

The potential for South Africa's mining sector to drive renewable energy investments

By Wilco de Villiers, issued by Yellow Door Energy

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In recent years, the emphasis in the global mining industry has shifted from mere energy cost savings and carbon footprint reduction to a more critical concern: energy security. Mines now grapple with questions such as how to keep their operations running during load shedding, load curtailment, or when the grid is not available at all. This shift has sparked an exploration of renewable energy as a means to ensure energy security while reaping various other benefits.

Defining the value of renewables to mining

To meet the imperative of energy security, mines must adopt a holistic approach that encompasses both energy generation and demand. A comprehensive understanding of the entire energy system and its requirements is crucial for achieving stability. While wheeling energy can contribute to reducing energy costs and carbon footprints, it falls short in providing the needed energy security.

In order to achieve true energy security, mines must consider incorporating technologies such as battery energy storage systems (BESS), generators, or a combination of both behind the meter. Adding on-site renewable energy sources can not only reduce overall energy costs but also ensure uninterrupted production during grid disruptions. The value of this approach goes beyond cost savings and carbon reduction; it translates into averted production losses.



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Contracting models

In the pursuit of renewable energy projects, mining companies have three primary contracting models at their disposal:

- Power purchase agreements (PPA)
- Engineering, procurement and construction (EPC)
- Engineering, procurement and construction management (EPCM)

Among these, EPC stands out as the preferred choice for outright procurement. Under the EPC model, the contractor assumes responsibility for the entire project, from design to procurement and successful integration. This approach places the project risk squarely on the contractor until the system has been delivered successfully and warranties have expired.

Conversely, many mining contracts are executed through EPCM models. While this approach may be comfortable for mining companies, it shifts more risk onto the mine, leaving only engineering man-hour risks with the EPCM contractor.

On the other hand, power purchase agreements (PPAs) offer a compelling alternative, allowing mines to focus on their core operations. When executed in partnership with a team that comprehends the mine's specific requirements, PPAs can provide additional value beyond mere cost savings. This approach permits the incorporation of system enhancements that might have been capital-intensive if delivered through EPC or EPCM models.

Additionally, the different return expectations of renewable energy investors compared to traditional mining investors can make such transactions more cost-effective. Independent power producers, in particular, absorb project risks and negotiate

risk-sharing arrangements with off-takers (mining companies).

How load shedding has affected the mining sector

South Africa's mining sector, a vital contributor to the country's GDP, faces a significant threat from recurring power blackouts that have plagued the nation for years. Among the most severely affected subsectors is platinum mining, a critical component of the country's economy due to its prominent role in catalytic converters for vehicles. Platinum production relies heavily on electricity, given its intensive underground mining and surface processing requirements.

Load shedding poses a direct threat to South Africa's platinum supply chain, disrupting operations and causing damage to equipment. A reduction in platinum output could lead to higher prices and reduced demand for platinum products, impacting not only the automotive industry but also other sectors relying on platinum.

As noted by Deloitte, energy constitutes a substantial expense, accounting for approximately 30% of total cash operating costs for mining companies. This situation underscores the significant opportunity for these companies to leverage renewable energy solutions to lower costs, enhance safety, improve reliability and sustainability, and mitigate risks.

Leading the charge in renewable energy investments

Energy security has become a critical concern for mines, and renewable energy solutions offer a pathway to address this challenge while simultaneously delivering cost savings and environmental benefits.

By exploring contracting models like PPAs and EPCs, mining companies can embark on a sustainable energy journey that not only strengthens their operations but also contributes to the overall economic and environmental wellbeing of the region. Embracing renewables is not just an option for our mining sector, it is a strategic imperative for the industry's future.

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