

Addressing post-pandemic challenges in the mining industry

The South African mining industry has managed protocols around Covid-19 exceptionally well, but pressing challenges that were on the backburner are demanding renewed attention. These include - amongst others - the reduction of their carbon footprints, enhancement of health and safety measures and creation of sustainable communities beyond the life of the mine.



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Protecting a concentrated number of people working in a confined space from Covid-19 is not an easy task. "While the industry did experience a dip in production during the initial lockdown phases, mining houses did remarkably well in controlling their environments, educating their employees and ensuring a high level of compliance. In fact, the sector did so well that it grew its revenue by 40% in the last financial year, assisted by a boom in commodity prices," says Alan Wingrove, managing director, Gibb Mining.

In pursuit of net-zero emissions

One of the key challenges for the mining industry – in South Africa and globally – is the pursuit of net-zero emissions by 2050, in alignment with the 2015 Paris Agreement.

Wingrove says strategies to address this goal must include the streamlining of operational efficiencies, use of renewable energy and electrification of equipment. "There has already been a significant commitment made by the mining sector to progressively move away from diesel to battery-powered vehicles or hydrogen fuel cells. Anglo is testing a haul-truck using a hydrogen fuel cell / battery combination with the intention of expanding it to all operations.

“With the Department of Mineral Resources and Energy’s stated commitment to permitting mines to generate their own energy (distributed generation), most of the large mining houses are pursuing alternative energy sources, especially solar power. Mines have an advantage when it comes to renewable energy as they generally have the space to install solar or wind technology,” he says.

These self-generation schemes will supplement the supply from Eskom, thereby reducing the burden on the main grid. The licensing of such processes, including the wheeling of power across the Eskom grid, needs to be clearly documented and supported by the National Energy Regulator of South Africa.

He says incorporating renewable energy sources into the power mix has become more viable as demand for the technologies has intensified and made it a more affordable option. “To adopt renewable energy does, however, depend on factors such as the remaining life of mine and whether there is a techno-economic business case to supply the entire mine, which typically requires between 40MW and 60MW.”

Creating value for local communities

Wingrove says creating real value for local communities is a key consideration for the mining industry. “Local communities are key stakeholders in mining projects and securing their buy-in / social licence to operate requires a multi-faceted approach.

“Not only do mining houses need to provide job opportunities and transfer skills to people in local communities, they need to have strategies in place that facilitate sustainability beyond the life of mine. In many instances, they also need to explore the creation of enabling infrastructure (roads, hospitals, schools), health services and ICT networks, amongst others.”

Importantly, mining houses need to ensure local communities are engaged with from the outset of new mine developments and/or expansion opportunities. In addition, local communities need to be equipped with the skills and means to sustain themselves beyond the life of the mine. This requires a deep understanding of the issues they deal with on a daily basis and determining what their expectations are beyond the life of mine – rather than the mine deciding what it believes is best for the community.

“One of the most obvious options is to upskill people during the life of the mine and provide them with technical and commercial skills required to run their own businesses after the mine’s end of life. While this is a well-intentioned move, it can fail if there is no demand for those particular skills or offerings within the local area or surrounding communities,” says Wingrove.

A more viable option, he says, is to look at what else can be done to ensure the sustainability of communities. “Some of the initiatives my team has explored is the generation of power that goes beyond the life of the mine via solar, wind or biomass systems.”

Typically, mines have large tracts of land that are refurbished at the mine’s end of life. These are not necessarily suitable for growing food crops, but can be used to grow grasses and other organic matter as a source of biomass for energy generation. A secure source of energy for local communities not only allows the pre-mine closure standard of living to be maintained through sustained electrification of households, but empowers local communities to continue to participate in a range of economic activities including small to medium scale manufacturing, agriculture and tourism, ultimately improving their economic status.

“Agricultural support is an effective way of boosting communities beyond the life of the mine. On the most basic level, this translates into a source of food, but agricultural projects can be developed into viable commercial operations. However, for

this (and any other industrial concerns), the community needs a source of fairly cheap and clean energy,” he says.

Better decision-making for improved health and safety

Health and safety are – and always will be – key focus areas for mining houses with the emphasis on finding ways to improve the effectiveness of their safety management plans.

The use of integrated digital platforms for the management of mining operations is critical for driving improved efficiencies and ensuring effective decision making based on equipping management teams with real-time information at their fingertips. There is an important safety improvement spin-off in that there is a reduced number of ‘crisis management’ events. Crisis management typically results in increased safety risk due to poor or misinformed decisions being taken. Digital platforms have the ability to harness information from many areas of influence, equipping the management team to more fully assess and appraise ‘what-if’ scenarios leading to quick and better-informed decisions.

Wingrove says effective use of digital platforms can help mines avoid relatively low-risk situations from escalating due to poor decision-making. “There are several vendors in the market that offer these technologies, which can be customised to meet the specific needs of a particular mining operation. At the end of the day, when mine management is placed in a position to make good decisions – and do it quickly – they can improve the safety performance of their operations significantly.”

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