Fortune Minerals: Mining for Smartphones

by Debra McCown

It's been true since ancient times: when new technologies are developed, demand grows for the raw materials they require. Particularly over the last century, as technical progress has moved forward by leaps and bounds, materials that once had little or no use have become valued commodities.

The communications revolution that's seemingly put a smartphone in every pocket–the proliferation of mobile phones and tablet computers–is no different. Everything that goes into making a smartphone or tablet comes from the ground, and that's created new opportunities for mining across the globe.

One material that's seen a boom in demand because of technology is cobalt, says Robin Goad (left), President and CEO of Fortune Minerals Limited, an Ontario-based mineral development company that's seeking to cash in on the growing demand. Fortune is traded on Canada's Toronto Stock Exchange (FT) and in the U.S. on the OTC QX (FTMDF).

Goad says demand for cobalt has grown at a compound annual rate of 5-6 percent for the last two decades–and that will likely increase as use of rechargeable battery-powered devices continues to expand.

"It's anticipated to grow at an even higher rate as we see broad-scale automotive industry electrification, expanded use of portable devices to a growing percentage of the world's population, and because of the opportunity in stationary storage cells paired with intermittent power generation from windmills and solar," he

Aerial view of NICO

Test Mining at the NICO gold-cobalt-bismuth-copper project in Canada's Northwest Territories.

says, noting that advances in battery technology could lead to a whole host of new applications in renewable energy.

As demand increases, supply-side factors are also significant and can impact the production of cobalt, Goad says. Existing sources of cobalt, for example, may be unreliable due to conflict and political factors in the countries where much of the material is mined and processed. It's an issue that's been recognized as a threat to U.S. interests and noted with concern in Europe as well.

At the present time, Goad says, about 65 percent of the world's cobalt is mined in the Democratic Republic of Congo, an African country that's anything but democratic.

"It's a politically unstable country, you have issues with supply chain transparency," he says. "Having noted the concentration of mine supply, understand that about 53 percent of the refining of cobalt is controlled by China. So on one hand you have a risk associated with mine supply because of political instability and corruption, and then there is policy risk from the concentration of processing in China, as raw materials are used by China to support their own manufacturing–and sometimes as a lever if you don't agree with them politically."

He says the recent proposed sale of the world's largest cobalt mine in the DRC to a large Chinese company–part-owned by the Chinese government–speaks to the importance of these concerns. Meanwhile, the value of the transaction–between $2.65 and $3 billion–signifies the ongoing importance of cobalt in the manufacture of high-tech products.

Fortune's response to the market is the NICO project, a gold-cobalt-bismuth-copper mining and refinery development project in Canada's Northwest Territories and Saskatchewan with a capital cost of $450 million.

"The NICO deposit has reserves of 33 million metric tons, which will support a projected mine life of 21 years, processing ore at the rate of 4,650 tons per day," says Goad. That will be concentrated through a simple flotation process to produce a bulk concentrate of just 180 wet tons per day–five truckloads–that will then be sent by rail to a refinery that's planned for construction in Saskatchewan. The refinery is being built near an urban setting in southern Canada to reduce costs and turnover.

Goad says the vertically integrated project has been test mined and pilot plant tested and has cleared a five-year environmental assessment process, making it essentially a "shovel-ready" project subject to securing the additional financing needed to

continue

begin construction.

"Cobalt is one of the essential metals in what's broadly referred to as energy metals," he says. "Cobalt is used in the cathodes of lithium ion rechargeable batteries, and they're virtually the only batteries that perform to the requirements of the automobile industry. Most portable electronic devices also require batteries made with cobalt cathodes."

The mine will also produce bismuth, a material used in a variety of products, from lead-free alloys in plumbing fixtures and electronics to certain paints and "the little black dots on the windshield of your car that protect the seal from degrading." It's another critical metal, Goad says–and it's important to have a reliable North American supply, considering 80 percent of bismuth is currently sourced from China.

"Bismuth is an interesting metal," he says. "It has very unique physical properties, including being benign. You can ingest it; it's in medicines like Pepto-Bismol. It's also one of the very few metals that expands when it cools, so if you want to produce a dimensionally stable metal or compound you need bismuth."

Producing cobalt and bismuth in a mining-friendly developed country like Canada ensures that both environmental concerns and the well-being of workers will be addressed, Goad says. Meanwhile, communities will benefit from the taxes, royalties, and jobs created–including hundreds of jobs in mining, construction, and processing. Goad says an estimated $1.4 billion will be spent in the community over the life of the mine, and $520 million will be paid in taxes and royalties.

The roads constructed to build and operate the mine will also supply important infrastructure to the Tlicho First Nation and to the public, and these roads will open areas to tourism as well as future exploration and mine development. The processing plant in Saskatchewan will have long-term potential for additional uses, including toll processing and metals recycling.

Goad says he's long been focused on the north of Canada and began exploring the area where the NICO mine is planned back in the 1990s. Development of the project has been a systematic process ever since.

A geologist and self-described "rock nerd" since childhood, Goad says he worked at a gold mine in northern Quebec before he earned degrees in geology and geochemistry from Western University. He went on to work for several different mining companies before founding Fortune Minerals.

He says he's entrepreneurial by nature, and he certainly embraces risk; the company's fortunes have waxed and waned over the years, and it has weathered its share of struggles in what's always been a cyclical business.

"We've had some pretty interesting things in this company," Goad says. "We were a more substantive company last year but unfortunately invested in a silver mine in the U.S. which just about took us down."

Fortune also sold a significant coal asset–Goad says it's the world's largest undeveloped reserve of anthracite metallurgical coal–to the government of British Columbia due to First Nations opposition to that project, but the company retains a 10-year option to buy it back, just in case.

Just past the humbling experience of how quickly the market can change–a drop in the price of silver that drastically reduced its number of employees–Fortune is focused on NICO, and the promise of metals that will help to feed the ever-growing demand for high-tech gadgets and rechargeable batteries.

Goad sympathizes with the coal industry in its current challenges, but he's also optimistic. Like other mining sectors, it has its low points, he says–but it will always return because, bottom line, the world needs resources.

"One thing for sure is that metal prices and coal prices go up–and they go down," he says, "and when it's the deepest and darkest, oftentimes things turn."

His optimism is the perspective of a man who's taken enough risks to experience failures along with success–and who knows the next big thing is always just around the corner.

"I think one of the challenges of being in the exploration/mineral development side of the business is it's a very cyclical business and the first people to get laid off and lose their jobs when you go into a bad cycle is the exploration department. And that's one of the reasons why big companies never find anything. They tend to eliminate their talent pool in a metal cycle, which is five years, and it typically takes 10 years to make a discovery," he says. "It's very high-risk, and you have to be innovative and tenacious to be able to make it."

Dr Rick Schryer, Director of Regulatory & Environmental Affairs for Fortune Minerals, collecting cattails at NICO for the development of a demonstration wetland for water treatment.

A long-term view is especially needed in the present age, he says; in just over a century, humans have gone from their first powered flight to living in space. As technology continues to advance, it's hard to predict what materials will be required next–but it will certainly drive new opportunities in the future. It's because of this trend that cobalt, once a little-known metal, is now in demand–and that's what's driving interest in the NICO project.

"There will always be a new product, and who knows what the next evolution will bring?" Goad says.

"Historically there's been people looking for the basic raw materials like copper, zinc, lead, iron, metallurgical coal, and now we're in a whole new sort of technology sector where we need access to metals and elements that nobody's even heard of before they're needed in complex electronics," he says. "You've got to understand where things are going and have the products that we're going to need when the demand is there."