Copper Mining and Extraction in Cyprus - from Ancient Heritage to a Green Future

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Cyprus has been associated with copper mining for ~6,000 years. Modern mining commenced in the 1920s, with >74 Mt of ore extracted from ~30 deposits over 50 years. The primary processing method for the sulphide-rich ores associated with the volcanic massive sulphide (VMS) deposits was flotation; oxide material was not amenable and was stockpiled.

Most historic deposits were outcropping and little effort was placed on exploration for "blind" deposits, with activities peaking between 1950 and 1970. The events of 1974 caused the annexation of processing facilities from the mines, leading to accelerated decline in the sector. Operators were forced to adopt new extraction methods, including from low-grade sulphide stockpiles by heap leach, then later (1995-2020) pioneered developments in solvent extraction and electrowinning (SX-EW) technology for processing oxide material.

Most copper mines in Cyprus remain abandoned, while the mine closure and rehabilitation requirements of the past have caused environmental legacies such as acid mine drainage. Despite this, opportunities exist to extract copper and other commodities that were considered uneconomic when first mined. SX-EW technology is capable of being optimised for the recovery of metals from waste at 11 historic mine sites, enabling their holistic rehabilitation to benefit both the environment and local communities. Furthermore, improved energy efficiency and the use of renewable power provide reductions in operating costs. A recent pilot study is considering copper and gold recovery from the Kokkinoyia mine, to reprocess 300,000 tonnes of waste and stockpile material.

Cyprus represents a unique opportunity in Europe for “green” copper. Several sites are largely fully permitted, enabling shorter lead times to commercialisation, with additional environmental, social and governance benefits and strong government and EU support for such initiatives. Further, several deposits contain potentially economic primary resources, and with advancements in exploration technology, the discovery of buried deposits is increasingly probable.