

Pathfinder Investment Outlook

For the week ending November 6, 2020

Copper Deposits and Characteristics

Copper plays an integral role in modern life through its role in everyday infrastructure—a role that is set to increase as the need for renewable energy rises (figure 1). It is estimated that a shift to green energy will require significantly more copper than conventional power generation methods. For example, almost three times more copper is required for electric vehicles compared to conventional vehicles. The importance of this is the global demand for copper is poised to exceed supply in the future driving the price of copper. This rationale is the basis for our long-term copper thesis which coincides with a tightening supply due to lack of discoveries (20 years required to advance a project from discovery to production). These factors will affect the long-term copper pipeline and, in turn, provide a favourable outlook for the commodity price going forward.

Copper mineralization occurs in many forms and different geological settings but is largely dominated by porphyry copper deposits. Currently, Chile is the world’s leading copper producer followed by Peru and China. Not surprising, the world’s largest copper deposit is in Chile—the Escondida mine which has close to 6 billion tonnes (Bt) of mineable ore at 0.64% Cu and an additional 10 Bt at 0.50% Cu that could also be mined in the future. The global average is approximated to be 500 Mt at 0.62% copper.

Porphyry deposits are typically polymetallic either copper-molybdenum or copper-gold and usually have a silver credit. The western coasts, North and South America, are where the majority of deposits are found due to converging tectonic plates. At these subduction zones, heavier and denser oceanic plates are forced down under continental plates (lighter due to mineral composition) into the asthenosphere where the plate begins to melt causing magma to rise up through the crust. As discussed in our earlier outlook, the rising magma leaches elements from the surrounding rock concentrating them in the rising magma only to be deposited at a certain depth. The deposits are classified as porphyries because of the texture of the rock. As the magma rises, different minerals precipitate out of solution due to differential cooling which creates larger crystals within a finer grained groundmass. The main copper mineral associated with these deposits is chalcopyrite (CuFeS_2) which contains about 34.5% Cu.

“This means that” porphyry deposits account for 60-70% of global copper production and as demand increases new deposits must be found, namely porphyries, to replace the current pipeline. The ongoing shift to renewable energy and electrification is a clear indication of the importance copper will play in the future and hence the companies seeking to find new deposits.

Gary Sidhu, MBA | Analyst

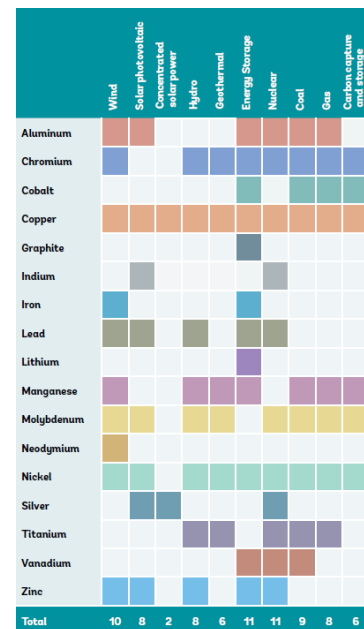


Figure 1: The role of copper in modern day electrification and need in renewable energies underpins copper's importance (source: World Bank Corp).



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Sources: Bloomberg, Pathfinder Asset Management Limited

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