Alternative Energy Roadmap for the Mining and Mineral Processing Industry

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# ABSTRACT

Global drivers such as the ongoing transition to a net-zero emissions, circular economy as well as rising energy costs and global action on climate change are causing mining companies to consider how they will power their mines and mineral processing facilities into the future. Demand for the outputs from the mining industry is set to increase into the future as the world will continue to need metals and minerals but, to meet global goals, there will be a requirement for all industries to reach net zero emissions during the 21st century.

This paper explores the key energy users for a number of different hydrometallurgical and pyrometallurgical processes and considers roadmaps for rollout of key technologies for meeting energy needs in a manner which supports global and national goals. This includes the use of renewable energy sources, energy storage options, technology to firm renewables, the use of liquefied or compressed natural gas and the potential for hydrogen. Both mobile and stationary equipment are considered and the roadmaps to transition these to alternative energy sources presented. Consideration is given to the technology readiness levels of technology presented in the roadmap and the timeframes in which they may become commercial. Barriers and enablers for greater uptake and commercialisation of these technologies is also discussed.

This information on alternative energy pathways for mining is critical as mine sites make long term strategic decisions on existing and future projects. Long term plans based on this information will help to reduce exposure to risks associated with the global economic transition and enable companies to take advantage of opportunities.