for Ontario Nickel

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EDIT

Ontario could provide manufacturers like Tesla, Apple and Toyota with a stable, long-term supply of the nickel sulfide required to build lithium-ion batteries.

With Canadian pennies gone from circulation, a "nickel" for your thoughts will have to do. And nickel, along with lithium, copper, cobalt, graphite, vanadium and other minerals, is in everyone's thoughts these days.

Demand for all things electronic, like smartphones and EVs, is continuing to surge. But trade war headwinds are blowing. So far, China, the EU and Canada have been recipients of US tariffs, which have been responded to in

kind. A such, global supply chains are being impacted. Concern, but not panic, appears to be the mood in Ontario's mining supply and service sector.

Although it is difficult to say where the tit-for-tat trade war is heading, base metals prices have taken a synchronized dive. But despite current headlines, one must also consider long-term prospects.

Nickel and EV batteries

In 2017, global nickel production amounted to 2.1 million tons and 85 percent served stainless and alloy steel manufacturers. However, recent years have not been easy for some nickel producers. In the past decade, manufacturers have pursued cheaper substitutes for class 1 nickel, including ferronickel and nickel pig iron. In response, prices for nickel plummeted from US$29,000 per tonne in 2011 to just US$10,000 in 2017. The price drop led to the curtailment of class 1 nickel production globally. The London Metal Exchange posted a nickel price of US$13,870 on July 13, 2018.

But nickel markets are evolving. Nickel comprises an increasingly large portion of lithium-ion battery cathodes. Because lithium-ion batteries are compact in size and hold a significant charge, they are highly sought after. Real headway has been made to make EVs a competitive substitute to fossil fuel-based vehicles. In 2008, lithium-ion EV battery packs were a staggering US$600 to US$1,200 per kilowatt hour (kwh). Today that price is south of US$200 per kwh and dropping. Range is also increasing: Tesla's (NASDAQ:TSLA) Model X has an impressive range of 475 kilometers between charges. It would be like driving from

Los Angeles to Las Vegas on one tank of gas. EVs keep marching towards cost parity with fossil fuel vehicles, and nickel is essential to serving this growing market.

Growth of EV market

Battery markets in 2017 accounted for 3 percent, or between 65,000 and 75,000 tonnes, of nickel equivalent, supplying production of 300,000 to 350,000 tonnes of nickel sulfate. But if EV costs and charging infrastructure near parity with fossil fuel vehicles, demand for nickel is expected to continue increasing. UBS (NYSE:UBS) estimates that 10-percent EV market penetration would require 400,000 tons of nickel, nearly 20 percent of total nickel supplied in 2017.

Similarly, CRU Group suggests 32-percent EV market penetration in 2030 would require 1.1 million tonnes of nickel, or a 56-percent increase from current levels.

Agreeing with these projections, Ken Hoffman, basic materials expert at McKinsey & Co., told INN that "the battery technology that [he thinks] we'll see pretty solidly for the next five to seven years is a nickel-heavy battery, nickel-manganese-cobalt (NMC) or the nickel-cobalt-aluminum (NCA) battery that Tesla uses. That seems to be where the battery industry is going."

The issue appears to be not if but when consumers will opt en masse for EVs. The International Energy Agency anticipates 40 to 70 million EVs will be on global roads by 2025. UBS estimates 15 million EVs will be on the road, requiring an additional 300,000 to 900,000 tons of nickel per year. The Bank of Montreal projects a more gradual EV uptake of nickel: 215,000 tons by the same time period.

But while demand predictions for EVs are all over the map, they appear to be pointing in the same direction: up. Hoffman suggests that the business case for nickel-heavy batteries will be "solid" for next five to seven years.

Ontario: Stable and mining friendly

Ontario's Sudbury Basin is considered one of the world's super-large nickel sulfide deposits. The second is located in Siberia. Geologist Peter Lightfoot has characterized both

regions as the "sumo wrestlers" of the nickel world. Nickel sulfide is premium stuff, and is essential for production of the highly prized nickel sulfate used in lithium-ion batteries.

Ontario is a historically well-known and stable mining jurisdiction where the rule of law is paramount. There are 900 mine-related companies in the Canadian province, employing 78,000 people in mineral production and 40,000 in related supply and servicing. Because Ontario has a long history of mining, investors are keen to utilize existing infrastructure and a large, skilled workforce.

But after labor, electricity is the largest cost for Ontario mine operators: 15 to 30 percent of total cost. Ontario electricity rates are the highest in Canada and a major bone of contention for the province's residents and industrial consumers. However, it appears more than one abrupt change is coming down the line for Ontario's electricity market.

Although there are US tariffs on Canadian steel and concerns about Ontario's electricity prices, context is required. Not everything is rosy in other parts of the world. In Australia, Glencore (LSE: GLEN) Business Director Aristotelis Mistakidis has complained that electricity costs have doubled in just three years. Australia's mine operators and public are incensed at the nation's electricity costs and stability issues.

As for other major nickel producers globally, uncertainty abounds. Last year, 23 Philippine mines were shut in by the government, impacting 10 percent of global nickel supply. Whatever his motivation, Philippine President Rodrigo Duterte has threatened to end the industry in the South Asian nation, suggesting it "could survive without the industry." Other large nickel producers like Indonesia and New Caledonia have histories of placing export restrictions on unprocessed nickel ore. Also, Russia faces sanctions from many countries in the west.

Ontario does not face these types of uncertainties and complications. Spending on exploration and deposit appraisal is expected top C$593 million in 2018, up from C$394 million in 2016. The Ontario Mining Association posted a 2018 map of advanced mineral projects.

The players

Nickel production in Ontario is centered on three mining companies: Vale (NYSE:VALE), Glencore and KGHM International (WSE:KGH), which all have nickel operations in the Sudbury Basin. All three companies have new projects in the region.

Glencore is proceeding with a US$700-million development program for the Onaping Depth mine, which bears grades of 2.25 percent nickel and 1 percent copper. Vale is proceeding with a C$760-million development plan for the Copper Cliff Deep project. KGHM International's Victoria mine is in pre-production, and it has a mineral resource of 500,000 tonnes indicated and 13.1 million tonnes inferred, with average grades of 2.7 percent nickel and 2.6 percent copper.

Several nickel exploration and development companies are also active in Ontario, and not just in the Sudbury region. Tartisan Nickel's (CSE:TN) Kenbridge property, for instance, near Kenora, has a measured and indicated resource of 7.139 million tonnes at 0.62 percent nickel and 0.33 percent copper. The company is looking to advance the project through feasibility. The company is also assessing data from the past-producing Alexo-Kelex mine near Timmins.

Landore Resources (LSE:LND) commenced a feasibility study for 84 million pounds of nickel and 58 million pounds of copper at the West Graham project, just 17 kilometers from Sudbury. The Junior Lake property, 285 kilometers north of Thunderbay, is expected to contain 48,281 tonnes of nickel equivalent. Landore has been granted three mining and surface rights leases.

What lies ahead

Although there are some present challenges, the long-term prospects for Ontario's nickel industry are positive. Exploration and deposit appraisal is growing, as is mining investment in general. Ontario has an abundance of many inputs required by battery manufacturers, like nickel, copper and cobalt. For an industry that thinks decades into the future, Ontario is a stable, long-term producer of base, industrial and precious minerals.

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