

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>
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Rowena Smith Highlights ASM's

Operational Success at Korean Metals Plant in Rare Earth Metals Production

written by InvestorNews | March 22, 2024

In a conversation with InvestorNews host Tracy Weslosky, Rowena Smith, the Managing Director of [Australian Strategic Materials Ltd.](#) (ASX: ASM), highlighted the company's innovative edge in the rare earth sector. Smith detailed ASM's end-to-end approach from mining to metal production, underscoring its capability to control the entire supply chain outside China—a key differentiator in the market. She also pointed to the operational success of the Korean Metals Plant (KMP), which is already producing essential rare earth metals and alloys. Smith mentioned plans to expand KMP's production to include heavy rare earths, reinforcing ASM's competitive advantage and commitment to technological advancement.

Smith also delved into the technological innovations at the KMP, showcasing ASM's forefront position in metallurgical advancements. The KMP's current production of neodymium-praseodymium (NdPr) and the development of neodymium iron boron (NdFeB) alloys are pivotal for high-performance magnets used in renewable energy and electric vehicles. This technological edge not only demonstrates ASM's capacity to meet critical global demands but also reinforces its role as a leader in reducing dependency on the conventional rare earth supply chains. Smith's narrative underscores ASM's commitment to sustainability and innovation, highlighting its readiness to meet the increasing demands for rare earth elements critical to modern technology and green energy solutions.

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

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About Australian Strategic Materials Ltd.

Australian Strategic Materials (ASX: ASM) is a vertically integrated 'mine to metals' producer of critical metals for new growth industries, high technologies and sustainable energy solutions. ASM operates a metals plant in Ochang, South Korea which is currently producing critical metals and alloys to customer specifications. The initial production focus is on neodymium praseodymium (NdPr) and neodymium iron boron (NdFeB). Currently, ASM sources the rare earth oxides for the production of the critical metals at its Korean Metals Plant (KMP) from a third party located in Vietnam. The company's Dubbo Project, is a long-term resource of rare earth elements, zirconium, niobium and hafnium, located in New South Wales, Australia. ASM intends to develop the Dubbo Project to produce metal oxides which will be used for refining into critical metals at ASM's KMP and subsequent plants that may be established in other jurisdictions.

To learn more about Australian Strategic Materials Limited, [click here](#)

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Rowena Smith sits down with Jack Lifton on ASM's 'Mines to Metal' Advantage in Supplying Rare Earths

written by InvestorNews | March 22, 2024

During an interview at PDAC 2024 in Toronto, Jack Lifton of InvestorNews sat down with Rowena Smith, the Managing Director of [Australian Strategic Materials Ltd.](https://www.asm.com.au) (ASX: ASM), to delve into the company's position and strategic initiatives within the rare earths and permanent magnet supply chain. Smith elucidated ASM's comprehensive strategy, spanning from "mine to metal," highlighting their advanced development project in Dubbo, New South Wales, and their operational metals plant in South Korea. The company has successfully commenced production of neodymium praseodymium (NdPr) metal and neodymium iron boron (NdFeB) strip alloy, which are essential components for sintered magnets used across various technological applications. Smith proudly noted ASM's pioneering role as the first Australian entity and one of the few globally to achieve such depth in the supply chain outside of China, emphasizing the critical nature of their work

in diversifying the global supply chain and reducing dependence on single-source suppliers.

Smith also detailed the Dubbo Project's progress, underlining its pivotal role in ASM's mine-to-metals business model for supplying rare earths and critical minerals. Funding and securing off-take agreements are current priorities, with the project's engineering, exploration, and permitting stages already completed. Smith's participation in a U.S. trade delegation and discussions with U.S. government departments reflect a strong international interest in funding the project. These interactions highlight the alignment between Australian and U.S. interests in establishing a sustainable and transparent critical minerals supply chain. ASM's engagement with various U.S. government agencies and the passage of legislation recognizing Australia as a 'domestic source' for U.S. Department of Defense procurement showcases the international efforts to bolster critical mineral supply chains outside of China. The company's ongoing discussions for offtake agreements and advancements in metallization capability at the Korean Metals Plant further underscore ASM's commitment to securing a robust position within the global supply chain of rare earth metals and alloys.

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

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ASM's Rare Earths Leadership and CEO Rowena Smith's Global Vision

written by InvestorNews | March 22, 2024

In a recent InvestorNews interview, Tracy Weslosky had a conversation with Australian Strategic Materials Limited's ("ASM") (ASX: ASM) Managing Director and CEO Rowena Smith, delving into the company's new ventures and its unique positioning in the rare earths market.

Redefining Rare Earths Supply Chain: A Conversation with ASM's Rowena Smith

written by InvestorNews | March 22, 2024

In a recent interview on InvestorNews, CMI Co-Chair Jack Lifton had a chance to speak with Rowena Smith, the Managing Director and CEO of Australian Strategic Materials Limited (ASM) (ASX: ASM). The conversation took a deep dive into ASM's unique positioning in the rare earths industry.

Eyes on Korea: The Emerging Epicenter of the Rare Earth Supply Chain

written by Jack Lifton | March 22, 2024

To sum up, while the global discourse frequently orbits around China and the US, the Korean rare earth landscape is bustling. Their relentless quest to develop a comprehensive domestic supply chain for rare earth permanent magnets will invariably lead to a demand spike, which may catch many by surprise.

What does the replacement of the Australian Strategic Materials CEO mean?

written by Jack Lifton | March 22, 2024

[Australian Strategic Materials Ltd.](#) (ASX: ASM) has accomplished the execution of a business model first described by Canada's former Great Western Minerals and then appropriated by the (second) American MolyCorp, neither of which could ultimately pull it off – the vertical integration of a critical mineral producer from the mine to the finished mass-produced product ready for end-user product fabrication.

For ASM the first integrated production will be of rare earth metals, titanium, and zirconium, the mineral supply chain for each of them originates with the company's Australian mining operation, and the final processing to metals is done in a Korean joint venture, already proven at the pilot plant level and with a full-scale plant being contracted for with Hyundai Engineering.

I have no doubts that the entire output of ASM's Korean operations will be sold into the Korean market. The sister company of Hyundai Engineering, Hyundai Motors, is already mass producing a low-cost battery powered EV, which needs rare earth permanent magnet electric motors made independently of Chinese critical metals.

The Korean nuclear power industry needs zirconium (and its sister metal, hafnium [also to be produced by ASM in Korea]) for the cladding of fuel rods. And the Korean domestic armaments industry needs rare earth permanent magnet motors and titanium for its aircraft and shipbuilding (Korea's first full-scale aircraft carrier is now being planned).

ASM, having now structured its total supply chain for critical metals, just last week [installed a new CEO](#), its former COO, Rowena Smith, who has almost 30 years of global mining experience in strategic planning and mineral processing with senior mining corporations, including roles at South 32, Rio Tinto, and BHP. Previous CEO David Woodall abruptly stepped down from his roles and left the company.

It's important at this point to understand the significance of the replacement of now former CEO, David Woodall, by former COO, now CEO, Rowena Smith. Those who plan wars, or even battles, rarely carry them out. During David Woodall's tenure, the vertical integration of ASM was planned and the component

ventures were acquired, modified and themselves integrated. During that time Rowena Smith, as COO, familiarized herself with the plan, helped to implement it, and took over the day-to-day operations of the system as it matured. She has overseen areas of the Dubbo project and the Korean Metals Plant. Last week the board of the company determined that ASM was ready for her operationally-experienced and skilled management to assume overall control, and the management change was implemented.

ASM is now the first non-Chinese company to complete a vertically integrated business model from the mine through to the production of high purity critical metals for the EV, shipbuilding, aerospace, and nuclear industries.

ASM is Australian-owned and sited, and its first customers are in Korea.

The rest of the non-Chinese mining and processing world should look closely at this success and emulate this model.

Critical materials frontrunner ASM closes out 2021 with a pre-tax NPV of AUD\$2.36 billion

written by Tracy Weslosky | March 22, 2024

[Australian Strategic Materials Ltd.](#) (ASX: ASM) management team closed out 2021 with a measurable project and corporate successes. Most significantly, in December 2021, the company

updated the 2018 Dubbo Project Optimization Study. The [updated study](#) released in early December 2021, supports a 20-year mine life based on existing ore reserves, with Measured and Inferred mineral resources, (which have the potential to extend the mine life) being excluded for this study. The economics are robust – pre-tax NPV of AUD\$2.36 billion and a pre-tax IRR of 23.5%. This is 6% higher than the previous study done in 2018 and is measurably significant.

The Dubbo Project is based on the Toongi deposit in southeastern Australia (New South Wales), which contains rare earths, zirconium, niobium and hafnium and reserves that support a project life of 20 years and resources that may support a much longer mine life. Importantly, on July 21, 2021, the company [announced a new 20% partner](#) for Dubbo development, the receipt of US\$250 million from a consortium of South Korean investors, and a buyer for product from its Korean Metals plant in South Korea, which saw partial commissioning for the neodymium metal production furnace system last year with additional commissioning to follow this year and full scale production expected in the second half of 2022.

The Dubbo Project is ready for construction with all major state and federal approvals and licenses in place, along with a proven process flow sheet and solid project economics. Management has appointed Australian and New Zealand Banking Group Limited (ANZ) as debt financial advisor to assist in engaging with Australian and South Korean export finance agencies as part of the financing of the Dubbo Project.

The company has a “mines to metal” strategy and has executed on that in the past year. The company is nearing completion of the Korean Metals Plant (KMP) in South Korea and, as previously announced, as part of the framework agreement with the investors, a new and separate consortium will be established to

develop a permanent magnet manufacturing business in South Korea (MagnetCo Fund).

Not to be outdone by the calendar, in mid-December the company announced the signing of a Joint Statement of Cooperation. ASM and KOMIR, the Korea Mine Rehabilitation and Mineral Resources Corp., have agreed to work together to expand the use of rare earths and critical metals in Korea and develop import opportunities that will secure the supply of these metals for Korean industry. While this is a lot of press-release-speak, it means that ASM has a deal to supply an alternative, secure and sustainable supply of critical metals to South Korea. ASM will commence production of critical metals at ASM's Korean Metals Plant in 2022.

In Summary:

- Dubbo Mine – fully permitted, updated optimization study, now funded and partnered. Have a feedstock purchaser in KMP for rare earths.
- Metallization plant – under construction in South Korea. Partially commissioned in 2021 and expected to be fully operational this year.
- Magnet producer – to be constructed, partnership established.

Or as keen observers of the Australian Open tennis tournament would observe “Game, Set and Match”.

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

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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.