

Strategic Metals & Rare Earths Letter

INTERNATIONAL

the independent information and advisory publication on investing in Strategic Metals & Rare Earths

August 2022



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publisher and editor

Critical Metals and Special Minerals		Heavy Rare Earths Oxides (HREO)		Light Rare Earth Oxides (LREO)
lithium (Li)	yttrium (Y)	europium (Eu)	erbium (Er)	lanthanum (La)
cobalt (Co)	scandium (Sc)	gadolinium (Gd)	thulium (Tm)	cerium (Ce)
graphite (C)	niobium (Nb)	terbium (Tb)	ytterbium (Yb)	praseodymium (Pr)
vanadium (V)	tantalum (Ta)	dysprosium (Dy)	lutetium (Lu)	neodymium (Nd)
magnesium (Mg)	beryllium (Be)	holmium (Ho)		promethium (Pm)
tungsten (W)	gallium (Ga)			samarium (Sm)
titanium (Ti)	indium (In)			
zirconium (Zr)	germanium (Ge)			
hafnium (Hf)				
antimony (Sb)				

► As one of the major EV Strategic Commodity providers, a strong **nickel** price trend is seen continuing in 2022

Overview of listed LITHIUM focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	US\$ billion	US\$ billion
			US\$	US\$		US\$	US\$	US\$ billion	US\$ billion
Albemarle	NYSE	ALB	255.30	233.77	9	298.17	169.93	29.9	29.9
SQM	1) NYSE	SQM	95.89	50.43	90	115.75	46.13	27.4	27.4
			CNY	CNY		CNY	CNY	CNY billion	US\$ billion
Tianqi Lithium	Shenzen	002466	107.92	107.00	1	148.57	58.05	155.4	21.8
Ganfeng Lithium	2) Shenzen	002460	84.80	142.85	-41	142.31	64.21	157.3	22.0
			Euro	Euro		Euro	Euro	Euro billion	US\$ billion
ERAMET	Euronext	ERA:FP	84.85	71.95	18	166.00	60.20	2.3	2.3
			A\$	A\$		A\$	A\$	A\$ billion	US\$ billion
Pilbara Minerals	3) ASX	PLS	3.65	3.20	14	3.89	1.78	10.9	7.5
Allkem	4) ASX	AKE	13.91	10.81	29	14.38	7.78	8.9	6.1
Liontown Resources	ASX	LTR	1.74	1.66	5	2.19	0.82	3.8	2.6
Core Lithium	ASX	CXO	1.40	0.59	137	1.68	0.33	2.4	1.7
Sayona Mining	5) ASX	SYA	0.30	0.13	127	0.39	0.11	2.4	1.7
Lake Resources	ASX	LKE	1.17	1.01	16	2.65	0.49	1.6	1.1
IoNeer	ASX	INR	0.67	0.80	-17	0.86	0.32	1.4	1.0
Piedmont Lithium	ASX	PLL	0.87	0.74	18	1.08	0.49	1.4	1.0
								A\$ million	US\$ million
Neometals	ASX	NMT	1.39	1.43	-2	1.97	0.70	767.70	529.7
Argosy Minerals	ASX	AGY	0.42	0.32	30	0.57	0.15	566.8	391.1
Galan Lithium	ASX	GLN	1.30	1.95	-34	2.33	0.90	394.4	272.1
Latin Resources	ASX	LRS	0.12	0.03	297	0.23	0.03	224.3	154.8
Lithium Power International	ASX	LPI	0.63	0.46	36	1.04	0.26	218.2	150.6
European Lithium	ASX	EUR	0.09	0.13	-34	0.19	0.05	120.4	83.1
Lithium Australia	ASX	LIT	0.08	0.12	-33	0.16	0.05	79.7	55.0
Prospect Resources	ASX	PSC	0.11	0.80	-87	1.02	0.07	48.5	33.5
Winsome Resources	ASX	WR1	0.27	0.37	-28	0.57	0.18	38.0	26.2
Balkan Mining and Minerals	ASX	BMM	0.19	0.34	-43	0.95	0.15	8.7	6.0

1) 23.8% equity interest Tianqi

2) announced on January 21, 2022 a 90.3% ownership in Bacanora Lithium

3) completed acquisition of Altura Lithium on January 20, 2021; in consideration of an upfront cash payment of US\$ 155 million (A\$ 201 million)

4) merger of Orocobre with Galaxy Resources implemented on August 20, 2021; name change from Orocobre effective December 6, 2021

5) superior Court of Quebec approved acquisition of North American Lithium to create world-scale Abitibi Lithium hub

Overview of listed LITHIUM focused companies (by market capitalization) - continuation

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	C\$ million	US\$ million
			C\$	C\$		C\$	C\$		
Lithium Americas	1)	TSX LAC	35.51	36.82	-4	53.09	24.05	4,779.5	3,680.2
Sigma Lithium		TSX V SGML	27.97	13.00	115	33.01	8.81	2,817.0	2,169.1
Standard Lithium		TSX V SLI	6.64	12.27	-46	15.92	4.92	1,105.9	851.5
American Lithium		TSX V LI	2.33	4.26	-45	6.25	1.56	484.0	372.7
Frontier Lithium		TSX V FL	2.22	2.03	9	3.89	0.81	471.4	362.9
Critical Elements Lithium		TSX V CRE	1.48	1.39	6	1.98	1.13	306.8	236.2
Alpha Lithium		TSX V ALLI	1.13	1.15	-2	1.69	0.45	179.8	138.4
Cypress Development		TSX V CYP	1.18	2.22	-47	2.61	0.97	172.9	133.1
E3 Lithium	2)	TSX V ETL	2.57	2.30	12	3.49	1.59	152.8	117.7
Wealth Minerals		TSX V WML	0.27	0.37	-26	0.70	0.21	75.7	58.3
Avalon Advanced Materials	3)	TSX AVL	0.14	0.11	27	0.24	0.09	56.7	43.7
ACME Lithium		CSE ACME	1.05	0.96	9	1.44	0.62	53.6	41.3
Foremost Lithium Resource		CSE FAT	0.27	0.29	-7	0.44	0.10	50.2	38.6
Brunswick Exploration		TSX V BRW	0.31	0.17	82	0.34	0.11	48.1	37.0
Lithium South Development		TSX V LIS	0.46	0.81	-43	1.08	0.38	44.4	34.2
HeliosX Lithium & Technologies	5)	TSX V HX	0.76	0.76	0	1.31	0.42	27.5	21.2
Macarthur Minerals		TSX V MMS	0.16	0.31	-48	0.60	0.14	26.5	20.4
Ultra Lithium	4)	TSX V ULT	0.14	0.21	-33	0.45	0.13	23.3	17.9
Power Metals		TSX V PWM	0.18	0.22	-18	0.34	0.16	20.9	16.1
International Lithium		TSX V ILC	0.08	0.12	-38	0.15	0.06	18.6	14.3
Pure Energy Minerals		TSX PE	0.52	1.64	-68	2.60	0.55	17.2	13.2
Argentina Lithium and Energy	*	TSX LIT	0.21	0.45	-53	0.96	0.15	15.6	12.0
Aberdeen International		TSX AAB	0.07	0.14	-52	0.24	0.06	9.4	7.2
Portofino Resources		TSX V POR	0.08	0.12	-38	0.17	0.06	8.2	6.3
			GBX	GBX		GBX	GBX	£ million	US\$ million
European Metals Holdings		AIM EMH	45.00	68.50	-34	87.00	34.20	83.7	97.9
Savannah Resources		AIM SAV	3.00	4.35	-31	5.60	2.04	50.7	59.3
Kodal Minerals	6)	AIM KOD	0.30	0.31	-3	0.47	0.21	50.3	58.8

* featured as a **Special Situation** and included in **SMRE shortlist of investment recommendations**

1) acquisition of Millennial Lithium completed on January 11, 2022 at a price of C\$ 4.70 per share payable in cash and shares

2) name change from E3 Metals effective May 31, 2022

3) also rare earth elements indium, usium and tantanium

4) name change from Ultra Resources effective January 19, 2022; also gold assets in Australia

5) name change from Dajin Lithium effective February 1, 2022

6) lithium project in Mali and in addition gold activity in Côte d'Ivoire

Overview of major NICKEL focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	C\$ million	US\$ million
			C\$	C\$		C\$	C\$		
Canada Nickel		TSX V CNC	1.63	3.52	-17	4.01	1.40	180.9	124.8
Sherrit International		TSX S	0.39	0.41	-4	0.85	0.31	154.9	119.3
FPX Nickel		TSX V FPX	0.47	0.50	-6	0.96	0.42	101.57	78.2
Nickel 28		TSX V NKL	1.25	0.97	29	0.58	0.13	85.9	66.1
Garibaldi Resources		TSX V GGI	0.33	0.25	32	0.65	0.21	44.4	34.2
Grid Metals		TSX V GRDM	0.14	0.11	29	0.23	0.09	14.75	11.4
			A\$	A\$		A\$	A\$	A\$	
Queensland Pacific Metals		TSX V QPM	0.15	0.17	-17	0.29	0.09	226.7	156.4
			CNY	CNY		CNY	CNY	CNY billion	US\$ billion
Metallurgical Corp. of China		SSE 601618	3.20	3.83	-17	6.30	3.05	62.2	8.7

► Reflection on the 2021 Nickel Market

Similar to the previous year, 2021 started with a renewed optimism in the nickel market buoyed by anticipation that mass electrification of transportation would continue towards a tipping point where EV production would eventually eclipse internal combustion engine production. At the end of 2020 nickel prices were approaching \$8.00 per pound and in February 2021 reached a new high since 2014 of \$8.42 per pound. However, in February **Tsingshan**, the world's largest producer of nickel (all of it in NPI) announced that they would make nickel matte later in 2021 to help feed the large demand being created by the battery industry for nickel units.

This sent the price down 20% over the next month, however as the year has progressed it is evident that **Tsingshan's** announcement would have limited impact on nickel availability for battery production and the nickel price has recovered and exceeded the February high and currently is trading at \$ 21.458/lb. This is the highest price that nickel has attained since 2014 and does not show any signs of abatement.

It is evident that the world has embraced electrification and EV production is taking off. According to many global analysts, 2021 looks to set a record for EV production with almost 6 million vehicles expected to be produced in the year. Macquarie reported that EV sales in 2021 are up 83% over 2020 with nickel rich lithium ion batteries continuing to dominate the industry. 2021 saw major announcements from both Ford and GM committing to major shifts towards electrification sending a strong message to the industry that materials such as lithium, nickel, cobalt and graphite will be in strong demand to feed this transition in the years to come.

Nornickel recently reported that almost 400,000 tonnes of nickel will be consumed by the battery industry in 2021, a number many analysts did not expect until 2025. **At current levels it appears that the nickel market will require an additional 1 million tonnes of supply by 2030.**

As seen, the LME nickel price appreciated in 2021. Also is seen a steady decline in global nickel inventories. Over the course of 2021 approximately 150,000 tonnes of nickel has come off global stockpiles mainly in the form of briquettes used by the battery industry. LME inventories are just over 110,000 tonnes representing a 60% decline in available stocks. As the LME inventory continues to be depleted, upward pricing pressure is anticipated on the nickel price as available material for the battery industry becomes more limited.

For the **Ramu Project** in **Papua New Guinea**, which produces nickel and cobalt as mixed hydroxide (MHP), (91.44% held by Metallurgical Corporation of China ("MCC") and 8.4% by Nickel 28), demand was encouraged by pricing for this product which was contracting for 80-85% of the LME price. As availability and pricing of nickel briquettes has started to impact battery production, demand for MHP has only increased. MHP is moving towards being the preferred feed material in the battery manufacturing process and coupled with higher LME nickel prices in 2021 with payability for nickel and cobalt in MHP to improve to 90-95% in 2021.

This is a trend we see continuing in 2022 which should provide another strong year of cash flow generation at Ramu.

Source: Anthony Milewski, Executive Chairman, Nickel 28

► World Nickel Mine Production and Reserves

World Nickel Mine Production and Reserves			
(in Mt)	2021	2020	Reserves
Indonesia	1,000.0	771.0	21,000
Philippines	370.0	334.0	4,800
Russia	250.0	283.0	7,500
New Caledonia *	190.0	200.0	340.0
Australia	160.0	169.0	21,000
Canada	130.0	167.0	2,000
China	120.0	120.0	2,800
Brazil	100.0	77.0	16,000
United States	18.0	16.7	95,000
			170,440

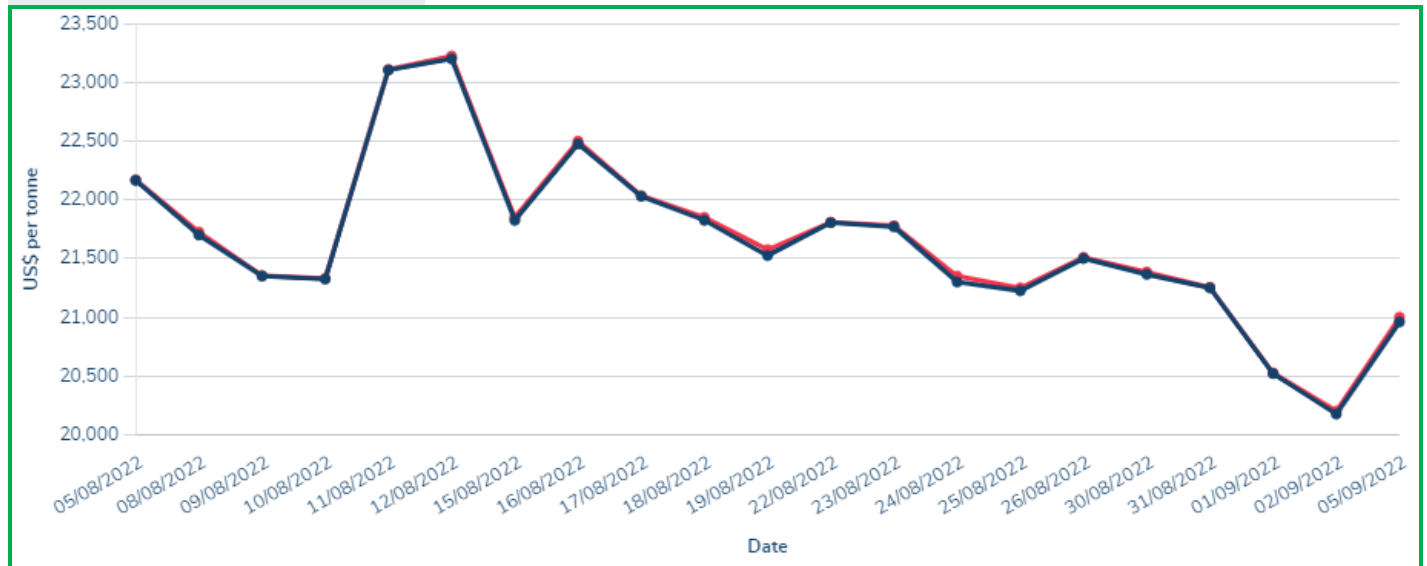
* Overseas Territory of France

In 2021, the annual average LME nickel cash price was estimated to have increased by 30% compared with that in 2020, which was attributable to expectations of increased use of nickel in electric vehicle batteries and continuing strong demand for stainless steel.

Mine production in **Indonesia** increased by an estimated 30%, which was facilitated by the ongoing commissions of integrated nickel pig iron and stainless-steel projects. The country's first hydrometallurgical plant began operation in May on Obi Island. It was among several similar projects in the country that were designed to produce intermediate nickel products to be used as feed material at battery-grade nickel sulphate plants.

Substitutes: Low-nickel, duplex, or ultrahigh-chromium stainless steels have been substituted for austenitic grades in construction. Nickel-free specialty steels are sometimes used in place of stainless steel in the power-generating and petrochemical industries, Titanium alloys can substitute for nickel metal or nickel-base alloys in corrosive chemical environments.

LME Nickel Official Prices graph



► US sets 50% target on electric vehicles by 2030

The United States has set a target to make half of all new passenger cars and light trucks sold in 2030 zero emission vehicles. The category includes battery electric plug-in hybrid electric or fuel cell electric vehicles.

“America must lead the world on clean and efficient cars and trucks” U.S. President Joe Biden announced on August 5, 2022. “My administration will prioritize setting clear standards, expending key infrastructure planning, critical innovation and investing in the American auto worker”.

In a joint statement by [Ford](#) [General Motors](#) and [Stellantis](#), the automakers announced “their shared aspiration to achieve sales of 40-50% of annual U.S. volumes of electric vehicles (battery electric, fuel cell and plug-in hybrid vehicles) by 2030 in order to move the nation closer to a zero-emission future consistent with Paris climate goals”. That percentage range is up from about 2% this year.

The White House briefing noted that the U.S. market share of electric vehicles “is only one-third of that of the Chinese electric vehicle market” and outlined a number of investments including installation of the first-ever national network of electric vehicle charging stations; consumer incentives; financing the rebuilding and expansion of the fuel domestic manufacturing supply chain”; and “innovating the next generation of clean technologies to maintain our competitive edge”.

Since 2010, the cost of battery packs has fallen by 85%, the White House briefing stated, “paving the way to sticker price parity with gasoline-powered vehicles”. It also noted that “the range of EVs has increased dramatically as charging times shortened”.

As we said before, “we are in competition with China and many other nations for the 21st century”, President Biden declared. “To win, we are going to have to make sure the future will be made in America”.

“Right now, China is leading the race and is one of the largest and fastest growing electric vehicle markets in the world and a key part of the electric vehicle – to state the obvious – is the battery. And right now, 80% of the manufacturing capacity for these batteries is done in China”.

According to the White House briefing the [Environmental Protection Agency \(EPA\)](#) and [U.S. Department of Transportation](#) are advancing “smart fuel efficiency and emission standards and would deliver around US\$ 140 billion in net benefits over the life of the program, save about 200 billion gallons of gasoline and reduce around two billion metric carbon pollution”.

On [November 9, 2021](#), a proposal revised U.S. critical minerals list was published in the [Federal Register](#). The new list contained 50 individual mineral commodities, proposed changes were the addition of **nickel** and **zinc** and the removal of helium, potash, rhenium, strontium and uranium, which were included in the 2018 critical minerals list.

Overview of listed COBALT focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	CNY billion	US\$ billion
			CNY	CNY		CNY	CNY	CNY billion	US\$ billion
Zhejiang Huayou Cobalt		Shanghai 603799	76.15	110.31	-31	109.46	52.32	116.9	16.4
			C\$	C\$		C\$	C\$	C\$ million	US\$ million
Electra Battery Metals	1)	TSX.V ELBM	4.25	5.76	-26	7.65	3.27	137.5	105.9
Nickel 28 *		TSX.V NKL	0.95	0.97	-2	1.79	0.83	85.9	66.1
Fortune Minerals		TSX.V FT	0.09	0.15	-38	0.16	0.09	34.4	26.5
Canada Silver Cobalt Works		TSX.V CCW	0.11	0.17	-36	0.34	0.10	19.0	14.6
Cruz Battery Metals	2)	CSE CRUZ	0.13	0.27	-52	0.34	0.09	14.7	11.3
Quantum Battery Metals	3)	CSE QBAT	0.41	0.89	-54	5.85	0.33	9.9	7.6
Fuse Cobalt		TSX.V FUSE	0.09	0.07	21	0.11	0.04	12.4	9.5
Sienna Resources	4)	TSX.V SIE	0.06	0.12	-52	0.15	0.04	6.9	5.3
Fjordland Exploration	5)	TSX.V FEX	0.09	0.12	-26	0.13	0.05	7.0	5.4
Enerev5 Metals	6)	TSX.V ENEV	0.01	0.05	-78	0.06	0.01	2.3	1.8
Global Energy Metals		TSX.V GEMC	0.08	0.26	-69	0.31	0.08	2.6	2.0
Bolt Metals	7)	CSE BOLT	0.08	0.20	-59	0.35	0.08	1.2	0.9
Power Group Projects		TSX.V PGP	0.02	0.04	-43	0.06	0.02	1.5	1.1
			A\$	A\$		A\$	A\$	A\$ million	US\$ million
Jervois Global Limited		ASX JRV	0.54	0.59	-9	1.02	0.38	813.1	561.0
Cobalt Blue Holdings		ASX COB	0.80	0.50	62	1.07	0.27	264.1	182.2
A-Cap Energy	8)	ASX ACB	0.08	0.15	-45	1.07	0.27	110.9	76.5

* featured as a **Special Situation** and included in Shortlist of SMRE investment recommendations

1) name change from First Cobalt effective November 8, 2021

2) name change from [Cruz Cobalt](#), effective August 3, 2021

3) name change from [Quantum Cobalt](#), effective March 23, 2021

4) cobalt-nickel-copper project in [Sweden](#)

5) Nickel-copper-PGE project in Manitoba, USA and Nickel-copper-cobalt project in Newfoundland and Labrador, Canada

6) name change from [Cobalt Blockchain](#), effective November 10, 2021

7) mass consolidation of mining permits by Indonesian government leads to conditional sale of [Cyclops Project](#) to [Nickel Mines](#) in December 2021

8) besides farm-in and Joint Venture Agreement with [Blackham Resources](#) to acquire a 75% interest in cobalt and nickel associated metals of the [Wilconi Project](#) in [Western Australia](#); also major uranium project in [Botswana](#)

Overview of listed GRAPHITE focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	A\$ million	US\$ million
			A\$	A\$		A\$	A\$	A\$ million	US\$ million
Syrah Resources	ASX	SYR	1.87	1.81	3	2.13	0.98	1,240.0	855.6
Magnis Energy Technologies	ASX	MNS	0.46	0.58	-20	0.76	0.27	446.4	308.0
Talga Group	ASX	TLG	1.44	1.63	-12	2.23	1.00	439.2	303.0
Ecograf	ASX	EGR	0.38	0.68	-44	0.92	0.22	171.1	118.1
Greenwing Resources	1) ASX	GW1	0.29	0.43	-34	0.58	0.18	35.1	24.2
			C\$	C\$		C\$	C\$	C\$ million	US\$ million
Nouveau Monde Graphite	TSX.V	NOU	7.10	8.79	-19	11.90	4.36	396.2	305.0
NextSource Materials	TSX.V	NEXT	2.52	3.26	-23	4.90	1.73	256.7	197.7
Graphite One	TSX	GPH	1.28	1.91	-33	2.54	0.89	112.4	86.5
SRG Mining	TSX.V	SRG	0.80	0.72	11	0.96	0.37	91.1	70.1
Northern Graphite	TSX.V	NGC	0.57	0.83	-31	0.94	0.33	68.4	52.7
Mason Graphite	TSX.V	LLG	0.33	0.69	-53	0.78	0.27	44.3	34.1
Ceylon Graphite	TSX.V	CYL	0.13	0.20	-36	0.27	0.10	19.3	14.9
Focus Graphite	TSX.V	FMS	0.22	0.75	-71	1.20	0.20	11.9	9.1
Lomiko Metals	TSX.V	LMR	0.05	0.10	-55	0.13	0.04	10.7	8.2
Canada Carbon	TSX.V	CCB	0.05	0.08	-38	0.11	0.03	7.1	5.4
Eagle Graphite	TSX.V	EGA	0.11	0.16	-31	0.22	0.09	4.2	3.2
			US\$	US\$		US\$	US\$	US\$ million	US\$ million
Westwater Resources	NASDAQ	WWR	1.32	2.15	-39	4.19	1.00	62.3	62.3

1) formerly Bass Metals; name change, effective July 29, 2021; also lithium assets

Overview of listed VANADIUM focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	£ million	US\$ million
			GBX	GBX		GBX	GBX	£ million	US\$ million
Bushveld Minerals	AIM	BMN	6.05	10.10	-40	15.20	5.30	76.6	93.5
			A\$	A\$		A\$	A\$	A\$ million	US\$ million
Australian Vanadium	ASX	AVL	0.05	0.03	55	0.12	0.02	178.4	123.1
TNG	1) ASX	TNG	0.11	0.08	31	0.15	0.05	145.8	100.6
Technolpgy Metals Australia	ASX	TMT	0.32	0.29	10	0.62	0.27	67.1	46.3
Vanadium Resources	ASX	VR8	0.07	0.08	-7	0.58	0.18	34.6	23.8
			GBX	GBX		GBX	GBX	£ million	US\$ million
Aura Energy	2) AIM	AEE	14.65	13.50	9	23.00	5.60	75.9	92.6
			C\$	C\$		C\$	C\$	C\$ million	US\$ million
Blue Sky Uranium *	3) TSX.V	BSK	0.18	0.20	-8	0.37	0.12	35.9	27.6
Phenom Resources	4) TSX.V	PHNM	0.38	0.41	-7	0.81	0.35	31.5	24.3
Voyager Metals	5) TSX.V	VONE	0.13	0.18	-28	0.27	0.10	12.1	9.3
Vanadian Energy	TSX.V	VEC	0.03	0.05	-50	0.13	0.02	1.1	0.8

* featured as a **Special Situation** and included in Shortlist of investment recommendations

1) vanadium-titanium-iron project

2) also advanced uranium project in Mauretania

3) uranium-vanadium project

4) name change from First Vanadium, effective July 6, 2021

5) name change from Vanadium One Iron, effective October 18, 2021

Overview of listed MAGNESIUM focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	million local	US\$
			C\$	C\$		C\$	C\$	C\$ million	US\$ million
Western Magnesium	TSX.V	WMG	0.15	0.50	-70	0.90	0.14	67.5	52.0
West High Yield Resources *	1) TSX.V	WHY	0.40	0.68	-41	1.22	0.25	32.4	24.9
			A\$	A\$		A\$	A\$	A\$ million	US\$ million
Latrobe Magnesium	ASX	LMG	0.09	0.10	-6	0.18	0.02	146.6	101.1
Korab Resources	ASX	KOR	0.03	0.05	-40	0.10	0.02	11.0	7.6

1) also gold project in Victoria, Australia

* featured as a **Special Situation** and included in Shortlist of investment recommendations

Overview of listed MANGANESE focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	million local	US\$
			C\$	C\$		C\$	C\$	C\$ million	US\$ million
American Manganese	TSX.V	AMY	0.50	0.52	-4	1.36	0.46	124.1	95.6
Euro Manganese	TSX.V	EMN	0.35	0.47	-25	0.65	0.19	140.4	108.1
Giyani Metals	1) TSX	EMM	0.33	0.34	-3	0.61	0.27	72.1	55.5
Manganese X Energy	TSX.V	MN	0.25	0.30	-15	0.58	0.21	31.7	24.4
			A\$	A\$		A\$	A\$	A\$ million	US\$ million
Element 25	ASX	E25	0.70	1.23	-43	2.29	0.43	106.9	73.8

1) developing projects in Botswana

Overview of listed TUNGSTEN focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	million local	US\$
			C\$	C\$		C\$	C\$	C\$ million	US\$ million
Almonty Industries	TSX	All	0.77	0.89	-13	1.10	0.77	166.3	128.1
			A\$	A\$		A\$	A\$	A\$ million	US\$ million
EQ Resources	1) ASX	EQR	0.05	0.06	-16	0.08	0.04	65.9	45.4

1) formerly Carbine Tungsten; new name change from Specialty Metals, effective December 2, 2020; also lithium assets in Chile and gold exploration licences in NSW, Australia

Overview of listed TITANIUM focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization	
			Aug. 31 2022	Year-end 2021		H	L	US\$ billion	US\$ billion
			US\$	US\$		US\$	US\$	US\$ billion	US\$ billion
Tronox	NYSE	TROX	14.41	24.03	-40	26.33	14.57	2,230.0	2,230.0
Kronos Worldwide	NYSE	KRO	13.11	15.01	-13	19.78	12.06	1,510.0	1,510.0
			A\$	A\$		A\$	A\$	A\$ million	US\$ million
Iluka Resources	ASX	ILU	10.54	10.10	4	12.83	8.05	4,470.0	3,084.3
			GBX	GBX		GBX	GBX	£ million	US\$ million
BlueJay Mining	1) AIM	JAY	6.00	9.22	-35	12.85	4.20	65.0	76.0

1) Dundas ilmenite project in Greenland; also joint venture and earn-in agreement with Rio Tinto to advance Enonkoski nickel project in Finland

Overview of listed REE focused companies (by market capitalization) - traditional countries

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization million	
			Aug. 31 2022	Year-end 2021		H	L	US\$ million	US\$ million
Australia:			A\$	A\$		A\$	A\$	A\$ million	US\$ million
Lynas Rare Earths	ASX	LYC	8.88	10.17	-13	11.59	6.21	8,010.0	5,526.9
Hastings Technology Metals	ASX	HAS	5.46	5.20	5	6.40	3.46	553.9	382.2
Arafura Resources	ASX	ARU	0.32	0.21	52	0.50	0.14	551.9	380.8
Northern Minerals	ASX	NTU	0.04	0.06	-17	0.07	0.04	209.2	144.3
US:			US\$	US\$		US\$	US\$	US\$ million	US\$ million
Texas Mineral Resources		OTC US TMRC	2.00	1.97	2	2.55	1.30	145.7	145.7
Rare Element Resources	1)	OTC US REEMF	0.56	1.25	-55	2.75	0.45	114.7	114.7
			C\$	C\$		C\$	C\$	C\$ million	US\$ million
Ucore Rare Metals		TSX V UCU	0.77	0.73	5	1.25	0.53	37.8	29.1
Canada:			C\$	C\$		C\$	C\$	C\$ million	US\$ million
Appia Rare Earths & Uranium	2)	CSE API	0.53	0.14	293	1.02	0.28	64.4	49.6
Search Minerals		TSX V SMY	0.11	0.22	-52	0.33	0.10	43.5	33.5
Eagle Plains Resources		TSX V EPL	0.17	0.17	-3	0.19	0.14	18.2	14.0
Commerce Resources		TSX V CCE	0.15	0.23	-33	0.32	0.14	13.7	10.5
Marvel Discovery	3)	TSX V MARV	0.10	0.08	27	0.17	0.07	9.7	7.4
Canada Rare Earth		TSX V LL	0.04	0.06	-33	0.09	0.03	8.4	6.5
Medaillon Resources		TSX V MDL	0.07	0.13	-50	0.20	0.05	4.6	3.5
Western Europe:									
Greenland:			A\$	A\$		A\$	A\$	A\$ million	US\$ million
Greenland Minerals	4)	ASX GGG	0.06	0.08	-25	0.16	0.04	86.0	59.3
Sweden:			C\$	C\$		C\$	C\$	C\$ million	US\$ million
Leading Edge Materials	5)	TSX V LEM	0.21	0.50	-58	0.72	0.18	32.0	25.0

1) approximately 49% held by Synchron, an affiliated General Atomics privately held group of companies

2) also uranium assets; name change from Appia Energy, effective October 15, 2021

3) also uranium assets

4) world's largest undeveloped multi-element REE-uranium-zinc occurrence; uranium exploitation banned by Greenland government

5) also graphite and lithium properties in Sweden and 51% nickel-cobalt exploration alliance in Romania

Overview of listed REE focused companies (by market capitalization) - emerging countries

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization million		
			Aug. 31 2022	Year-end 2021		H	L			
Africa:										
Namibia:										
Namibia Critical Metals	1)	TSX.V	NMI	C\$ 0.14	C\$ 0.25	-43	C\$ 0.27	C\$ 0.14	C\$ million 27.5	US\$ million 21.2
Angola:										
Pensana Plc		AIM	PRE	GBX 47.00	GBX 99.05	-53	GBX 119.52	GBX 43.20	£ million 115.4	US\$ million 135.0
Tanzania:										
Peak Rare Earths	2)	ASX	PEK	A\$ 0.46	A\$ 0.85	-46	A\$ 0.96	A\$ 0.29	A\$ million 95.4	US\$ million 65.8
Burundi:										
Rainbow Rare Earths		AIM	RBW	GBX 10.50	GBX 17.38	-40	GBX 18.50	GBX 10.28	£ million 55.1	US\$ million 64.4
Malawi:										
Mkango Resources		TSX.V	MKA	C\$ 0.22	C\$ 0.52	-58	C\$ 0.70	C\$ 0.20	C\$ million 47.3	US\$ million 36.4
Globe Metals and Mining		ASX	GBE	A\$ 0.09	A\$ 0.11	-18	A\$ 0.15	A\$ 0.06	A\$ million 41.9	US\$ million 28.9

1) heavy rare earths joint venture with JOGMEC of Japan

2) name change from Peak Resources, effective November 29, 2021

Overview of listed CARBON STREAMING focused companies (by market capitalization)

August 31, 2022	Trading symbol		Share price		Change in %	12 months prices		Market capitalization million		
			Aug. 31 2022	Year-end 2021		H	L			
US:										
Carbon Streaming	*	OTCBQ	OFSTF	US\$ 3.13	US\$ 13.15 *	-76	US\$ 14.00	US\$ 1.95	US\$ million 146.5	US\$ million 117.0

* featured as a **Special Situation** and included in **SMRE shortlist of investment recommendations**

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January	25 – 27	Mines and Money Online Connect
April	5 – 7	Mines and Money Online Connect
April	6 – 8	Madrid Energy Conference (MEC 2022), Madrid, Spain
April	6 – 8	MINEX Kazakhstan – Nur Sultan, Kazakhstan
May	4 – 5	Mines & Money London (Hybrid)
June	1 – 3	DRC Mining Week – Lubumbashi, DRC
June	13 – 15	PDAC 2022 – Toronto, Canada – in person
June	28 – 29	PDAC 2022 – Toronto, Canada – ONLINE
June	28 – 30	Suriname Energy, Oil & Gas Summit, Paramaribo, Suriname
July	26 – 27	Lithium Latin America – Buenos Aires, Argentina
August 30 – September 1		Mines and Money Online Connect
September	14 – 16	Guyana Basins Summit – Georgetown, Guyana
November	1 – 3	ZIMEC 2022 – Kitwe, Zambia
November	2 – 4	Int.Mining and Resource Conf. (IMARC) – Melbourne, Australia
November	15 – 17	Symposium Mines Guinee – Conakry, Guinea
November	29	MINEX Eurasia
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