

Creating a sustainable cycle

Mining may longer be a dominating force in the economic landscape, but it still remains a tremendously significant player. The mining industry accounts for 20% of all investment in the country and generates R441bn in expenditure annually, of which R407bn is spent locally.



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Despite its importance, the mining sector is facing severe pressure on various fronts, including costs, environmental liability, and the lack of a cohesive strategy in terms of minerals demanded by the future green economy.

Challenges

“On a global front, mining operations face severe economic and financial challenges, including escalating costs, reduction in resources, labour availability, and effective labour utilisation. The gold mining industry, particularly in South Africa, is facing gold price volatility, where rising costs, decreasing commodity prices, lower ore grades and labour issues are squeezing profit margins and ultimately affecting competitiveness in the industry. This is a catch-22 in terms of the growth of the South African industry, as it makes strategic planning very difficult,” Tshego Motsoenyane, chief operating officer at Ncamiso Mining says.

“The sustainability of mining in South Africa is heavily affected by the social implications of widespread labour unrest which imply a lack of trust and transparency between the mining companies and the employees. The company and employee goal alignment issues affect productivity and profit yield resulting in further wage issues. If these issues are not addressed, the sustainability of the industry is seriously compromised.”

Supply of technology minerals

From a global strategic perspective, matters are even more perturbing. As pointed out recently in a peer-reviewed paper in *Nature*, the future sustainability of mineral supply is far from assured. Data and demand forecasts on the sustainability of global mineral supplies in coming decades show that not enough mining exploration is taking place to keep up with the future demand for minerals and that mineral recycling alone won't fill the gap.

Cause for concern is the supply of technology minerals needed to produce laptops, cell phones, electric cars, solar panels and copper wiring for homes, as well as base metals like copper. The paper recommends the coordination of international mineral supply through global resource governance and the sharing of geoscience.

“At a time when the world is making the transition to a low-carbon society, we have to realise that great quantities of metals and minerals are going to be required in order to manufacture the clean technologies that the green economy needs. We have to ask ourselves, where should exploration efforts be focused? What kind of minerals are we likely to find in different locations? When we know this, we can decide what kind of agreements various countries, especially in Africa, need to make in order to make the most of the minerals,” Mosa Mabuza, acting chief executive officer of the Council for Geoscience, explains.

Sustainable development

Geographic information systems (GIS) play a key role in this regard. “With GIS, we can overlay and analyse interdisciplinary data, such as geological maps, geochemical surveys, geophysical images, drillhole data and mineral resource studies. Supplied to mining companies, this information helps them to better understand the geographic or spatial relationships that impact mining and exploration concerns around sustainability, profitability, and environmental issues,” he says.

However, there is a silver lining. By thoroughly integrating sustainability principles in mining planning and operations, mining companies can reduce the sector’s current social and environmental deficit while growing the economy and creating jobs; truly placing mining at the service of the nation.

“The most commonly used definition of sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The three dimensions of sustainable development (social environmental and economic) are interconnected and equal.

More insightful model

“What has emerged is a more sophisticated and insightful model, in which it is seen that these three elements are not equal, but rather hierarchical, since there can be neither social nor economic development on a deteriorating environment.

“By providing adequate financial provision for actual and latent or residual impacts and rehabilitation, preventing pollution and concurrently rehabilitating the degraded areas, mining companies can assure sustainable future (post-mining) land uses with associated resources (such as water) and viable livelihood opportunities in the post-closure mining phase.

“They can prevent legacy impacts such as acid mine drainage, radioactivity, dust fallout, seismicity and sinkholes, abandoned radioactive mine residue areas, polluted wetlands and rivers, degraded land and high salinity, the costs of which are currently carried by the domestic sector, future generations and the environment. Beyond that, they can improve the quality of life for communities and future generations without exacerbating poverty. Finally, they can limit their long-term liabilities and the effective closing of the mine.”

The message is clear: by sustaining the planet and the people, mining companies can sustain their profits – a virtuous circle for a sector under pressure.

Converting these challenges into opportunities is the theme of the Sustainability and Mining Seminar at [Sustainability Week](#) 2017, taking place 14 June at the CSIR International Convention Centre, Tshwane.

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