

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

written by Tracy Weslosky | March 15, 2024

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

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

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

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

reduce reliance on international sources.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Investor.News Critical Minerals Media Coverage:

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

Investor.News Critical Minerals Videos:

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

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

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

Critical Minerals IN8.Pro Member News Releases:

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

The Australian Government Steps into the Critical Minerals Supply Chain Ring

written by Jack Lifton | March 15, 2024

A recent monumental development within the mining and rare earths sectors is the Australian government's [financial endorsement](#) of [Arafura Rare Earths Limited](#)'s (ASX: ARU) rare earth mine and refinery project. This marks a significant step forward in the global pursuit of sustainable and secure Non-Chinese owned or operated sources for critical minerals. This move, underscored by an impressive A\$840 million in loans and grants, signals a strong Australian governmental belief in the necessity and potential profitability of domestically sourced rare earth elements, vital for electric vehicle (EV) motors and renewable energy technologies.

Gina Rinehart's Hancock Prospecting, alongside other private equity interests, has seen a notable appreciation in value following this announcement, illustrating the private sector's growing confidence in rare earth ventures as a viable and lucrative investment avenue. This confidence is buoyed by government backing, which often acts as a catalyst for further private investment by demonstrating a commitment to the sector's success and stability.

Australia's strategic decision to support Arafura's project,

situated near Alice Springs, showcases its ambition to become a frontrunner in the production of rare earth elements, crucial for EVs and wind turbines. This initiative not only addresses the immediate financial hurdles faced by the mining industry but also aligns with broader goals of establishing Australia as a key player in the global supply chain for renewable energy technologies.

The involvement of figures like Gina Rinehart and Andrew Forrest, both of whom have substantial stakes in mining ventures, underscores a deeper shift towards mining as an investment that offers both substantial returns and strategic value in the context of the global green transition. Their investments in rare earths and the potential for vertical integration, as seen in the partnership between Forrest's [Hastings Technology Metals Limited](#) (ASX: HAS) and [Neo Performance Materials Inc.](#) (TSX: NEO), highlight a keen understanding of the sector's critical role in future technologies and energy solutions.

Australia's proactive stance, contrasted with the more cautious approaches of other Western nations, illustrates a deep understanding of the strategic importance of rare earths and the necessity for domestic processing capabilities. This is not just about securing supply chains but also about capturing more value within the country, creating jobs, and fostering technological advancements in green energy and EV production.

Moreover, the broad financial and strategic implications of this government support extend beyond the immediate economic benefits. They underscore a pivotal moment for the global rare earths market, emphasizing the critical need for diversified, reliable sources of these essential materials. As tensions and competitions intensify on the international stage, Australia's move represents a significant step towards greater independence

and resilience in the face of geopolitical and market pressures.

In conclusion, this development is a clarion call to nations and investors alike to recognize the indispensable role of rare earths in the modern world. It is a testament to the vision and audacity of those like Rinehart and Forrest, who see beyond the immediate to the immense potential that rare earths hold for the future of technology, energy, and national security. As Australia forges ahead, it sets a compelling example for others to follow, highlighting the comprehensive strategy needed to fulfill the burgeoning demand for domestic sourcing of rare earth magnets, especially among European and American EV automotive OEMs.



Analyzing Conflicting Reports of a Rare Earths Technology Ban by China

written by Steve Mackowski | March 15, 2024

Dynamic Reading – Is this the prodigy of today's AI Report Writing phenomenon? I have been asked to write my thoughts on

the latest news about potential rare earths technology bans from China. The first reference I received was written by Shunsuke Tabeta, a staff writer for Nikkei Asia: [China weighs export ban for rare-earth magnet tech](#)

The second reference I received was written by Jingyue Hsiao of DIGITIMES Asia, Taipei. This was in response to the Nikkei Asia news: [A rare earth war simmers as China reportedly to impose export ban](#)

I then received the preparatory title of a response from one of the InvestorIntel journalists: "[What happens next if China bans rare earths technology needed to process rare earths and to make high-performance magnets](#)".

Lessons from the past

Got me thinking about how people's reading styles, capabilities, and mental processes appear to be controlling how they understand the reading matter and therefore influence the way they report or comment. Reminded me of a few years back when my granddaughter wasn't achieving at high school.

I purchased National Geographic subscriptions for us both and commenced a weekly telephone hook-up routine. We took turns investigating each article, with one being the interviewer developing the questions and the other, being the interviewee who had to answer the questions. Who, What, When, Where? With those satisfactorily answered you could then ask the key question: Why? Look at what this does. It focuses the mind to search for factual information BEFORE you look for answers that may be swayed by things such as bias, agendas, or less well-informed previous interactions. It also aids in memory retention.

Unpacking the articles

Look at the Nikkei headline: “export ban”. The DIGITIMES headline reads: “Rare earth war”. The InvestorIntel “What happens next”. These all point to and highlight the differences in the author’s history, experience, and understanding of the topic or their editorial bent.

I thought back and my favorite primary school teacher came to mind. She used these Who, What, When, Where, and Why prompts when I was learning to read. No, not read but understand. So Mrs. long-since-forgotten surname, thank you for your skills. But, I’ll lay claim to the Dynamic Reading title. BTW, it’s about now I’m expecting some hi-tech whiz kid to jump in and say that this tool is similar but opposite to the AI report writers that aggregate multi-article “Who, What, When, Where, and Why” information. Strange place the past!

So I’ll use Dynamic Reading to get to my response to the articles.

	Nikkei Asia (Japanese)	DIGITIMES Asia (Taiwanese)
Who	China. Un-named Beijing Officials	China
What	Considering prohibiting exports of certain rare earth magnet technology	China had updated a technology export restriction list which may ban the exports of certain rare earth elements
When	Later this year	Later this year
Where	Beijing	Beijing

What is really being written

Note already the difference in the What. Banning Rare earth magnet technology versus Rare earth elements. So, do I have enough to comment? To provide a Why? Well, not from that information, I need more.

The DIGITIMES Asia article cites Quartz as reporting that China is trying to defend its dominance in rare earths by increasing investments at home and abroad. This position is not supported by the Off-Market Sale of the East China Exploration (ECE) Group of their holdings in Arafura Resources Ltd. (ASX: ARU). Especially since Arafura is well progressed on its Nolans Project development schedule. And then Lynas Rare Earths Ltd. (ASX: LYC) is very well developed on their North American value-adding schedule.

To be honest, I have always had difficulty in developing an overview of how China aggregates and controls the Rare Earth business in China. Although the quotas and technology strategies appear to be working well on paper (their paper), it is not without some resistance from the regions that want more self-governance over their resources. Go no further than looking at the resource development battle between the light rare earths in Baotou, the heavy rare earths in Guangzhou, and the historic separation plants around Nanjing.

My conclusions

My take? Well, I would question: Is the news real or not? Is it part of a grander plan? I am sure that China can see the many developments occurring outside of China. And I am sure that China sees the projected growth in rare earths that are needed and coming from developing towards a Net Zero Carbon future. And I am sure that China must acknowledge that its pre-eminent

position is not so much as under threat but that it will lessen as the whole of the world looks to resource development for a global benefit.

So, my feelers are out for more information. Difficult though these days and especially now that TikTok bans are muddying the relationships. Let's just hope for everyone's future that China's People's Liberation Army ("PLA") venture into the Straights of Taiwan is not on, or part of, any strategic China agenda.

Oh, my granddaughter? She went from the bottom quartile of her class to be in the top 10%. And is now running her own business. Simply by being taught how to read.

The top billionaires are now chasing the critical magnet rare earths – Part 1 of 2

written by Matt Bohlson | March 15, 2024

In this two part series we look at a growing trend where billionaires have started investing or taken a strong interest in rare earths companies, mines, and/or projects around the world. The significance is that these billionaires are very well known and followed. Plus it now appears they have their targets set on the 'magnet' rare earths sector, which many analysts forecast to go into deficit this decade, driven by the shift to renewable energy and electric vehicles. The magnet rare earths mostly refers to neodymium and praseodymium (NdPr), the world's

most sought after rare earths. Dysprosium (Dy) is the third key rare earth used in magnets. It is also used in control rods for nuclear reactors.

One can argue that this trend all started back when, now billionaire, James Litinsky bought a mine in California from bankrupt Molycorp and subsequently turned the mine into USA's largest producing rare earths mine, with the company MP Materials Corp. (NYSE: MP) now valued at [US\\$5.48 billion](#). As Wikipedia [states](#): "In June 2017, the Mountain Pass mine was purchased at auction for \$20.5 million by a new entity called MP Mine Operations LLC (MPMO). MPMO was a consortium formed principally by JHL Capital Group, a Chicago-based investment firm led by James Litinsky." Litinsky recognized, well before others, that the most powerful magnetic electric motors need rare earths, and that these motors would become essential to modern life technology, especially in the green revolution. Litinsky and his partner's move buying a mine for just US\$20.5m that is now worth 200X or more today was pure genius!

The world's most powerful electric motors are used today in wind turbines and electric vehicles. They rely on the critical and valuable magnet rare earths (Nd, Pr, Dy)



Source: [iStock photo](#)

Jeff Bezos, Michael Bloomberg, Bill Gates & others are looking towards Greenland for rare earths

As [reported by InvestorIntel](#) in September 2022, Jeff Bezos, Michael Bloomberg, Bill Gates & others (via their company [KoBold Metals](#)) are looking towards Greenland as a source of rare earths and other critical metals. KoBold Metals is partnered with Bluejay Mining PLC to find the rare and precious metals in Greenland. An August 2022 article by CNN [quoted](#): “Billionaires are funding a massive treasure hunt in Greenland as ice vanishes.....Greenland could be a hot spot for coal, copper, gold, rare-earth elements and zinc, according to the Geological Survey of Denmark and Greenland.” While there are challenges in Greenland the fact that billionaires who made their money in online shopping, financial services/media, and software are now scouring the globe for rare earths speaks to their importance and value in modern society.

Gina Rinehart buys into Arafura Rare Earths Limited

Gina Rinehart, the world's richest woman, recently bought [A\\$60 million](#) worth of Arafura Rare Earths Limited (ASX: ARU) shares via her private company Hancock Prospecting, as part of an A\$121 million capital raising by Arafura. Arafura's news release on December 5, [stated](#): "Hancock Prospecting Pty Ltd acted as a cornerstone investor, committing to invest \$60 million which will result in a post-completion interest of ~10%....Funds raised will be applied towards orders for long lead items, commencement of fabrication in readiness for main plant construction and early works."

Europe and the global auto manufacturers are also chasing the critical magnet rare earths

In September 2022 The European Commission [stated](#): "Lithium and rare earths will soon be more important than oil and gas. Our demand for rare earths alone will increase fivefold by 2030. [...] We must avoid becoming dependent again, as we did with oil and gas." The European Critical Raw Materials Act is due for release in Q1, 2023.

European Critical Raw Materials Act – securing the new gas & oil at the heart of our economy (red underline by the author)

"Lithium and rare earths will soon be more important than oil and gas. Our demand for rare earths alone will increase fivefold by 2030. [...] We must avoid becoming dependent again, as we did with oil and gas. [...] We will identify strategic projects all along the supply chain, from extraction to refining, from processing to recycling. And we will build up strategic reserves where supply is at risk. This is why today I am announcing a European Critical Raw Materials Act."

Source: [Blog of Commissioner Thierry Breton](#)

2023 will likely see more urgency from countries and EV and wind turbine companies regarding sourcing the magnet rare earths.

Part 2 of this series will take a look at Andrew ‘Twiggy’ Forrest’s rare earths foray, as well as some other companies and billionaire’s rare earths dependency and challenges to secure enough supply, including Tesla’s CEO Elon Musk.

All Eyes on Australia in 2022 as a Global Rare Earths Production Leader

written by InvestorNews | March 15, 2024

The rare earths sector, particularly the rare earth magnet metals (such as neodymium (Nd)), had a great 2021; but given that the electric vehicle (EV) and clean energy booms are just getting started, 2022 should be another strong year. The most powerful electric motor magnets used today are known as permanent magnets, and they typically are made of neodymium iron boron (NdFeB). Dysprosium (Dy) and praseodymium (Pr) are also commonly [used](#) in permanent magnets.

As shown below, neodymium prices had a very strong 2021 reflecting a very strong demand for permanent magnets used in powerful electric motors. It is interesting to note the correlations of price and EV car sales from the chart below especially when considering that the peak months for global electric car sales in 2021 were [March](#), [June](#), [October](#), [November](#),

and most likely December (usually the best month of the year).

If you think electric car sales will boom again in 2022 and throughout the decade (as I do), then there is a strong case for owning the rare earth miners of these key magnet metals.

Neodymium 1 year price chart – Currently at CNY 1,110,000/t (USD 174,134/t)



Source: [Trading Economics](#) (red arrows by the author to show peak e-car sales months in 2021)

Where is the opportunity in rare earths?

Most [rare earths reserves](#) are found in China, followed by Vietnam, Brazil, Russia, India, Australia and the USA. Canada also has some rare earths. Most of the global [rare earths production](#) is from China followed by USA and Australia.

For Western investors, the two largest rare earths producing mines are owned by Lynas Rare Earths Limited (ASX: LYC) and MP Materials Corp. (NYSE: MP). A third smaller producer is [Energy Fuels Inc.](#) (NYSE American: UUUU | TSX: EFR), which, however, is a processor, not a rare earth miner.

For investors looking at the next potential rare earths producer then best to look to Australia and Canada. Today I will focus on Australia.

Australian rare earth miners

Lynas Rare Earths Limited (ASX: LYC) (Lynas)

Lynas is the second largest NdPr producer in the world. Lynas owns the Mt Weld rare earth mine and Concentration Plant in Western Australia (WA), one of the world's highest grade rare

earths mines. Lynas ships concentrate from WA to their Malaysian plant for separating and processing into commercial rare earths' materials. As part of their 2025 plan, Lynas is progressing their new Kalgoorlie Rare Earths Processing Facility in WA as well as their LRE/HRE separation & specialty materials facility in the USA.

Boosted by strong prices and production ([5,461t of NdPr](#) in FY 2021), Lynas reported [record sales of A\\$498 million and a record profit of A\\$157 million](#) in FY 2021. I would expect this to continue in 2022.

Lynas is no longer cheap and trades on a market cap of [A\\$9.69 billion](#), and a 2022 PE of [24.9](#). A top tier Western rare earths (NdPr) producer.

Australian Strategic Materials Limited (ASX: ASM) (ASM)

Australian Strategic Materials is an emerging integrated producer of critical metals for advanced and clean technologies based in Australia and South Korea. ASM plans a "mine to metal" strategy to extract, refine and manufacture high-purity metals and alloys that they can then supply directly to global manufacturers. ASM plans to produce a range of high-purity metals, alloys and powders from their metals plant in South Korea. Products will include titanium, zirconium and rare earths, required for permanent magnet production with the raw materials initially sourced from the market. The plan is to later source some materials internally, notably from their flagship Dubbo Project.

The Dubbo Project deposit contains rare earths, zirconium, niobium and hafnium. The Dubbo Project is ready for construction, subject to financing. In December 2021 ASM announced an updated base case in which the 20-year life of mine is expected to achieve a [pre-tax NPV of A\\$2,361 million](#) and a

pre-tax project internal rate of return of 23.5%.

In November ASM [announced](#) the commissioning of their Korean Metals Plant in Ochang Province, South Korea. In December ASM [announced](#) they had formed a JV with Resource Corporation (KOMIR) (formerly known as Korean Resources Corporation (KORES)) to enable the supply of critical minerals and metals into Korea.

Korea is a tech-based manufacturing powerhouse, and this JV is very timely as non-Chinese tech manufacturers try to wean themselves from dependence on China-centric supply chains.

ASM trades on a market cap of [A\\$1.34 billion](#).

Arafura Resources NL (ASX: ARU) (Arafura)

Arafura own the shovel ready Nolans rare earths (NdPr) Project in the Northern Territory of Australia. Arafura is aiming to be a trusted global leader for sustainably mined and processed rare earth products and plans to mine and process ore to separated commercial oxides at a single site at their Nolans Project. The main focus being to produce NdPr oxide. The Project has [all](#) Federal & NT Environmental approvals secured and Government and Minister support for [A\\$300 million](#) senior debt facility. Basically, the Project is ready to go subject to final project funding being secured. Subject to that funding, first production is targeted to begin [late 2024](#).

Arafura trades on a market cap of [A\\$333 million](#).

An interesting side note to end on is that Arafura quote:

- “EV market growth is exponential: 10 to 40 times in the next 20 years. This will require 6–15 times more rare earth elements.
- Most EVs need about 1kg of rare earths for their motor magnets.

- Just 0.05% of the vehicle cost: but it can't run without it.
- Market analysts forecast a supply gap that represents 109% of global supply today and is in excess of 11 Nolans Projects."

Source: [Arafura Resources October 2021 company presentation](#)

Closing remarks

We should remember that in 2021 the Morrison led Australian Government [announced a A\\$2 billion loan facility](#) for Australian critical minerals projects. These funds have the potential to help Australian rare earths juniors to move towards production.

Combine this with high magnet rare earths prices and surging demand, and we have all the ingredients for a strong 2022 from the Australian rare earths' miners.

The Post-COP26 World Looks To Australia For Future Non-Chinese Rare Earths Production

written by InvestorNews | March 15, 2024

To achieve U.N. climate change management goals the world needs to shift rapidly to clean energy, and that means we need to build or secure, reliable sources of rare earths. While the USA and Canada have made some progress in this direction, Australia will also be needed to play a key role.

When looking at [a chart of rare earths reserves by country](#), China shows the largest reserves followed by Vietnam, Brazil, Russia, India, and Australia, in that order. The USA is ranked 8th and Canada is outside of the top ten. Given Australia's stellar track record as a reliable supplier of raw materials, it should not be surprising to know that the West is looking towards Australia to step up production of rare earths, especially those needed to support the surging cleantech sectors of electric vehicles, wind energy, and solar energy.

ClearWorld.us says it well, [stating](#):

“Renewable energy development relies upon sufficient quantities of rare earth minerals, specifically neodymium, terbium, indium, dysprosium, and praseodymium. These are used in the production of solar panels and wind turbines. **If the world is to meet the greenhouse gas emissions targets sought in the Paris Climate Agreement the availability of these minerals must increase by 12 times by 2050.**”

(Emphasis by the author.)

Rare earths are key elements in the cleantech revolution



Australian listed rare earths companies:

Producers

[Lynas Rare Earths Limited](#) (ASX: LYC) (“Lynas”)

Lynas is the second largest neodymium and praseodymium (“NdPr”) producer in the world. Lynas owns the Mt Weld rare earth mine, which is one of the world's highest grade rare earths' mines, and the Mt Weld ORE Concentration Plant, both located in Western Australia. Lynas also owns the Lynas Advanced Materials Plant

(LAMP), which is an integrated manufacturing facility, separating and processing rare earths' materials in Malaysia. The Lynas 2025 growth strategy encompasses plans to build the Kalgoorlie Rare Earths Processing Facility (cracking and leaching) in Australia and an LRE/HRE separation and specialty materials facility in the USA. Lynas trades on a market cap of [A\\$7.3 billion](#).

Iluka Resources Ltd. (ASX: ILU) ("Iluka")

Iluka is a relatively new (April 2020) producer of rare earths at their Eneabba Project in Western Australia. Iluka intends to ramp to selling 50,000 tpa of a 20% monazite-zircon ore concentrate for further processing offshore. Iluka has an offtake agreement for 50,000 tpa. Iluka [is working on developing a Phase 2](#) of the Eneabba Project which involves investigating techniques to beneficiate and purify the monazite to an 80% concentrate for sale further down the value chain. Iluka is mostly known for being an Australian heavy mineral sands, zirconium and titanium, producer. Iluka trades on a market cap of [A\\$3.5 billion](#).

Vital Metals Limited (ASX: VML) ("Vital")

Vital recently began mining ore at its Nechalacho' Mine in Canada's Northwest Territories (NWT), with commencement of ore processing at Vital's, under construction, Saskatoon cracking and leaching facility expected to begin in 2022. The Nechalacho Mine is a high grade, light rare earth (bastnaesite) project with a world-class resource of 94.7Mt at 1.46% REO (measured, indicated and inferred). Nechalacho's North T Zone, which is being mined by Vital, hosts a high-grade resource of 101,000 tonnes at 9.01% LREO (2.2% NdPr). Vital has a [non-binding MOU](#) with Ucore Rare Metals Inc. for the supply to it of a mixed rare rare earth carbonate, beginning H1 2024. Vital Metals trades on

a market cap of [A\\$250 million](#).

Explorer/Developers (in alphabetical order):

[Arafura Resources Limited](#) (ASX: ARU) (“Arafura”)

Arafura 100% own the Nolan’s Bore rare earth project 135kms from Alice Springs in the Northern Territory, Australia. Arafura [states](#): “The Project is underpinned by low-risk Mineral Resources that have the potential to supply a significant proportion of the world’s NdPr demand. It is a globally significant and strategic NdPr project which, once developed, will become a major supplier of these critical minerals to the high-performance NdFeB permanent magnet market.”

The deposit contains a JORC 2012-compliant Mineral Resources of 56 million tonnes at an average grade of 2.6% total rare earth oxides (TREO). 26.4% of the total rare earths contained are NdPr. The Project is [supported by](#) Export Finance Australia (EFA), and the Northern Australia Infrastructure Facility (NAIF), via non-binding letters of support for a proposed senior debt facility of up to A\$200 million and A\$100 million respectively. Arafura is looking to raise further funds to get the project started. Arafura recently [stated](#): “The momentum with offtake discussion has enabled engagement to expand to include the options for strategic investment as part of the Nolan’s project funding.” Market cap is [A\\$379 million](#).

[Australian Rare Earths Limited](#) (ASX: AR3) (“AREL”)

AREL is progressing in the exploration of a significant deposit of valuable ‘clay-hosted’ rare earth elements, located at their Koppamurra Project spread over [~4,000km²](#) of tenements in South Australia and Victoria. Past exploration of the Koppamurra region has shown it contains [mineralization containing the rare earth elements](#) neodymium, praseodymium, dysprosium and terbium.

The Koppamurra Project is an 'ionic clay' rare earth opportunity with a 2021 JORC [Inferred](#) Mineral Resource of 39.9Mt @ 725ppm TREO. AREL trades on a market cap of [A\\$98 million](#).

[Australian Strategic Materials Ltd.](#) (ASX: ASM) ("ASM")

ASM owns the Dubbo Rare Earths Project in NSW, Australia. The Dubbo Project is a 100% owned 'construction ready' poly-metallic and rare earths project with potential to become a key global supplier of specialty metals and rare earths. ASM's goal is a "[mine to metal](#)" strategy to extract, refine and manufacture high-purity metals and alloys, supplying directly to global technology manufacturers. Market cap is [A\\$1.92 billion](#).

[Northern Minerals Limited](#) (ASX: NTU)

Northern Minerals own the Browns Range heavy rare earth minerals project in Western Australia. Northern Minerals has built a pilot plant to test a number of deposits and prospects that contain high-value dysprosium and other Heavy Rare Earths (HREs) such as yttrium, hosted in xenotime mineralization.

The Company [states](#): "Northern Minerals is positioned to become the world's first significant producer of dysprosium outside of China. Accounting for 60% of the Browns Range Project's (the Project) revenue, dysprosium is the key value driver of the Project and is at the core of Northern Minerals' marketing strategy. With a high value, high purity, dysprosium rich product, the Company is set to become a long term and reliable supplier of dysprosium and other critical heavy rare earths to world markets." Market cap is [A\\$339 million](#).

[Peak Resources Limited](#) (ASX: PEK)

Peak Resources 75% owns the Ngwalla Tanzania rare earth project, which the Company [states](#) is one of the world's, largest and

highest grade, undeveloped rare earth projects. The Ngwalla Project has ore reserves of 18.5 million tonnes at 4.8% REO; 22% of the total mineral resource is NdPr, with an expected 26 year life of mine. The Project is currently at the funding stage having completed a BFS in 2017. The BFS summary details are [here](#). About 90% of the Project's revenues will be coming from NdPr. Peak Resources [state](#): "Operating cost of US\$ 34.20/kg NdPr* Oxide, demonstrating potential to be the world's lowest-cost fully integrated rare earth development project." Market cap is [A\\$135 million](#).

Closing remarks

With rare earths demand set to grow strongly this decade as the world moves towards cleaner energy and technology, investors would be wise to take a second look at the [rare earths sector](#).

Australian critical minerals projects were recently in the news after the Government announced that they would receive an [A\\$2 billion boost](#) (via a loan facility), to support the sector. This bodes well for the Australian rare earths junior miners to join Lynas as producers. Stay tuned as this sector looks set to shine this decade.

The Rare Earths Market in Review – June 2020

written by InvestorNews | March 15, 2024

"I think Energy Fuels is serious about going into the rare earths business. What I was told is that they are going to begin

by selecting a rare earths mineral produced in the United States...” States critical materials expert Jack Lifton, in an interview with the Technology Metals Show hostess Tracy Weslosky.

In the interview Tracy and Jack discussed some of the major news in the rare earths space for the month of June. Jack also commented on Lynas and shared his view on Alkane’s plan to demerge their poly-metallic and rare earths holding company Australian Strategic Materials Limited (ASM).

To access the complete interview [subscribe](#) to the [Technology Metals Show](#) and get exclusive access to member only content through this exclusive site! Or [Log-In Here](#) for the latest conversations, debates, updates and interviews with the leaders, thought leaders and investors focused on issues relating to sustainability in the critical materials sector.

For more information on the [Technology Metals Show](#) email us at info@technologymetals.com or reach us direct at +1 (416) 546-9233

Arafura’s Gavin Lockyer on the rising rare earths market

written by InvestorNews | March 15, 2024

May 17, 2018 – “What I will say about this slide though is that our project is one of only 12 in Australia that has been granted major project status by both the federal government and our local Northern Territory government. I think that reflects the

strategic importance of rare earths, in particular, to Australia and its export partners.” states Gavin Lockyer, Managing Director of [Arafura Resources Ltd.](#) (ASX: ARU), in a recent presentation at the 7th Annual InvestorIntel Summit – Buds, Batteries & Blockchain 2018.

Gavin Lockyer: My name is Gavin Lockyer. I am Managing Director of Arafura Resources. I have been with the company for around 12 years now. I commenced as CFO and company Secretary and stepped into the managing director role about 3½ years ago. Also, traveling with me is our General Manager for Business Development and Exploration, Mr. Richard Brescianini, who is standing over to the side there. If you have any technical questions about the project later on please feel free to seek out Richard or myself. Richard has also got some little toys which we can pass around because we all talk about these magnets, but not all of us have seen them all, been able to feel how strong they actually are. Richard has got a couple of toys there to play with. As you heard earlier if you were around when I was on the panel, we are developing the Nolans Bore Project, which sits in the middle of Australia. It is enriched in the rare earths in particular NdPr or neodymium, praseodymium. These are the key feed materials for these high-strength magnets. I will not bore you with all the standard details. What I like to do in these presentations is to talk a little bit about the market, about what we are experiencing at the moment so perhaps it might not correlate with the slides that are on the screen. I think you are all educated enough to jump on the website and download a standard presentation. I think it is probably more beneficial if we have some interaction around what we are actually seeing in the real world from our discussions with magnet producers, both in China, Japan, etc. What I will say about this slide though is that our project is one of only 12 in Australia that has been granted major project status by both the

federal government and our local Northern Territory government. I think that reflects the strategic importance of rare earths, in particular, to Australia and its export partners. What this means really it just gives us a dedicated case officer in Canberra and also in Darwin, the capital of the Northern Territory where we can coordinate relationships through government and, not fast-track, but supposedly grease our way through the wheels of bureaucracy. I will touch on some of our permitting stuff a bit later on. As we have all heard, the NdPr market is critical to the high-performance magnets. We are seeing renewed interest in capital markets in particular around the fact that a lot of these guys have made money out of the battery metals. A lot of the fund managers, etc, we are speaking to now have all made money in graphite, cobalt, lithium. They are starting to think, well, what is the next technology metal that is going to take off? Inevitably the battery technology has been the key enabler around the electrification of transportation fleets. Those batteries have to drive something. Inevitably it is an electric motor. Those electric motors, as we have heard from Nick from Alkane earlier, if you want that motor to be lighter and more efficient it will have NdPr magnets in it...to access the complete presentation, [click here](#)

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