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Can a Simple Price-rise Unlock Complex Copper Orebodies?

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ABSTRACT

Numerous recent analyses have shown that future demand for a broad range of critical commodities is unlikely to be met by new discoveries and recycling alone. The only practical alternative source to address this shortfall comes from orebodies which are currently either uneconomic or inaccessible. A common assumption is that a simple rise in commodity price will render these deposits economic.

A preliminary assessment of a widely-accessed global database for copper orebodies shows that there are more than 300 projects with a resource of greater than 500,000 tonnes of copper metal that are currently not in production and have no clear development timeline. These projects, which together account for approximately 1 billion tonnes of copper metal, were selected on the basis that impediments to operation are likely to be representative of a broader range of mineral commodities. A series of proxies were developed to assess risk related to eleven separate areas potentially affecting project development, including: grade; ore variability; water risk; tailings disposal; permitting; legal challenges; community opposition; land use competition including artisanal scale mining; deleterious elements; biodiversity and infrastructure. These proxies were based on a combination of technical information from the database, summaries of information from company public filings, and publicly available spatial and country-level datasets relating to social, economic, business and environmental factors.

Our analysis indicates that low grades are an important challenge in slightly less than half of the tonnes of copper metal accounted for in the database. A similar or greater number of tonnes of future copper supply show above average risks related to water stress, tailings disposal, permitting and community-related factors. Less than 3% of the copper metal tonnes represented by the dataset have low grades as their only challenge, negating the suggestion that lack of supply can be addressed by simple commodity price increases. On average, projects in the database show heightened (top two quartiles) levels of risk in 5 of the 11 areas analysed. Our analysis suggests that a range of innovative approaches crossing the social, legal, environmental and technical areas will be necessary in order to unlock future mineral supply from existing complex orebodies.