Key Trends in Technology: an Analysis using Patent Data

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# ABSTRACT

As Australia looks to increase its supply of critical minerals, investing in new technologies will become increasingly important. The mining sector remains one of the greatest contributors to the Australian economy, accounting for ~15% of our GDP in 2023. For Australia to fully realise its potential as a supplier and producer of critical minerals, it is also important to understand the state of development of its technology.

Using patent data, we explore and identify emerging trends in critical minerals both locally and globally. We create topographical maps of patent data to show us the parts of the supply chain which are attracting the most innovation and those which will require further development. This enables us to pinpoint gaps in research areas. These gaps correspond to less competitive areas with regard to R&D and/or IP filing. The gaps can also correspond to vital sections of the supply chain which require development.

We also look at emerging trends in technology for different critical minerals to identify the trajectory of innovation. This helps us to understand how technologies related to the exploitation of critical minerals such as mining, ore processing, refining, etc. are changing over time.

Finally, as companies look to add value to critical minerals, strategic partnerships between major players will become more crucial. We map the activity of competitors, which can help to identify potential research or commercialisation partners.

From our analysis, key recommendations are presented in which we show the “hot” areas for innovation and identify crucial gaps that need to be filled to ensure that critical mineral supply can keep pace with demand.

*Theme: Showcasing new technologies*