

Technology Metals Report (03.22.2024): US pledges \$1.28B for ASX rare earths stocks and Biden takes a major step in tackling climate change

written by Tracy Weslosky | March 22, 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 Director's 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 US's pledge of \$1.28 billion to ASX-listed rare earths firms to lessen China's dominance in the sector, the looming uncertainty over the future of Flow-Through Financings in Canada as the METC deadline approaches, and Albemarle Corporation's groundbreaking lithium auction aimed at enhancing pricing transparency. Additionally, the Biden administration's ambitious rule to expand electric vehicles (EVs) and the examination of factors behind cooling EV sales growth emphasize the ongoing transformations and challenges within the critical minerals sector.

This week's TMR Report also highlights several significant developments that further shape our understanding and approach to the critical minerals industry. The urging by the US Energy Secretary for Congress to ban uranium imports from Russia supports domestic nuclear fuel development, while China's

rebound in graphite exports for batteries signals geopolitical tensions and strategic resource control. The US's efforts to incorporate Central Asia into its critical minerals supply chains, Indonesia's investment in a new HPAL plant by Vale to boost nickel production for EV batteries, and CATL's enduring ambitions despite a slight dip in quarterly earnings showcase the global landscape's complexity and interconnectedness. Furthermore, Graphjet Technology's innovative approach to producing greener graphite and the push to recognize phosphate and potash as critical minerals in the US underscore the ongoing efforts to secure and diversify supply chains. Lastly, Kazakhstan's emerging potential to rival China in the production of rare-earth metals points to the shifting dynamics of global supply and the continuous search for strategic alternatives to current market dominators.

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US pledges \$1.28b for ASX rare earths stocks (March 21, 2024, [Source](#)) – The US aims to allocate \$1.28 billion to ASX-listed rare earths firms, Meteoric Resources NL (ASX: MEI) and [Australian Strategic Materials Limited](#) (ASX: ASM) (ASM), to diminish China's dominance in critical minerals necessary for decarbonization and defense. The US Export Import Bank's (US EXIM) potential loans aim to support projects in Brazil and New South Wales, contingent upon US companies obtaining project contracts. This funding is part of wider US and Australian efforts to establish non-Chinese critical mineral supply chains, with additional support from the US Department of Defence and other agencies for various projects. This initiative underscores the strategic importance of diversifying global supply chains and bolsters the credibility and development prospects of companies like Meteoric and ASM in the critical minerals sector.

Anxiety Rises on the Future of Flow-Through Financings as METC Deadline Looms, Canadian Government Keeps Quiet (March 20, 2024, [Source](#)) – Facing the potential expiration of the Mineral Exploration Tax Credit (METC) at the end of March, the Canadian mining industry is gripped by uncertainty. This credit, crucial for supporting exploration companies through Flow-Through Share pricing, might not be renewed, threatening to raise capital costs by 15-20%. The federal government's silence on the issue heightens anxiety, affecting planning and investments, especially for junior miners. Provincial credits in Ontario and Saskatchewan face similar fates, though Manitoba and British Columbia have permanent solutions. The industry is anxiously awaiting the federal budget announcement on April 16, hoping for a resolution. The potential loss of METC, combined with recent tax changes, could significantly impact exploration investment in Canada, underscoring the importance of government policy in the sector's financial health.

Albemarle Lithium Auction offers a bold move forward in pricing transparency in the critical minerals market (March 20, 2024, [Source](#)) – [Albemarle Corporation](#) (NYSE: ALB), the largest lithium producer, is initiating a landmark auction on March 26 to enhance transparency and address price discovery issues in the lithium market. This move, highlighted by Jack Lifton of the [Critical Minerals Institute](#) (CMI), aims to mitigate the opacity and volatility that have long plagued the sector, exacerbated by the electric vehicle (EV) boom. Traditionally, lithium prices have been privately negotiated, lacking a clear global benchmark. Albemarle's auction represents an innovative step towards establishing more transparent pricing, inviting competitive bidding for a significant lithium quantity. Although this initiative marks progress towards addressing market challenges, Lifton cautions it may not fully resolve the industry's volatility and unpredictability, signaling a critical

evolution in lithium pricing strategies amidst growing global demand.

Biden Administration Announces Rule Aimed at Expanding Electric Vehicles (March 20, 2024, [Source](#)) – The Biden administration unveiled a pivotal climate regulation, aiming to revolutionize the U.S. auto industry by ensuring a majority of new passenger vehicles sold by 2032 are electric or hybrid. This marks a major step in tackling climate change, given transportation's status as the top carbon emitter in the country. Despite electric vehicles (EVs) constituting only 7.6% of car sales last year, this rule mandates a significant increase to meet a 56% EV sales target, with hybrids contributing an additional 16%. President Biden highlighted the initiative's potential for economic growth, job creation, and significant environmental benefits, including a projected reduction of over seven billion tons of carbon dioxide emissions over three decades. However, the transition faces challenges, including manufacturing and infrastructure overhaul, political opposition, and consumer acceptance. The regulation, which introduces stringent emissions caps, has garnered both support for its environmental impact and criticism for its feasibility and potential economic implications. Critics argue it may impose undue pressure on the auto industry and consumers, while supporters see it as a crucial step toward a more sustainable future.

The cars, the chargers or the customers? A look at what's behind cooling EV sales growth (March 20, 2024, [Source](#)) – Facing cooling growth in electric vehicle (EV) sales, automakers are adjusting their production strategies amidst increasing model availability. The sector balances optimism with skepticism regarding the shift away from fossil fuels, underlined by challenges like inadequate charging infrastructure impacting consumer choices. Events like CERAWeek by S&P Global highlight EVs' potential to reduce oil demand, emphasizing the

transition's significance. Despite slower sales growth, companies like Ford report significant increases, pointing to the essential role of EVs in future automotive competitiveness. Addressing consumer concerns, particularly around charging reliability and infrastructure, alongside educating an evolving customer base, is pivotal for sustaining the industry's growth momentum.

US energy secretary encourages Congress to ban uranium supplies from Russia (March 20, 2024, [Source](#)) – U.S. Energy Secretary Jennifer Granholm has urged Congress to ban uranium imports from Russia to support domestic nuclear fuel development. This call comes in light of legislation passed by the U.S. House last December, aimed at halting these imports as part of the response to Russia's invasion of Ukraine. However, the Senate has faced delays due to a hold by Senator Ted Cruz on unrelated issues. Granholm emphasized that passing this ban would release funds for expanding domestic uranium enrichment and producing high assay low enriched uranium (HALEU) for advanced nuclear reactors. She expressed optimism during a House hearing on her department's budget, highlighting the urgency of this action to advance domestic nuclear energy capabilities.

China's exports of graphite for batteries rise from December low (March 20, 2024, [Source](#)) – China's natural graphite exports, essential for electric vehicle batteries, rebounded after Beijing's December controls aimed at tightening its grip on vital minerals for advanced manufacturing. From a December low of 3,973 tonnes, exports rose to 6,275 tonnes in January and 10,722 tonnes in February, despite previously averaging about 17,000 tonnes monthly. The restrictions, viewed as a response to Western trade barriers, notably impact trade flows. Rising tensions are evident as the U.S. considers blacklisting Chinese semiconductor firms linked to Huawei Technologies, signaling an escalation in the technological rivalry. These developments

underscore the strategic importance of graphite in the global tech industry and the geopolitical tensions surrounding access to critical manufacturing resources.

US Looks to Draw Central Asia Into Critical Minerals Supply Chains (March 18, 2024, [Source](#)) – The United States is actively seeking to integrate Central Asia into its critical minerals supply chains, a move underscored by the February 2024 inauguration of the Critical Minerals Dialogue (CMD) in the C5+1 format. This initiative, bolstered by the collective will of the U.S. and Central Asian nations—Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan—aims to bolster Central Asia's role in global supply chains, thereby enhancing economic cooperation, facilitating clean energy transitions, and protecting regional ecosystems. Central Asia, rich in critical minerals like nickel, cobalt, palladium, rare earth elements (REEs), and others vital for high-tech, defense, and green technologies, represents a strategic alternative to China's dominance in these supply chains. The U.S. is particularly keen to mitigate risks associated with China's control over a significant portion of the world's critical minerals processing and production. Through the CMD and other partnerships, the U.S. seeks to foster investment in Central Asia's vast mineral resources, promising a potential shift in global economic and technological power dynamics while confronting strategic vulnerabilities and enhancing national security.

Indonesia says nickel miner Vale to build another \$2 bln HPAL plant (March 18, 2024, [Source](#)) – Nickel miner PT Vale Indonesia is considering a \$1.91 billion investment in a new high-pressure acid leaching (HPAL) plant on Sulawesi island, announced Indonesia's Investment Ministry. This plant, named "SOA HPAL," aims to produce mixed hydroxide precipitate (MHP), essential for electric vehicle batteries, with an expected annual output of 60,000 metric tons of nickel in MHP. Vale Indonesia, which is in

the final stage of exploration, plans to collaborate with automakers for this venture. The company already has two HPAL projects underway in Sulawesi, partnering with Zhejiang Huayou Cobalt, and has Ford's involvement in the \$4.5 billion Pomalaa project. Additionally, Indonesia's state mining company MIND ID recently acquired a 14% stake in Vale Indonesia, bolstering its position as a top shareholder.

CATL earnings slip masks charged-up ambitions (March 18, 2024, [Source](#)) – Contemporary Amperex Technology (CATL), the world's largest electric car battery manufacturer, experienced a slight 1.2% decline in quarterly earnings, marking its first downturn since early 2022. Despite reduced factory utilization and the broader industry's cooling sales growth, CATL is ambitiously expanding, planning new facilities to increase its production potential significantly. The company dominates the global market, boasting a 36.8% share and leading innovation with a large R&D team focused on advanced battery chemistries. Although facing challenges in the United States, CATL is making strategic moves abroad, including constructing a factory in the European Union. Investors remain optimistic, reflected in a stock price increase, as CATL's scale, innovation, and strategic expansion position it to potentially outpace competition and maintain market leadership, despite potential overcapacity risks.

Startup Offers EV Firms Greener Graphite in Alternative to China (March 18, 2024, [Source](#)) – Graphjet Technology, an alternative energy startup in Malaysia, is offering electric-vehicle (EV) manufacturers a sustainable source of graphite by converting agricultural waste into this critical battery component. Utilizing palm kernels, the company can produce graphite with an 83% lower carbon footprint and at 80% less cost than traditional methods. Starting in the second quarter, Graphjet aims for an annual production capacity of 3,000 tons from its facility in Malaysia, a leading palm oil producer. This move provides a

significant alternative to China's dominance in the synthetic graphite market, responsible for 90% of the global supply. The U.S. is keen on diversifying its EV battery supply chain away from Chinese control, especially in light of China's recent export restrictions on graphite. Graphjet's initiative is timely, as it plans expansions in Nevada, Korea, Japan, and Europe, aiming to address the growing global demand and the U.S.'s need for a reliable graphite source outside China.

TFI: Phosphate and Potash are Critical Minerals, Senate Bill to Solidify (March 14, 2024, [Source](#)) – The Fertilizer Institute (TFI) has commended the U.S. Senate's bipartisan effort to classify phosphate and potash as critical minerals, highlighting the move as crucial for securing the nation's agricultural future and food supply. The legislation, backed by Senators from both parties, aims to ensure a resilient and sustainable domestic fertilizer supply for American agriculture by addressing the vulnerabilities in the global supply chain and geopolitical instability. With the majority of the world's phosphate and potash concentrated in a few countries, and the U.S. heavily reliant on imports for its potash needs, this initiative seeks to mitigate supply chain risks. Recognizing these minerals as critical could streamline the permitting process for expanding and opening new mines in the U.S., a necessary step given the extensive time and financial investment required.

Kazakhstan's Potential to Overtake China in Production of Rare-Earth Metals (March 14, 2024, [Source](#)) – Kazakhstan is on the verge of becoming a significant contender in the global rare-earth elements (REEs) market, challenging China's dominance. With China controlling 70% of the market and facing strained relations with the West, North American and European investors are turning to Kazakhstan's rich reserves as a strategic alternative. This shift is driven by the need to diversify

supply chains away from China, given REEs' critical role in technology and manufacturing. The US and EU are prepared to invest in Kazakhstan, aiming to secure a stable, sustainable supply of these vital materials. However, Kazakhstan must modernize its mining practices and carefully select investors to fully leverage its potential as a global REE supplier.

Investor.News Critical Minerals Media Coverage:

- March 20, 2024 – Anxiety Rises on the Future of Flow-Through Financings as METC Deadline Looms, Canadian Government Keeps Quiet <https://bit.ly/3IKHmI7>
- March 20, 2024 – Albemarle Lithium Auction offers a bold move forward in pricing transparency in the critical minerals market <https://bit.ly/3vkpBwf>
- March 20, 2024 – The Top 5 Reasons Why YouTube Will Transform Marketing for Public Companies <https://bit.ly/3PvPnEC>

Investor.News Critical Minerals Videos:

- March 20, 2024 – CBLT'S Peter Clausi on de-risking exploration projects with M&A <https://bit.ly/3vfU6Uf>
- March 20, 2024 – Chris Buncic on the “shocking” Chrysalis Copper timeline for production <https://bit.ly/49ZGRGm>
- March 19, 2024 – World Renowned Critical Minerals Expert Constantine Karayannopoulos is Bullish on Lithium <https://bit.ly/43m0vbK>
- March 19, 2024 – Peartree's Ron Bernbaum on how Charitable

Flow-Through Financings Connects Donors, Investors, and Mining Companies for Canada's Exploration Capital
<https://bit.ly/4cj303V>

- March 19, 2024 – Xcite Resources' Jean-Francois Meilleur on the Athabasca Basin's untapped potential for significant uranium discoveries <https://bit.ly/49YQ9SK>
- March 19, 2024 – Scandium Canada's Guy Bourassa on One of the Largest Primary Scandium Projects in the World <https://bit.ly/3TlHeUp>
- March 18, 2024 – Rowena Smith Highlights ASM's Operational Success at Korean Metals Plant in Rare Earth Metals Production <https://bit.ly/3TH1jWS>
- March 18, 2024 – Jack Lifton Sits Down with 'Bobby' Stewart, the Driving Force Behind Geophysx Jamaica's Charge into the Global Arena with Critical Minerals <https://bit.ly/3vhDtaG>
- March 18, 2024 – WEALTH's Peter Nicholson on the Added Benefits of Critical Mineral Flow Through Investment Deals in Quebec, Saskatchewan and Manitoba <https://bit.ly/4a37xGk>
- March 17, 2024 – John Passalacqua on First Phosphate's groundbreaking achievements in the phosphate mining industry <https://bit.ly/3VgRlwt>
- March 17, 2024 – America Rare Earths' Donald Swartz on the recent increase in in-situ resources at Halleck Creek by 64% to 2.34 billion tonnes <https://bit.ly/3IGgvNv>
- March 17, 2024 – Rowena Smith sits down with Jack Lifton on ASM's 'Mines to Metal' Advantage in Supplying Rare Earths <https://bit.ly/4cmILMc>

Critical Minerals IN8.Pro Member News

Releases :

- March 21, 2024 – Hearty Bay Drilling Suggests Till Sampling May Lead to Source of Radioactive Boulders <https://bit.ly/3ILHjvL>
- March 21, 2024 – ASM receives US\$600M (A\$923 million) Letter of Interest from US EXIM for Dubbo Project, as US partnerships begin to play a significant role <https://bit.ly/4ahxWQR>
- March 20, 2024 – NEO Battery Materials Announces Change of Auditor to MNP LLP <https://bit.ly/3VrGyQf>
- March 20, 2024 – Power Nickel Continues to Expand its Near Surface High-Grade Cu-Pt-Pd-Au-Ag Zone 5km Northeast of its Main Nisk Deposit <https://bit.ly/3IM5Cd5>
- March 19, 2024 – First Phosphate Drills 9.44% P2O5 Over 89.10 m at Its Bégin-Lamarche Project in Saguenay-Lac-St-Jean, Quebec, Canada <https://bit.ly/43wi4qT>
- March 19, 2024 – Defense Metals Appoints HCF International Advisers for Strategic Funding Review of Wicheeda REE Project <https://bit.ly/3IGNMIo>
- March 18, 2024 – American Rare Earths' Scoping Study confirms low-cost, scalable world-class REE project <https://bit.ly/3IJD2l>

Darren Hazelwood on Panther

Metals' VMS Project Scale and the Graphite Potential Near Thunder Bay

written by InvestorNews | March 22, 2024

In a compelling interview at PDAC 2024, InvestorNews host Peter Clausi engaged with Darren Hazelwood, CEO of [Panther Metals PLC](#) (LSE: PALM), to discuss the company's significant progress and exploration insights, particularly surrounding the Obonga Project near Thunder Bay. Hazelwood shed light on the company's exploration achievements, notably at the Obonga Greenstone Belt, where Panther Metals has discovered substantial Volcanogenic Massive Sulphide (VMS) mineralization and several new VMS lenses through targeted drilling. These findings underscore the project's potential to host Canada's next VMS camp, a prospect supported by comparisons with the productive Sturgeon Lake Greenstone Belt. The CEO expressed confidence in the project's scale and the promising indicators for further exploration success.

Adding to the narrative of exploration success, Panther Metals also provided an update on the graphite potential within the Obonga Project's Awkward Prospect. The company's focused drilling and historical data review have extended the graphite potential, revealing significant intersections of crystalline 'flake' graphite. This update, encompassing an additional 21.5 km² target area for graphite exploration, marks a pivotal expansion of Panther Metals' mineral exploration endeavors in Canada. Hazelwood's commentary highlighted the strategic importance of graphite in the context of global decarbonization, emphasizing the potential of the Awkward Prospect to contribute significantly to the supply of this critical mineral. With these

developments, Panther Metals underscores its robust exploration strategy, leveraging technological advancements and extensive geological insights to uncover valuable mineral deposits within its diversified portfolio in Canada and through strategic investments in Australia.

To access the complete interview, [click here](#)

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About Panther Metals PLC

Panther Metals PLC is an exploration company listed on the main market of the London Stock Exchange. Panther is focussed on the discovery of commercially viable mineral deposits. The Company's operational focus is on established mining jurisdictions with the capacity for project scalability. Drill targets are assessed rapidly utilising a combination of advanced technologies and extensive geological data to decipher potential commercial viability and act accordingly. Panther's current geological portfolio comprises of three highly prospective properties in Ontario, Canada while the developing investment wing focuses on the targeting of nickel and gold in Australia.

To learn more about Panther Metals PLC, [click here](#)

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The Critical Minerals Institute Report (01.25.2024): U.S. government bans Pentagon battery purchases from major Chinese companies starting October 2027

written by Matt Bohlsen | March 22, 2024

Welcome to the January 2024 [Critical Minerals Institute](#) (CMI) report, designed to keep you up to date on all the latest major news across the critical minerals markets. Here is the CMI List of [Critical Minerals](#) or visit the [CMI Library](#).

Global macro view

January 2024 saw a slight rise in U.S. inflation [reported](#) from 3.1%pa in November to 3.4%pa in December 2023. This has led market commentators to suggest the proposed 2024 interest rate [reductions](#) may be pushed out to H2, 2024, or be smaller in nature.

The next U.S. Fed rates announcement is due on January 31, 2024, and no changes in rates are expected. Year to date, as of January 21, 2024, the [S&P 500](#) is up 2.04%. U.S. GDP looks set to slow in Q4, 2023 ([announcement](#) due 25 January 2024) with [forecasts](#) for 2% annualized growth, which would result in a [2023 GDP](#) of ~2.7%. 2024 U.S. GDP is [forecast](#) to be ~2.2%. The U.S. consumer remains resilient with U.S. employment [very strong](#).

China continues its property led slowdown with 2023 GDP recently [reported at 5.2%](#) annualized. China's December new [home prices fell](#) at the fastest pace in almost 9 years. Despite this the Chinese Central Bank left rates unchanged, defying expectations for a 0.1% cut.

The Russia-Ukraine war continues as does the Hamas-Israel war which last month spread to include the U.S. and UK forces [bombing](#) Iran-backed Houthis over their attacks in the Red Sea. The Middle East is a hotbed ready to explode.

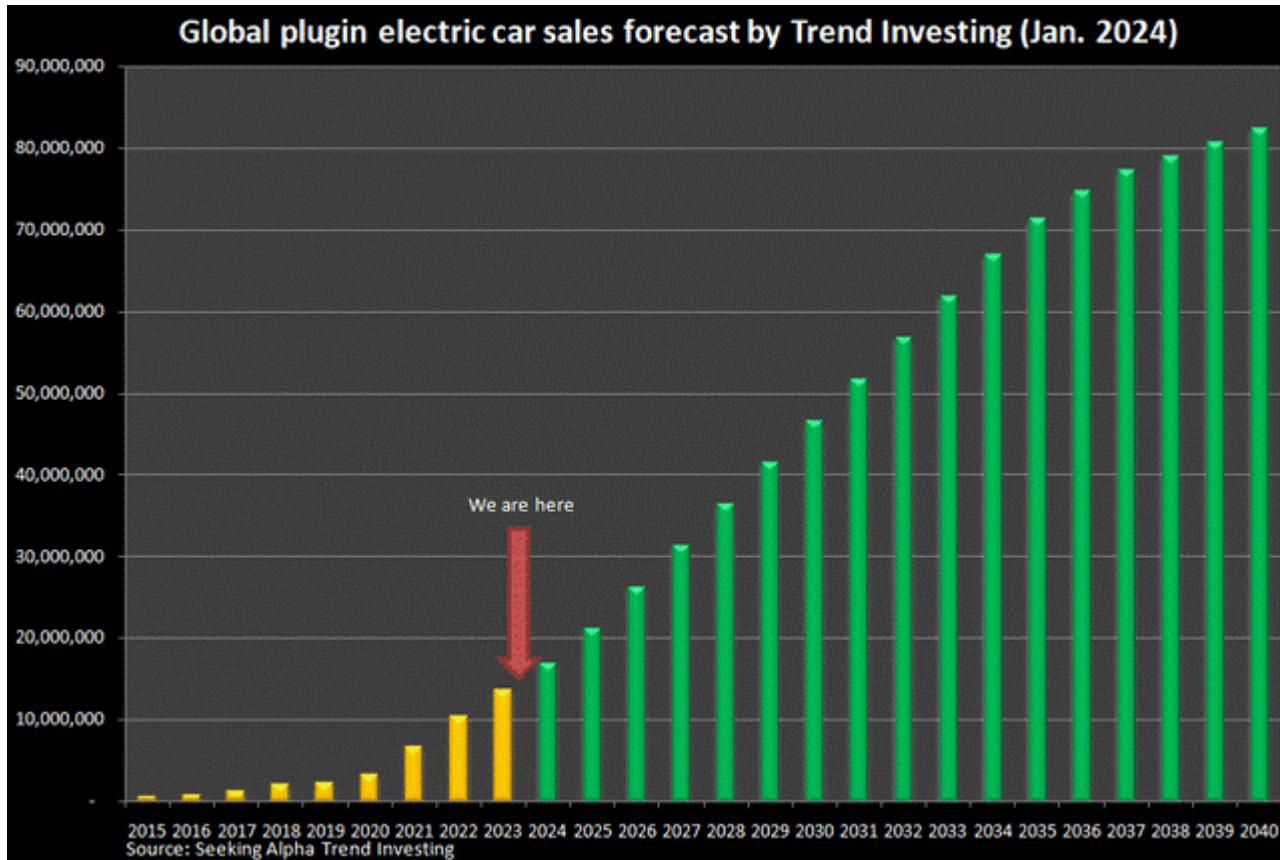
Global plugin electric vehicle (“EV”) update

December 2023 saw the usual seasonal upswing in global plugin electric car sales reaching a record [~1.5 million](#). China led the way with a stellar result of [1.191 million units](#), up [46% YoY](#).

Global plugin electric car sales ended 2023 at [13.6 million units](#) (~16% market share), for a growth rate of [31% YoY](#) (a significant slowdown from the ~60% growth rate in 2022).

- Trend Investing [forecast](#) for 2024 is 17 million units (20% market share), for a growth rate of 25% YoY.
- BloombergNEF [forecast](#) for 2024 is 16.7 million units (~20% market share), for a growth rate of 21% YoY.

We are still at the very early stage of the EV boom.



Trend Investing's global plugin electric car sales forecast to 2024 (green bars)

In early January, news was released that [a record](#) 1.2 million EVs were sold in the U.S. in 2023, according to estimates from Kelley Blue Book. The report noted that U.S. market share [reached 7.6%](#) in 2023 and that 55% of EV sales were attributable to Tesla (NASDAQ: TSLA).

The UK announced that their Zero Emission Vehicle (ZEV) [mandate](#) to increase electric car sales has become law. Key rules include:

- **"ZEV Mandate demands makers up share of electric car sales to 22% in 2024.**
- Electric vehicles currently make up around just 18% of all registrations in the UK.
- **Mandate thresholds rise annually to an 80% share in 2030 –**

and 100% by 2035.

- Failure to meet the ZEV mandate sales targets can result in huge fines for auto makers of £15,000 per model below the required threshold.”

EV battery news

The U.S. government continues to tighten the screws towards developing their own EV supply chain independent of Foreign Entities Of Concern (“FEOC”). On January 20 Bloomberg [reported](#): “US to ban Pentagon battery purchases from China’s CATL, BYD”. The ban will commence from October 2027 and include 4 other Chinese battery makers (Envision Energy Ltd., EVE Energy Co., Gotion High Tech Co., and Hithium Energy Storage Technology Co).

Global critical minerals update

There is an enormous amount of doom and gloom surrounding the EV and battery metals sector as we commence 2024. A key theme in recent months has been very depressed prices for many of the critical minerals, especially those related to the EV segment. A combination of the slowing EV growth rate in 2023 from ~60% in 2022 to ~31% in 2023, combined with an excess of battery inventory from 2022 and new EV metals supply has left most EV metal markets in surplus with prices collapsing.

MarketsCommodities

Battery Metal Price Plunge Is Closing Mines and Stalling Deals

■ Prices for lithium, nickel and cobalt have tumbled from peaks

Source: [Bloomberg article, January 10, 2024](#)

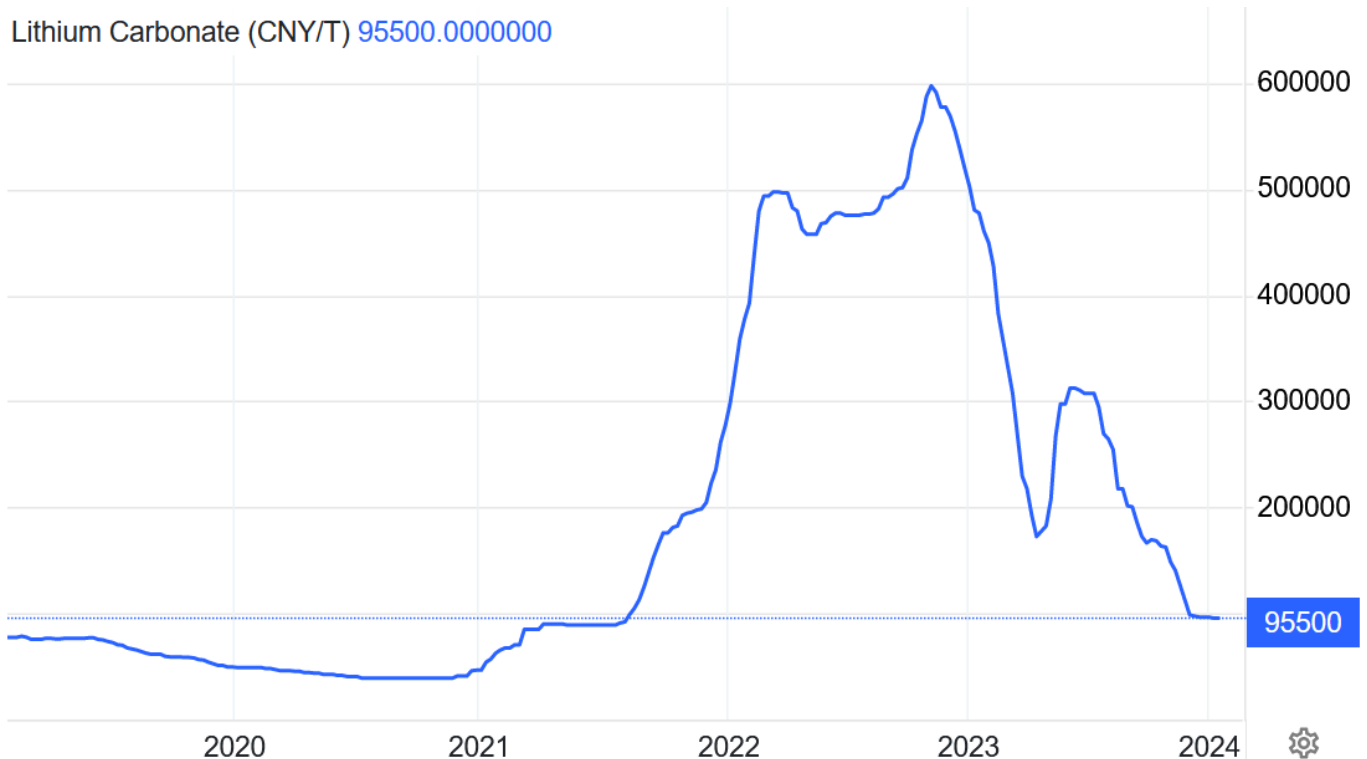
Lithium

China lithium carbonate [spot prices were flat](#) the past month, with the price now at [CNY 95,500/t](#) (USD 13,275/t). After an [~80%](#) fall from the high, lithium prices appear to have finally stabilized. This is logical given that prices are now at or below the marginal cost of production, especially for the higher cost China lepidolite producers.

Industry participants have been calling for a price bottom in recent months, with China Futures Co. analyst, Zhang Weixin, forecasting lithium prices to bottom out between [CNY 80-90,000/t](#) and average CNY 100,000/t in 2024.

The other key recent trend in the lithium sector has been several announcements from lithium producers either stopping production or reducing their expansion plans. Core Lithium (ASX: CX0) announced on January 5, 2024 it will [temporarily suspend](#) mining operations. Then on January 17, 2024, Albemarle Corporation (NYSE: ALB) [anno](#)unced “actions to preserve growth, reduce costs, and optimize cash flow”. This includes deferring plans to build a fourth lithium hydroxide processing train at their Kemerton LiOH facility.

The China lithium carbonate spot price has stabilized near the marginal cost of production



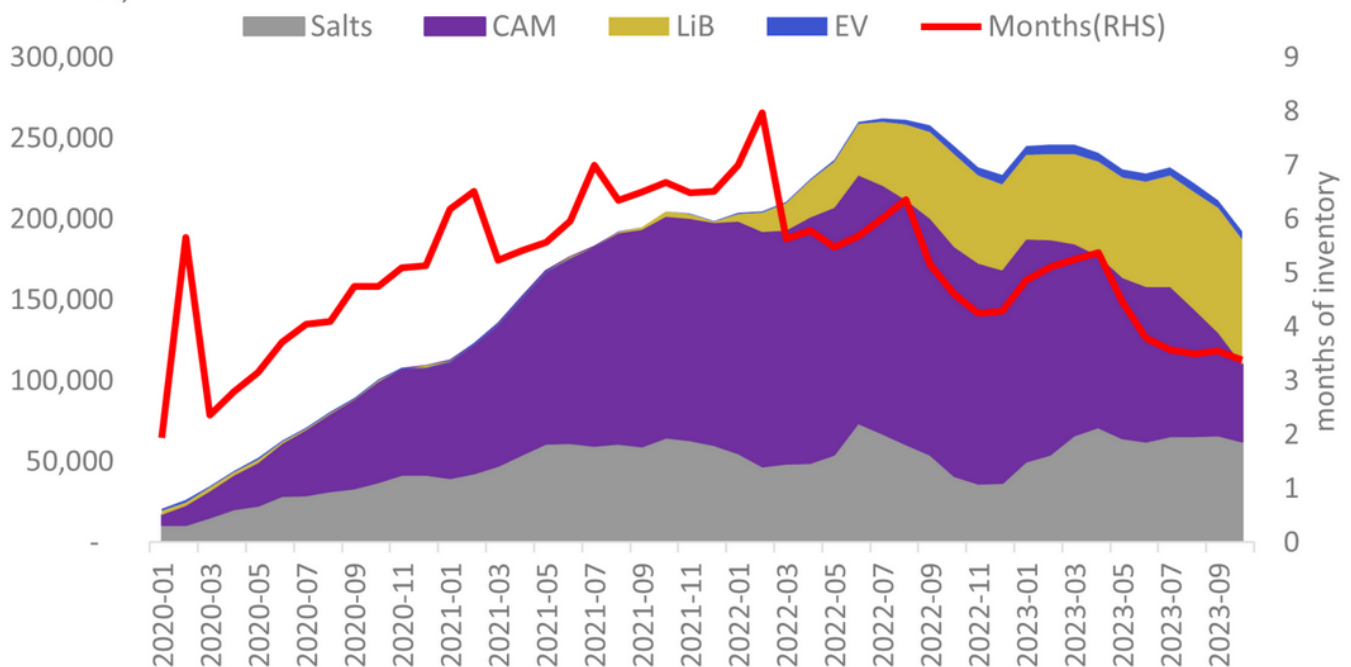
Source: [Trading Economics](#)

On the topic of when we might see some recovery in lithium prices. On January 19 Fastmarkets put out a report [stating](#): “...We expect orders to start flowing upstream again either towards the end of the first quarter or early in the second quarter.” If this proves correct and EV demand remains solid, then we could expect some lithium price recovery late Q1, early Q2, 2024.

Fastmarkets reports China lithium inventory levels are now back to the pre-boom levels with ~3 months of supply (red line)

Implied inventory on the way back to normalized level

Implied lithium inventory within China's supply chain
tonnes, LCE



Source: [Fastmarkets](#)

Magnet Rare Earths

Neodymium spot prices fell again the past month to [CNY 505,500/t](#). Prices peaked in February 2022 at CNY 1,506,530 and have been trending lower ever since then.

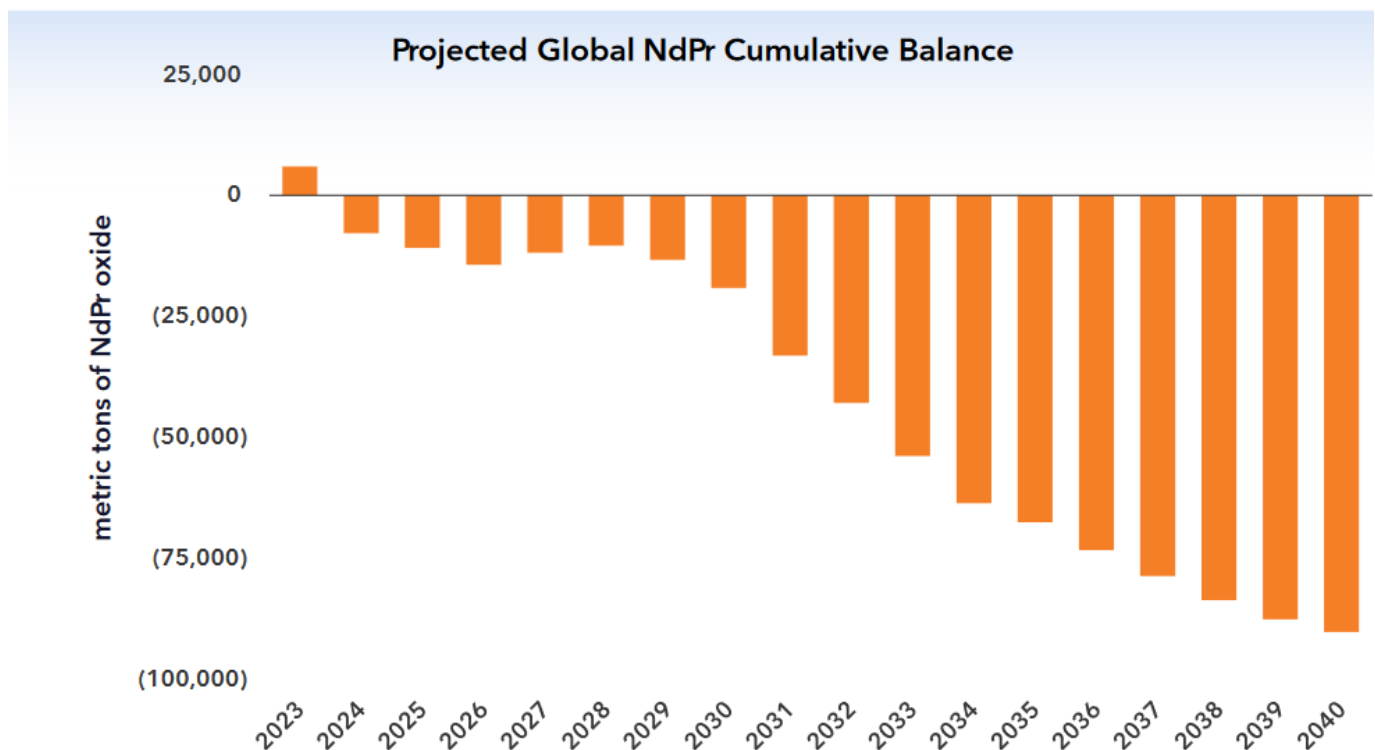
As discussed in a recent [InvestorNews article](#), the consensus of industry experts is for 2024 to be a consolidation year. The article states: "2024 should see a year of consolidation for the rare earths sector as some experts are telling me. Some [forecasts](#) are for NdPr supply deficit to begin as early as 2024; however, this will largely depend on China demand, the global economy, EV sales, and new NdPr supply hitting the market."

One interesting [news item](#) that emerged in January was of Rainbow Rare Earths Limited (LSE: RBW) ("Rainbow") and their Phalaborwa Project in South Africa. The key aspect being that the Project

[consists of gypsum](#) waste piles that contain large quantities of the magnet rare earths. Rainbow CEO Bennett [stated](#): “We’ve got no mining cost, no crushing, no milling, no flotation. I saw the advantages to lead to a low capital intensity and low operating cost environment project.” Rainbow targets first production for 2026.

Some analysts are forecasting deficits ahead for NdPr rare earths driven by strong EV and wind energy demand

A precarious supply-demand imbalance looms



Source: [MP Materials courtesy Adamas Intelligence](#)

Cobalt, Graphite, Nickel, Manganese and other critical minerals

Cobalt prices (currently at [US\\$12.90/lb](#)) were flat the past month and remain at very depressed levels. The cobalt market is

suffering from excess cobalt supply from the DRC which combined with a global slowdown in demand has led to cobalt prices dropping by almost 2/3 since their April 2022 peak. With LFP batteries gaining in popularity (no cobalt required) and a weak global consumer electronics market, there appears to be no short term turnaround for cobalt. Leading cobalt producer Glencore PLC (LSE: GLEN | OTC: GLCNF) has been stockpiling their excess material. At current prices, there is limited incentive for western producers to expand or enter the market.

Cobalt has lost two-thirds of its value since a recent peak in 2022



Source: [Trading Economics](#)

Flake graphite prices remain very weak with prices near the marginal cost of production and [down ~2%](#) over the past month.

A January 2024 Bloomberg [report](#) noted that natural flake graphite shipments slumped 91% in December from November 2023. Of course, sales surged prior to the Chinese export license permits being implemented in December 2023. December exports

were 3,973 tons compared to the past monthly average of ~17,000t, so still a very significant fall.

Despite the spate of recent bad news, graphite is one of the EV metals with the largest demand profiles ahead this decade. Several groups are forecasting deficits ahead this decade starting from 2024/25 for the various types of graphite including flake, spherical, and synthetic. You can read more on the graphite outlook [here](#).

Nickel prices fell again last month to [USD 15,799/t](#). The [1 year outlook for nickel](#) remains poor due to oversupply concerns from Indonesia. As a result of low nickel prices we saw [the collapse](#) of Panoramic Resources (ASX: PAN) in December and then on January 22, 2024, it was [reported](#) that BHP Group (ASX: BHP | NYSE: BHP) plans “to put parts of Kambalda nickel concentrator in Australia on care and maintenance” from mid-2024. This was caused by Wyloo Metals, which supplies ore to the plant, announcing a pause in mining operations due to low nickel prices.

Manganese prices were flat the past month and are now at [CNY 29.25/MTU](#).

Uranium prices have been the exception to the rule the past year as they continue to rise, now at [US\\$106/lb](#).

Uranium 5 year price chart



Source: [Trading Economics](#)

Conclusion

The biggest trend that looks to be emerging in Q1, 2024 for the EV metals sector is a negative supply response from producers. Producers are cutting CapEx, scaling back expansion, and in some cases reducing or stopping production. Expect to see a lot more of this in H1, 2024.

They say “the cure for low prices is low prices”. Well that’s exactly where we are now in the cycle. The next 3-6 months is likely to see the washout phase, where many miners collapse, reduce production or put their mine into care and maintenance. There is no point running a mine and selling a limited resource and making no profit. I will end with three well known sayings:

- “Bear markets are the author of bull markets”
- “*Bull markets are born on pessimism, grown on skepticism, mature on optimism, and die on euphoria.*”

- “You have suffered through the pain, now hang around for the gain.”

Given the EV metals markets have been in a bear market for the past 15-18 months the end is near, and we should expect some recovery during H2, 2024, assuming EV sales can grow at a reasonable rate.

Darren Hazelwood Discusses Panther's Substantial Land Package and VMS, Graphite Prospects in the Greenstone Belt

written by InvestorNews | March 22, 2024

In an Investor.Coffee interview with Peter Clausi, Darren Hazelwood, CEO of Panther Metals PLC (LSE: PALM), discussed the company's strategic focus and current projects. Panther Metals is dedicated to developing the next Volcanogenic Massive Sulphide (VMS) camp in Canada, a significant endeavor considering VMS deposits include valuable minerals like copper, zinc, lead, gold, and silver. The company's exploration in the Obonga greenstone belt, located approximately 2.5 hours north of Thunder Bay by tarmac road, has already yielded promising results.

The Critical Minerals Institute Report (12.27.2023): Politics Driving Marketable Commodities into 2024

written by Matt Bohlsen | March 22, 2024

Welcome to the December 2023 [Critical Minerals Institute](#) ("CMI") report, designed to keep you up to date on all the latest major news across the critical minerals markets. Here is the [CMI List](#) of Critical Minerals or click here to visit the [CMI Library](#).

Global macro view

December 2023 saw a further fall in U.S. inflation from 3.2%pa in October to [3.1%pa](#) in November. As expected the U.S. Fed left interest rates unchanged at their December meeting. Even more significant was the Fed indicated that there are potentially '[3 interest rate cuts coming](#)' in 2024. This was an early Christmas present for U.S. equity markets which continued their recent rally. Year to date, as of December 26, 2023, the S&P 500 is up 25.75% and the NASDAQ is up an amazing 43.25%. Of course, this follows heavy falls in 2022.

In late December China signaled a possible early 2024 interest rate cut when they [reduced](#) bank deposit rates. As a result China 30 year government bond yields hit their lowest level since 2005. All of this [recent support](#) for China's economy and property market looks likely to set up a potential China

recovery story in 2024. If China starts to recover in 2024 it would be a positive for commodity markets including the critical minerals.

The Russia-Ukraine war drags on through the European winter. There are some very [early signs](#) that both sides may be willing to end the war in 2024. We will see. Meanwhile, the Hamas-Israel war has been contained for now. We can only hope for peace in 2024.

Global plugin electric vehicle (“EV”) update

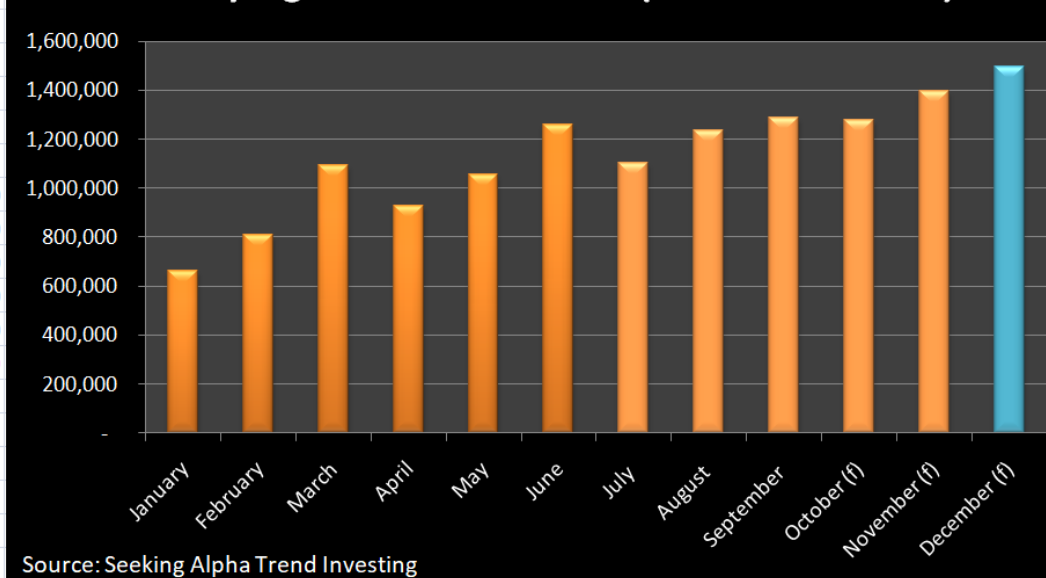
Global plugin electric car sales were [1,279,000](#) in October 2023 (the second-best month ever), up 37% YoY. November global sales reached [1.4 million](#). December should be even better. CPCA expects China’s NEV (New Energy Vehicle) retail sales in December 2023 to reach a record [940,000 units](#) (41.4% market share), up 46.6% YoY. That should mean December global EV sales will be around 1.5 million.

This means that 2023 global plugin electric car sales should end up close to 13.6 million (~17% market share), for a growth rate of ~29% YoY (a significant slowdown from the 56% growth rate in 2022).

2023 Global plugin electric car sales (actual + forecast)

Month	Sales
January	662,000
February	812,000
March	1,097,000
April	928,000
May	1,057,000
June	1,260,000
July	1,104,000
August	1,238,000
September	1,291,000
October (f)	1,279,000
November (f)	1,400,000
December (f)	1,500,000
	13,628,000
H1 sales	5,816,000

2023 Global plugin electric car sales (actual & forecast)



In other EV related news, in December Germany announced an abrupt [ending](#) to their EV subsidy. The subsidy was originally intended to apply until the end of 2024.

We also heard news that the U.S. is considering [raising tariffs](#) on Chinese EVs and Chinese solar products. The White House plans to complete a tariff review in early 2024. Chinese EVs entering the USA already have a [25% tariff](#). This follows the [EU's](#) probe into China subsidies for EVs. All of this has come about due to the fact that about 60% of all global plugin EV sales are in China and the fact that China completely dominates the EV market and EV supply chain. This is now leading to a flood of compelling Chinese electric cars being exported to global markets where Western manufacturers (excluding [Tesla Inc.](#) (NASDAQ: TSLA)) are struggling to compete with China.

Finally, in December it was announced that Canada will require all new cars and trucks to be zero-emissions vehicles by 2035. The Canadian government [stated](#): "The Standard will ensure that Canada can achieve a national target of 100 percent zero-emission vehicle sales by 2035. Interim targets of at least 20 percent of all sales by 2026, and at least 60 percent by 2030."

Global critical minerals update

In December we got a key U.S. political announcement that will impact EV sales and critical minerals demand in 2024 and beyond.

U.S. Foreign Entity of Concern (“FEOC”) proposal

The U.S. DoE releases proposed interpretive guidance on Foreign Entity of Concern (“FEOC”) rules. FEOC’s include China, Russia, North Korea, and Iran. Key proposals include:

- Beginning 2024, companies that have >25% ownership or control by a FEOC will not be eligible for tax credits available under the Inflation Reduction Act (IRA).
- Beginning in 2024, an eligible clean vehicle (for IRA credits) may not contain any battery components that are manufactured or assembled by a FEOC.
- Beginning in 2025, an eligible clean vehicle may not contain any critical minerals that were extracted, processed, or recycled by a FEOC.

These rules are quite strict and it is looking like the majority of EVs sold in the USA will not qualify in 2024 and hence not receive the subsidy of up to US\$7,000 per vehicle. For example, the Tesla Model 3 and Model Y base range EVs use Chinese made LFP batteries, making them both ineligible to meet the FEOC rules. Things will only get harder in 2025. Of course, this is designed to motivate auto and battery OEMs to hurry up and build a new western battery supply chain, independent of FEOC.

The FEOC proposal follows last month’s news of new guidelines for the EU Critical Raw Materials Act (“CRMA”) as discussed [here](#). A key ruling was that ***“not more than 65% of the Union’s***

consumption of each strategic raw material comes from a single third county."

U.S. proposal to create a 'Resilient Resource Reserve' for key critical minerals

As [reported](#) in December, the U.S. select committee has recommended the creation of a critical mineral reserve to protect domestic industry. The Fastmarkets report [stated](#):

*"The adoption of such a reserve is intended to "insulate American producers from price volatility and (the People's Republic of China's) weaponization of its dominance in critical mineral supply chain. Such a reserve would be used to sustain the price of a critical mineral when prices fall below a certain threshold and would be replenished through contribution from companies when prices are "significantly" higher"...The fund would target critical metals where there is high price volatility, low US domestic production and import dependence on China. **Cobalt, manganese, light and heavy rare earths, vanadium, gallium, graphite, germanium and boron** are critical minerals that fall under that category, according to the report..."*

Note: Bold emphasis by the author.

Lithium

China lithium carbonate spot prices [fell again](#) in December 2023, with the price now at [CNY 96,500/t](#) (USD 13,505/t) and [down 82%](#) over the past year. Prices are now below the marginal cost of production, meaning a bottom should be found very soon (assuming EV sales hold up in 2024).

Industry participants are increasingly calling a likely bottom. For example, China Futures Co. analyst, Zhang Weixin, forecasts China's lithium carbonate spot to bottom out between [CNY 80-](#)

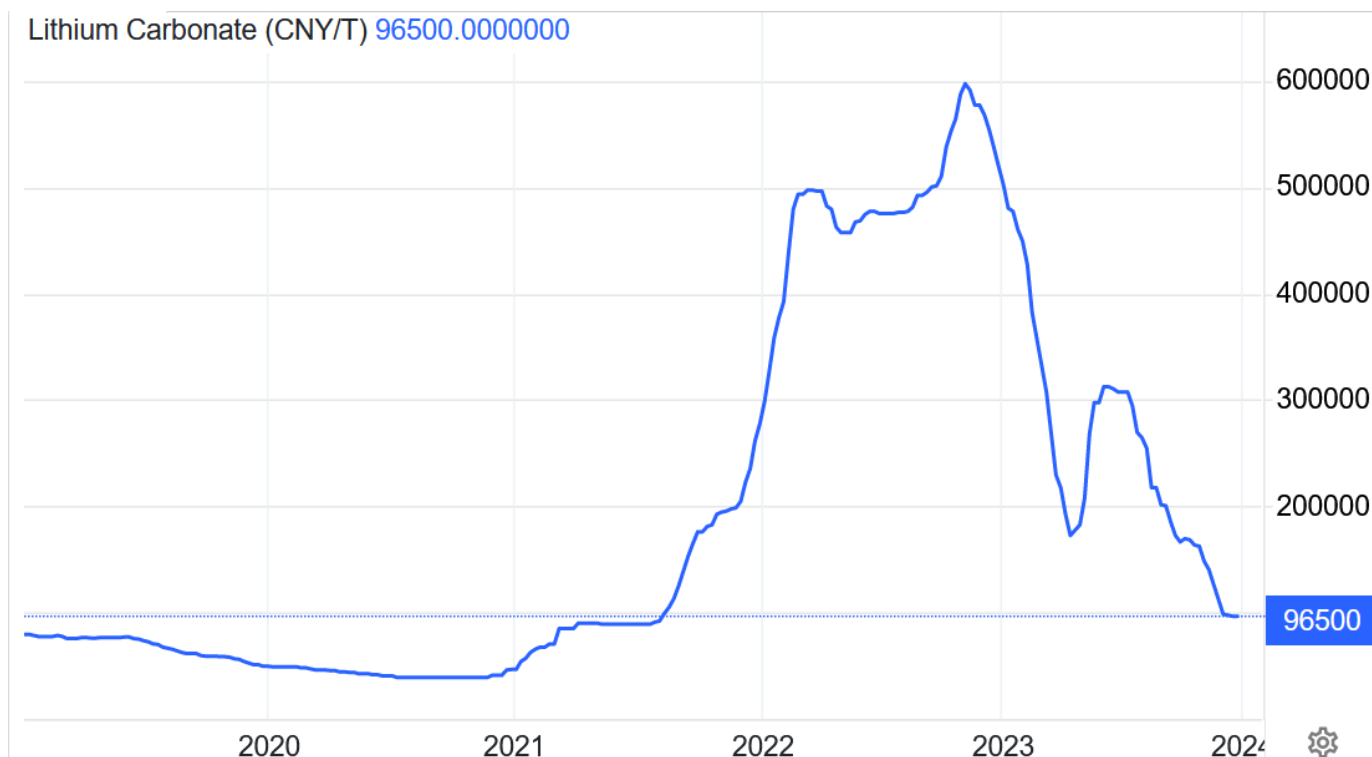
90,000/t (US\$11,200-US\$12,600/t). Goldman Sachs is a little more bearish with a 1 year price target for China's spot lithium carbonate of US\$11,000/t.

The negative price action has not deterred SQM and Gina Reinhart's Hancock Prospecting (private) who recently increased their bid to A\$3.70 per share to takeover Australia's Azure Minerals Limited (ASX: AZS).

In December we saw shareholders approve the Allkem Limited (ASX: AKE | TSX: AKE) – Livent Corporation (NYSE: LTHM) 'merger of equals' which is now expected to close by January 4, 2024. The new company is to be known as Arcadian Lithium PLC (NYSE: ALTM | ASX: LTM).

Finally, in December we got news that free markets supporter Javei Milei was elected as the new Argentina President. This is good news for those companies with mining projects in Argentina, of which there are many lithium projects under development.

The lithium carbonate spot price collapsed in 2023 and is now below the marginal cost of production and expected to form a bottom very soon



Source: [Trading Economics](#)

Magnet Rare Earths

Neodymium prices fell in December to [CNY 560,000/t](#) almost 1/3 the price of the February 2022 peak. The [one year outlook](#) remains quite weak; however, this will largely depend on how China's economy performs in 2024. A strong pickup in EV sales in 2024 could quickly change the market dynamics.

The big news in December in the rare earths market this month was China's announcement to ban the export of [rare earth processing technology](#). As discussed in an [InvestorNews article](#), Western companies have been efficiently separating rare earths for some time, so this ban has minimal implications. CMI Co-Chair and rare earths expert, Jack Lifton, [states](#): "Solvent extraction separation is a long-established practice everywhere. The issue is the production of rare earth metals and alloys and from them of rare earth permanent magnets. This is where China's massive lead in manufacturing technology may be insurmountable. Time will tell."

Of course, the trend for Western auto OEMs is concerning, especially following China's recent introduction of export [license permits](#) on graphite products (including synthetic graphite, flake graphite, and spherical graphite).

Cobalt, Graphite, Nickel, Manganese, and other critical minerals

Cobalt prices (currently at [US\\$12.91/lb](#)) were lower the past month and continue to be very depressed. China's slowdown and the [slowdown](#) in global electronics sales have suppressed cobalt demand at the same time as new supply from the DRC and Indonesia has risen.

One glimmer of hope for the Western cobalt producers is that the U.S. government announced in December the creation of a critical mineral 'Resilient Resource Reserve' (as discussed above).

Flake graphite [prices](#) also remain very weak with prices near the marginal cost of production. Following the introduction of Chinese export license permits in December 2023 there has been some increased signs of buying activity and a slight graphite [price improvement](#). However, the main concern for flake and spherical graphite is that lower energy input costs in China have lowered the cost of producing synthetic graphite, thereby dampening demand for flake and spherical graphite. Despite this, there are several analysts now forecasting graphite deficits to begin as soon as 2024/25 as you can read in a recent InvestorNews article [here](#).

Nickel prices fell slightly in December to [US\\$16,279/t](#). The [1 year outlook](#) for nickel remains poor due to oversupply concerns from Indonesia. A recovering global economy and Chinese property sector will be needed to help balance the nickel market, which is currently in oversupply.

Manganese [prices](#) also fell slightly in December and are now at [CNY29.20/MTU](#).

2023 has been a tough year for many [critical mineral prices](#) (except for gallium, germanium, tellurium, indium, tin, and uranium – [a critical mineral in Canada](#)) as a slowing China and global economy weighed down demand at a time where supply increased. Uranium was the standout performer in 2023 with a gain of [over 75%](#). You can read an article [here](#) from back in April 2023 where we highlighted the coming rise of uranium.

The key to watch in 2024 will be if we see lower interest rates in China trigger a China property and economy recovery. A stronger U.S. and Europe in 2024 would also help boost the global economy and demand for critical minerals. Lower interest rates in 2024 could potentially make it a great year for the auto sector and EV metals.

Wishing you all a safe and prosperous 2024 from the Critical Mineral Institute (“CMI”).

An update on the graphite sector and what to expect in 2024 and beyond

written by Matt Bohlsen | March 22, 2024

2023 has been a rough year for all the EV metals and graphite was no exception. EV battery anodes contain a combination of spherical graphite (sourced from natural flake graphite) and synthetic graphite. Today we take a look at the key trends of

2023 and what we can expect in 2024 and beyond.

The Critical Minerals Institute Report (CMI 11.2023): Neodymium price is down 33% over the Past Year, Record Plug-In EV Car Sales for September

written by Matt Bohlsen | March 22, 2024

Welcome to the November 2023 [Critical Minerals Institute](#) (“CMI”) report, designed to keep you up to date on all the latest major news across the critical minerals markets. Here is the CMI list of critical minerals ([CMI List of Critical Minerals](#)) or visit the [CMI Library](#) where critical minerals expert Alastair Neill tracks the latest critical mineral lists worldwide.

Global macro view

High interest rates (and cost of living increases) in most Western countries continue to be a drag on the global economy. Europe, in particular, continues to struggle. Last month saw a welcome fall in US inflation to [3.2%pa](#) suggesting the US Fed may not need to raise rates at their [December 12-13 meeting](#).

China has been [ramping up support](#) for their beaten down property

sector and economy. The key hope for 2024 is that China's property market stabilizes and their economy improves. Some early positive signs are appearing.

The Russia-Ukraine war continues as does the Hamas-Israel war. The outcomes of these conflicts can impact oil prices and hence inflation, meaning they are key events to monitor as we head into 2024.

Global electric vehicle ("EV") update

November 2023 saw strong EV sales reported for September 2023. Global plugin electric car sales for September were a record [1,291,000](#) up 23% YoY to 17% market share.

In September, China sales were up 22% YoY to 37% share. Europe sales were up 15% YoY to 25% share. USA sales were up 59% YoY to 9.9% share.

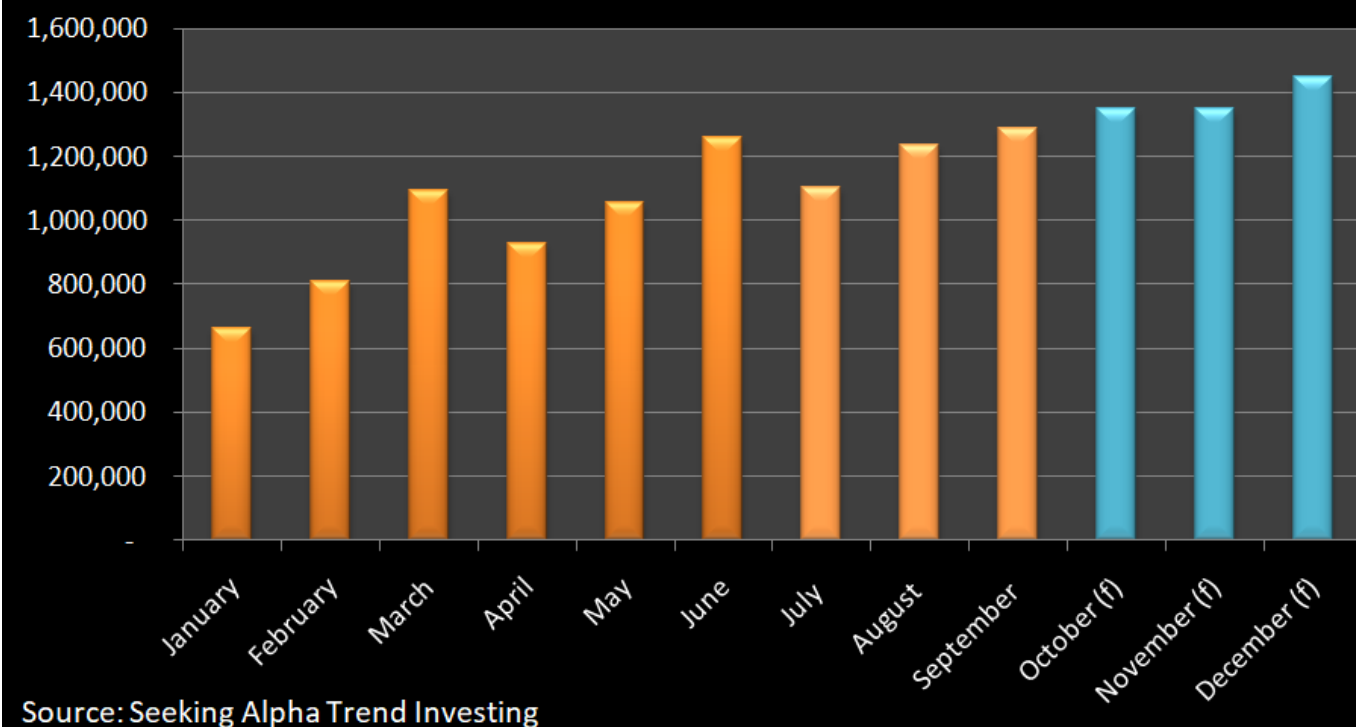
Results look very promising for October 2023 with global plugin electric car sales on track to reach or exceed ~1.35 million. China's October sales have been announced and they hit a new record of [956,000 sales](#).

2023 sales look set to finish at ~13.6 million and 17% market share, which would be a 29% increase on 2022 (10.522 million and 13% market share). A 29% growth rate in 2023 would be a significant slowdown on the 56% growth rate achieved in 2022.

Regarding US Battery Electric Vehicle ("BEV") car sales, the EIA recently [reported](#) that "BEV prices are now within \$3,000 of the overall industry average transaction price for light-duty vehicles."

Global plugin electric car 'monthly' sales in 2023 ([source](#))

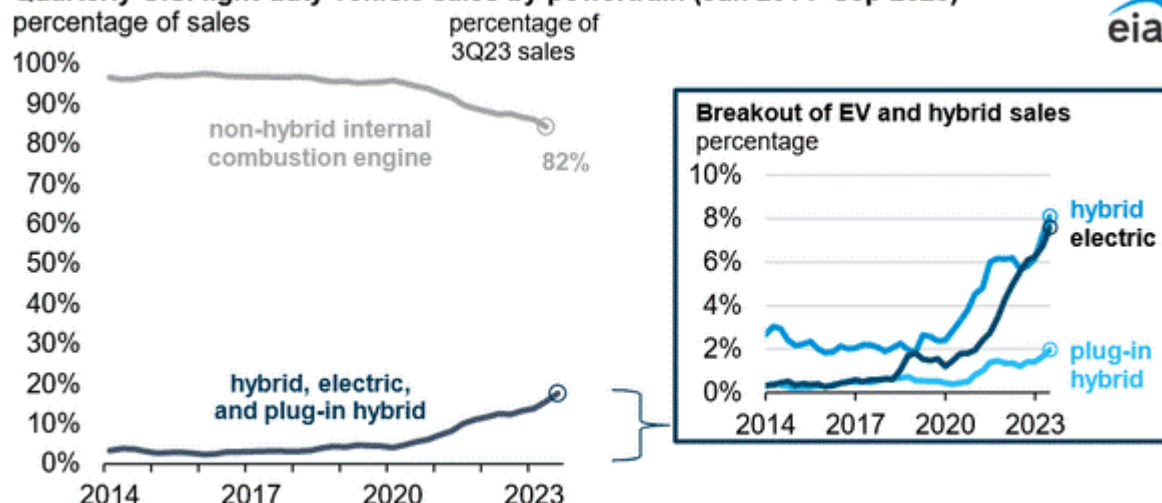
2023 Global plugin electric car sales (actual & forecast)



Finally, [reports](#) of a slowdown in US EV demand are 'fake news'. US electric car sales are achieving record sales in 2023 as we saw in the [US Energy Information \("EIA"\) announcement](#) on November 27, 2023. The chart below gives a good summary. The fact that [Ford Motor Company \(NYSE: F\)](#) and [General Motors \(NYSE: GM\)](#) are slowing down their EV production plans due to weak EV sales says more about their failure to produce well priced and desirable EVs rather than the US market as a whole. There is a similar situation with Volkswagen AG in Europe. Both BYD Company Limited (OTC: BYDDF) and Tesla Inc. (NASDAQ: TSLA) continue to rapidly expand their production and EV sales. Legacy automakers need to up their game or be left behind by the EV leaders Tesla and BYD who continue to go from strength to strength.

Electric vehicles and hybrids grow to a record-high 18% of U.S. light-duty vehicle sales ([source](#))

Quarterly U.S. light-duty vehicle sales by powertrain (Jan 2014–Sep 2023)



Data source: Wards Intelligence
Note: 3Q23 = third quarter of 2023

Global critical minerals update

Western governments, led by the USA, have continued to ramp up support for a Western EV and battery supply chain. In November we had two key announcements:

- On October 31 The Government of Canada [announced](#): “Government of Canada to enhance critical minerals sector with launch of \$1.5 billion Infrastructure Fund...“Our investments will help the mining industry develop important enabling and supporting infrastructure such as roads and energy facilities required prior to construction of mines.”
- On November 15 [Energy.gov announced](#): “Biden-Harris Administration announces \$3.5 Billion to strengthen domestic battery manufacturing...As part of President Biden’s Investing in America agenda, the funding will create new, retrofitted, and expanded domestic facilities for battery-grade processed critical minerals, battery precursor materials, battery components, and cell and pack manufacturing...”

These are positive developments, however not enough is being done upstream to support the critical minerals 'miners' to get into production. The Canadian Government's announcement above is reasonably well directed, but it is to be spread over 7 years and is nowhere near enough money for what is needed. The US Government's effort is further supported on the back of previous announcements as part of the 2022 Inflation Reduction Act ("IRA") which intends to spend US\$369 billion in energy security and climate change programs over ten years. However, most of the funds so far are to support battery manufacturing and EV plants and subsidies. More funds need to be put to use to help support the critical mineral mining companies, particularly as key critical minerals such as lithium is the bottle neck to ramp up western production of EV's and energy stationary storage.

The IRA has been extremely successful so far at bringing EV and battery investments to the USA. For example, in November we heard [a report](#) of yet another US factory being planned with Toyota planning to invest US\$8 billion in a North Carolina battery plant to increase EV capacity.

Over in Europe, the EU Critical Raw Materials Act ("CRMA") has progressed to the next stage with 'provisional' agreement achieved, noting the increased focus on recycling. On November 13, the European Union Council [announced](#):

"The Council and the European Parliament today reached a deal on the proposed regulation establishing a framework to ensure a secure and sustainable supply of critical raw materials, better known as the Critical Raw Materials Act. The agreement is provisional, pending formal adoption in both institutions...The political agreement reached today keeps the overall objectives of the original proposal but strengthens several elements. It includes aluminium in the list of strategic and critical materials, reinforces the benchmark of recycling, clarifies the

permitting procedure for strategic projects, and requires relevant companies to perform a supply-chain risk assessment on their sourcing of strategic raw materials...On the global stage, the regulation identified measures to diversify imports of critical raw materials ensuring that **not more than 65% of the Union's consumption of each strategic raw material comes from a single third country**...The provisional agreement keeps the benchmarks of 10% for extraction of raw materials and 40% for processing but increases the benchmark for recycling to at least 25% of EU's annual consumption of raw materials...The provisional compromise also unifies the timings of the permit procedure. **The total duration of the permit granting process should not exceed 27 months for extraction projects and 15 months for processing and recycling projects**...Next steps. The provisional agreement reached with the European Parliament now needs to be endorsed and formally adopted by both institutions."

Note: Bold emphasis by the author. Synthetic graphite was also added.

In November we did hear some more reports on sodium-ion batteries and how they can help meet the incredible battery demand needed for the green energy transition. Sodium-ion can help around the margin, but it will not replace lithium-ion. Sodium-ion batteries will be used for energy stationary storage and cheap (<US\$10,000) low-end, low-range, small EVs. Beyond that, the sodium-ion battery as exists today will have limited demand. CATL is leading the way with sodium-ion battery manufacturing and is one to watch.

On November 25 The Fraser Institute [reported](#):

"A total of 388 new mines must be built to produce the metals required to meet international government mandates for electric vehicle...The International Energy Agency (IEA) suggests that to

*meet international EV adoption pledges, **the world will need 50 new lithium mines by 2030, along with 60 new nickel mines, and 17 new cobalt mines**...Historically, however, mining and refining facilities are both slow to develop and are highly uncertain endeavors plagued by regulatory uncertainty and by environmental and regulatory barriers. Lithium production timelines, for example, are approximately 6 to 9 years, while production timelines (from application to production) for nickel are approximately 13 to 18 years, according to the IEA...The risk that mineral and mining production will fall short of projected demand is significant, and could greatly affect the success of various governments' plans for EV transition."*

Note: Bold emphasis by the author.

Lithium

China lithium carbonate [spot prices fell significantly](#) in November 2023, with the price now at [CNY 126,500/t](#) (US\$ 17,870/t) and down 78% over the past year. At these prices, marginal cost lithium producers in China are shutting down and Albemarle Corporation (NYSE: ALB) and JV partners at the Greenbushes Mine [are considering production cuts](#) in H1, 2024. A bottom is likely to form soon at or above CNY 100,000/t assuming global EV sales hold up at current rates of about 30% growth in 2023 and 2024.

Lithium takeovers continue despite weak sentiment

Chile's SQM recently increased their takeover offer for Azure Minerals Limited (ASX: AZS) to US\$900 million. Meanwhile, Mineral Resources Limited (ASX: MIN) has been [building an equity stake](#) in Azure Minerals as well as buying a [19.85% equity interest](#) in Wildcat Resources Limited (ASX: WC8), another WA lithium junior miner. Not to be outdone, Australian billionaire

Gina Reinhart has recently bought a [19% interest](#) in Azure Minerals. Reinhart was active in buying Liontown Resources Limited (ASX: LTR), ultimately leading Albemarle [to withdraw their takeover offer](#).

At least it looks like the Allkem-Livent merger is still going ahead. Allkem Limited (ASX: AKE) and Livent Corporation (NYSE: LTHM) [have received all required regulatory approvals globally](#) for their 'merger of equals', expected to close by January 4, 2024.

All of this takeover activity from the major lithium companies suggests that we are near a bottom in the lithium price cycle and that the mid to long-term outlook for lithium remains very strong.

Rare Earths

Neodymium ("Nd") prices fell in November and are currently sitting at [CNY 610,000/t](#). The neodymium price is down 33% over the past year, but still well above the 2019 price.

Neodymium 5 year price chart ([source](#))



On November 16 Rare Element Resources Ltd. (OTCQB: REEMF) announced receipt of the final [NEPA approval](#) for their rare earth processing and separation demonstration plant to be built in Upton, Wyoming, USA. The news [stated](#): “The Company is awaiting next stage budget approval from the DOE, which is providing approximately 50% of the project costs, to commence construction.”

Cobalt, Graphite, Nickel, Manganese and other critical minerals

Cobalt prices (currently at [US\\$14.85/lb](#)) remained flat the past month and continue to be very depressed. China’s demand for NMC cathode material for EVs has been weak as LFP cathodes (no nickel or cobalt) have gained in popularity.

Flake graphite prices also remain very weak with prices near the marginal cost of production. The big news in the graphite world is China’s intention to temporarily enforce export license permits on three synthetic graphite-related items and six

natural graphite-related items, starting from December 1, 2023. As a result, we have seen some buying activity and [flake graphite prices rising in Europe](#).

Nickel prices fell further to [US\\$16,593/t](#) in November due to oversupply concerns from Indonesia and the depressed Chinese property sector.

Manganese [prices](#) also fell slightly in November.

Europe's Strategic Transformation in Critical Raw Material Management

written by Tracy Weslosky | March 22, 2024

The [recent provisional agreement](#) by the Council and the European Parliament to bolster the supply of critical raw materials with the proposed Critical Raw Materials Act heralds a pivotal advancement in Europe's raw material strategy. Awaiting formal adoption, this agreement is a testament to the European Union's commitment to transforming its raw material dependency into a pillar of continental strength.

[Teresa Ribera Rodríguez](#), the acting Spanish third vice-president, underscores the significance of this initiative within Europe's broader ecological and demographic ambitions. The regulation ambitiously aims to enhance the EU's role in the extraction, processing, and recycling of 34 critical raw materials, with a special focus on 16 considered strategic. A key aspect of this agreement is the inclusion of aluminum in the

strategic list and the emphasis on recycling, with benchmarks set to reach at least 25% of the EU's annual raw material consumption.

This paradigm shift towards sustainable raw material management extends beyond environmental objectives, aiming to fortify economic resilience. The regulation seeks to diversify critical raw material imports, capping the EU's reliance on any single third country to a maximum of 65% for each strategic raw material. This strategy is poised to spur innovation, as evidenced by the temporary classification of synthetic graphite as strategic and the provision for member states to veto projects within their jurisdiction.

Swiss mining giant Glencore PLC (LSE: GLEN | OTC: GLCNF | HK: 805) has aligned with these trends, announcing a pilot [electric vehicle \(EV\) battery recycling plant](#). Initially eyeing Sardinia, the company is now scouting other locations across Europe and North America. This move mirrors the wider shift in the decarbonization and EV sector towards recycling, a strategic response to market fluctuations and environmental considerations.

Melissa Sanderson, Director of the [Critical Minerals Institute](#) (CMI), highlights that these developments are indicative of an overarching trend. The EU's legislative emphasis on recycling over primary mining resonates with the decarbonization and electric vehicle sectors' trajectory. Glencore's strategic pivot to recycling efforts is a response to these evolving market and legislative landscapes.

The new EU regulations may also significantly impact Glencore's broader initiatives. Should Italy ratify the proposed law, it could streamline the authorization process for Glencore's larger recycling project, potentially relocating it to mainland Italy

due to opposition in Sardinia. Sanderson notes that the industry's exploration of alternative materials, beyond current focuses like lithium, signals a dynamic and evolving sector.

In conclusion, these developments indicate a major shift in the management of critical raw materials, steering towards a future where sustainability, economic resilience, and innovation are central to the EU's industrial strategy. The anticipated Critical Raw Materials Act, integral to the Green Deal Industrial Plan, may not yet be formally adopted, but its influence on industry and environmental policy is already evident. As corporations like Glencore adapt to these changes, we can anticipate a continued evolution in the landscape of raw material management and recycling

Greg Fenton on China's graphite export restrictions and Zentek's Albany graphite deposit in Ontario

written by InvestorNews | March 22, 2024

In a recent InvestorNews interview with host Tracy Weslosky, Zentek Ltd.'s (NASDAQ: ZTEK | TSXV: ZEN) CEO and Director, Greg Fenton, discussed China's recent move to restrict graphite exports and its potential impact on global supply chains and the electric vehicle (EV) industry.

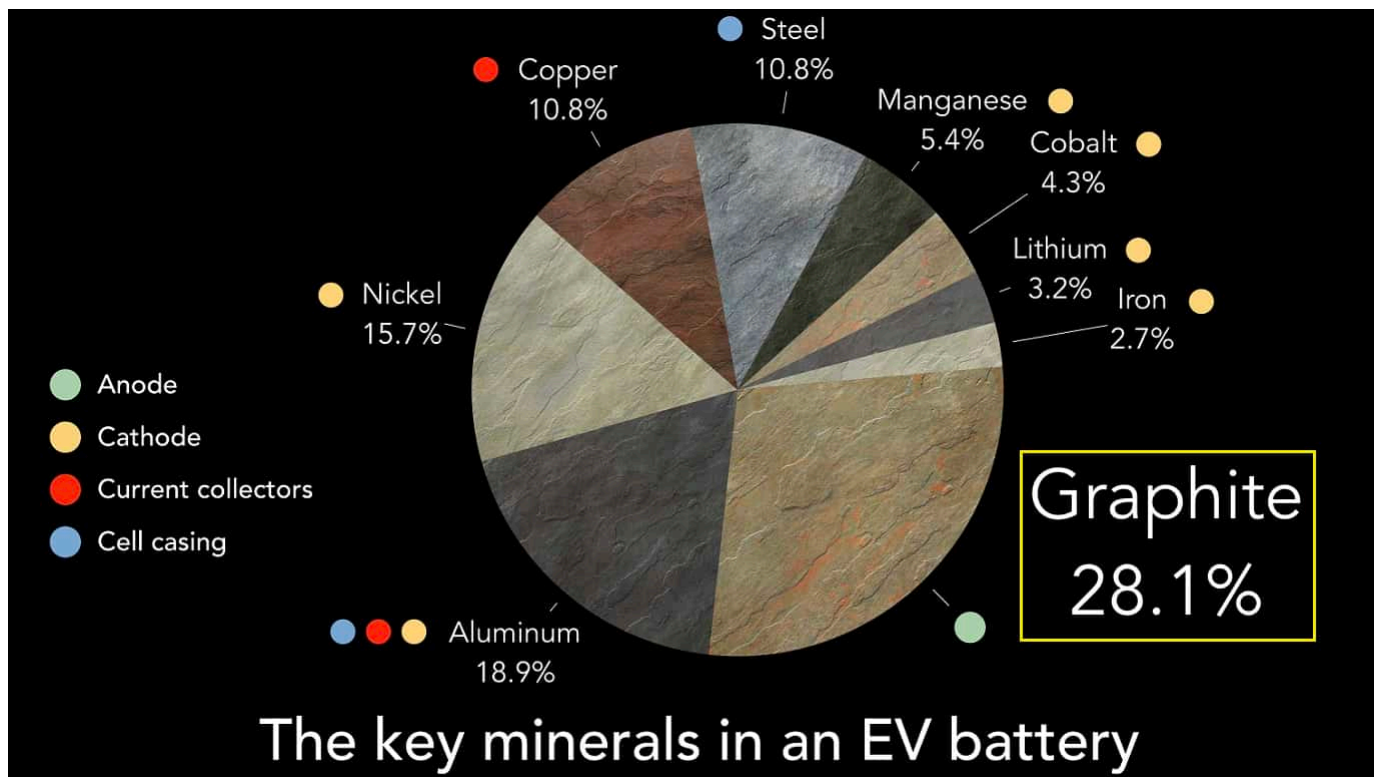
Can the Western graphite and anode industry rise to meet China's challenge?

written by Matt Bohlsen | March 22, 2024

China to impose some graphite and processed graphite materials 'export permits' from December 1, 2023

Last week it was [reported](#) that China, the world's top graphite producer plans to curb exports of key battery material by implementing export permits for some graphite products from December 1 to protect national security. Another report [stated](#): "China graphite export restrictions could hinder ex-China anode development...if it lasts into the longer term, it is likely to accelerate the build-out of a localized graphite and battery anode supply chain outside China."

Graphite is the number one metal required for lithium-ion batteries making up about a 28% share. It is used in the anode.



The key metals and minerals in a battery of an electric vehicle

The world is very dependent upon China to supply processed graphite material and anodes for Li-ion batteries

The reason why this is huge news in the graphite world is that China produces [67% of global natural flake graphite](#) supply and refines more than [90%](#) of the world's graphite into active anode material (typically spherical graphite). If China were to deny or delay permits for spherical graphite it will cause major problems for anode manufacturers outside China, such as those in South Korea, Japan, or North America.

China currently produces [~77% of global lithium-ion batteries](#) and 75-80% of global electric cars, thereby completely dominating the industry. If the West is shut out from sourcing

processed EV battery materials from China then they will have a major problem producing their own EVs. China plans to prioritize EV battery materials for their own needs. This is why President Biden introduced the Inflation Reduction Act (IRA) and the EU introduced the EU Critical Raw Materials Act. Both are designed to address the shortages in the EV supply chain and the forecast shortages of future supply of critical raw materials. The problem is the IRA has done little to address the supply of raw materials and the EU Critical Raw Materials Act is [woefully inadequate](#) and targets fall way short of what will be needed.

Which western graphite companies can rise to meet the challenge to establish an ex-China graphite supply chain

The leading western graphite companies that are working to establish an ex-China supply chain for flake graphite, synthetic graphite, and spherical graphite include:

- [Syrah Resources Limited](#) (ASX: SYR) – Largest western flake graphite producer with their 350,000tpa flake graphite capacity Balama Mine in Mozambique. Currently constructing the Vidalia spherical graphite facility in Louisiana, USA with Stage 1 production plans to produce 11,250tpa of spherical graphite. Longer term they plan to expand to 45,000tpa in 2026 and then to >100,000tpa by 2030 with an Europe/Middle East facility. Syrah already has an off-take agreement with Tesla (NASDAQ: TSLA). Syrah's stock price has surged ~80% higher the past week following the release of the China export permits news.
- [Nouveau Monde Graphite Inc.](#) (NYSE: NMG | TSXV: NOU) – Is


rapidly progressing their plans for their Matawinie Graphite Mine and Bécancour Battery Anode Material Plant in Quebec, Canada. The company is [working with Panasonic](#) to qualify their graphite anode material. Panasonic supplies Tesla with batteries.

- [Northern Graphite Corporation](#) (TSXV: NGC | OTCQB: NGPHF) – Owns graphite producing and past producing mines in Quebec, Canada and Namibia. They also own the Bissett Creek graphite Project in Ontario, Canada. The Company [state](#) that they are “North America’s Only Significant Natural Graphite Producer”. The Company plans to develop one of the world’s largest battery anode materials facilities in Baie-Comeau Québec with [200,000tpa](#) of capacity.
- [NextSource Materials Inc.](#) (TSX: NEXT | OTCQB: NSRCF) – A new graphite producer from their Molo Graphite Mine in Madagascar with Phase 1 capacity of [17,000tpa](#) of flake graphite production and plans to expand to [150,000tpa](#). The Company’s short term plan is for [a Battery Anode Facility in Mauritius](#) and longer term for similar facilities in USA/Canada, UK, EU.
- [Magnis Energy Technologies Ltd.](#) (ASX: MNS | OTCQX: MNSEF) – Magnis aims to produce high performance anode materials utilising ultra-high purity natural flake graphite from their Nachu Graphite Project in Tanzania. Magnis’ partially owned U.S.-based subsidiary Imperium3 New York, Inc (“iM3NY”) operates a gigawatt scale lithium-ion battery manufacturing project in Endicott, New York.
- [Talga Group Ltd.](#) (ASX: TLG) – Own the integrated mine to anode Vittangi Graphite Project in Sweden. In September 2023 Talga broke ground on their [19,500tpa](#) anode facility, [stating](#) “the refinery is projected to be the first commercial anode production in Europe for electric vehicle Li-ion batteries”.


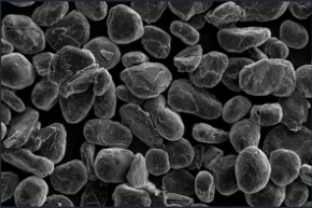

- [Novonix Limited](#) (NASDAQ: NVX | ASX: NVX) – Has a production capacity target of [up to 20,000 tpa](#) of synthetic graphite anode material from their Tennessee facility in the USA.
- [Anovion Technologies](#) (private) – The USA anode producer plans to invest US\$800 million to produce a [40,000tpa synthetic graphite anode material facility](#) in Georgia, USA with plans to expand to [150,000tpa](#) by 2030.

Syrah Resources leads the West's attempt to build an ex-China flake graphite and anode material supply chain

Our Position



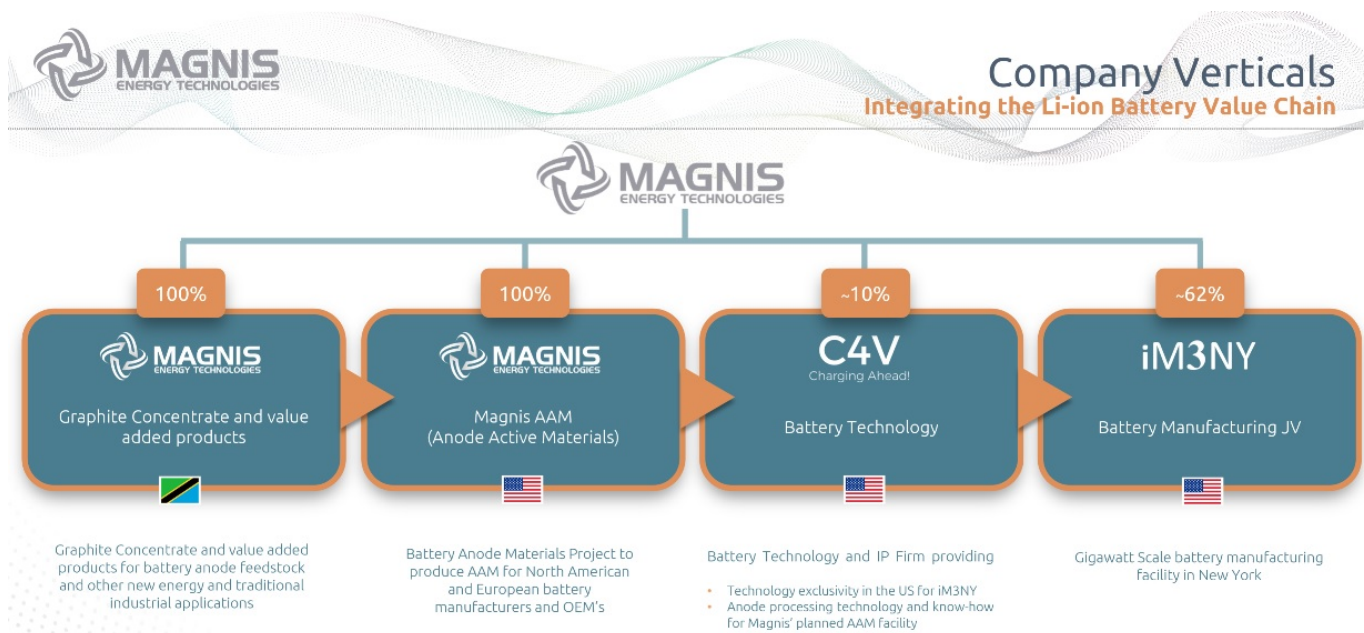
Syrah is a major ex-China natural graphite and active anode material (AAM) supplier for global customers, with upstream and downstream expansion potential underpinned by its world-class Balama resource

 <p style="margin-top: 10px;">Natural graphite and AAM demand will increase four and six times, respectively, over the next 10 years¹</p>	 <p style="margin-top: 10px;">Syrah is the only operating vertically integrated natural graphite AAM supplier outside of China</p>	 <p style="margin-top: 10px;">Balama is a 350ktpa graphite producer in Mozambique supplying global battery anode and industrial customers since 2017</p>	 <p style="margin-top: 10px;">Syrah is nearing completion of an 11.25ktpa AAM facility at Vidalia in the US with commercial sales arrangements in place with tier 1 customers</p>
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1. Source: Benchmark Minerals Intelligence Flake Graphite Forecast, Q3 2023. Note: AAM demand is for natural graphite AAM.

Source: [Syrah Resources September 2023 Quarterly Activities presentation](#)

Magnis Energy Technologies is working towards becoming a graphite producer, anode materials producer and is already a small scale JV battery producer in the USA



Source: [Magnis Energy Technologies company presentation](#)

Closing remarks

The Western world received a loud wake-up call the past week. The China graphite products 'export permits' may only serve to restrict or slow down some anode material supply from China, but it puts the West on notice of how dependent they are upon China.

Given the world is rapidly moving to electric vehicles, the West must urgently build up its EV materials supply chains or risk being left behind in the global EV race.

The USA is making some bold moves and the companies discussed in this article are moving in the right direction. Let's just hope that the western EV supply chain build out accelerates rather than stalls like [GM's latest electric pickup truck plans](#). I think Americans will want U.S.-branded electric cars and I know Europeans will want European branded electric cars. If we are not careful our only choice one day might be Tesla and Chinese electric cars. Stay tuned.