

# Technology Metals Report (03.28.2024): China Challenges US EV Plans and the DoE Invests \$6B to Decarbonize Economy

written by Tracy Weslosky | March 28, 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 Chile's attempts to spur lithium sector investments amidst regulatory and environmental concerns, France's Orano exploring the possibility of a uranium enrichment plant in the U.S., and China's challenge to U.S. electric vehicle subsidy policies at the WTO. Additionally, we delve into the EU's potential adjustments to its 2035 EV mandate, President Biden's electric vehicle policies influencing American election outcomes, and Kazakhstan's push to increase uranium exports to the U.S.

This week's TMR Report also highlights U.S. Critical Materials' efforts to publicize its Bitterroot gallium deposits, significant for semiconductors and defense technologies; the Department of Energy's largest-ever investment to decarbonize industry; Brazilian Rare Earths Limited's new rare earth discovery in the Pele Project; challenges in America's lithium laws slowing down the pace of domestic production; and collaborative efforts between Australia's Pilbara Minerals and

China's Ganfeng to study a new lithium chemical plant. Additionally, we explore CATL's discussions with Tesla and other automakers for U.S. licensing of its battery technology, aiming to navigate the tightening U.S. regulations on the battery sector. Through these stories, the TMR provides a comprehensive overview of the latest developments affecting the critical minerals sector, highlighting the challenges and opportunities ahead. To become a CMI member and stay informed on these and other topics, [click here](#)

**Chile needs to finalize more lithium plan details to spur investment, miners say:** (March 27, 2024, [Source](#)) – Chile's attempt to draw private investment into its lithium sector is met with apprehension due to unresolved details and potential regulatory hurdles. The government plans to open 26 salt flats for private mining, excluding some reserved for state control, as part of President Gabriel Boric's strategy to double lithium production by decade's end. However, concerns over how contracts will be allocated, opposition from Indigenous communities, and environmental considerations could deter investors. Industry voices also caution against possible legal conflicts over mining rights and the negative impact of heavy state involvement on Chile's investment appeal. With lithium prices and electric vehicle sales currently in a slump, the attractiveness of new projects is further challenged, making neighboring countries more appealing for lithium investment.

**Chile opens lithium salt flats for investment, saves two for state control:** (March 27, 2024, [Source](#)) – Chile has inaugurated a significant move to open more than two dozen lithium salt flats to private investment, while strategically keeping the prolific Atacama and Maricunga deposits under state majority control. This decision is part of President Gabriel Boric's vision to increase state involvement in the nation's lithium sector, which is the second-largest globally. The initiative

could potentially double Chile's lithium output within ten years, crucial for electric vehicle batteries, according to Finance Minister Mario Marcel. The tender process for 26 salt flats will start in April, aiming for completion in July. State-run enterprises are initiating projects in five other flats, seeking partners. Currently, only Sociedad Química y Minera de Chile S.A. ("SQM") (NYSE: SQM) and U.S.-based Albemarle Corporation (NYSE: ALB) operate in Chile, specifically in the lithium-rich Atacama salt flat. The government, signaling further interest in lithium ventures beyond Atacama and Maricunga, is also contemplating the establishment of a national lithium company and emphasizes environmental protection and indigenous community involvement in new projects.

**China to challenge Biden's electric vehicle plans at the WTO:** (March 27, 2024, [Source](#)) – China has filed a complaint with the World Trade Organization (WTO) against the United States, alleging that U.S. electric vehicle (EV) subsidy policies unfairly discriminate against Chinese products. This action comes in response to the U.S. Inflation Reduction Act, which, from January 1, disqualifies EVs from receiving tax credits if their critical minerals or battery components are sourced from Chinese, Russian, North Korean, or Iranian companies. China argues that these policies distort fair competition and disrupt the global EV supply chain by excluding Chinese products. The outcome of this dispute is uncertain, particularly if the U.S. appeals a ruling against it, due to the current dysfunction of the WTO's Appellate Body. This complaint underscores the growing tensions in the global EV market, where China is a dominant player in battery technology and aims to expand its auto industry globally.

**France's Orano studying plan to build U.S. uranium enrichment plant:** (March 27, 2024, [Source](#)) – French nuclear fuel company Orano, previously known as Areva, is exploring the possibility

of constructing a uranium enrichment plant in the United States, as part of efforts to decrease U.S. dependency on Russian uranium imports. The plan, which had been shelved following the Fukushima disaster due to a surplus in enrichment capacity, is being revisited amidst growing demand and geopolitical tensions. Orano, which is state-owned, aims to support the U.S., the world's largest nuclear power producer, in bolstering its domestic fuel production capabilities. This initiative aligns with recent U.S. legislative moves, including President Biden's approval of significant funding for domestic uranium production. Orano also plans to expand its existing uranium enrichment capacity in France to meet U.S. demand and reduce reliance on Russian supplies.

**EU May Water Down Harsh 2035 EV Mandate And Reprieve Hybrids:** (March 27, 2024, [Source](#)) – The European Union and Britain's ambitious plans to phase out combustion engine vehicles by 2035 in favor of electric vehicles (EVs) are facing scrutiny and potential adjustments. Experts suggest that hybrids may be given more leeway to ensure a smoother transition. The automotive industry is at risk of being dominated by more cost-effective Chinese EVs, prompting concerns over the financial viability of European carmakers in the shift to electric. Stricter CO2 emissions targets are also causing unease among manufacturers. Reports indicate that EV sales growth is slowing, and the current market offerings are deemed too expensive for widespread adoption, with technology and infrastructure not fully meeting consumer needs yet. There's lobbying for regulatory review and more flexible approaches, including a broader acceptance of hybrid models and other technologies to reduce emissions. The upcoming review by the EU, along with potential geopolitical shifts and industry collaborations, could influence the pace and nature of Europe's transition to electric mobility.

**Electric cars will decide the outcome of the American election:** (March 26, 2024, [Source](#)) – President Biden's aggressive promotion of electric vehicles (EVs) may jeopardize his political standing, particularly in critical Midwestern swing states. His administration's focus on EVs, marked by substantial price differences and practicality issues compared to traditional vehicles, risks alienating a significant voter base. This strategy, characterized by stringent mileage requirements and incentives for EV adoption, could undermine the traditional auto industry, a cornerstone of states like Michigan and Wisconsin. Furthermore, the policy may inadvertently bolster China's position in the global EV market, while threatening job losses across America's automotive sector, including sales, maintenance, and after-market services.

**World's Top Uranium Miner Seeks to Boost Exports to US:** (March 26, 2024, [Source](#)) – Kazakhstan, the leading uranium producer globally, is intensifying efforts to increase its uranium exports to the United States. This initiative follows discussions on energy cooperation with U.S. Senator Steve Daines. Kazakhstan already holds contracts for uranium product supply until 2032 with key U.S. energy companies. The push for expanded uranium exports comes at a time when the demand for this critical metal is rising, driven by a global shift towards nuclear power to combat climate change. Furthermore, the U.S. is contemplating a ban on imports of enriched Russian uranium, used in both nuclear reactors and weapons, highlighting the strategic importance of identifying alternative uranium sources.

**Mining company touts Bitterroot gallium deposits:** (March 26, 2024, [Source](#)) – U.S. Critical Materials is stepping up its public outreach concerning its mining claims in the Bitterroot's headwaters, with a focus on valuable gallium deposits over 6,700 acres, essential for semiconductors, 5G, smartphones, satellite systems, and defense technologies. The U.S. government,

recognizing the strategic importance of gallium—especially amidst a Chinese export embargo—is heavily involved in funding and driving the production of REE and other critical minerals, with significant contributions from federal agencies. Preliminary exploration at Sheep Creek has seen support from the DOD and collaboration with academic and geological institutions, utilizing advanced survey techniques. Amidst concerns over national security due to dependency on imported gallium, U.S. Critical Materials boasts high-grade gallium deposits and is exploring environmentally sustainable separation processes. The company's partnership with Idaho National Laboratories aims to develop new processing methods to establish a domestic supply chain, a crucial step given the current lack of processing facilities in North America and the environmental and commercial challenges of existing separation technologies.

**Department of Energy announces largest-ever investment to decarbonize industry:** (March 25, 2024, [Source](#)) – The Department of Energy has announced a substantial \$6 billion funding for 33 projects across the U.S. to reduce emissions in energy-intensive industries. This effort, part of the largest-ever investment to decarbonize industry, leverages the Bipartisan Infrastructure Law and Inflation Reduction Act, aiming for a combined investment of \$20 billion including company contributions. Targeting major sectors like steel, aluminum, cement, and food production, the initiative is expected to cut down 14 million metric tons of CO<sub>2</sub> annually, equivalent to removing 3 million gas-powered cars from the roads. Highlighted projects include Constellium's zero-carbon aluminum plant in West Virginia, with potential federal funding up to \$75 million, and Kraft Heinz's \$170.9 million investment to electrify and decarbonize food production at 10 facilities. Additionally, nearly 80% of the projects are located in disadvantaged communities, emphasizing the investment's broader social and environmental benefits.

**Brazilian Rare Earths Limited (ASX:BRE) Announces New Rare Earth Discovery – the Pele Project:** (March 25, 2024, [Source](#)) – Brazilian Rare Earths Limited (ASX:BRE) has unveiled the Pele Project, a significant new rare earth discovery in Bahia, Brazil, positioned 60km southwest of their Monte Alto Project. This district-scale endeavor is set to explore ultra-high grade REE-Nb-Sc mineralization across a target area vastly exceeding that of Monte Alto. Key findings include extensive geophysical anomalies, the largest known hard rock monazite outcrop extending over 30m, and promising high-grade monazite sand intercepts. Initial results suggest a substantial rare earth mineralization potential, mirroring the successful exploration techniques employed at Monte Alto. With comprehensive surveys and an imminent diamond drilling program, CEO Bernardo da Veiga anticipates accelerating exploration to uncover this area's full potential, marking another stride in expanding their rare earth province footprint.

**America's lithium laws fail to keep pace with rapid development:** (March 25, 2024, [Source](#)) – Efforts to make the United States a leading global lithium producer are hindered by a tangled set of state regulations, creating a significant barrier against reducing dependence on foreign lithium supplies, particularly from China. Confusion over ownership, valuation, and processing of lithium resources across states like Texas and Louisiana, combined with fluctuating commodity prices and technical challenges, are major obstacles. This situation complicates the Biden administration's ambitions for electrification and increasing domestic lithium production. Despite the urgent need for regulatory clarity to attract investment and advance projects, states vary widely in their approaches to lithium extraction and regulation. The uncertainty around regulatory frameworks is delaying the development of lithium projects, thus affecting the U.S.'s ability to meet its



lithium production and electrification goals.

**Pilbara Minerals and China's Ganfeng agree to study for lithium chemical plant:** (March 24, 2024, [Source](#)) – Australia's Pilbara Minerals and China's Ganfeng Lithium have agreed to study the feasibility of building a lithium chemical plant capable of producing 32,000 metric tons of lithium carbonate or hydroxide annually, at an undecided location. The study, set to complete by March 2025, explores potential sites, including Australia, aiming for greater supply chain diversification. Pilbara Minerals, which has partnerships in other lithium projects, seeks to reduce transportation volumes and carbon footprint through midstream lithium chemicals production. Preliminary discussions have shown strong international interest in the venture, with incentives such as economic benefits and support for permitting. The venture would be a 50:50 partnership, with Ganfeng considering a stake sale based on U.S. Inflation Reduction Act benefits. Pilbara is increasing spodumene production to 1 million tons annually and may expand further, committing 300,000 tons annually to this project if it proceeds.

**CATL in talks with Tesla, global automakers for US licensing, WSJ reports:** (March 25, 2024, [Source](#)) – Contemporary Amperex Technology Co. Ltd. (CATL), a leading Chinese electric-vehicle battery maker, is currently in discussions with Tesla Inc. (NASDAQ: TSLA) and other automakers to license its battery technology in the U.S. This approach comes as an alternative to establishing its own manufacturing facility in the country. These negotiations, still in the early stages, revolve around the extent of the collaboration and the specifics of the technology Tesla would license, influenced by the EV giant's financial health. CATL's existing partnership with Ford, which recently adjusted its investment strategy for a Michigan battery plant to use CATL's licensed technology amid legislative pushback, serves as a blueprint for potential agreements with



other U.S. car manufacturers. This development is amidst a global downturn in EV demand and tighter U.S. regulations on the battery sector to curb Chinese influence, with CATL also focusing on innovations like faster charging batteries for Tesla.

**CATL Working With Tesla on Fast-Charging Cells, Supplying Nevada:** (March 25, 2024, [Source](#)) – CATL is enhancing fast-charging batteries for Tesla, targeting an electric car under \$25,000. Emphasizing cost-efficiency and longevity, CATL's collaboration extends to supplying Tesla's Nevada factory and innovating in battery technology. Despite global EV market challenges, CATL sustains growth through a diversified clientele including BMW and Mercedes-Benz, and is adapting to U.S. market restrictions by licensing its technology, notably to Ford. With geopolitical tensions affecting trade, CATL values client trust and plans to expand production in Europe and Southeast Asia. The company's strong financial standing allows it to delay further funding rounds, focusing instead on technological advancement and strategic partnerships to navigate the evolving electric vehicle landscape.

## **Investor.News   Critical   Minerals Videos:**

- March 25, 2024 – Western Uranium & Vanadium's George Glasier on Gearing up for SMC to Commence Production in Colorado <https://bit.ly/3ITmUVA>

## **Critical Minerals IN8.Pro Member News**

## Releases:

- March 28, 2024 – American Clean Resources Group Establishes Environmental Sustainability Board <https://bit.ly/43JkN0o>
  - March 28, 2024 – Scandium Canada Forms a Strategic Advisory Committee and Confirms its Initial 3 Members <https://bit.ly/3ISuHTM>
  - March 28, 2024 – Nano One Reports Q4 2023 Results and Provides Progress Update <https://bit.ly/3IXI2Km>
  - March 26, 2024 – Voyageur Pharmaceuticals Files Audited Annual Financial Statements and Grants Stock Options <https://bit.ly/4a0gTFV>
  - March 26, 2024 – First Phosphate Reports Published Research Studies for its Lac à l'Original, Mirepoix and Bégin-Lamarche Properties in the Saguenay-Lac-St-Jean region of Quebec, Canada <https://bit.ly/3T0TEWq>
  - March 26, 2024 – Kraken Energy Confirms Elevated Radioactivity in Both Initial Drill Holes at Harts Point Property, Utah <https://bit.ly/3VskYem>
  - March 25, 2024 – Bechtel contract to support ASM with engineering at the Dubbo Project <https://bit.ly/3Vsx8E3>
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## A look at the lithium market leaders as EV manufacturers

# face generational challenge to keep factories running

written by Matt Bohlson | March 28, 2024

Investors are starting to realize the lithium boom is likely to last the next 1-2 decades. EV manufacturers are now facing a generational challenge to secure enough lithium supply to keep their factories running.

In 2021, the [IEA forecast](#) that the world will need **13-42x more lithium by 2040 (from 2020 levels)**. The 13x increase was based on the stated policies track (as of 2021) and the 42x increase was based on the sustainable development scenario (we move rapidly towards a world of zero emissions). Just this past week [Benchmark Mineral Intelligence forecast](#): “Lithium has to scale **twenty times by 2050** as automakers face generational challenge”. This was **based on 2021 levels**. Our exclusive research at [Trend Investing forecast](#) a **35x increase** in lithium demand **from 2020 to 2037**.

As of October 2022, the best positioned EV manufacturers are Tesla & BYD Co, and perhaps Ford & GM. These companies have made good preparations including multiple lithium off-take agreements and investments in the lithium companies or projects. Examples are Ford’s July 2022 [off-take and A\\$300 million debt facility agreement](#) with Australian lithium junior Lontown Resources Limited (ASX: LTR), and the August 2022 [GM off-take and US\\$198 million pre-payment](#) deal with Livent. Both these recent deals show the new reality of what it takes to secure future lithium supplies.



Tesla Model 3 – A global leader in electric car sales the past 5 years

## Who are the lithium leaders?

The lithium leaders are those lithium companies that are currently the leading producers and who have potential to significantly ramp their lithium production this decade.

**Sociedad Quimica y Minera S.A. (NYSE: SQM)** – A Chile company with a 51% share of the world's best lithium brine mine at the Atacama Salar in Chile. They also own 50% share of the Mt Holland spodumene project (with Wesfarmers) set to begin production in [Q4, 2023](#). SQM is targeting lithium carbonate equivalent ("LCE") sales in 2022 of [150,000t](#), 210,000t in 2023, and 240,000t in 2024.

**Albemarle Corporation (NYSE: ALB)** – An American company often seen as the lithium leader. They own 49% of the Atacama Mine (with SQM JV) and 49% of the world's best spodumene mine Greenbushes in Australia. They also have a 50% JV ownership (with Mineral Resources) of the massive Wodgina Mine in Western Australia, which recently began producing again with plans for a large ramp ahead. The JV also has a recently completed hydroxide conversion plant (60% ALB; 40% MIN) in Kemerton, WA. Albemarle's production is targeted to increase from [~130,000t](#) LCE in 2022 to ~220,000t LCE in 2025.

**Ganfeng Lithium Group Co., Ltd. (SHE: 002460 | HK: 1772 | OTC: GNENF)** – A Chinese lithium company focused on lithium refining, however now has multiple projects around the world including 49% of Mt Marion in WA and a 50% JV with Lithium Americas at the massive Cauchari-Olaroz project in Argentina due to start production soon. Ganfeng aims to boost production from ~90,000t in 2022 to [200,000tpa](#) by 2025.

The other leaders with large projects include Pilbara Minerals Limited (ASX: PLS) with their massive Pilgangoora Mine in Western Australia (~90,000tpa in 2022/23), Mineral Resources

Limited (ASX: MIN), Tianqi Lithium Corporation, Livent Corporation (NYSE: LTHM) and Allkem Limited (ASX: AKE | TSX: AKE).

Together the names above represent the biggest eight lithium producers and they produce most of the world's lithium today.

Some others such as AMG Advanced Metallurgical Group NV and a few smaller Chinese producers make up the balance of global lithium production.

The next or near term producers set to come online include (in rough order) Argosy Minerals Limited (ASX: AGY), Lithium Americas Corp. (NYSE: LAC | TSX: LAC), Core Lithium Ltd (ASX: CX0), – SIGMA Lithium Corporation (NASDAQ: SGML | TSXV: SGML), Sayona Mining Limited (ASX: SYA | OTCQB: SYAXF)/Piedmont Lithium (Nasdaq: PLL | ASX: PLL) (NAL Project in Canada), and Liontown Resources Limited (ASX: LTR).

There are also a bunch of other very promising lithium junior miners with potential to become new lithium producers after 2025. Three of the biggest projects could be in Canada with Critical Elements Lithium Corporation (TSXV: CRE | OTCQX: CRECF), Patriot Battery Metals Inc. (TSXV: PMET | OTCQB: PMETF) and Frontier Lithium Inc. (TSXV: FL | OTCQX: LITOF).

## **Closing remarks**

It may seem like there is a lot of lithium supply coming online in the next few years, but of course demand is rising faster than supply, assuming EV sales growth continues at a 50%+ growth rate as expected.

Could there be some periods of short term oversupply? Yes, but only likely if EV sales falter. Either way the decade or two ahead looks set to be a very exciting time for lithium investors

and the lithium leaders discussed in this article.

*Disclosure: The author is long Tesla, BYD Co and most of the lithium stocks mentioned in the article.*

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## Why have lithium miner stock prices fallen when lithium prices have surged higher?

written by InvestorNews | March 28, 2024

Investing in the stockmarket is part science and part art. The science part refers to the fundamental analysis and the art refers more to the instinct/understanding and timing of investments. What truly sets great investors apart from the average are two things – Spotting a winning trend early and investing when there is a market disconnect caused by negative sentiment.

Today's article is about just that. The winning trend is the EV

and lithium boom, and the disconnect is the recent lithium price gains while the lithium miners stock prices fell. Did you know that in the past 3 months lithium carbonate spot prices in China have more than doubled ([up ~125%](#)), yet lithium miners stocks have fallen in many cases by 25% or more in the same time period?

**China lithium spot prices are up ~125% in the past 3 months and 10x the past 14 months**



[Source](#): Trading Economics

The chart below shows the stock price falls of several lithium producers and one highly promising junior. In the past 3 months (as lithium prices more than doubled) Albemarle Corporation (NYSE: ALB) has fallen 32.40%, Livent Corporation (NYSE: LTHM) has fallen 28.43%, SQM (NYSE: SQM) is down 6.20%, Ganfeng Lithium (HK: 1772) is down 9.53%, and Lithium South Development Corp. (TSXV: LIS) is down 35.35%.

**Leading lithium miners' stock prices the past 3 months have fallen significantly**



Source: [Yahoo Finance](#)

**Why have lithium miner stock prices fallen when lithium prices have surged higher?**

The answer as to why is as follows:

- Several lithium miners sell their lithium on contract prices which are yet to properly reflect the market spot price for lithium. As these contracts expire they will be



replaced with much higher contract prices or spot prices.

- Macro events and market sentiment – The general market has been selling off with the S&P500 down about 10% from its peak due to U.S. interest rates soon to rise and more recently the Russia-Ukraine crisis. Of course, this will pass and has almost zero impact on EV sales and/or lithium prices. In fact, current very high oil prices are helping EV sales. In my situation my new electric car costs me \$17 to drive 420kms compared to \$75 for my old gasoline car, that's about 4.5x less. Servicing costs are almost zero, with the main cost being tire replacements.

The recent disconnect between the more than doubling of lithium prices and lithium miners stock prices falling would only make sense if the sector was in trouble, yet EV sales are setting new records, up [108%](#) in 2021, and look set to grow well above 50% each year this decade. Lithium demand is forecast to grow [11x](#) this decade with most analysts forecasting growing lithium deficits. So we have a winning trend and a huge disconnect caused by macro factors (Russia-Ukraine conflict, rising US interest rates). Great investors can see this huge disconnect and will move now to profit from it.

Two popular ETFs that track the stocks of EVs, batteries, lithium and EV metal companies also tell a similar story, having both fallen the past 3 months. The Global X Lithium & Battery Tech ETF (LIT) is now trading on a PE of just [26](#) and the Amplify Lithium & Battery Technology ETF (BATT) trades on a PE of only [21](#). Considering the sector's growth rate of well above 50%pa, this is plain crazy.

A final example could be Tesla (NASDAQ: TSLA). The stock is [down 26%](#) over the past 3 months despite reporting its best ever results in Q4, 2021 and smashing the competition. Tesla had an outstanding 2021 [growing revenues 71% YoY](#) and GAAP earnings by

665% YoY. Total vehicle production grew 83% YoY. 2022 looks to be even better for Tesla with 2 new gigafactories set to open and production likely to grow from ~936,000 electric cars in 2021 to somewhere near 1.7 million in 2022. One more key factor highlighting global EV demand, Tesla has an estimated [1.3 million pre-orders](#) for their Cybertruck. In total Tesla's pre-orders are so high that they don't even accept orders for Model Y in many countries as they cannot meet demand for some years.

**Tesla's electric cars have huge waiting lists and well over 1.5 million pre-orders**



## **Closing remarks**

All forms of lithium prices (spodumene, Li hydroxide, Li carbonate) have been surging higher the past 14 months. In particular, the China lithium carbonate price has surged **125% higher** the past 3 months, while leading lithium miners and others fell between 6% and 35%. Albemarle, the leading lithium miner, has **fallen 32%** in the past 3 months. This is a huge disconnect, and frankly what great investors dream of. I will be topping up my positions in the EV companies and lithium miners as the EV and lithium boom has only just begun and current macro events have opened up a huge buying opportunity for investors. The last time I saw this happen was in the March 2020 Covid-19 low, with many lithium stocks surging higher once market sentiment improved.

My view is that the lithium miners are currently like a tightly sprung coil. As soon as the market sentiment and macro issues improve that coil should spring open propelling lithium miners stock prices higher and closing the current huge disconnect.

Don't miss this opportunity to buy into 'white gold' as lithium becomes the most critical element of the modern era.

*Disclosure: The author is long all the stocks and ETFs mentioned in this article.*