

# Cobalt: a critical commodity

by Troy Nazarewicz

Energy-related metals, specifically lithium, have been attracting market attention in recent months as the lithium-ion battery market expands due to developments in the electric vehicle and stationary storage markets. The specialty metal cobalt is also critical for the production of lithium-ion batteries.

In fact, 50% of the world's cobalt demand is for its use in rechargeable batteries. Cobalt is facing the same demand pressures as lithium but has different supply characteristics. Cobalt is primarily a by-product of copper and nickel mining and, as the price of these metals has declined, a number of mines have been idled resulting in reduced cobalt production at a time when demand for cobalt is growing rapidly. Market analyst company, CRU, and other sources are calling for cobalt to enter a deficit position later this year.

The cobalt market has had compound annual growth of approximately 5-6% for the past two decades and in 2015 grew by 5.4%, more than double recent global GDP growth of 2.4% for the same period. Market growth has been driven primarily from the demand for cobalt in chemicals used to make lithium-ion rechargeable batteries needed to power portable electronic devices, electric vehicles and stationary storage cells. Battery chemical demand increased nearly 12% in 2015 and now accounts for approximately half of the world's annual cobalt production. Double digit growth of cobalt used in rechargeable batteries is expected to continue for the foreseeable future.

Supporting the positive outlook for cobalt, Tesla Motors made automotive history on March 31, 2016 with the launch of its Model 3 electric vehicle, receiving US \$325 million in deposits for 325,000 preorders of these cars in the first week (now ~400,000 orders). If these orders are



The Idaho Cobalt Project mill and concentrator pads, tailings waste storage facility and water management ponds' earthworks. Photo courtesy Formation Metals Inc.

converted into annual sales, production of the Tesla Model 3 would be comparable to the top selling vehicles in North America. Mainstream interest in electric vehicles has been validated by thousands of people lining up to make a US \$1,000 down payment for a car that will only be available in late 2017.

The market for cobalt last year totaled ~110,000 tonnes. Knowledgeable analysts are projecting a supply deficit of ~1,600 tonnes in 2016 due to increased demand. This excludes 6,500 tonnes of annual production recently shuttered as a result of the closure of Katanga (Congo), Mopani (Zambia), Queensland Nickel (Australia) and Votorantim (Brazil).

There are also rumors that Minara, Koniambo and Goro could potentially be shut down as well (~7,000 tonnes of cobalt production). These mines are being shuttered due to the low primary nickel and copper metal prices – not because of cobalt, which is produced as a by-product.

Future risks to cobalt supply are further

exacerbated by geographic concentration of supply and 65% of mine production currently sourced from the DRC, as noted above, a politically unstable country, and 52% of refinery production in China, a country with policy risk. These risks were recently addressed in the Assessment of Critical Minerals report to the U.S. Congress that identified cobalt as a critical mineral on a list that “have a supply chain that is vulnerable to disruption, and that serve an essential function in the manufacture of a product, the absence of which would cause significant economic or security consequences”. The Report to Congress is at: [https://www.whitehouse.gov/sites/default/files/microsites/ostp/NSTC/csmsc\\_assessment\\_of\\_critical\\_minerals\\_report\\_2016-03-16\\_final.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ostp/NSTC/csmsc_assessment_of_critical_minerals_report_2016-03-16_final.pdf)

China Moly's recent acquisition of the Tenke Mine in DRC has the potential to further concentrate cobalt refining. ■

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**FORTUNE MINERALS: NICO PROJECT**

**Fortune Minerals Ltd.** [FT-TSX; FTMDF-OTCQX] is developing the NICO Project that is preparing to become a vertically integrated Canadian source of battery-grade cobalt chemicals with supply-chain custody transparency. The NICO gold-cobalt-bismuth-copper development is comprised of a planned mine and concentrator in Canada's Northwest Territories and a refinery near Saskatoon, Saskatchewan to process concentrates from the mine to higher value products.

The project has a positive feasibility study and has received its environmental assessment approvals in the Northwest Territories and Saskatchewan. It is an essentially shovel-ready project. The NICO deposit mineral reserves will support a 21-year mine life at a mill feed rate of 4,650 tonnes of ore/day to produce 180 wet tonnes of concentrate/day for shipment to the refinery.

Life-of-mine average annual production is projected to be 41,300 ounces of gold, 1,615 tonnes of cobalt contained in a battery grade cobalt sulphate heptahydrate, 1,750 tonnes of bismuth contained in ingots, needles and oxide, and 265 tonnes of copper.

NICO is well positioned to become a reliable North American source of battery grade cobalt chemicals with supply chain custody transparency and tax advantages under the North American Free Trade Agreement (NAFTA). Earlier in 2016, an ultra-pure cobalt sulphate sample was delivered from an earlier pilot plant for testing by a potential customer. Discussions for offtake agreements and project financing are ongoing.

**FORMATION METALS: IDAHO COBALT PROJECT**

**Formation Metals Inc.** [FCO-TSX; FMETF] is a well-established Canadian mineral exploration and mine development company focused on cobalt production in Idaho, US. The company's flagship property is its wholly-owned Idaho Cobalt Project (ICP), North America's only near term, environmentally-permitted, primary

cobalt deposit.

The ICP is also slated to produce by-product copper and gold. Formation's main objective is advancing the project to production in order to provide North American consumers with ethically sourced and responsibly mined, battery-grade, cobalt chemicals for use in the booming rechargeable battery sector.

In April 2015, Formation Metals completed a positive Preliminary Economic Assessment on the Idaho Cobalt Project. In March 2016, Formation received the final metallurgical report on bench test production of cobalt sulphate heptahydrate from ore samples from the ICP demonstrating it can successfully produce high purity, battery grade, cobalt sulfate from the project.

Early in June of this year, Formation announced the successful conclusion of an oversubscribed \$4.4M financing with the intent to use the proceeds to fund a bankable feasibility study and for general working capital purposes.

Later that month, the company announced the awarding of the Feasibility Study contract to Micon Engineering and SNC-Lavalin with an expected completion date in Q1 2017. This feasibility study will form the basis to secure mine capex financing to re-commence construction on its cobalt project.

**CRUZ CAPITAL ACQUIRING COBALT PROJECTS**

**Cruz Capital Corp.** [CUZ-TSXV; BKTPF-OTC; A2AG5M-Germany] is actively acquiring cobalt exploration projects. James Nelson, President, says, "Cruz is aiming to be North America's premier cobalt project generator and developer. We have identified a number of under developed cobalt prospects that have some kind of historic cobalt showings that would be considered above average. Being first movers in the space has enabled Cruz to identify and secure many high priority prospects. We have started in Canada and are now evaluating North American and Australian prospects. The prospects will be available for option or selling outright making the company self-financing."

In late July, Cruz Capital acquired six prospects in Canada; two in BC and four in the famous Cobalt Mining Camp of north-east Ontario. In 1903 extremely rich silver veins were discovered which also hosted significant quantities of cobalt – not yet an important metal. By 1905 there were sixteen mines with many more to come. Cobalt became the richest silver camp in the world. Silver-cobalt mineralization was widespread, often occurring in many parallel veins and dozens of mines achieved production. The last mines closed down in the early 1980s – sometimes leaving behind attractive mineralization at today's metal prices. With the advent of lithium-cobalt ion batteries and several factories under construction, the Cobalt Mining Camp offers a compelling case for discovering and developing mineral prospects hosting the critical specialty metal cobalt.

Cruz Capital has just over eight million shares outstanding and seven separate cobalt assets. ■