

2025/11/09 opinion piece on critical raw materials

As a think tank that focuses on the financial sector, we have hosted two Masterclass webinars on critical raw materials, because we recognised that South Africa was in a unique position to capitalise not only on the coal economy of the past, but to extract additional value from the current energy consumption of coal.

Critical raw materials (CRMs), also known as critical minerals, have been popularised by the geopolitics of the day. CRMs are integral to the countermeasures for environmental challenges of a rising global temperature, which have been embedded in societies consciousness. CRMs contribute as raw materials for energy battery storage, wind turbines, photovoltaics, robotics and much more.

Since South Africa has been the hub of mining for decades, secondary sources of CRMs such as coal mine dumps, acid mine drainage, sludge, and mine tailings offer an unprecedented opportunity to finance the cleanup of these historical coal landmarks. Not only are they cheaper options to accessing the ore body itself, but they will consume less water and energy since they are easily accessible.

This is where our interest as the Centre of Excellence in Financial Services (COEFS) was piqued. The approach to coal has become one sided. “Coal is bad”. There was no appetite for a conversation around investing in coal research, and we saw an opportunity to reframe this discussion. The challenge was to make investors and financiers more comfortable with the opportunities, unrelated to coal for energy generation. The financing of this research to address these legacy coal landmarks as a societal good, and with the current electricity generation programme, to develop CRM extraction processes before burning the coal, would be advantageous to the country. A knowledge driven approach through science.

The second opportunity for finance was more complex. We discovered that each coal deposit had a different combination of CRMs with different qualities of the various minerals. Taking samples of every coal deposit to analyse the quantum of CRMs is another opportunity for South Africa to develop a map of CRM rich coal deposits so that intelligent extraction can be optimised, during the global window of demand. This will further enhance the knowledge and understanding of how these CRMs are associated with various properties of coal.

South Africa needs to move away from looking at CRMs as a resource, only available from primary sources such as ore deposits. There is a substantial opportunity to explore the extraction of CRMs from secondary sources. This will lead to industrialization opportunities especially with the country’s commitment towards the green economy.

Instead of simply burning coal to create electricity, the extraction of rich deposits of CRMs from the coal, before burning the coal, would enable South Africa to “stockpile”

these scarce minerals. As a country, we have missed many global resource booms, and our approach to extracting CRMs may arrive too late to benefit, as new technologies will rapidly emerge, like flow batteries, and change the need for the minerals we have today. We are already struggling to map our CRMs and have yet to benefit from the downstream manufacturing opportunities that present themselves.

Developing a South African downstream of manufacturing electric vehicle batteries and other commodities, creates substantial value retention for South Africa, rather than the traditional export of raw materials and import of finished goods. The country has already promulgated policies and regulatory frameworks that supports the green economy. In 2023, the DTIC published a White Paper on Electric Vehicles. In May 2025, The DMPR launched a Critical Minerals and Metals Strategy which followed by the DTIC publishing a South African Renewable Energy Masterplan in July 2025. The green economy is envisioned to be more mineral intensive, and there will be a clear need for CRMs as they are indispensable for modern economic sectors.

As COEFS we believe the clarion call for CRMs must be that we need to be intentional in our approach. The national strategy should be based on science, and that science, which we have demonstrated is available already, needs to be funded so that we can map South Africa's endowment of resources and allow entrepreneurs to invest with confidence in this window of opportunity.