards. This recalibration underscores the automotive sector's response to less-than-expected consumer uptake of EVs and the reality of current market conditions, suggesting a more gradual shift towards electrification.

UK Signs Trade Pact With Texas in Effort to Boost Green Industry (March 12, 2024, [Source](#)) – The UK has signed a trade pact with Texas to enhance cooperation in green energy, aerospace, and advanced technologies, marking the eighth non-binding memorandum of understanding (MoU) with a US state since Brexit. This agreement aims to boost the collective GDP of these states to \$6.8 trillion, a quarter of the US economy. It includes mutual recognition of engineering qualifications to facilitate talent exchange for infrastructure projects. The pact also focuses on making business easier in sectors like hydrogen and carbon capture. Despite not being the comprehensive Free Trade Agreement that Brexit supporters hoped for, this deal reflects the UK's strategy of forming state-level agreements in the US. Texas, the UK's ninth largest trade partner, exchanged £14.7 billion in goods with the UK in 2023. However, some critics argue these MoUs do little to reduce tariffs and aren't sufficiently promoted.

POSCO International signs deal for permanent magnet supply with US, European automakers (March 12, 2024, [Source](#)) – POSCO International has inked deals worth 1.16 trillion won (\$885 million) to supply rare earth permanent magnets, essential for electric vehicle (EV) motors, to North American and European automakers. These contracts aim to diversify the supply chain away from China, utilizing materials from the US, Australia, and Vietnam. The company's U.S. subsidiary will supply a North American carmaker with magnets worth 900 billion won from 2026 to 2031, while its German subsidiary will provide a European brand with magnets valued at 260 billion won from 2025 to 2034. Star Group, Korea's exclusive rare earth magnet producer, will handle production. This marks a strategic entry into markets dominated by China, reflecting POSCO's efforts to expand its global footprint and secure additional orders with car and motor manufacturers.

After Massive Bust, Global Lithium Market Shows Signs of Life (March 12, 2024, [Source](#)) – The global lithium market, vital for electric vehicle batteries, is witnessing a cautious revival after a drastic downturn. Prices for lithium carbonate in China have surged to a post-December high following an over 80% fall in 2023, with futures contracts also seeing significant gains. This rebound is amidst a global supply glut that previously tanked prices. Leading producers remain hopeful, with giants like Albemarle Corporation (NYSE: ALB) and Sociedad Química y Minera de Chile S.A. (“SQM”) (NYSE: SQM) continuing expansions despite the market’s volatility. Efforts to rebalance include production cutbacks by some firms. However, analysts warn that the recovery could be fragile, with environmental regulations in China and a persistent supply surplus posing challenges to a sustained rally. Skepticism remains regarding the end of the bear market amidst these tentative gains.

The (Bidding?) War For the DRC (March 12, 2024, [Source](#)) – The Democratic Republic of the Congo (DRC) is a focal point for global powers due to its rich deposits of critical minerals essential for modern technologies and green economies. China, Saudi Arabia, the United Arab Emirates, and Russia are the main players, each with distinct strategies and impacts. China has a controversial history in DRC’s mining sector, while Saudi Arabia’s investment approach fosters a positive development model. The UAE’s agreement aims to enhance artisanal mining, and Russia’s involvement hints at a Cold War-style influence game. In contrast, US and European engagement in securing these vital resources has been relatively minimal. These dynamics underscore the geopolitical competition over the DRC’s mineral wealth, pivotal for technological advancement and climate change mitigation.

Critically important metals are found (March 11, 2024, [Source](#)) – Greece is emerging as a significant potential source of critical

minerals essential for the clean energy transition, attracting investor interest. The Ministry of Environment and Energy, bolstered by Rockfire Resources PLC's positive findings in Molaoi, southern Greece, indicates substantial deposits of germanium, gallium, lead, silver, and zinc. Germanium's uses span fiber-optics to solar panels, while gallium, extractable from Greece's abundant bauxite, is vital for electronics. The EU has noted Mytilineos' pilot project for gallium extraction from bauxite, potentially satisfying European demand. Additionally, Mytilineos explores scandium production, beneficial in aerospace and electric vehicles, forecasting a significant demand increase. Rockfire Resources plans further exploration and a viability study post-summer. Greece's untapped resources, including antimonite in Chios and bismuth near Xanthi, underscore its strategic position in supporting Europe's energy transition and reducing reliance on imports, especially from China.

DOD Looks to Establish 'Mine-to-Magnet' Supply Chain for Rare Earth Materials (March 11, 2024, [Source](#)) – The Defense Department is actively pursuing the establishment of a domestic "mine-to-magnet" supply chain for rare earth materials, crucial for manufacturing permanent magnets used in significant U.S. military systems and commercial applications. Recognizing the vulnerability of relying on foreign sources, notably China, for these materials, the DOD aims to enhance national security through self-reliance. It has allocated over \$439 million since 2020 to develop this supply chain, covering mining, separation, refining, and manufacturing processes within the U.S. This initiative is guided by the National Defense Industrial Strategy and seeks to achieve a resilient, domestic supply chain capable of meeting all U.S. defense requirements by 2027. Critical defense systems, such as the F-35 Lightning II aircraft, Virginia and Columbia class submarines, and various missile and

radar systems, depend heavily on these rare earth materials. The DOD's strategy includes significant investments in U.S.-based companies and technologies to ensure the country's self-sufficiency in rare earth element production and magnet manufacturing, aiming to eliminate dependency on foreign sources and secure the future needs of both defense and commercial sectors.

Critical minerals mining industry requires more of everything if Canada to be a global player (March 11, 2024, [Source](#)) – The KPMG in Canada survey reveals optimism among Canadian mining leaders regarding the potential for Canada to be a global leader in critical minerals. However, they acknowledge significant obstacles, including the need for more investment, government support, and favorable tax policies. Challenges like decarbonization, lack of domestic refining capacity, raising capital, environmental, social, and governance risks, cost reduction, and regulatory hurdles are highlighted. The survey indicates that only a minority of companies have committed to comprehensive carbon emission reductions by 2050, with many still planning or not having a strategy for emission reduction. Furthermore, the Critical Mineral Exploration Tax Credit (CMETC) has boosted exploration activities but is seen as complex and limited in scope. Respondents call for broader and more innovative tax policies to encourage investment and development in the sector.

Global miners call on LME to introduce green premium for nickel (March 5, 2024, [Source](#)) – Global mining giants, including BHP Group (ASX: BHP | NYSE: BHP) and Wyloo Metals, have urged the London Metal Exchange (LME) to create a green premium for sustainably produced nickel amidst concerns over environmental damage caused by “dirty” nickel, particularly from Indonesia. Indonesia, a major player in the nickel industry, has been criticized for deforestation, pollution, and high carbon

emissions due to its reliance on coal-fired power. The LME, however, responded that the market for green nickel isn't yet large enough to support a dedicated futures contract. BHP and others argue for differentiating between green and dirty nickel, highlighting the environmental impact differences. The LME supports trading low carbon nickel but cites the need for more development in identifying a credible green premium. Meanwhile, Indonesia's low-cost nickel production is poised to dominate the global market, raising concerns over environmental standards and the need for responsible sourcing guidelines that include emissions metrics.

Investor.News Critical Minerals Media Coverage:

- March 14, 2024 – The Australian Government Steps into the Critical Minerals Supply Chain Ring <https://bit.ly/3Vm9NDR>
- March 12, 2024 – The (Bidding?) War For the DRC <https://bit.ly/4aaKMz0>

Investor.News Critical Minerals Videos:

- March 14, 2024 – Neo Performance's Rahim Suleman on being 'the most vertically integrated rare earth magnetics company in the world.' <https://bit.ly/3PkS8IY>
- March 14, 2024 – Darren Hazelwood on Panther Metals' VMS Project Scale and the Graphite Potential Near Thunder Bay <https://bit.ly/4920z0M>
- March 14, 2024 – Codemge's CEO on Leveraging Minas Gerais' Position as Brazil's Niobium Mining Powerhouse <https://bit.ly/48Pfo8U>
- March 13, 2024 – Chris Berlet on the benefit of MineralPrices' real-time pricing information <https://bit.ly/3TA1i6Q>
- March 11, 2024 – Power Nickel's Terry Lynch on "the least

expensive high-grade nickel sulfide exploration play in the world” <https://bit.ly/3VgWdBF>

- March 11, 2024 – Tom Drivas Explores the Initial Rare Earth Mineral Resource Estimate from Appia’s PCH Ionic Adsorption Clay Project in Brazil <https://bit.ly/3VdU9KL>
- March 11, 2024 – Chad Clovis on Real Environmental Benefits through the Karbon-X Carbon Credit App <https://bit.ly/3Tt6jy6>
- March 11, 2024 – Stephen Burega on Romios Gold’s Recent Strides Forward in High-Grade Copper Exploration in Nevada <https://bit.ly/4a9HA7E>
- March 11, 2024 – Sean Cleary on Strategic’s plans to revitalize former producer of 10% of the world’s vanadium <https://bit.ly/3IwVZP9>

Critical Minerals IN8.Pro Member News Releases:

- March 14, 2024 – Technology Advancement: NEO Battery Expands Production Yield and Capacity with Manufacturing Innovation <https://bit.ly/43f7Efj>
- March 13, 2024 – Voyageur Achieves Milestone with Rain Cage Royalty Agreement for Sustainable Carbon Drug Development <https://bit.ly/3TzarN0>
- March 13, 2024 – First Phosphate and Groupe Goyette Sign MOU for Logistics Footprint at the Hebertville-Station Intermodal Facility in the Saguenay-Lac-St-Jean Region of Quebec, Canada <https://bit.ly/3PlqXxL>
- March 13, 2024 – Fathom Announces Completion of Drilling at Albert Lake Project and Commencement of Drilling at the Gochager Lake Project <https://bit.ly/3wPQFnA>
- March 12, 2024 – American Clean Resources Group Enters Well Water Purchase Agreement with Road and Highway Builders LLC <https://bit.ly/3w0X2aT>
- March 11, 2024 – Critical Metals PLC Appointment of Non-

Does Nationalization Loom for Critical Minerals

written by Peter Clausi | March 15, 2024

The world is finally starting to pay attention to the importance of 'critical minerals'. Different countries have different lists of what those minerals are, but every list includes lithium, rare earths ("REE"), cobalt, copper, nickel, and zinc. (One region mystifyingly includes rubber on its list, but I digress.)

The problem is, most people are missing the point of why these minerals are critical and what that means for private ownership. So let's go back to basics.

The Importance of Critical Minerals

One of the definitions of the word critical is "important or vital; irreplaceable". When it comes to the Green Revolution, that definition is spot on. Critical minerals are irreplaceable in the march away from fossil fuels. Without those minerals, we will continue to use fossil fuels until a better technology comes along, decades from now, during which interlude we will choke out Mother Earth.

But saying 'we need those minerals to make rechargeable batteries and permanent magnets' is rather simplistic. That's not really the point. A recent article in *The Economist* gives better arguments about why the Green Revolution is good for

countries, apart from saving the planet.

The article titled "[The green revolution will stall without Latin America's lithium](#)" argues that nationalizing critical mineral deposits and mines (and by extension, minerals like silver that aren't on critical mineral lists) offers benefits like a broadened tax base and more jobs within the country. Nationalization, it argues, can be good for the economy.

That argument rings hollow with me. Jobs can be created and taxes can be paid without the national government owning the assets. Mining rights can be exercised by foreign companies under a regime without the government getting into the mining business, plus does any government operate any business well? *The Economist* has missed the point.

Companies are Protecting Vertical Supply Chains for Critical Minerals

Before we get to the point, let's revisit the February 2023 announcement of a [General Motors Company](#) (NYSE: GM) investment into [Lithium Americas Corp.](#) (TSX: LAC), which holds among other assets Thacker Pass. Thacker Pass is the largest known potential source of lithium in the United States of America. We've seen other investments from auto manufacturers into lithium companies.

Do you think they're doing this as a long-term investment to be monetized at some point in the future? When one of the shadow Chinese investment companies invests in a critical minerals company, do you think it's for the portfolio?

No, these are not portfolio investments. These are functional investments into irreplaceable assets. Everyone is worried about the vertical supply chain for those critical minerals for their

own uses.

GM is looking to ensure it has access to lithium for its own purposes. GM isn't going to share the lithium eventually produced at Thacker Pass (assuming Thacker Pass overcomes community challenges and gets into production).

[Mercedes-Benz Group AG](#) (XTRA: MBG) won't share the lithium it gets from [Rock Tech Lithium Inc.](#) (TSXV: RCK), northwest of Thunder Bay, Ontario. These investments are to help ensure a vertical supply chain of lithium. Expect other investments into other critical minerals.

Countries are now Protecting Vertical Supply Chains for Critical Minerals

What did *The Economist* miss? Countries aren't nationalizing or protecting mineral assets for tax or employment reasons. They are doing so to protect their own vertical supply chains for critical minerals. To do otherwise would be to turtle, to offer up a neck to be crushed by a foreign actor who has such minerals.

Countries like Peru, Argentina, Mexico, the Congo, and Kazakhstan have either announced or enabled plans to nationalize their natural resources.

Even nice Canada has taken some steps to put the ownership of Canadian assets into more friendly hands (too little, too late).

These countries won't be the last.

When you're investing, jurisdictional risk just became one of the largest risks to consider.

Vertical Integration is all the Rage in the EV Industry, is Musk the New Ford?

written by InvestorNews | March 15, 2024

Last week, Bloomberg news [reported](#) that [Tesla, Inc.](#) (NASDAQ: TSLA) was in talks to buy [Sigma Lithium Corporation](#) (TSXV: SGML | NASDAQ: SGML), a company that is focused its 100%-owned Grota do Cirilo project, a large hard-rock lithium deposit in Brazil with lithium production aiming for 2024.

The stock price of Sigma Lithium was up 16% after the news was released and is up almost 250% over the past year in lockstep with other lithium miners. Electric vehicle (“EV”) manufacturers want to lock up lithium supplies as the metal increases since it is a key component in EV batteries and there are worries that demand will soon outstrip supply.

Neither Telsa nor Sigma Lithium released any news release on the subject nor provided any comment to the media. Tesla, led by Elon Musk, is looking at various options to secure its lithium sources, including potentially its own mining and refining.

Previously to fund its exploration and development, Sigma Lithium had signed a funding and 6-year offtake agreement with [Mitsui & Co., Ltd.](#) (TSE: 8031) of Japan and also signed a six-year lithium offtake agreement with Korean-based [LG Energy Solution](#) (K0SE: A373220).

In the past, Tesla signed [contracts for lithium](#) with Ganfeng

Lithium Group Co. (SZSE: 002460), one of the largest lithium suppliers in the world, and [more recently, Lontown Resources Limited](#) (ASX: LTR), an Australian miner.

Is Elon Musk the New Henry Ford?

The reappearance of Henry Ford-style vertical integration in car manufacturing marks a big 180-degree turn from the late 1990s when outsourcing to sub-contractors began.

In the early 1900s (over 100 years ago!), Henry Ford had a keen interest in acquiring and controlling the sources of raw materials for his company to achieve manufacturing self-sufficiency for his automobile operations. By achieving vertical integration, a business strategy in which a company controls all aspects of production, from raw materials to finished products, Henry Ford believed he would ensure a reliable supply chain and potentially reduce costs.

To achieve this desire, Henry Ford bought vast tracts of timberland and built sawmills in Michigan to control the wood required in his vehicles but also used to create shipping containers and for heating his factories. Henry Ford had a strong interest in controlling other sources of raw materials for his company, such as iron ore for steel production, a key component of automobiles, and also coal for his factories.

But Henry Ford also went further afield as he sought to secure a reliable source of rubber for his company. In the mid-1920s, he purchased a large tract of land in the Brazilian Amazon rainforest and established a rubber plantation and community called Fordlandia. Unfortunately, it was abandoned in the late 1930s due to challenges with the workers and the physical environment.

The New Vertical Integration Trend Continues...

Not to be outdone by Tesla, earlier this month, [General Motors Co.](#) (NYSE: GM) announced the closing of the initial tranche, [a \\$320 million investment](#), of a previously announced \$650 million investment and offtake agreement with [Lithium Americas Corp.](#) (TSX: LAC | NYSE: LAC). Lithium Americas is advancing the Caucharí-Olaroz lithium project in Argentina towards first production and is also developing the Thacker Pass lithium project in Nevada which is advancing towards construction.

Last year, [Rio Tinto Group](#) (NYSE: RIO | LSE: RIO) and the [Ford Motor Company](#) (NYSE: F) signed [an agreement](#) whereby Rio Tinto would supply Ford with materials including lithium, low-carbon aluminum, and copper and Ford would become the initial customer for Rio Tinto's Rincon lithium project in Argentina.

It's also happening with the smaller technology components in EV batteries. In June 2022, [Nano One Materials Corp.](#) (TSX: NANO), a company with patented processes for the low-cost, low-environmental footprint production of high-performance cathode materials used in lithium-ion batteries, [announced](#) a strategic US\$10 million equity investment and collaboration agreement with Rio Tinto. The two companies entered into an agreement under which they would work together to support the acceleration of the commercialization of Nano One's patented cathode technology.

Also in June of last year, [NEO Battery Materials Ltd.](#) (TSXV: NBM | OTCQB: NBMFF) announced a [C\\$3 million strategic investment](#) from Automobile & PCB Inc. (KOSE: A015260) into its Korean subsidiary for the first phase of its commercial plant project. NEO focuses on producing silicon anode materials for lithium-ion batteries through its proprietary single-step nanocoating

process.

Final Thoughts

Ford's attempts to control raw materials were not always successful, and he faced challenges such as labor disputes, market fluctuations, and supply chain issues.

Nonetheless, his focus on vertical integration and self-sufficiency had an impact on the American manufacturing industry.

Perhaps what is old is new again.

Two 'monster-sized' lithium projects for high-risk appetites to chew on

written by Matt Bohlson | March 15, 2024

Many people nowadays are just becoming aware of the lithium boom and the massive lithium demand wave ahead this decade. My models and articles have been forecasting the lithium boom since 2017 and the good news is we are only potentially just at the beginning of a [lithium supercycle](#) as EV's gain market share each year. China lithium carbonate spot prices have already risen almost 12x from US\$7,000/t to ~US\$83,000/t ([CNY 592,500](#)) over the last 3 years. Just last week global lithium expert Joe Lowry was [quoted](#) that he sees lithium prices rising further to US\$97,000/t by 2027 and a base value of just below US\$80,000/t.

Investors are on the search for lithium juniors that have the potential for monster-sized lithium projects, ideally in safe locations. Everyone wants to find the next Pilbara Minerals Limited (ASX: PLS), which has seen its stock price rise from A\$0.15 to A\$4.75 in less than 3 years, a very nice ~32x gain.

Today's two lithium companies have potential to be the next Pilbara Minerals. They both own great lithium projects in Canada with the potential to grow to become monster-sized North American lithium projects. They also come with risks, so some research and due diligence is always required.

The two companies are [Frontier Lithium Inc.](#) and [Patriot Battery Metals Inc.](#)

Frontier Lithium Inc. (TSXV: FL | OTCQX: LITOF) ("Frontier")

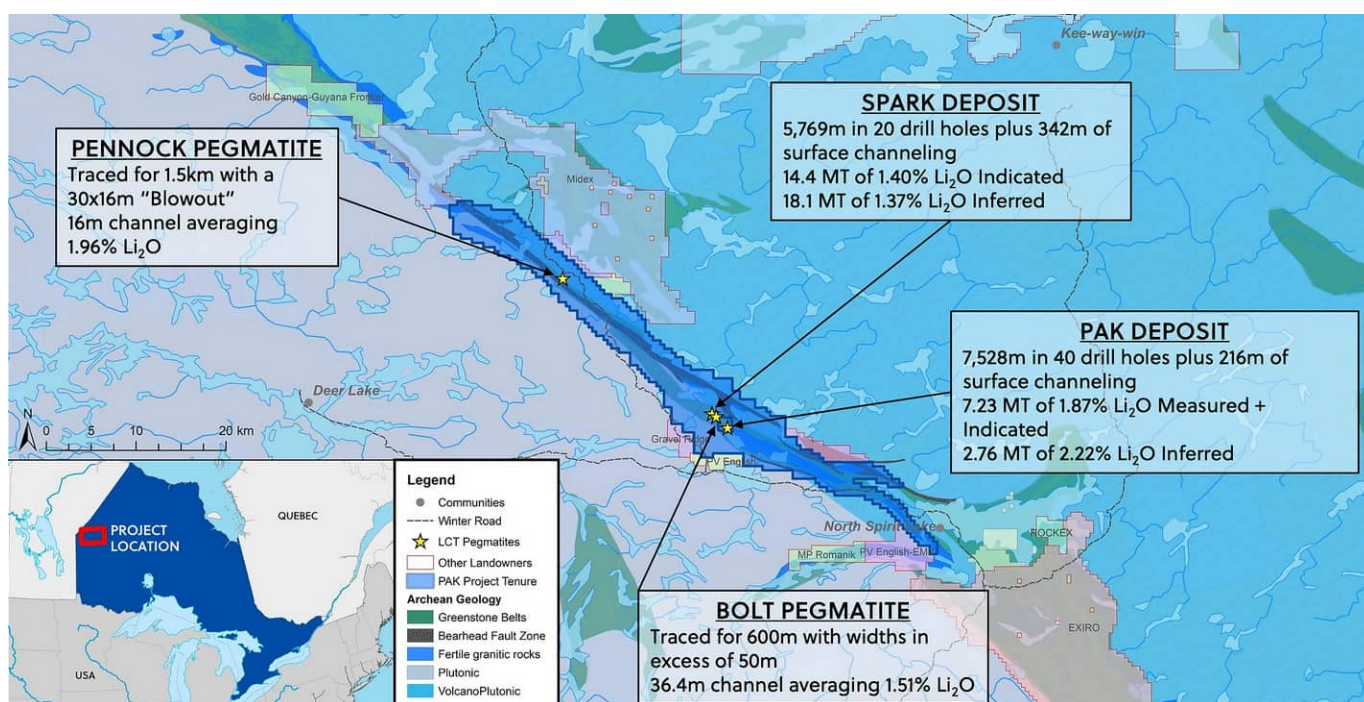
Frontier is developing their 100% owned PAK Lithium project in northern Ontario, Canada. The Project already has an M&I&I Resource estimate of [41.9Mt @ 1.54% Li₂O](#) (as of March 2022), with potential to grow to a 100+ million tonne resource. [No other lithium junior](#) has had drill results anywhere near as good as Frontier. Just one example of many great results, was announced in October 2022 and was a stunning [326.6.m of pegmatite averaging 1.92% Li₂O](#).

Frontier is currently still drilling and has plans to announce an updated resource estimate and a PFS by the end of Q1, 2023. The [February 2021 PEA](#) for the PAK Lithium Project resulted in a post-tax NPV8% of US\$974.6 million, using lithium prices of only US\$13,500/t. One can hardly imagine what the PFS result might be. Certainly US\$2 billion+ looks entirely possible, especially if Frontier uses lithium price assumptions closer to US\$20,000/t. Sigma Lithium's updated post tax NPV8% was [US\\$5.1 billion](#), so we would have to assume in time Frontier could

potentially head in a similar direction. Frontier does still have some road access issues and permitting and project funding challenges ahead of them, so investors should be aware of the risks and also take a 5 year plus investing time frame.

Frontier Lithium currently trades on a market cap of only [C\\$430 million](#) ([US\\$323 million](#)).

Frontier Lithium's PAK Project in northern Ontario, Canada (PAK & Spark deposits included in the current 41.9Mt resource)



Source: [Frontier Lithium website](#)

Patriot Battery Metals Inc. (TSXV: PMET | OTCQB: PMETF) ("Patriot")

Patriot is focused on their 100% owned Corvette Lithium Project in James Bay, Quebec, Canada. The Project is still at a relatively early stage with no resource announced yet; but has some excellent drill results pointing towards this being potentially a huge lithium resource, in the order of 50-100+ million tonnes. Discovered in September 2021, CV5 is currently the largest outcropping deposit with its first drill result of a

146.8m at 0.93% Li₂O and 114 ppm Ta₂O₅. Since then there have been several other great drill results and there are multiple outcropping pegmatite targets yet to be drilled. The main 2.2km pegmatite strike from CV1-CV6 remains [open along strike at both ends and at depth](#). Spodumene has been encountered down to a vertical depth of approximately 315m. President & CEO Blair Way comments (from 30:45 min mark in the [CEO video](#)):

“With a 2.1km corridor even around 100m thick and 300m deep.....it appears to be well and truly into the three digits.....I think we will easily be over the 1.0, 1.2%....”

This looks to be a massive resource, but it will take the next two years to drill and grow it towards its potential. In late 2023 or early 2024, I would expect a maiden resource to be announced, followed soon after with a PEA or PFS. All weather road access and power are 15kms from the Corvette Project, so a minor challenge. Risks due to the early stage and again lithium juniors require a 5 year plus investing time frame.

Patriot currently trades on a market cap of [C\\$486 million](#) ([US\\$365 million](#)).

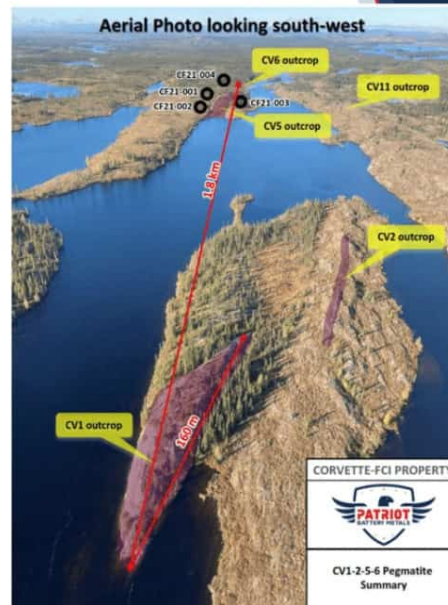
Patriot's Corvette Lithium Project showing the CV1 pegmatite outcropping and the CV1 to CV6 pegmatite corridor



Corvette CV1-2 | Lithium Pegmatite Outcrops



CV1
Channel sample CV1 - CH03
1.36% Li₂O, 128 ppm Ta₂O₅ over 11 m
Spodumene crystals at CV1 Pegmatite



Winter drilling on the frozen shallow lake confirmed continuity of spodumene pegmatite between CV5 and CV1

CV2
6 samples
Average 0.94% Li₂O

The CV1 - CV6 core area includes an approximate 2 km long corridor, which is part of the more than 50 km long CV lithium trend.



Source: [Patriot Battery Metals company presentation](#)

Closing remarks

Early-stage lithium miners come with numerous risks but also potentially huge rewards. In the case of Frontier Lithium and Patriot Battery Metals, they are, in my view, the two most promising earlier-stage lithium juniors in North America.

There are also three other very advanced North American juniors (Piedmont Lithium Inc., Sayona Mining Limited, Critical Elements Lithium Corporation) that offer lower risk, less patience, but perhaps less reward. These 5 lithium stocks look likely to be the 'fabulous 5' that could become the backbone of the North American lithium industry along with Albemarle Corporation, Livent Corporation, and perhaps Lithium Americas Corp.

Disclosure from the Author: The author is long all the lithium companies mentioned in this article.

Argentina, the new Saudi Arabia of Lithium

written by InvestorNews | March 15, 2024

Former Chinese leader, Deng Xiao Ping, is most famous in mining circles for his oft-repeated aside from the 1980s that whereas “Saudi Arabia has oil, China has Rare Earths”. It didn’t grab much attention at the time because Rare Earths were largely a mystery to most listeners and, moreover, were not worth all that much and did not have many day-to-day applications then besides bringing red colors to one’s cathode ray tube television. The rest is history with the final wake-up call in 2009-10 as to what Deng was actually referring to in strategic terms.

Now we can add a third leg to the mantra because Argentina has lithium and oh, potentially, how much lithium it does have! In theory, Chile was the place to source lithium from brine lake lithium deposits (salares), but in a curious own-goal situation, Chile has squandered that advantage by trying to keep a tight control on the number of players and advantaging the two incumbents. Predictions are that Argentina will overhaul Chile in terms of lithium production by 2030. The result of the Chilean torpor at welcoming new entrants is that the surprisingly more laissez-faire attitude in Argentina has made it the go-to place for those wishing to stake positions in salares. Argentina has become something like, to paraphrase Deng, the Saudi Arabia of Lithium.

The Fluctuating Fortunes of Salares

One of the paradoxes of the middle of the decade was the “talking down” of salares as being in some way “too difficult” or too “long term”. Having said that though, several of the highest-flying stories in the First Lithium Boom such as

Orocobre Limited, Galaxy Resources Ltd., and Lithium Americas Corp. were salar-based. Back in that boom, and its current revival, there was/is a staking boom in the Argentine part of the Lithium Triangle of Chile, Argentina, and Bolivia that makes the California gold rush in the 1850s pale into insignificance. Explorers, quite literally, cannot get enough of Argentine lithium territory.

The caution relating to salares exploitation was powered by the mishaps that befell Orocobre and Rincon. However, in both these cases, the lessons learned meant that others will have the benefit of their difficult experiences. The argument that there is a longer lead time for salar development (due to the need to kickstart the evaporation process) does not hold much water (pardon the bad pun) due to the much longer (and more expensive) drilling and resource estimation phase at a hard rock deposit and the much higher development costs at underground mines.

The downfall firstly of Canada Lithium, after the end of the First Lithium Boom, and then the travails of Nemaska, at the beginning of the latest recovery, have cast a pall in many investors' minds over large-cap underground spodumene mines.

The Road Most Taken

Despite perennial concerns about Argentina's political direction, the metaphorical road to the Argentine salares opportunity has become more like a Los Angeles expressway in peak hour, of late. Argentina has been in the Lithium game for decades, so is no newbie, but was always perceived as playing second fiddle to Chile. With opportunities to enter and develop new projects in Chile finding constant stones in the road, several of Argentina's Andean provinces have become veritable boomtowns for the Great & Good of the global EV revolution.

The long-established Livent (formerly FMC) was joined by

Orocobre and Galaxy Resources (which then merged), and then a stampede of the elephants in the Lithium space occurred with Posco, Ganfeng, Tianqi and most recently Zijin Mining Group resetting the bar higher with its [stunning move](#) on [Neo Lithium Corp.](#) (TSXV: NLC | OTCQX: NTTHF).

Then in November of 2021 TSX-listed miner Lithium Americas offered \$400 million in shares and cash for Vancouver-listed Millennial Lithium Corp., the third offer for the company this year following one by China's largest battery maker CATL and another one by Chinese lithium producer Ganfeng Lithium. A feeding frenzy has begun.

Beyond these majors, there is an array of junior players hoping to replicate the Neo Lithium success story. One of these stocks that has come to attention lately is [Edison Lithium Corp.](#) (TSXV: EDDY | OTCQB: EDDYF).



Into the Fray

In mid-June 2021, Edison Cobalt Corp. as the company was then known, announced that it had entered into a Definitive Purchase & Sale Agreement to acquire Resource Ventures S.A. (ReVe), an Argentine corporation that owns or controls the rights to over 148,000 hectares (365,708 acres) of prospective Lithium brine claims in the province of Catamarca, Argentina. The claims are principally located in the two geologic basins known as the Antofalla Salar and the Pipanaco Salar in the famed Lithium Triangle.

The Transaction

To effect the purchase Edison inked an agreement to acquire ReVe and a 100% interest in its properties for a purchase price of

\$1.85 million paid by the issuance of ten million common shares of the company at a deemed price of \$0.185 per share. All securities issued pursuant were subject to a hold period of four months from the date of closing.

The Political Scene

For most of the last two decades, Argentina has been ruled by irregular iconoclastic governments, most recently by the dynasts of the Kirchner family and before that the Duhalde regime the country with a brief interlude of fiscal conservatism under Mauricio Macri, elected President in the last quarter of 2016.

The major bugbears of foreign miners operating in the country have been:

- Currency controls – though the devalued Peso results (in theory) in lower costs for project development
- Export taxes on concentrates
- Import restrictions on equipment

The Macri regime reverted these and this coincided with the Second Battery Metal Boom of 2017. Though that boom proved to be fleeting, it reenergized players in the Argentine space.

The Macri regime fizzled after three years and the Kirchnerites were back in power, but mining (and particularly Lithium) scarcely missed a beat with the surge of development of salares (and increasingly large copper projects) at the current time.

There is a good case to be made that the relative lack of salares moving to production pre-2019 was due to the double negatives of the low lithium price between 2011 and 2016 and the death throes of the first Kirchnerite period making Argentina an unattractive place to advance projects. Pricing has resolved itself and the Argentine government is welcoming Lithium players with open arms.

Edison Lithium's pivot from Cobalt to Lithium looks like a prescient move. While Cobalt is much sought after it is seldom found. Unicorn hunting can be a long and expensive sport. With Argentina's rapid evolution as the "Saudi Arabia of Lithium" who could fault the company moving into the territory and building up a substantial position?

It's still early days of course with exploration, resource definition (and presumably more territorial expansion) still lying ahead. However, in elephant country, one is more likely to find elephants than gerbils. The hunt is on at Edison Lithium.