



Sub-Saharan Report [Business Plus]

These reports are by Mr. Ryota Kikkawa, an expatriate employee working in Johannesburg with a view across the region.

Business Plus

With a growing population, abundant natural resources, and enormous infrastructure and industrial development potential, Africa, particularly sub-Saharan Africa, has been called the “Continent of Hope”. In Marubeni’s mid-term management plan, “Global Challenge 2018”, sub-Saharan Africa has been cited as an important region to actively pursue opportunities to lay the groundwork for future business.

The Marubeni Research Institute has modified the “Sub-Saharan Report”, which basically presented an overview of sub-Saharan countries, to focus on the latest business trends and prominent business models in the region, including Marubeni’s own businesses. This revised version is called “Sub-Saharan Report [Business Plus]”.

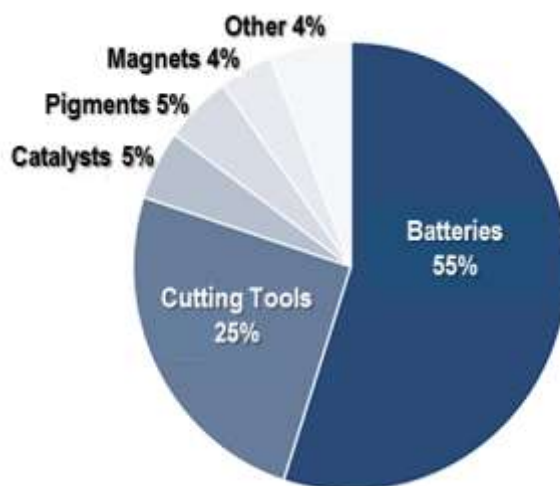
World Focuses on the EV Battery Material Cobalt - Marubeni’s Cobalt-Related Business

March 29, 2019

What is Cobalt?

Cobalt is a type of rare metal with various characteristics. One of the main uses of cobalt is for lithium-ion rechargeable batteries (LiBs) which are in turn used in smart phones and electric vehicles (EVs). Cobalt acts as a positive electrode material in LiBs (please see the July 2018 Sub-Saharan Report for a description of the LiB’s mechanics). Cobalt can also be melded with steel to form cutting tools for metal processing due to its hardness, and heat and corrosion resistance features. Other applications are in the manufacture of magnets attributable to its ferromagnetic properties and in pigments and coloring owing to its blue-based color and is where the term “cobalt blue” comes from (graph 1).

Graph 1: Cobalt Applications

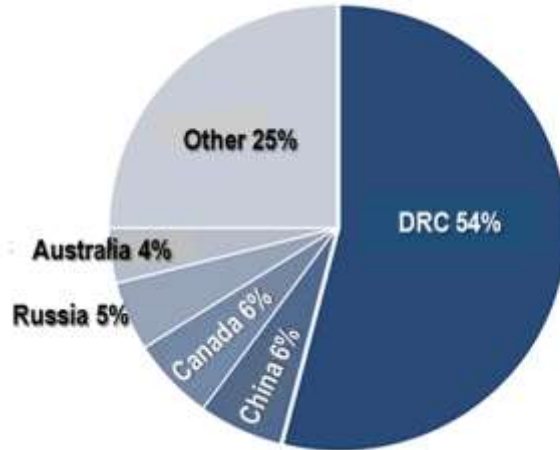


Source: Roskill

In terms of cobalt reserves, it is very unevenly distributed. Most of the world’s cobalt comes from copper deposits found in Central Africa (Democratic Republic of the Congo, Zambia), and from nickel deposits in Canada and Australia. According to the U.S. Geological Survey (USGS), the DRC has the largest reserves of cobalt (3.5 million tons) followed by Australia (1.2 million) and Cuba (500 thousand). As far as cobalt production goes, the DRC accounts (64 thousand tons) for an overwhelming amount of the world’s total production (graph 2) (picture 1). However, many owners of these cobalt mining interests are Chinese, with Chinese-based capital holding one-third of the world’s cobalt mining interests, including such

Chinese government affiliated companies as China Molybdenum (CMOC). In terms of cobalt smelter production by country, China accounts for the majority of this production. China, which is beginning to monopolize the market for cobalt, could cause worldwide supply shocks just as occurred in the 2010 rare earth metals shock (note 1).

Graph 2: World Cobalt Production by Country



Source: Japan Ministry of Economy, Trade and Industry



Picture 1: Cobalt mine in the DRC
 (Picture taken by Marubeni's Johannesburg Branch expatriate staff.)

Demand for LiBs is expected to increase along with the spread of EVs. According to Fuji Keizai the automotive LiB market is expected to expand 3.6 times (in monetary terms) by 2030. As such, the demand for cobalt is also expected to grow going forward together with the demand for LiBs. On the other hand, on the supply side due to the rise in cobalt prices up until last year new cobalt development projects were being considered worldwide, especially in the DRC, however, with the recent drop in cobalt prices it is unclear whether these projects will actually go ahead or not. In addition, in 2016, Amnesty International pointed out that cobalt mining has been carried out under extremely harsh labor conditions in many areas by mining companies (note 2) and noted the importance, which has been gaining support, of procuring raw materials that are being produced in an ethical or clean fashion. Currently, it is said that about 80% of the total supply of cobalt is made up of clean ores (note 3). While there is no government oversight of the mines in the DRC and the illegal individual hand digging of cobalt is expected to continue, the call for clean cobalt has intensified, so it is expected that the supply and demand of clean ores, including clean cobalt, will tighten.

It was anticipated that cobalt prices would continue to increase on the back of the expanding EV market, and in fact cobalt prices rose to the mid-\$40 range per 1 pound of cobalt in Europe in April of 2018. However, cobalt prices began to soften

thereafter and fell below half of their peak prices due to fears of oversupply from new cobalt development project momentum as well as increased inventories in China. Still, as mentioned, cobalt supply and demand is expected to remain tight and cobalt prices should moderately recover in the mid-term.

Marubeni's Cobalt Trading

Marubeni has a long history in the trading of cobalt that goes back more than 30 years. Zambia, where Marubeni is involved, is most famous for its copper, but Zambia's many copper mines also produce cobalt. According to the USGS, Zambia has 270,000 tons of cobalt reserves (5th in the world) and is producing 3,000 tons annually. Marubeni has been importing copper to Japan from its Zambian trading partner Chambishi Metals (see the June 2018 Sub-Saharan Report on Marubeni's Zambian copper business). Marubeni now also imports about 600 to 800 tons of Zambian cobalt from them and sells it to such Japanese customers as battery manufacturers, rare metal magnet makers and specialty steel producers. Marubeni expects to expand its handling of cobalt along with increases in production at the current mines.

Prospects for Marubeni's Cobalt Business (Mr. Yoichiro Suga of the Non-Ferrous Metals & Ores Trading Department)

Recently, automakers have been focusing on developing and increasing the production of EVs, so the demand for cobalt used in LiBs is expected to grow. Among Japanese automakers, Toyota Motor has set up a new company with Panasonic to manufacture batteries for EVs. Also, as moves to secure cobalt are intensifying, a joint scheme to procure cobalt is being considered under the auspices of Japan's Ministry of Economy, Trade and Industry.

Conversely, many suppliers of such cobalt materials used in LiBs as cobalt sulfate and cobalt oxide are from China. It has been pointed out that it is possible that some of the cobalt materials supplied by them may be derived from forced labor and child labor practices in the DRC. However, automakers and device manufactures have been increasingly calling for a clean cobalt supply chain (picture 2).

Under these circumstances, Marubeni will apply its knowledge of the cobalt industry and leverage customer relationships to further strengthen its (clean) trade of cobalt materials and cobalt products, while formulating competitive strategies to expand the cobalt business including investment in cobalt smelters.



Picture 2: Crude cobalt hydroxide exported from the DRC
(Picture taken by Marubeni's Johannesburg Branch expatriate staff.)

Note 1: Rare earth metals are rare metals that are essential to next generation and advanced technologies as functional materials. China accounts for the majority of the world's rare earth metals and in July of 2010 it set export restrictions on them triggering soaring prices in the rare earth metal market and creating turmoil among many parts makers and product manufacturers worldwide.

Note 2: Refer to Amnesty International's "This is What We Die For" (2016).

Note 3: Ores that are certified as mined without forced labor or child labor.



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In order for the Marubeni Research Institute to acquire first hand information from the field and contribute to the company's strategy, young Marubeni staff well-versed in economic and industry analysis have been posted to the region.

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