

Smart mining is the key to competitiveness

By [Eric Croeser](#)

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Smarter mining, embracing the total value chain and finding solutions to the new realities that the industry faces, holds the key to remaining competitive in a fiercely contested marketplace. It is critical to apply new thinking in response to the changing global demand/supply balance and to leverage new technologies to promote an entirely new way of working in mining.



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The industry has much value and potential which can be realised by staying abreast of innovation and leveraging technology for smarter precision mining, while having the agility to adjust to the supply or demand balance throughout the mining value chain.

Respond proactively to the changing bulk commodity mining landscape

Bulk commodity mining has a significant role to play in mining in South Africa and the country's GDP growth.

According to MiningMX, [mining's contribution](#) to GDP dropped to 7.7% from levels as high as 9% in 2011. South African mining companies returned R27bn in dividends to shareholders in the 12 months ending in June 2019. Half of the contributions were made by miners of bulk materials; the contribution of iron ore production was 12%, up from 10% in 2018, and coal remains the largest revenue driver for the South African mining industry, at 28% of total revenue, but it was down marginally from 29% in 2018. The manganese market share grew, and South Africa now accounts for approximately 80% of the world's identified manganese resources and is also the largest producer of manganese globally.

The Minerals Council suggests that [/ https://www.mineralscouncil.org.za/downloads/send/18-current/682-facts-and-figures-2018-coal-has-an-export-potential-of-110-million-tonnes \(Mt\)](https://www.mineralscouncil.org.za/downloads/send/18-current/682-facts-and-figures-2018-coal-has-an-export-potential-of-110-million-tonnes-(Mt)) (versus the current 75Mt) whilst domestic demand comprises 120Mt annually. However, the International Energy Agency (IEA) has predicted that [the International Energy Agency \(IEA\) has predicted that \[https://www.moneyweb.co.za/news/international/clean-energy-investment-is-set-to-hit-2-6trn-this-decade/ investment in renewables](https://www.moneyweb.co.za/news/international/clean-energy-investment-is-set-to-hit-2-6trn-this-decade/) will amount to \$322bn a year through to 2025, close to triple the \$116bn it expects will go to fossil fuel plants.

Environmental sensitivities

It is also a reality that South Africa is located far away from the major bulk commodity consumption markets, specifically China and India, meaning transport and logistics impacts its competitiveness in the international marketplace. To overcome the additional cost requires a focus on the entire value chain to include beneficiation beyond the traditional scope and to redefine the way in which South African bulk commodity miners approach business. At the same time, they must embrace smarter technology, integrated through the value chain.

The economic realities, coupled with pressure from a society increasingly comprised of millennials and Gen Z and focused on the sustainability of source, will impact both supply and the way bulk commodities are produced. Environmental sensitivities and heightened demands on safety have impacted the way in which mining is approached. The need to contain waste, mitigate carbon emissions and reduce overall mining footprint resulted in calls for improved integrated environmental management and greater safety throughout the value chain. Precision mining post-blast has and will become more important as end-to-end value chain solutions and practice are embraced, with options like waterless beneficiation becoming more appealing across the sector.

There is a gradual but visible shift in the commodities mix. Technology sector advances will bring with it a stronger focus on metals and therefore bulk commodity providers will need to rethink the way in which they work and offer their product. New offerings like steel sheeting 'as a service' and the ability to recycle technology will also impact supply.

The sector is a key employer; it is the third largest employer of skilled employment in South Africa. Advances and the new way of doing business, alongside the changing demographic of the workforce, bring with it fierce competition to attract top talent with emerging skills. New and advanced skills are required to succeed in the mining business today where the focus has shifted, and technology has a key role to play; this requires attracting fresh talent and critically reskilling the current workforce.

Embracing new thinking and new technology

Throughout the mining value chain, digital technology has a role to play to increase competitiveness, ensure greater profitability and mitigate risk in a smarter way.

Safety and productivity remain paramount in mining. Automated processes leveraging improved and increased machine data in near-real time, and the ability to use cloud-based infrastructure, enables mining businesses to use their data in a far more efficient and effective manner for value driven, data-based decision making. The quantum shift in data analytics brings significant impact for managing mining safety. The ability to now record non-events can now provide more complete information and impact biased perspectives and the manual motivation to report on all risk factors. Working in this smarter way, miners are increasing the computing of both structured and unstructured data to predict more accurately and manage their safety in a significantly improved manner. New systems provide resource visibility, management consistency, and operational control for cloud optimization and scale, amidst changing business needs.

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