

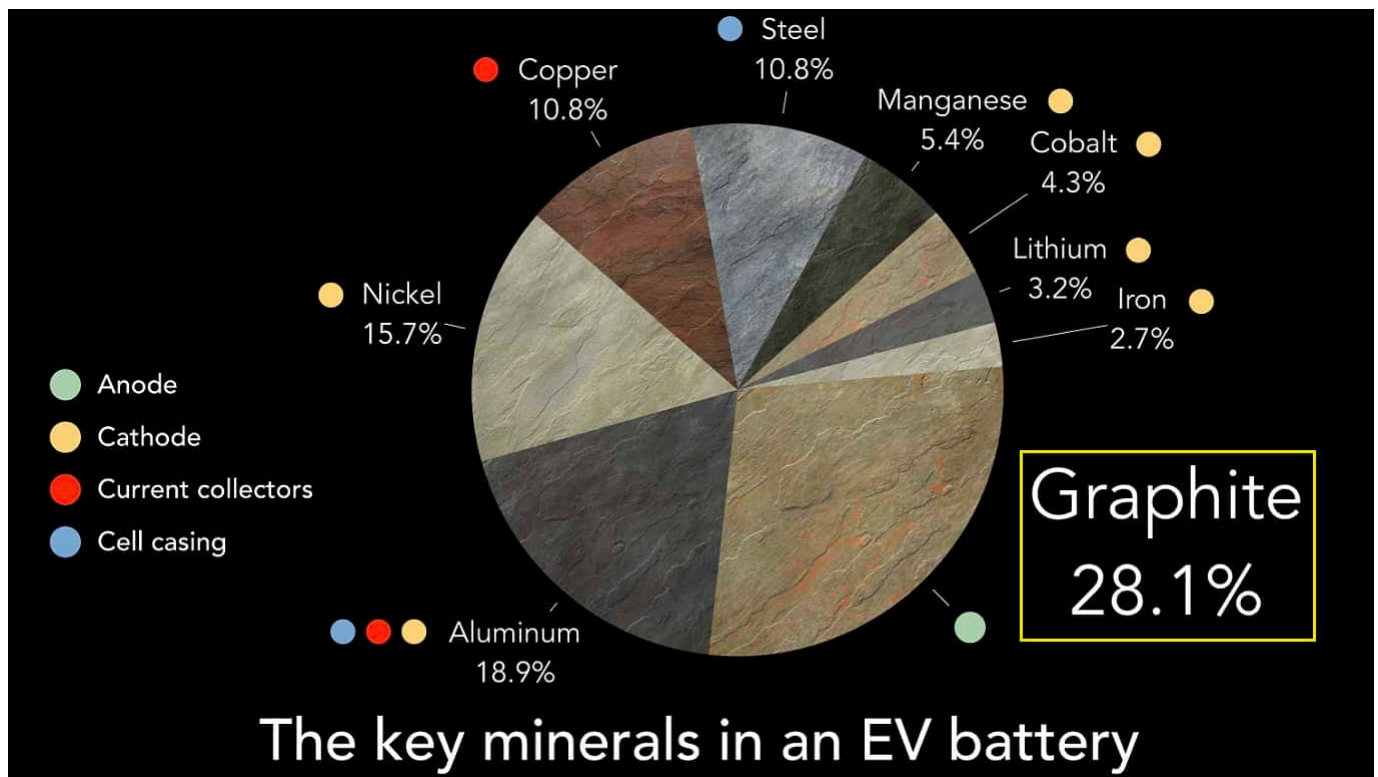
Can the Western graphite and anode industry rise to meet China's challenge?

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



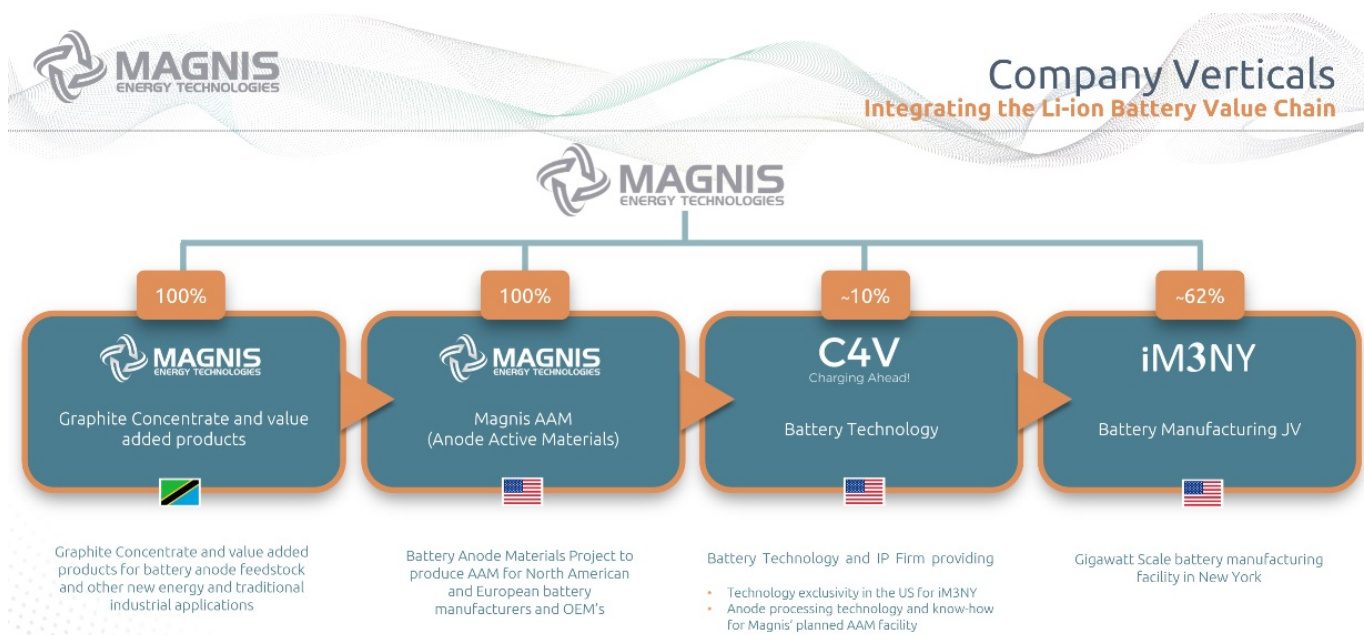
Syrah is a major ex-China natural graphite and active anode material (AAM) supplier for global customers, with upstream and downstream expansion potential underpinned by its world-class Balama resource

 <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.

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 Munglunup 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).

The Dean's List – Part 3: What graphite company could benefit from Canada's commitment to critical minerals?

written by InvestorNews | October 25, 2023

Part 3: Northern Graphite Corporation

It's time for another installment in [our series](#) that looks at Canadian companies in the mining sector that could be impacted

by Federal and Provincial government announcements with respect to critical materials, supply chain, EV battery manufacturing, etc. As a reminder, the province of Ontario first announced in March its [strategy for 'critical minerals'](#) followed shortly by a [C\\$4.9 billion electric vehicle battery plant](#) in Windsor, Ontario. This was followed in April by the Federal Government's [Budget 2022 proposing up to C\\$3.8 billion in support](#) over eight years to implement Canada's first Critical Minerals Strategy. The Fed's followed this up in late June with a House of Commons Standing Committee on Industry and Technology report entitled: [Positioning Canada as a Leader in the Supply and Processing of Critical Minerals](#). Just to highlight a few of the momentum building actions in the sector.

Today we're going to have a look at what I consider to be the least publicized critical mineral that comprises a lithium-ion battery (LiB) – graphite. Not only is graphite the largest component in a lithium-ion battery (up to 48%), it also requires the largest production increase of any battery mineral in order to meet forecast demand.



Source: Northern Graphite [Corporate Presentation](#)

Conversely, over 80% of [graphite mine](#) production in 2021 came from China, while China makes almost 100% of the graphite anode material for lithium-ion batteries. Does this sound like a recipe for disaster for the rest of the world to you? Perhaps it's stats like these that have put graphite on the critical minerals list of virtually every country that is attempting to develop a critical minerals strategy.

Assuming governments get their strategies at least partially right, that could result in opportunities galore for miners and explorers of these critical materials. This includes [Northern](#)

[Graphite Corporation](#) (TSXV: NGC | OTCQB: NGPHF), a Canadian company focused on becoming a world leader in producing natural graphite and upgrading it into high-value products critical to the green economy. Northern is the only significant graphite producing company in North America and will become the third largest non-Chinese producer when its Namibian operations come back on line in the first half of 2023. The Company also has two large-scale development projects, [Bissett Creek](#) in Ontario and [Okanjande](#) in Namibia, that will be a source of continued production growth in the future. All projects have “battery quality” graphite and are located close to infrastructure in politically stable countries.

Looking a little closer at the Bissett Creek project, testing has indicated that graphite from Bissett Creek is very well suited for the manufacture of high capacity, durable, long-life lithium-ion batteries. Bissett Creek is projected to produce 20,000 tonnes of graphite per year in phase 1 of development and has the resources to increase production to approximately 100,000 tpy as demand grows. By comparison, Canada’s graphite production in 2020 was estimated to be only 10,000 tonnes. An independent study has rated Bissett Creek the highest margin graphite project in the world, including existing producing mines. This is due to its very high percentage of valuable large flake graphite, simple metallurgy and favorable location which provides ready access to equipment, supplies, labor, grid power, natural gas and markets.

Why is this important? Along with the above noted Windsor battery plant JV between Stellantis and LG Energy Solution, the latter has also announced two projects in Michigan, just across the US border from Ontario. It is investing US\$1.7 billion to expand its LiB cell plant in Holland, Michigan and has a third joint venture with GM to build a US\$2.5 billion cell plant in the City of Lansing and Delta County, Michigan. Combined with

the investment in Ontario, LG will have a collective LiB production capacity of 200 GWH in North America, requiring 250,000 tpy of graphite. And Bissett Creek is the nearest graphite deposit to these megafactories which provides Northern Graphite with a unique opportunity to deliver a secure, local, responsibly sourced supply of graphite.

It seems Northern Graphite might be sitting pretty as LG Energy Solution looks to start sourcing supply for all its facilities. This could dovetail nicely with two upcoming milestones the Company has stated. In Q3, 2022 Northern is planning to announce an LiB anode production strategy, which also aligns with two of the Ontario government's strategies: [Growing domestic processing and creating resilient local supply chains](#) and [Investing in critical minerals innovation, research and development](#). Then come Q4, 2022 they are looking to arrange financing for the Bissett Creek Project which could potentially include government support or possibly loan guarantees, a strategic offtake agreement with LG Energy Solution or just an old-fashioned capital raise. Regardless, the appetite should be there for whichever means the Company determines is its best course of action with the current tailwind for critical minerals.

Did you miss a previous edition? *Check it out...*

[The Dean's List – Part 2: What nickel company will benefit from Canada's commitment to critical minerals?](#)

[The Dean's List – Part 1: What rare earths company will benefit from Canada's commitment to critical minerals?](#)

Northern Graphite moves to become a North American producer

written by InvestorNews | October 25, 2023

Did you know that 'graphite' is on the [list of 35 U.S critical minerals](#)? It is because graphite is important in steel manufacturing and also in batteries. An average sized electric vehicle ("EV") lithium-ion battery typically has about 55 kgs of graphite, larger size EVs can use [75-115 kgs](#) per vehicle. This is why in 2016 Elon Musk famously [said](#): "Our cells should be called Nickel-Graphite, because primarily the cathode is nickel and the anode side is graphite with silicon oxide."

Graphite demand is set to soar this decade as EVs takeoff



Source: [Northern Graphite company presentation](#)

Today's company has recently signed a company changing deal that will see them soon become a North American graphite producer, assuming the deal finalizes.

Northern Graphite to acquire two graphite mines from Imerys Group

[Northern Graphite Corporation](#) (TSXV: NGC) [announced](#) on December 2, 2021: "Northern Graphite to acquire two graphite mines from Imerys Group."

The two graphite mines are the Lac des Iles, producing graphite mine in Quebec, Canada, and the Okanjande graphite deposit/Okorusu processing plant in Namibia. The purchase price is approximately [US\\$40 million](#). Northern Graphite plans to fund the deal and raise extra working capital, according to a term sheet with Sprott Resource Streaming and Royalty Corp., through [US\\$40 million](#) in debt/royalty/stream financing plus a US\$15 million (~[C\\$20 million](#)) private placement equity raise.

Northern Graphite CEO, Gregory Bowes, [stated](#): “This is a truly transformational deal that will elevate Northern from one of over 20 junior graphite companies looking for project financing to being **the only North American and the world’s third largest¹ non-Chinese graphite producing company.**”

Note: Bold emphasis by the author.

Northern Graphite’s existing graphite project

Northern Graphite owns the Bissett Creek Graphite Project located 100km east of North Bay, Ontario, Canada and close to major roads and infrastructure. The Company has completed an NI 43-101 Bankable Feasibility Study and received its major environmental permit. The next step is project financing. More details on the Bissett Creek project [here](#).

Northern Graphite’s company goal and strategy

Northern Graphite is focused on becoming a world leading producer of natural graphite and on the upgrade of mine concentrates into high value products critical to the green energy revolution including lithium-ion battery anode material for EVs and stationary power systems, fuel cells, and graphene, as well as advanced industrial technologies. The upgrading of mine concentrates usually means upgrading flake graphite (sells at [~US\\$550-1,000/t](#)) to active coated spherical graphite (sells

at [~US\\$7,000+/t](#)). Northern Graphite is not yet at this stage, but it is their plan to go in that direction, which makes good business sense, to increase profit margins. Manufacturing and selling graphene is another way to add value.



Source: [Northern Graphite company presentation](#)

Closing remarks

Northern Graphite has made a company changing deal by purchasing two graphite mines (and a processing plant) for only ~US\$40 million. Combine this with their existing advanced stage Bissett Creek graphite Project, and Northern Graphite will own 3 graphite projects/mines, two in Canada and one in Namibia.

A key to the new acquisition is that the Quebec based Lac des Iles Mine is already a producing asset. The Okanjande is a fully operational, permitted, mine in Namibia (currently on care and maintenance). With graphite demand set to surge this decade as electric vehicles takeoff, the timing of the recent acquisition could not be any better and propels Northern Graphite from being a junior to being a North American graphite producer. Or as the company [states](#): “Northern will become the only North American, and the world’s third largest non-Chinese, graphite producing company.”

The deal still needs to go through the usual approvals but is expected to finalize soon. Higher graphite prices are needed in the sector to make it more profitable; however, this may happen in 2022 as [flake graphite is expected to move into deficit](#). Also, note the higher sovereign risk for the Namibia operation.

Northern Graphite Corporation trades on a market cap of only [C\\$69 million](#). One to follow closely in 2022.

Northern Graphite Greg Bowes InvestorIntel Summit Presentation

written by InvestorNews | October 25, 2023

May 30, 2018 – “Why should you be interested in graphite? As I mentioned earlier, graphite is the anode material in lithium-ion batteries. That is a \$20 billion dollar a year business that is growing at over 20% a year. That chart is historical. That is not a forecast.” states Gregory Bowes, CEO and Director of [Northern Graphite Corp.](#) (TSXV: NGC | OTCQX: NGPHF), in a recent presentation at the 7th Annual InvestorIntel Summit – Buds, Batteries & Blockchain 2018.

Gregory Bowes: Northern Graphite is a company that is based in Ottawa, Canada. We have about 65 million shares outstanding. We consider that we have the best new graphite project. I am sure everybody says that so my job today is to convince you why it actually might be true in our case. It starts with location. If any of you want to do a site visit you can jump in a car and you would be there in 4½ hours. It is between North Bay and Ottawa, off the Trans-Canada Highway. It has a reasonable capital cost. It has a realistic production target relative to the size of the market. It is the highest percentage of the more valuable large flake production. It has the lowest marketing risk of any new project. It has the highest margin and the best economics. It is not a junior exploration story. We have a full feasibility study and we have our major environmental permit. The next step is \$100 million dollars Canadian and building a mine. We have

developed a patent pending battery material technology, which I will tell you a little bit more about, which converts that graphite mine concentrate or helps convert it into the anode material for lithium-ion batteries. Why should you be interested in graphite? As I mentioned earlier, graphite is the anode material in lithium-ion batteries. That is a \$20 billion dollar a year business that is growing at over 20% a year. That chart is historical. That is not a forecast. As usual the best investment advice comes from looking around you. We all know the proliferation of personal devices, cameras, cell phones, laptops. All of that market is driven by lithium-ion batteries. This is lithium-ion battery manufacturing capacity that is in the pipeline. It is set to quadruple by 2021. If that happens we are adding 300 gigawatt hours of production capacity. You can see at the bottom that would require a doubling of annual graphite production. Even if these plants were only to operate at 20% or 30% or 40% of capacity due to lower than expected growth in EVs, you would still need multiple new graphite mines. This is a little bit of a comparison. The three main battery minerals are graphite, lithium and cobalt, obviously. The difference in the graphite market you can see it is quite a bit bigger than the other two. In terms of battery demand, it still has not got to where the other two are yet. That is one of the reasons that the graphite price has not performed as well, nearly as well, as lithium and cobalt. The interesting story is that if you add 100 gigawatt hours of battery manufacturing capacity or demand, you are looking at 160% increase in graphite demand so there is much greater leverage there than there is in the other two minerals. That leverage comes from two factors that people do not often consider. You talk about how much lithium you need and how much graphite you need in a battery...to access the complete presentation, [click here](#)

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