

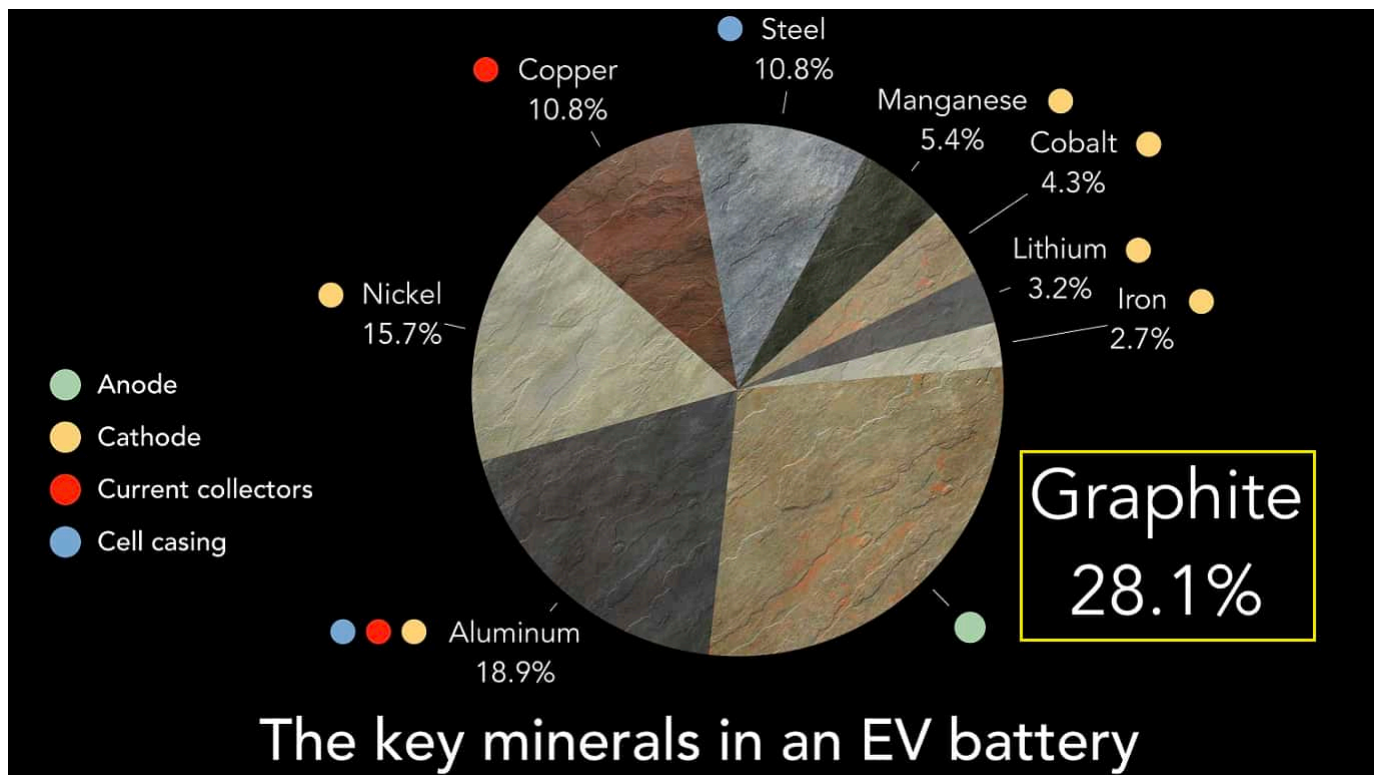
Can the Western graphite and anode industry rise to meet China's challenge?

written by Matt Bohlsen | October 25, 2023

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

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

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



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

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

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

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

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

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

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

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

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

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




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

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

Our Position



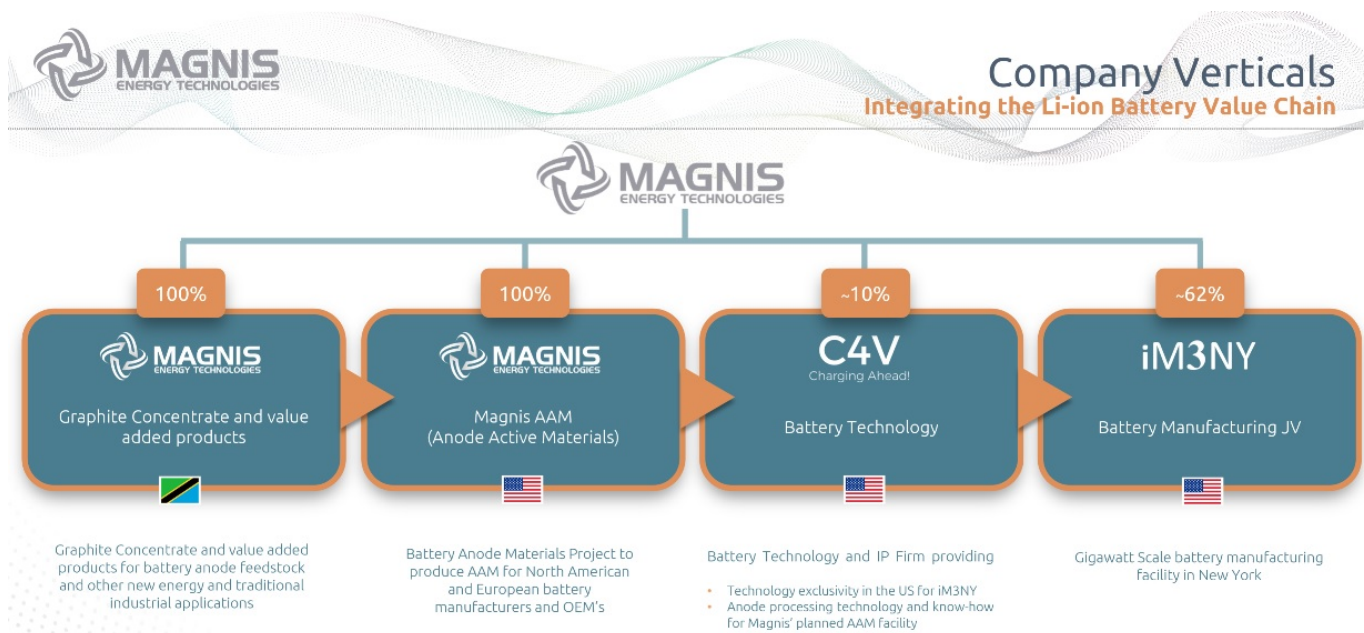
Syrah is a major ex-China natural graphite and active anode material (AAM) supplier for global customers, with upstream and downstream expansion potential underpinned by its world-class Balama resource

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

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

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



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

Closing remarks

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

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

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

5 Stocks on the Radar Amid China's Graphite Export Ban

written by Tracy Weslosky | October 25, 2023

Recent developments from China's Ministry of Commerce concerning export permits on critical graphite products have sent ripples through the financial markets. Graphite, indispensable for electric vehicle (EV) batteries, is now under tighter control by China, a country that dominates its global production.

Who are the graphite mining leaders as analysts forecast a tight graphite market in 2023 and beyond

written by Matt Bohlsen | October 25, 2023

Reports continue to emerge that the graphite market may be next to boom. This is due to accelerating strong demand from the EV battery sector and limited new supply in the pipeline.

The 2021 [International Energy Agency \("IEA"\) report](#) highlighted that the world will need between **8 and 25x more flake graphite** from 2020 to 2040. This is supported by my recent Trend Investing [forecast](#) of a **17x increase in flake graphite demand**

from 2020 to 2037.

In December 2022 Fastmarkets [stated](#): “An impending graphite shortage, driven by phenomenal demand growth from the EV battery sector and delays to new capacity...will all lead to significantly higher graphite prices in the coming years.”

Trend Investing v IEA demand forecast for EV metals

Increase in metal demand 2020 to 2037 (100% EV and sustainable energy world)				
	Trend Investing (f) to 2037	IEA (f) to 2040		
Lithium demand	35	13 --42		
Cobalt demand	5.7	6--21		
Nickel demand	2.8	7--19		
Manganese demand	1.7	3--8		
Flake Graphite demand	17	8--25		
NdPr demand	5.9	3--7		
Copper demand	2.3	2--3		

Source: [Trend Investing](#) & [IEA](#)

The graphite mining leaders

There are a number of leading Chinese graphite mining companies (Aoyu Graphite Group, BTR New Energy Materials, Qingdao Black Dragon, National de Grafite, Shanshan Technology, and LuiMao Graphite); however, they are not typically accessible to most western investors.

Syrah Resources Limited (ASX: SYR | OTC: SYAAF) is the leading western graphite producer. They source their graphite from their 100% owned and massive Balama graphite mine in Mozambique. Syrah is currently constructing their active anode materials (“AAM”) plant at their Vidalia facility in Louisiana, USA. The facility has initial plans for 11.25ktpa of AAM and then to expand to 45ktpa AAM. The first stage 11.25ktpa AAM is targeted to start production in the September quarter of 2023. Tesla (NASDAQ:

TSLA) signed an off-take agreement for an initial 8ktpa of AAM which was recently expanded to an additional 17ktpa AAM of off-take (see [Dec. 23, 2022 news](#)).

Other graphite producers include Ceylon Graphite Corp. (TSXV: CYL | OTCQB: CYLYF) with production in Sri Lanka, **Mineral Commodities Ltd. (ASX: MRC)** who own 90% of Skaland Graphite which operates the highest grade flake graphite operation in the world and largest producing mine in Europe, **Tirupati Graphite PLC's (LSE: TGR)** project in Madagascar, and **Northern Graphite Corporation** (TSXV: NGC | OTCQB: NGPHF) with their Lac des Iles producing graphite mine in Quebec and the Okanjande graphite deposit/Okorusu processing plant in Namibia.

Some junior graphite miners

There are several junior graphite miners but those with the more advanced stage projects are **NextSource Materials Inc. (TSX: NEXT | OTCQB: NSRCF)**, **Talga Group Ltd. (ASX: TLG)**, **Westwater Resources Inc. (NYSE: WWR)**, **Nouveau Monde Graphite Inc. (NYSE: NMG |, TSXV: NOU)**, **Triton Minerals Limited (ASX: TON)**, (TSXV: LEM | OTCQB: LEMIF), [Lomiko Metals Inc.](#) (TSXV: LMR | OTCQB: LMRMF), and **Renascor Resources (ASX: RNU)**.

Closing remarks

The graphite miners have not yet taken off due to subdued graphite prices and ample supply in recent years; however, this looks set to start changing from 2023 onwards especially if the EV boom continues to do well. The flake graphite miners that can also move to make valued added active anode materials (spherical graphite) look set to capture even greater profits. There is also the synthetic graphite producers such as Novonix (ASX: NVX) (Nasdaq: NVX), the future graphite recycling companies such as [Elcora Advanced Materials Corp.](#) (TSXV: ERA | OTCQB: ECORF), and the graphene companies such as [Zentek Ltd.](#) (NASDAQ: ZTEK | TSXV:

ZEN).... but that's for another discussion next time.

These are the graphite leaders as we head towards a forecast graphite deficit in 2023

written by Matt Bohlsen | October 25, 2023

The flake graphite sector does not get as much attention as [lithium](#), yet the demand wave coming is also very significant. For example, in 2021 the International Energy Agency [forecast](#) that flake graphite demand could grow between **8x to 25x** from 2020 to 2040. Benchmark Mineral Intelligence [forecasts](#) we need **97 new (56,000tpa) natural flake graphite mines** from 2022 to 2035.

The calm before the storm

More recently in October 2022, Fastmarkets [stated](#):

*"Fastmarkets has forecast that demand for graphite from the battery sector in 2022 will rise by 40% year on year, in line with growth in the EV sector.....**We expect to see the graphite market tip back into deficit in late 2022.....**Graphite prices are in a lull, but this lull will prove to be temporary and may well be **the calm before the storm.**"*

Note: Bold emphasis by the author.

An 8 to 25x increase in demand, 97 new graphite mines, graphite deficit coming in late 2022! Yet no one is talking about

graphite. Today we cover the main western graphite producers and touch on a few promising near term graphite producers, noting China currently dominates the graphite and anode sectors.

The western flake graphite leading producers

[Syrah Resources Limited](#) (ASX: SYR) – Syrah is an Australian company and one of the world's largest flake graphite producers from their Balama graphite mine in Mozambique. Syrah is also working towards becoming a vertically integrated producer of Active Anode Materials ("AAM") at their Vidalia facility, Louisiana, USA. In some exciting [recent news](#) for shareholders, Syrah was selected for a U.S Department of Energy grant of up to US\$220 million towards their Vidalia facility expansion (initial production targeted to begin in Sept. quarter 2023). This comes on top of the news late in 2021 that Syrah [signed a four year deal](#) to supply graphite anode materials to Tesla. Syrah also recently signed an [MOU with Ford and SK On](#) as well as an [MOU with LG Energy Solution](#). Clearly, Syrah Resources is in the box seat to become a critical supplier of both graphite and active anode materials this decade, especially for western OEMs.

The following companies are smaller scale western flake graphite producers:

- **Advanced Metallurgical Group NV** (AMS: AMG | OTC: AMVMF) – Is a diversified producer of critical metals. They mostly produce lithium and vanadium, but also [some high purity natural graphite production](#).
- **Ceylon Graphite Corp.** (TSXV: CYL | OTCQB: CYLYF) – Produces graphite from their '[vein graphite](#)' mine in Sri Lanka.
- **Mineral Commodities Ltd.** (ASX: MRC) – [State](#) they have the "world's highest-grade operating flake graphite mine with mill feed grade averaging ~25%C". Also that they are "the

biggest crystalline graphite producer in Europe and the fourth largest producer globally outside of China and accounts for around 2% of global annual natural flake graphite production” at their Skaland Graphite Operation in Norway. They also own the Munglinup Graphite Project in Western Australia and [have received Critical Minerals Grant funding](#) to build a pilot scale battery anode plant in Australia.

- **Northern Graphite (TSXV: NGC | OTCQB: NGPHF)** – Recently completed the [purchase](#) from Imerys of the Lac des Iles producing graphite mine in Quebec and the Okanjande graphite deposit/Okorusu processing plant in Namibia. They also own the Bissett Creek graphite project located 100km east of North Bay, Ontario, Canada and the nearby Mousseau West Graphite Project.

Near term western potential flake graphite producers

- **NextSource Materials Inc. (TSX: NEXT | OTCQB: NSRCF)** – Completion of construction activities and the start of mining activities is expected in [November 2022](#), at their Molo Graphite Project in Madagascar. Phase 1 of the Molo Mine is designed to operate at a production capacity of [17,000 tonnes](#) per annum.
- **Westwater Resources Inc. (NYSE: WWR)** – Owns the [Coosa Graphite Plant](#) (2023 production start targeted) in USA. The Company plans to source natural graphite initially from non-China suppliers and then from the USA from 2028.
- **Nouveau Monde Graphite Inc. (NYSE: NMG | TSXV: NOU) (“NMG”)** – Own the Matawinie graphite project, located in Quebec, Canada. In September this year it was [announced](#) that Tesla had recently visited their project in Quebec. Also recently the Company [announced](#): “NMG, Panasonic Energy and Mitsui announce Offtake and Strategic Partnership supporting the supply of active anode material

plus US\$50 million private placement by Mitsui, Pallinghurst and Investissement Québec.”

- [Lomiko Metals Inc.](#) (TSXV: LMR | OTCQB: LMRMF) – Earlier stage but 100% owns the promising [La Loutre Graphite Project](#) in Québec, Canada, where a PEA has been completed.

Closing remarks

An 8 to 25x increase in demand by 2040, 97 new graphite mines needed by 2035, graphite deficit coming in late 2022! Investors should not forget about graphite, and particularly focus on those graphite miners that are working towards being able to manufacture value-added active anode materials (spherical graphite), as that is where the real money is.

We may be experiencing ‘the calm before the storm’ (before graphite deficits push up prices), which means the sector still offers many great opportunities for investors.

Disclosure: The author is long Syrah Resources (ASX: SYR) and Advanced Metallurgical Group NV (AMS: AMG).

Biden Leads the build-out of an EV market critical minerals supply chain outside of China parade

written by Matt Bohlsen | October 25, 2023

For the past decade it has been China that has massively

supported its battery and EV industry resulting in China now being by far the leader in EV production globally; and quite frankly a threat of totally dominating the future global auto industry as it goes electric.

Now, finally, the tide is turning with the Western governments starting to make very significant moves to support the EV and energy storage sectors (including batteries & the electric grid) and its supply chain. Today's article gives a summary of major western governments' new policies to support the EV and energy storage supply chain so far in 2022.

USA

As [announced](#) last week the DoE awarded **US\$2.8 billion** of grants to accelerate U.S. manufacturing of batteries for electric vehicles and the electric grid. As [stated](#) by Energy.Gov.:

"The 20 companies will receive a combined US\$2.8 billion to build and expand commercial-scale facilities in 12 states to extract and process lithium, graphite and other battery materials, manufacture components, and demonstrate new approaches, including manufacturing components from recycled materials."

A key component of the US\$2.8 billion in grants is that they will be matched with [US\\$9 billion](#) in recipient funds. Furthermore, the 20 company's projects are spread across the key areas of the battery supply chain with the key purpose to build a new U.S lithium-ion battery industry.

As shown below some of the winners were lithium companies Albemarle Corporation (NYSE: ALB) and Piedmont Lithium Inc. (Nasdaq: PLL | ASX: PLL), spherical graphite (soon to be a producer) company Syrah Resources Limited (ASX: SYR), nickel junior Talon Metals Corp. (TSX: TLO) and several others.

Location map showing the planned project locations of the DoE project grant recipients



Source: [Energy.Gov DoE](#)

Earlier in 2022, the U.S government announced funding in the [Inflation Reduction Act](#) of [US\\$369 billion](#) towards clean energy and climate change initiatives.

The Biden Administration is certainly leading the West in supporting the environment and building up a new clean energy industry with factories and jobs in the USA.

Canada

Canada has recognized that it is extremely well positioned to be a [supplier of EV metals](#) and components due to its inherent wealth of critical raw material resources. In the 2022 Canadian Budget the government allocated an additional [“C\\$3.8 billion](#) for critical minerals, including those that feed into clean technologies”. Clean Energy Canada [stated](#):

“This new funding will help Canada realize its vision of building an “end-to-end” battery supply chain through which Canada can do it all, from sourcing the materials to building the parts, batteries, and clean cars.”

Specifically, the Canadian government will spend up to [C\\$1.5 billion](#) over seven years, starting in 2023-24, for infrastructure investments that would support the development of the critical minerals supply chain, with a focus on priority deposits. Many very promising Canadian projects, such as Frontier Lithium Inc.’s (TSXV: FL | OTCQX: LITOF) PAK Lithium Project, need roads to be built to help bring their projects to production. Canada has a plan to make this happen, albeit rather

slowly.

Australia

The Australian government under Prime Minister Albanese has brought a new focus towards EVs and climate change. As announced last week the [“support for critical minerals breakthroughs”](#) policy is designed to accelerate the growth of the critical minerals sector. The announcement [stated](#):

“The Strategy will complement other Government initiatives including the National Battery Strategy and the Electric Vehicle Strategy. The National Reconstruction Fund will include the \$1 billion Value Adding in Resources Fund which will work alongside the \$2 billion Critical Minerals Facility.....The Government will also allocate \$50 million over three years to the Critical Minerals Development Program for competitive grants to support early and mid-stage critical minerals projects, building on the \$50 million recently committed to six key projects across Australia.”

The winning “six key projects” [are owned by](#) Alpha HPA Limited (ASX: A4N), Cobalt Blue Holdings Limited (ASX: COB), EQ Resources Limited (ASX: EQR), Global Advanced Metals Pty Ltd, Lava Blue Ltd., and Mineral Commodities Ltd. (ASX: MRC).

Europe

Last month the European Commission [announced](#) a new policy proposal called the ‘European Critical Raw Materials Act’. The announcement emphasized Europe’s need to secure a safe and secure supply of critical minerals, notably lithium and rare earths. The announcement [stated](#):

“Lithium and rare earths will soon be more important than oil and gas. Our demand for rare earths alone will increase fivefold

by 2030. [...] We must avoid becoming dependent again, as we did with oil and gas. [...] We will identify strategic projects all along the supply chain, from extraction to refining, from processing to recycling. And we will build up strategic reserves where supply is at risk. This is why today I am announcing a European Critical Raw Materials Act."

The European Critical Raw Materials Act is still being developed but it looks like it will follow along similar footsteps as the U.S Inflation Reduction Act, supporting and building local supply chains, but also relying on ally countries. The European Commission [stated](#) one objective as:

"To facilitate the roll-out of targeted raw materials projects in the EU, the Commission should be empowered to list Strategic Projects – which would be labelled as of European interest – based on proposals from Member States. These projects could benefit from streamlined procedures and better access to finance."

An excerpt from the recent 2022 State of the European Union address discussing the need for Europe to source critical raw materials



Source: [European Commission](#)

Some possible winners might be rare earths processing company [Neo Performance Materials Inc.](#) (TSX: NEO) and European Metals Holdings Limited (ASX: EMH | AIM: EMH | OTCQX: EMHXY). The former owns [the only commercial rare earth separations and rare metal processing plant in Europe](#) and the later has a JV 49% ownership of the [largest hard rock lithium project in Europe.](#)

Closing remarks

The Western governments have woken up from a decade long slumber and are now finally moving to build key critical raw material, battery, and EV supply chains both locally and with ally countries. Project funding and permitting are key obstacles being addressed as they are the reason why much of USA and Europe have virtually no EV supply chain today.

As we approach COP 27 starting on November 6, the 2022 awakening of the Western governments should lead to one of the biggest investment themes this decade. That is, investing in quality companies that are likely to succeed in supplying the EV and energy storage supply chains as the Western world looks to gain independence from China.

InvestorIntel has been bringing attention to these companies for more than a decade and provides the ideal starting point to research and learn about promising critical raw materials companies. Stay tuned.

Disclosure: The author is long Albemarle Corporation, Piedmont Lithium Inc., Syrah Resources Limited, Frontier Lithium Inc., Cobalt Blue Holdings Limited, European Metals Holdings.

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