



The Underestimated Potential of Cobalt Mining in Chile

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Cobalt mining in Chile offers an alternative investment stream to the lithium and copper industries.

While copper and lithium may reign in Latin America's thinnest country, cobalt mining in Chile may also prove an important contributor to the growing electric vehicle (EV) industry.

With electrification of transportation gradually taking place over the coming decades, demand for cobalt is expected to grow in the coming years. Bloomberg NEF **anticipates** that EVs, a key growth market for lithium-ion batteries, could increase from 1.1 million in 2017 to 30 million in 2030.

According to UBS Research, one in six cars globally will be electric by 2025. As many as **5 million EVs** could be on Chinese roads by 2020 given an aggressive **plan** to reduce pollution in key Chinese cities.

So why is cobalt essential to EVs and lithium-ion batteries? Alongside lithium and other metals, cobalt comprises part of the battery cathode. Because of its properties, cobalt cannot be easily substituted as it helps prevent the battery from **overheating**. Lithium-ion batteries make EVs marketable, because they pack a lot of power, hold a lot of charge and are compact in size. Though there are innovations on the horizon like the **solid-state battery**, lithium-ion batteries are expected to be marketable well into the foreseeable future and certainly over the next several decades.



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The need for ethical cobalt supply

At October 2018's Benchmark Mineral Week's **Cathode** conference at Newport Beach, David Anonychuk from M.Plan International suggested that cobalt demand could quadruple by 2035 from the current **110-120 thousand tonnes per annum**. CRU Group Analyst George Heppel shares a similar sentiment **suggesting** cobalt demand should remain strong for the next 5 to 10 years.

With the world keenly watching the impacts of mineral development in the Democratic Republic of Congo (DRC), finding stable, ethically sourced cobalt will be just as important. The London Metal Exchange is establishing a **framework** to prevent uptake of minerals from ethically dubious sources. Cobalt will receive a "higher focus" classification due to concerns about sourcing the mineral from the DRC, which is experiencing conflict, **human rights abuses** and **child labor**.

For producers and manufacturers, cobalt is a huge risk as roughly **two-thirds** of current global supply is sourced by the DRC. Because of the metal's current market value at roughly **\$49,000 US per tonne**, there is a huge need to either reduce the amount of cobalt in the EV battery or find new, large and ethical sources of the metal. Though Chile is not the only country receiving new attention aimed at its cobalt sources, it is certainly front and centre.

History of cobalt mining in Chile

Chile is a major global supplier of a variety of base and precious minerals, including copper and lithium. The South American nation remains a stable country with a mining friendly government and adequate infrastructure. Between 2004 and 2012, the nation received **\$81 billion in mining investment**, 50 percent of which was spent on infrastructure alone.

The government is also actively engaged and investing in solutions to make Chile's mining industry more effective. Earlier this decade, Chile's mining industry had to contend with skyrocketing electricity prices, scarcity of water and increased labour costs. The government has since taken proactive steps to reassure mining investors. Chile's electricity mix now contains **18 percent** renewable energy, up from just five percent in 2013. Solar and on-shore wind make up most of this increase.

The move to renewables serves two purposes: it helps the country reduce its emissions, but also enables cheaper and more secure electricity supply. Chile is prone to long droughts which impact viability of large hydro-electric projects in the country and occasionally faces natural gas supply **disruptions** from neighbouring Argentina. The mining industry stands to benefit from de-risking fluctuations in precipitation levels and importing natural gas from Argentina.

The Chilean government also actively investing in a new mining technology testing facility. Leandro Voisin, Director of the CNP mining testing centre, **suggests** that at the facility "new technologies for mining will be evaluated under almost real-scale conditions with methodologies, capabilities, and technical skills that will allow the validation of innovative products, with high value and potential market."

Cobalt in Chile's north

Late last year, the Chilean government and the University of Chile released a **preliminary report** on cobalt potential within the northern districts of San Juan & Carrizalillo Alto (Atacama) and Tambillos (Coquimbo). Though Chile does not currently produce cobalt, it did prior to 1945. Between 1844 and 1941, **seven million tons** of cobalt ore were extracted from the country.

The report suggests reassessing closed mines of La Cobaltera, Blanca, Verde, Prosperidad, Lea, Rosa Amelia and Delirio. So far, it appears samples are quite promising. Likewise, many of Chile's old cobalt mines are now getting a thorough second look from current exploration companies.

According to Ignacio Moreno of Chilean Cobalt Corp, samples with grades ranging from four percent to 12 percent cobalt have been **collected** in the San Juan District. By comparison, grades in the DRC are on average **between two percent and three percent**. The La Cobaltera Project covers roughly 1,500 hectares, including passed producing mines of Despreciada, La Negra and Rosa Amelia.

Surge Exploration (TSXV:**SUR**,OTCQB:**SURJF**,FWB:**DJ5C**) recently announced an **agreement** to acquire up to 100 percent of the Atacama Cobalto Exploration Property near Copiapo, roughly 200 kilometers north of La Cobaltera. The property is 1,059 hectares in size with 43 diamond drilled holes completed and 20,250 meters of drill core and past assays. Historic assay results from this property have yielded positive cobalt values over large drill core lengths. The company is proceeding with the development of a NI 43-101 Geological Report, a 3D model based, and a follow up exploration program based on historical results to determine the property's overall cobalt potential.

New Energy Metals, meanwhile, has also **acquired** several historical mines in the San Juan district near La Cobaltera. The company initiated an exploration program last summer to help delineate high grade cobalt sources on its project.

Takeaway

Companies that acquire ethically sourced cobalt will be well positioned in the future as increasing electrification boosts demand for lithium-ion batteries and the cobalt that comprises a part of the battery cathode. Though innovators are seeking to phase out the use of cobalt in batteries, a new large, ethical source is still needed. Cobalt mining in Chile offers a very promising alternative to the DRC, which continues to raise concerns for manufacturers looking for ethically-sourced cobalt.

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