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Accounting for social and environmental complexities in mining project developments: the case of copper

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ABSTRACT

A significant proportion of mineral resources around the world are currently on hold, and a common assumption is that a rise in commodity prices will make these deposits economic. However, grades and other mineralogical considerations are not the only factors that influence the viability of known ore deposits.

There has been an extensive amount of research studying the impacts mining activities have on their social and environmental context. Comparatively less research is dedicated to evaluating how social and environmental (SE) factors may affect the viability of a mining project at different stages of its life cycle. It is important to better understand the dynamics of such interactions in order to evaluate the potential impacts of improvements in these areas. In particular, this project aims at demonstrating that SE factors have a determining role during a mining project's most vulnerable pre-production stages. Acknowledging this is essential for the mining industry to better understand the full spectrum of risk facing pre-development projects. Developers of mining projects need to have a better framework in which to consider these factors as part of their risk assessment, and take them into account when making investment decisions.

This project investigates the way SE factors are reported in a widely-accessed global database for copper orebodies. In this database, we focus on 309 projects that are currently not in production and have no clear development timeline. A first step in our analysis was to develop, refine and test a set of 'negative' keywords (i.e. indicative of a problem) that we used to search the database. These keywords were arranged in three categories: environment, social and legal. We recorded the number of times keywords were found within the information available for each project. It was found that 196 out of the 309 projects contained five or more of these keywords, indicating that some concerns were raised on these topics. The second step of our analysis was then to investigate gaps in the database. The top 40 largest deposits were reviewed individually in order to determine whether the information in the database reflected the reality of the SE complexities these projects are facing. It was found that a large majority of cases (31/40) had significant SE challenges that were directly contributing to delaying the project's start. It was also found that, in many cases (22/40), the situation was underestimated and critical information was missing in the database. We argue these two statements with three striking examples.