

ASX: MEI

31/08/2023 Share Price \$0.215 Speculative Buy \$0.60 (Comparable Value¹) Overview: 52-Week Range \$0.01 - \$0.28 MEI Shares on Issue 1,940m Market Capitalisation \$417m Cash (26 Jun 2023) \$5.4m Substantial Shareholders: Tolga Kumova 8.3% 2.1% Andrew Tunks Dc & Pc Holdings Pty Ltd 2.0% Klare Pty Ltd 1.7% R & S Russell Investments Pty Ltd 1.4% **Board & Management:** Nick Holthouse CEO Dr Andrew Tunks **Executive Chairman Executive Director** Dr Marcelo De Carvalho Paul Kitto Non-Executive Director 1-year Share Price History: Volume (000's) Price (A\$) 180.000 0.30 160.000 0.25 140,000 120.000 0.20 100.000 0.15 80,000 0.10 60,000 40,000 0.05 20.000 0.00 0 08-22 10-22 12-22 02-23 04-23 06-23

Meteoric Resources – "The Pele Unicorn"

August Site Visit Report: MEI Is Our Rare Earth World Cup Winner On The ASX

Tier-one REE Project, with grades that are 5x of its IAC peers

Company overview: Meteoric Resources ('MEI') is developing its high-grade Caldeira lonic Clay Rare Earth project in the state of Minas Gerais, Brazil. In May 2023, MEI announced an initial resource estimate of 409Mt at 2,626ppm TREO showcasing the vast scale and superior grade of the deposit compared to its peers. For site visit videos please visit this <u>link</u>.

Why do we like Meteoric Resources?

• Boasts the world's largest and highest-grade IAC resource, offering the flexibility of multiple mining hubs.

• Strategically significant, allowing for diversification of the REE supply chain and reducing reliance on China.'

On The Ground Take Aways:

• The project is creating buzz in the state. There's widespread local and political excitement, highlighted by strong government backing and a fast 24-month approval process for construction licenses.

• Upon visual assessment of the deposit, it's evident that the MRE is only constrained by drilling. The vast project and the uniform clay depth indicate a potential MRE increase. Estimates show up to 1.2 billion tonnes at 2600 ppm, and with 85% uncharted, a 3x growth in the short term is feasible.

• Tier 1 quality infrastructure with a highly skilled mining workforce, located just a 4-hour drive from Sao Paulo a major city with more than 12 million people.

• The location and the state are favorable for obtaining permits due to its established reputation as a mining zone. Alcoa has operated a bauxite mine there since 1965.

• Given rare earths' processing demands, the project benefits from available essentials: port access, hydropower, dual-lane highways, and industrial capabilities.

Upcoming catalysts:

Q2 2024	100,000m drilling to grow MRE and transition resource to M&I.
Q3 2024	Optimise metallurgy.
2H 2023	Sale of non-core gold assets.
Q1 2024	Scoping Study
2H 2024 – 2H 2025	Detailed Feasibility Study (DFS), Final Investment Decision (FID), and project financing.
2H2025 – 1H2027	Construction and commissioning phase.

Comparable valuation:

Rare earth producers trade at an average of ~2.75x EV / Contained TREO

Producers and developers trade at an average of ~0.8x EV / Contained TREO

- Current rare earth developers trade at an average of ~0.36x EV / Contained TREO
- MEI currently trades at ~0.38x EV / Contained TREO

• Over the next 2-3 years as MEI progresses to production a significant rerate in MEI's EV is achievable as current producers trade at ~8x EV

• Over the next 12 months MEI has the potential¹ to significantly increase its total resource and high-grade zones of project by multiples of two to three times



Caldeira Will Be A Critical Piece In The Global Nd-Pr & Tb-Dy Supply

Calderia "The Pele Unicorn"

Overview:

Meteoric Resources holds 100% ownership and is currently on the fast track of development of the Caldeira Ionic Clay Rare Earth project located in Minas Gerais, Brazil. The company secured this project in December 2022 and in May announced a maiden resource of 409mt with 2,626ppm TREO.

This however is just the start!

- Largest & Highest-Grade Ionic Clay
 deposit globally
 - Strategically significant, allowing for diversification of the REE supply chain
- Development optionality with lower capex modules and mining hubs





Maiden Resources & Clay Peers

The Caldeira REE Project's initial resource estimate boasts an impressive 408mt at 2,626ppm TREO, significantly outpacing other Brazilian Ionic Clay (IAC) contenders and China Southern Rare Earths, that contributes nearly 30% of China's rare earth yield, primarily from ionic clay sources that register between 500-1000ppm TREO. The economic allure of IAC deposits lies in their cost efficiency and swift development cycle. To put it in perspective, Caldeira's grade is a substantial five-fold higher than Ionic Rare Earth's Makuutu, and its magnitude overshadows Alcara's PENCO by a factor of ten."

Key details from the Global MRE for the Caldeira REE Project, as per JORC 2012 guidelines:

- 409Mt @ 2,626 ppm TREO1 with a 1,000ppm cut-off.
- Magnet REO grades account for 24% of the TREO basket at 631ppm.
- Using a 2,000ppm TREO cut-off, MRE is 271Mt @ 3,146ppm TREO, which pinpoints high-grade zones for future drilling focus.
 At this higher cut-off, MREO grades form 26% of the TREO basket at 815 ppm.
- The average drill depth is 6.9m, with 85% of holes yielding TREO grades above 1,000 ppm, indicating potential depth expansion.
- A diamond drilling program aims to assess deeper clay zones beyond the current resource model.
- Notably, the MRE represents just 24% of the Caldeira REE Project area, and only a fifth of the area mentioned in a proposed acquisition from late April.
- Our estimate below does not include results from the 31/08/2023 ASX Announcement, which have reported the widest, highestgrade zones that measure ~150m @ 8912ppm TREO and 52m @ 12,692 ppm TREO



Source: Meteoric Resources

31/08/2023 Announcement - More Remarkable Results

MEI announced results from 22 diamond drill holes, 17 within and 5 outside the current resource area. The data suggests a deeper REE mineralisation depth than previously believed, with the CVSD001 hole showing exceptional results. The exploration program initiated in July is actively examining several priority targets, with promising early results.

- The drill CVSDD001, located outside Caldeira's resource, recorded the year's most extensive, highest-grade ionic clay REE intercept.
- The average MREO grade over CVSDD001's entire 149.5m intersection surpassed any peer's reported lonic Clay TREO grade.
- Light Magnet Rare Earths (Neodymium & Praseodymium) and Heavy Magnet Rare Earths (Terbium & Dysprosium) from CVSDD001 were 4-5 times higher than values in the maiden mineral resource estimate.
- A notable 52m segment from CVSDD001, starting 61m downhole, showed impressive LMREO and HMREO grades.
- MEI commenced a 60,000m aircore program targeting Measured & Indicated Resources at select sites following a drill rig purchase.
- Diamond drilling results indicate that REE mineralisation extends beyond 10m deep throughout the regolith profile.



Exploration Drilling (Outside the Caldeira Project Resource Estimate)

- CVSDD001 149.5m @ 8,912 ppm TREO [0m], with 52m @ 12,692ppm or 1.27 % TREO [61m],
- BDPDD001 73.3m @ 3,939ppm TREO [0m], including 42,3m @ 4,719ppm TREO [0m]
- CDMDD003 26.7m @ 1,561ppm TREO [0m], including 4.2m @ 3,582ppm TREO [0.9m]
- CRDD001 58m @ 2,702ppm TREO [0m], including 33m @ 3,006ppm TREO [5m]
- CRDD002 28.4m @ 2,194ppm TREO [0m], including 12.1m @ 2,322ppm TREO [5m]



Source: Meteoric Resources

Source: Meteoric Resources

Resource Upside - Billion Tonne Potential:

- Our assessment suggests that the global resource might triple by incorporating tonnage from incorporating increased depth extensions and regional targets
- The initial resource assessment drew from historical drilling, with the majority executed by JOGMEC between 2017-2019. A total
 of 1,379 shallow auger holes, averaging 6.9m in depth, informed this maiden resource.
- A significant portion of these auger holes (85%) concluded in mineralization, boasting grades exceeding 1,000ppm.
- Diamond drilling enhances the average clay depth by a staggering +164%, all the while sustaining 3,000ppm grades.
- Diamond drilling revealed that mineralization plunges to depths of 36m at the Capão de Mel deposit and 56m at the Figueria deposit.
- MEI has pinpointed several prominent regional exploration targets with the potential to amplify the resource base.
- On 10th July, MEI expanded its strategic footprint by an additional 20km², culminating in a total of 193km².
- To date, only about 15% of the tenement regions have undergone drilling. Yet, every explored area has encountered mineralization.
- The regional geology points to a distinctive asset. It appears underpinned by a vast-scale alkaline complex providing the rare earths. The elevated tropical setting (between 1,200-1,600m) coupled with a 5-month rainy season offers a robust weathering environment. The enclosing 25km by 30km Caldera wall likely acted as a barrier, which in our estimation, preserved the rare earths by preventing their outward transport



Source: Evolution Capital Estimates





CROSS SECTION SHOWING CONSIDERABLE DEPTH EXTENSIONS NOT IN CURRENT RESOURCE MODEL, 2 TO 5 TIMES DEPTH POTENTIAL INCREASE.

Source: Meteoric Resources

Metallurgy - Confirmed Ionic Clay REE Deposit

Layered clay minerals that make up ionic adsorption clays have a negative charge because of element substitutions in their structure. This allows the clay to capture and retain positively charged ions, known as cations on its surface. In places where minerals containing rare earths (like bastnasite, monazite, xenotime, etc.) have been weathered, the rare earth elements can be released through the weathering process. These elements then form cations that attach to the clay. However, the attachment is not strong, and altering the pH or introducing other ions can reverse it.

Simple and Environmentally Friendly Process

The Project is classified as an Ionic Adsorption Clay REE Deposit, which is characterised by the following key criteria:

- Formed in the saprolite (clay) zone of the weathering profile
- The majority of the REE's are adsorbed onto clay minerals and accumulate in the soil or clay zone of the regolith profile
- Adsorbed REE are ionically attached to the clay minerals and can be liberated by washing in a weak solution of ammonium sulphate (or other metal salt) at near neutral pH
- Ionic Adsorption Clay REE Deposits are typically found near the surface, often at depths of less than 10 meters
- The U and Th levels in Ionic Clay REE Deposits are typically low, as these elements are less soluble in ground waters and are not adsorbed during the weathering and leaching processes.



Source: Meteoric Resources



MEI's High-Grade Targets & Development Strategy:

Key Elements of Strategy:

- Focus on extending and solidifying the mineral resources at Calderia.
- Drive development studies to showcase superior economics, scalability, and production roadmap.
- Prioritize high-grade zones of the ore body (~3500 ~4000ppm) for better early economics.

Anticipated Outcomes:

- Possession of the largest, high-grade ionic adsorption clay deposits outside China.
- A High Rare Earth Element (HREE) project with straightforward processing, low initial capital, reduced capital intensity, and substantial profit margins.
- Unique exposure to the favorable economics of IAC deposits as MEI stands out; other IAC projects are privately held.
- A chance to offer a long-duration asset to counterbalance China's decreasing HREO production, thereby supplying western
 markets with essential magnet and heavy rare earths.

Resource and Exploration Details:

- Initial resource identified using a 1,000ppm cut-off grade.
- A comprehensive 100,000m drilling plan to enhance and expand the resource.
- Emphasis on high-grade zones to boost early-stage project economics.
- Resources at elevated cut-off grades (e.g., 2,000ppm) are vast and high-quality, combined with a low waste-extraction ratio.

Development Focus:

- Caldeira Rare Earths' value is heavily influenced by the project's specific development pathway.
- The approach will likely emphasize high-grade zones, especially in the project's initial years.
- Mining inventory encompasses 60% of total ore resources and 72% of TREO, with recent drillings hinting these figures could be conservative. Predominantly, the inventory is based on the 2,000ppm cut-off grade resource.

Infrastructure & Development

Mine Construction Feasibility?

Yes, it's feasible to construct a mine here. With the region's extensive mining history and the streamlined approach provided by the agreement, Meteoric is set to start construction by 2026 and begin production by 2027.

Minas Gerais is a powerhouse state, boasting over 300 active mines:

- 53% of Brazil's iron ore and 29% of its overall ores.
- A significant production of gold, zinc, and phosphate.
- 75% of global niobium output.
- Other minerals including bauxite, manganese, palladium, silver, dolomite, and more.
- 40 of Brazil's top 100 mines are located here.

Alcoa's Presence:

- Active in Poços de Caldas since 1965, their first venture in Brazil.
- Smelter operations ceased in 2014.
- The mine remains operational, extracting around 1Mtpa of bauxite. Peak operation reached a rate of 3Mtpa.
- Caldeira's Location Advantages:
 - A 4-hour drive on a paved highway from Sao Paulo, with speeds between 100-120km/h, leads to the Caldera project.
 - Boasts a skilled labor force.
 - Rich history of extensive mining.
 - Access to cost-effective hydropower.
 - Easily accessible location.
 - Poços de Caldas A prosperous town of 180,000 residents with significant manufacturing capabilities. Is Approximately a 30-minute drive from the project.

Homogenous, Large & Consistent Ore Body:

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Source: Meteoric Resources

Permitting for Calderia:

- On 11th August 2023, a Cooperation Agreement was signed with the State Government of Minas Gerais and the State Economic Department (Invest Minas).
- This agreement gives priority status to the Caldeira project, emphasizing its importance to the state.
- It ensures a streamlined permitting process with a 24-month timeline for the Construction License.
- Both parties are also keen on exploring downstream processing options up to magnet production.
- Meteoric initiated a partnership with Alger, a local environmental consulting firm, via an MoU to conduct the project's Environmental Impact Statement (EIS).
- Alger's notable work includes Sigma Lithium's Grota do Cirilo project.
- The signing event saw dignitaries like Minas Gerais Governor, Mr. Romeu Zema, and Australian Ambassador to Brazil, Ms. Sophie Davis.

Permit Details and Context:

- 21 out of the 30 licenses have mining permits; adjustments are needed to incorporate REE mining.
- This adjustment is estimated to take around 6 months.
- Radionuclides are not a concern in this project.
- A separate permit is essential for the processing plant.



Source: Meteoric Resources

 The region has existing mines and industries, like the 2Mtpa Alcoa bauxite mine which has been operational for over 30 years, suggesting easier permit acquisition. The project location is distant from rainforests, indigenous populations, and rare wildlife, being predominantly an industrial and agricultural zone.

Comparable Peers

EVOLUTION CAPITAL

Comparing rare earth projects is challenging due to inconsistent reporting and the unique nature of each project. Different geologies and products further complicate these comparisons, and many financial details often remain undisclosed.

Ionic Clay vs Hard Rock-Hosted REE

lonic clay allows for expedited development timelines, reduced capex requirements and a higher value product.

	Ionic Clay-hosted REE	Hard Rock-hosted REE				
	AUSTRALIAN RARE EARTHS	Image: Second				
Location	 Predominantly mined in China, with small deposits found in Myanmar However, global clay-hosted REE stocks are depleting 	 Majority of production based in China, with some projects under consideration in Australia, United States, and Africa 				
Payability	 70% - 80% payability as mixed rare earth elements Contains both light and heavy REEs 	 35% - 40% payability as a mineral concentrate Typically light REEs only 				
Scale	 Lower initial capex allows for increased scalability Typically ~US\$15/kg TREO annual output (<i>capital intensity</i>)¹ 	 Significant scale required before achieving economic feasibility due to higher initial capex requirements Typically ~US\$150/kg TREO annual output (<i>capital intensity</i>) 				
Exploration	 Quick and inexpensive – aircore drilling into deeply weathered granite (clays) 	 Similar to other hard rock base minerals requiring substantial drilling and geochemistry 				
Mining	 Surface mining, with minimal stripping of waste material Progressive rehabilitation of landscape – pits backfilled leaving no tailings or waste dumps 	 Drill and blast with large mining fleet (typically, with high strip ratios) Capital-intensive open cut and underground operations required 				
Processing	 Simple dissolution of desorbable REE from clay in ammonium sulphate followed by conventional REE separation No radioactive waste streams 	 High temperature mineral cracking using strong reagents to solubilise the REE minerals (capital-intensive equipment required) Tailings are often radioactive and are costly to dispose 				

Source: Meteoric Resources

Benchmarking

	lonic clays / tailings (low opex, easy met)				Aussie hard rock - high radionuclides			Other hard rock			Producers		
Company	Meteoric	AR3	Ionic	Aclara	Rainbow	Arafura	Hastings	Northern	Vital	American REs	Peak	Lynas	MP
Project	Caldeira	Koppamurra	Makuutu	Penco	Phalaborwa	Nolans	Yangibana	Browns Range	Nechalacho	La Paz	Ngualla	Mt Weld	Mountain Pass
Location	Minas Gerais	S. Australia	Uganda	Chile	South Africa	N. Australia	W. Australia	W. Australia	NWT, Canada	Arizona	Tanzania	W. Australia	California
Stage	Pre-Resource	Resource	Scoping study	Scoping study	Resource	Pilot Plant	Scoping study	Pilot Plant	Producer	Resource	Scoping Study	Producer	Producer
Resource Tonnes	409.0	101.0	532.0	29.2	30.4	56.0	29.9	10.8	119.0	170.6	214.4	54.2	42.4
Resource Grade (ppm)	2,626	818	640	2,275	4,400	26,000	13,900	7,600	14,000	391	21,500	52,000	60,137
Ore Type	Ionic clay	Ionic clay	lonic clay	Ionic clay	Gypsum	Monazite/Apatite	Monazite	Xenotime	Bast/Xeno	Allanite	Bastnaesite	Monazite	Bastnaesite
Nd (ppm)	447	133	110	298	1,030	5,491	3,400	Not discl	2,800	63	347	19,500	7,303
Pr (ppm)	154	34	30	77	246	1,373	Incl in Nd	Not discl	700	16	103	Incl in Nd	2,594
Dy (ppm)	25	21	10	58	44	73	Not discl	640	136	8	3	338	Not discl
Tb (ppm)	5	4	2	8	13	18	Not discl	90	35	2	2	Not discl	Not discl
Minesite product ⁽¹⁾	MREC	MREC	MREC	MREC	Oxides	Oxides	MREC	Concentrate	Concentrate	Not discl	Concentrate	Concentrate	Concentrate
Production (ktpa REO)	10.0	2.0 ⁽²⁾	1.2	0.7	8.6	13.3	15.0	3.9	0.5	Not discl	16.2	25	40
Risks evaluation													
Radionuclides	Low	Low	Low	Low	Low	High	High	High	Low to high	High	Low	High	Low
Capex (US\$m)	200	75 ⁽²⁾	121(2)	119	296	1,135	461	247	Not current	Not discl	321		
Capital intensity	20	38	105	160	34	85	31	64	n/a	n/a	20		
Minesite recovery (%)	58%	40-80%	35%	18%	65%	61%	74%	80%	70%	Not discl	43%	70% ⁽²⁾	70%
Payability - SCPe (%)	70%	70%	70%	70%	90-100%	90-100%	70%	40%	40%	Not discl	60%	40% **	40%
Infrastructure - SCPe	Good	Good	Good	Good	Good	Remote	Moderate	Moderate	Remote	Good	Remote	Built	Built
Permit risk - SCPe	Low	Low	Low	High	Low	Low	Low	Low	High	High	Moderate	Low	Low
Notable permit risks - SCPe	Has existing mining permit	Low	Resettlement	Nearby forest reserve	Low	Radionuclides	Radionuclides	Radionuclides	Radionuclides, wildlife	Radionuclides, BLM	Downstream	Malaysia permit renewals	
Source: Company disclosure, SCPe and market data from Factset; (1) Minesite only, excludes downstream; concentrate = 30-40% payability; MREC = mixed rare earth carbonate, ~60-70% payability; oxides = separated oxides, ~90- 100% payability; ** Lynas is vertically integrated thus we colour the cell green													

Source: Sprott Research Estimates



Source: Evolution Capital Estimates

EVOLUTION CAPITAL



Source: Evolution Capital Estimates

Sale of Non-Core Gold Assets

On June 3, 2022, MEI struck a deal to divest its Juruena Gold project to Keystone Resources for US\$20m. While Keystone made a US\$2.5m deposit in October 2022, they encountered payment challenges, preventing the settlement of the outstanding US\$17.5m. Consequently, the agreement was dissolved. The Juruena Gold project, boasting a high-grade resource, remains a prime attraction in the market. It encompasses a substantial reserve of 1.0mt @ 10.4g/t, translating to 326koz. Given its appeal, we predict MEI will revisit efforts to market the Juruena Gold project, valuing it between US\$15m and US\$20m, aligning with the initial sale price.

Additionally, MEI possesses full ownership of the Palm Springs Gold project, situated proximate to Halls Creek in the Kimberley region of Western Australia. This endeavor has a resource estimate of 5.6mt @ 2.0g/t, amounting to 357koz, primarily concentrated in the Butchers Creek and Golden Crown deposits.



Key Milestones

MEI has launched an ambitious 100,000m air core and diamond drilling campaign set to wrap up by the end of 2Q23. This aims not only to upgrade our resource categorization from 'inferred' to 'indicated and measured' but also to broaden the existing resource both vertically and horizontally. Our projections indicate that examining these depths could potentially unveil a substantial volume in deeper layers.

Moreover, our overarching objectives include exploring untapped areas for resource upgrade, initiating preliminary environmental clearance studies, and undertaking the PEA/scoping study. By 2024, we anticipate having the inaugural reserve, and permit application ready. This paves the way for securing permit approvals, finalizing the DFS, and making the FID by 2025. Based on our timelines, a construction period spanning 18–24 months seems feasible, which aligns with production by mid-2027.

Milestones Timelines:

Q2 2024

Complete the 100,000m drilling to refine MRE and transition resources to M&I categories.

Q3 2024

• Optimise metallurgy.

2H2023

Sale of non-core gold assets

Q1 2024

Scoping study.

2H2024-2H2025

Complete the Detailed Feasibility Study (DFS), make the Final Investment Decision (FID), and secure project financing.

2H2025-1H2027

Construction and commissioning phase.

2H27

Launch commercial production.



Source: Meteoric Resources



Rare Earth Elements 101

The U.S. government classifies the 17 rare earth elements on the periodic table as "strategic minerals" due to their importance for national security.

- These elements are found worldwide, typically in grouped deposits, though some sources may be enriched in particular elements. .
- Their extraction is a complex process.
- They are categorized as "light" or "heavy" based on atomic numbers, with the "heavy" variants being especially valued. This . classification, however, is sometimes debated among scientists.
- Rare earths play an increasingly vital role in modern technology, including in devices like smartphones and MRIs.
- The surging demand for these elements is driven by their essential role in producing high-performance magnets, particularly the NdFeB type, used in electric engines, computer drives, weaponry, and wind turbines, recognized for their impressive strength-tosize ratio.
- Predictions suggest a tripling in demand for elements like neodymium and praseodymium by 2030. This is emphasized by the fact that every electric vehicle (EV) uses an extra 1kg of NdPr oxide compared to traditional cars, and each direct-drive wind turbine requires 200kg of pure NdPr oxide, underscoring their significance in the sustainable energy sector.

Rare Earth Demand:

2022	Total 260-280 ktpa REO growing at 6-8% p.a.
Demand	MRE 60-80 ktpa REO, growing at 8-10% p.a.
2022	LRE Surplus
Supply	MRE Balanced
2030 MRE	Deficit of 20-40 ktpa REO (10-15%)
Source Ada	amas Intelligence 2023



Source: Meteoric Resources

The following is a list of the 17 elements and some of their uses in modern technology

HREE
Yttrium Created red Colour in 1960s TV sets. Also found in lunar rocks collected by Apollo astronauts. Uses: superconducting material; cancer treatment; lithium-ion batteries; spark plugs; camera lenses.
Promethium The one "non-commercial" rare earth element. Rare in nature; mostly produced in laboratories. Uses: atomic batteries found in pacemakers; guided missiles; radios. Samarium One of the elements in demand for high-density magnets.
Uses: samarium-cobalt batteries that can withstand extremely high temperatures. Europium Named after the continent of Europe.
Uses: Colour red in TV sets; possible use in quantum computing chips. Gadolinium An element with few large-scale applications but many niche applications. Uses: pucker marine propulsion; puckers shielding; X-ray machines; fuel cells; to enhance MRI
Holmium Has the highest magnetic strength of any element.
 Uses: artificially generated magnetic fields; neutron absorption to regulate nuclear reactors (burnable poison); possible use in quantum computers. Erbium A fluorescent, pink-Coloured element also found in human bones.



Lanthanum Applications often overlap with cerium. Uses: nickel metal hydride (NiMH) batteries; petroleum refinement; automobile catalytic converters	 Uses: medical lasers; malleable alloys; neutron-absorbing control rods; to boost speed of high-capacity fiber-optic lines. Thulium One of the least abundant rare earths. Uses: portable X-ray machines; solid-state military and medical lasers.
Cerium The most abundant rare earth. Uses: deColourizing and polishing glass; arc-lights; making aluminum alloys.	Ytterbium Found in small quantities and difficult to refine. Uses: atomic clocks; lasers used in quantum computing; strengthening steel. Lutetium Known as the rarest and most expensive rare earth to refine. Uses: catalyst in petroleum refineries that make jet and diesel fuel; cancer treatments for stomach, pancreas and intestines.

Growing REE market and the long-term fundamentals for NdPr Oxide pricing are robust and growing

Prices of rare earths are on the rise due to tightening market conditions, anticipated increasing shortfalls for NdPr Oxide, and a growing demand for products sourced outside of China. Other important drivers of long term NdPr Oxide price as follows;

- Swift expansion in the EV and sustainable energy industries
- Diminishing Chinese local rare earth supplies
- Continuation of tax benefits for EVs in China
- Escalating operational and capital expenses
- Consolidation within China's rare earth industry
- Stringent actions against unauthorized mining in China
- Decline in rare earth imports to China from Myanmar



Source: Peak Rare Earths

Metroic Resources' Calderia deposit is one of the world's largest and highest-grade untapped rare earth reserves, particularly rich in valuable elements like neodymium and praseodymium. The project boasts a composition of roughly 24% NdPr, accounting for about 81% of the basket price. This proportion highlights the potential future value of NdPr. Moreover, the Neodymium-Praseodymium contribution from this project constitutes almost 85% of the total global value in the rare earths market.

China's Dominance of The Market

China sources 60% of the world's rare-earth minerals. While they dominate the market, other significant producers, such as Lynas in Australia and MP in California, have emerged. Although a 60% market share might not seem overly dominant, China's stronghold becomes more apparent deeper in the supply chain. The rare-earths supply process involves three key stages: raw material extraction and concentration, refinement into oxides, and magnet production. According to data from the Centre for European Policy Studies (CEPS), China commands 91% of the refining stage, 87% of oxide production, and an impressive 94% of magnet manufacturing. However, after years of intensive mining, China's global output and reserves share has seen a decline.



Exhibit 1: Business Overview



Source: Meteoric Resources

China's Growing Dependence of Myanmar for Rare Earth Mining

China, the dominant player in heavy rare earths supply, is increasingly reliant on Myanmar for HREE concentrates and it is estimated ~15% of China's REE production is Ionic Clay.

- However, the extraction process of these minerals is environmentally damaging, making it a double-edged sword in the fight against climate change.
- As environmental concerns led to the closure of several mines within China, the mining industry shifted its focus across the border.
- Myanmar, particularly the militia-controlled Kachin Special Region 1, has emerged as a significant, albeit controversial, source of heavy rare earths.
- This rapid, unchecked rudimentary mining expansion in Myanmar is causing environmental degradation, including the poisoning of its mountains.
- Such practices have direct consequences on local communities, both in terms of opportunities and threats, as they navigate the delicate balance of economic gain against environmental and health risks.
- The spread of this destructive industry from China to Myanmar underscores a pressing need to reconsider global supply chains, especially as the demand for green technologies continues to surge.
- The below table shows the growing qutoas in REE China has mandated.

Group	2020 Total TPA REO		2021 Total TPA REO		2022	Total TPA REO	2023 Total TPA REO	
Gloup	Mining	Seperation & Smelting	Mining	Seperation & Smelting	Mining	Seperation & Smelting	Mining	Seperation & Smelting
Northern Rare Earth	70,750t	60,984t	88,250t	76,550t	141,650t	128,934t	161,900t	146,800t
Southern Rare Earth	16,850t	21,879t	20,450t	28,650t	62,210t	58,499t	71,100t	66,600t
Guangdong Rare Earth	2,700t	10,604t	3,250t	12,700t	2,700t	10,604t	3,100t	12,050t
Xiamen Tungsten	3,440t	3,963t	4,150t	4,750t	3,440t	3,963t	3,900t	4,550t
China Non-Ferrous Metal Industires	38,260t	29,570t	51,900t	39,350t	-	-	-	-
Total	132,000t	127,000t	168,000t	162,000t	210,000t	202,000t	240,000t	230,000t

Source: Australian Rare Earths

US Supply Chain Diversification – Inflation Reduction Act

The recently enacted Inflation Reduction Act (IRA) aims to boost domestic production of essential minerals pivotal for the energy transition, reducing dependency on geopolitically tense regions like China and Russia.

The growing demand for critical minerals, particularly rare earth elements (REEs) such as neodymium, dysprosium, and praseodymium. These elements are vital for technologies like wind turbines and electric vehicles. While the IRA encourages domestic mineral production, it's worth noting the environmental challenges: REEs and lithium, key to energy transition, are found in low concentrations, leading to high waste generation during extraction, a problem prevalent in current leading producer countries.

To promote domestic production, the IRA introduces:

EVOLUTION CAPITAL

- A tax credit covering 10% of production costs for manufacturers of essential components, including the aforementioned REEs.
- \$500 million additional funding under the Defense Production Act (DPA), empowering the President to bolster domestic production.
- An authorization for the Department of Energy (DOE) to extend \$40 million in loan guarantees for projects increasing the domestic supply of critical minerals.

Furthermore, the IRA revises electric vehicle tax credits. To qualify, vehicles must adhere to strict manufacturing criteria, such as the significant percentage of the vehicle's components, including battery minerals, being sourced or processed within North America or nations under U.S. free-trade agreements. These criteria will tighten over time.

In essence, the IRA positions the U.S. to play a more active role in the global production of vital minerals for the energy transition, while emphasizing domestic mining and processing of REEs essential for renewable technologies.

Lynas Corporation

Lynas (ASX:LYC, Market Cap:A\$6.7billion) is the largest producer of separated Rare Earths outside of China on the 1st of August released that it has secured a fresh agreement with the U.S. Department of Defense (DoD) to construct a Heavy Rare Earths facility in Texas. The revised contract guarantees all construction expenses for Lynas, with the **U.S. Government's funding now raised to approximately US\$258 million from the earlier US\$120 million announced in June 2022.**

- This project is a joint initiative between Lynas and the DoD and aims to boost the supply chain resilience for responsibly produced rare earths in the U.S.
- Lynas has completed the purchase of a 149-acre site in Seadrift, Texas for the new facility. This site will host both Heavy and Light Rare Earth separation plants and provide opportunities for future expansion.
- The U.S. Facility is scheduled to become operational between 1 July 2025 and 30 June 2026. Its feedstock will primarily come from the Lynas Mt Weld rare earths deposit and Kalgoorlie Rare Earths Processing Facility in Western Australia.
- Feedstock for the facility will be a mixed Rare Earths carbonate produced from material sourced at the Lynas mine in Mt Weld, Western Australia. Lynas will also work with potential 3rd party providers to source other suitable feedstocks as they become available.



Lynas's Kalgoorlie Project

MP Materials

MP Materials (NYSE:MP, Market Cap: A\$5.6billion), the largest, rare-earth producer in the Western Hemisphere, is set to bolster the domestic permanent magnet supply chain in the U.S. The company oversees the only notable rare earth mining and processing site in North America, the Mountain Pass facility, contributing to 15% of global rare earth consumption in 2020. They've been **awarded \$35 million by the Department of Defense**'s Industrial Base Analysis and Sustainment program to process heavy rare earth elements. The Mountain Pass mine's rare earth content is almost 50 percent composed of cerium (Ce), which is used in glass making and polishing. While abundant, it is not where the company sees future profits. Neodymium (Nd), dysprosium (Dy) and samarium (Sm) — three of the four elements that can make high-performance magnets — are now viewed as the biggest money makers.



- Additionally, MP Materials plans to invest \$700 million by 2024 in the magnet supply chain, aiming to reduce the current 94% control China has over the global permanent magnet market.
- MP Materials announced the construction of its initial rare earth metal, alloy, and magnet manufacturing facility in Fort Worth, Texas. This establishment be the center for its magnetics division, MP Magnetics. The facility has the potential to produce enough magnets to power half a million EV motors every year.
- Alongside this, they've entered a significant agreement with General Motors to supply U.S sourced and manufactured rare earth materials for several GM models.



Brazil

Brazil is a cornerstone in the global mining and metals industry, emerging as a pivotal contributor to an independent supply of critical rare earths essential for the energy transition. As the secondlargest global producer of commodities like iron ore, manganese, tantalite, and bauxite, and holding its rank as the leading producer of niobium, Brazil's mineral abundance is indisputable. The Rio de Janeiro-headquartered mining giant, Vale, is renowned as the world's top iron ore producer and ranks third among global mining companies.

In terms of Latin America, regardless of how one assesses the metrics—whether it's population, landmass, or economic stature—Brazil consistently accounts for about a third. Significantly, it retains its status as the dominant economy in Latin America. In 2020, Brazil's GDP stood at \$1.44 trillion, placing it eleventh globally.

Adding to its allure, Brazil hosts over 75 Australian companies, of which approximately a quarter are listed on the ASX200. On the policy front, Brazil, in conjunction with Guyana and Chile, is among the most attractive investment jurisdictions in Latin America. Impressively, Brazil's policy rating skyrocketed from 68th (out of 84) to 29th (out of 62).





Minas Gerais State:

The Caldeira lonic Clay Rare Earth project is located in the Minas Gerais an inland state in the south east of brazil, Rooted in a rich history dating back to the first discovery of gold in 1693 in Minas Gerais, interestingly, its name translates to "General Mines." Despite its centuries-old legacy, it's in recent years that the industry has witnessed significant growth. Other notable companies operating in the state are Vale (NYS:VALE, MCap A\$90.1billion), Sigma Lithium (NASDAQ:SGML, MCap A\$5.6billion) and Latin Resources (ASX:LRS, MCap A\$9.2billion), Centaurs (ASX:CTM, A\$360million). Minas Gerais has 5 dry ports, 8 airports, largest highway network and the second largest railroad system of Brazil.







Brazil's REE mine to magnet supply chain:

Brazil ranks second among top countries with greatest reserves, with about 17% of the world's rare earth reserves. In Minas Gerais, there are two important carbonatite complexes: (i) Araxá, a dolomitic carbonatite that concentrates the world's largest niobium deposit, and contains apatite and rare earth elements; and (ii) Tapira, the 2nd largest phosphate mine in Brazil, contained in calcitic carbonatite with pyrochlore and anatase. In 2018, Minas Gerais will inaugurate the lab-factory for rare earth magnets (LabFab ITR), which is being developed by Brazilian Research Centers and Federal Universities. This is an unprecedented initiative and represents an important step towards the national technological development iii) CBMM is the most important world supplier of niobium and niobium technology, and fully integrated from the mine through to final products.



Meteoric Resources' Caldera Project Is The Pele Unicorn.

- Largest & Highest-Grade Ionic Clay
 deposit globally
- Strategically significant, allowing for diversification of the REE supply chain

 \checkmark

Development optionality with lower capex modules and mining hubs



Board and Management

Dr Andrew Tunks - Executive Chairman

Dr Tunks is a member of the Australian Institute of Geoscientist holding a B.Sc. (Hons.) from Monash and a PhD from the University of Tasmania. Dr Tunks has held numerous senior executive positions in a range of small to large resource companies including Auroch Minerals, A-Cap Resources, IMAGOLD Corporation and Abosso Goldfields.

In his role as CEO and director of A-Cap Resources Dr. Tunks led the discovery of the 10th largest uranium resource in the world and managed four separate capital raisings totalling AUD\$45 million. Through his 30-year career within the resource and academic sectors Dr. Tunks has developed a unique skill set including technical, promotional and corporate.

Dr Marcelo De Carvalho - Executive Director

Dr Carvalho graduated from the State University of Sao Paulo in 1996 with a Bachelor of Geology and commenced his exploration career in Brazil, working for Anglo Gold exploring for gold in the Amazon and subsequently with Vale, exploring for base metals.

In 2004, Dr Carvalho moved to Perth (UWA) to complete a PhD in Metalogenesis. Returning to Brazil he joined Yamana Gold and rose to the role of Greenfields Exploration Manager before departing in 2012. During that time, Marcelo led an experienced Exploration Team and was part of a several gold discoveries, taking projects from Project Generation all the way through to Mining Reserves and Development.

With the experience acquired over these years, Marcelo cofounded his own consultancy company, Target Latin America (TLA) and has over the past 10 years consulted to explorers from across the globe, selecting and managing exploration projects in the Americas.

Nick Holthouse - Chief Executive Officer

Mr Holthouse is an experienced Resource Industry executive, appointed to the new role of Chief Executive Officer at Meteoric in April 2023, to progress the Caldeira REE Project through exploration and studies to production. Prior to joining Meteoric, Mr Holthouse was Chief Operating Officer and General Manager of Engineering at Hastings Technology Metals (ASX: HAS) where he successfully guided the Yangibana Rare Earths Project in the Gascoyne region of Western Australia from feasibility to construction.

Mr Holthouse has a proven track record of progressing projects from feasibility to operations and has held both Australian and international leadership roles with extensive experience in operations, project development, technical review, project finance and marketing/offtakes. Previous experience includes senior management roles with Hastings, Merdeka Copper Gold (MDKA: JK), Finders Resources (ASX) and European Nickel (AIM).

Dr Paul Kitto – Non-Executive Technical Director

Dr Kitto has over thirty years' experience working within the mining industry having served on a number of ASX Boards and holding senior level management positions around the world. Dr Kitto is currently Technical Director for Tietto Minerals (ASX:TIE).

Most recently Dr Kitto was Exploration Manager, Africa for Newcrest Mining Ltd and prior to that, was Chief Executive Officer and Managing Director of ASX listed Ampella Mining Ltd from 2008 until 2014, when Ampella was acquired by LSE/TSX listed Centamin PLC.

Throughout his career, Dr Kitto has led or been part of exploration teams that have discovered numerous multi-million ounce gold deposits in Africa, Australia and Papua New Guinea. Dr Kitto has extensive experience associated with a wide range of deposit types, predominantly associated with gold and base metal deposits.

Investment Risks

Geological risk: the actual characteristics of an ore deposit may differ significantly from initial interpretations.

Resource risk: all resource estimates are expressions of judgement based on knowledge, experience and industry practice. Estimates, which were valid when originally calculated may alter significantly when new information or techniques become available. In addition, by their very nature, resource estimates are imprecise and depend to some extent on interpretations, which may prove to be inaccurate.

Commodity price risk: the revenues MEI will derive mainly through the sale of rare earths concentrate exposing the potential income to metal price risk. The prices of REO fluctuate and is affected by many factors beyond the control of MEI. Such factors include supply and demand fluctuations, technological advancements and macro-economic factors.

Exchange rate risk: The revenue MEI derives from the sale of metal products exposes the potential income to exchange rate risk. International prices of rare earths are denominated in United States dollars, whereas the financial reporting currency of MEI is the Australian dollar, exposing the company to the fluctuations and volatility of the rate of exchange between the USD and the AUD as determined by international markets.

Mining risk: A reduction in mine production would result in reduced revenue.

Processing risks: A reduction in plant throughput would result in reduced revenue. In all processing plants, some metal is lost rather than reporting to the valuable product. If the recovery of metal is less than forecast, then revenue will be reduced.

Third-party processing: We view this as a major concern, if not a pivotal component for growth. Currently, few entities outside China excel in rare earth separation and the ensuing metal or magnet production. However, by our estimated initial production date in 2027, we expect more alternatives to surface. Potential players in this space might be Energy Fuels (US), MP Materials (US), Lynas (Australia and US), Iluka (Australia), Carrister (France), and Solvay (France). Nevertheless, it's vital to acknowledge the intrinsic risks tied to the development of these third-party establishments.

Operational cost risk: an increase in operating costs will reduce the profitability and free cash generation of the project.

Management and labour risk: an experienced and skilled management team is essential to the successful development and operation of mining projects.



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