Lessons from the Past

No quick fix

As mines age and deposits become more difficult to mine, prominent thought leaders in the mining industry are warning that there is no quick solution to the problem.

Gold mining in South Africa, the pillar on which the country’s economy was built, is no longer the powerful money spinner it used to be. According to Peter Major, mining specialist at Cadiz Corporate Solutions, South Africa produced 80% of the world’s gold in the 1970s. Now it accounts for about only 5% of the global output. “In 1979 we earned USD35-billion from gold,” says Major. “Now we barely get USD6-billion and the country is hurting not getting the money.”

As gold mining in South Africa heads into its sunset years, SRK Consulting (SA) chairman and corporate consultant Roger Dixon says that it is wishful to think that a “silver bullet” such as mechanisation will create a sustainable future; rather, the industry’s stakeholders should be squaring up to the formidable social and environmental challenges that the inevitable mine closures will bring.

According to him, the sector’s gradual but steady decline in recent decades is a sign of its natural trajectory, as operations deepen to reach remaining ore bodies, while grades drop and costs rise faster than returns.

Once the world’s number one gold producer – with gold production peaking at 1,000 tonnes in 1970 – South Africa is now in sixth position in the global ranking, producing just 150 tonnes. Employment has dropped steadily: whereas the sector employed 550,000 workers in 1987, its workforce is now only about 100,000, of which several thousand are currently at risk at unprofitable operations.

“Mechanisation is generally not an option in most South African gold mines,” says Dixon. “The only operations in which it really works are those specifically designed for it from the start, like the Target, South Deep and Modder East mines.” According to Dixon, the deep and narrow-reef conditions in older gold mines were in any event not conducive to mechanisation, and few technological developments had been made in recent years to significantly address these constraints.

“Following gold reefs to greater depths has meant steady increases in the costs of mining, which have not been matched by improvements in either productivity or grades,” he said. “So it is not difficult to understand the deterioration in mine viability over the years.”

Rapidly rising electricity prices have impacted particularly harshly on deep mines, as depth boosts key energy cost factors like refrigeration and rock hoisting.

“Apart from the sheer cost of electricity, the unreliability of power supply erodes mine productivity even further,” said Dixon. “Having capacity reductions or even load shedding has a hugely disruptive effect on mines, which comprise a complex set of integrated functions and may take days to fully resume efficient operational levels.”

The real issue for gold mining, says Dixon, is how to better manage the unstopuable haemorrhage of jobs. “The income of the average mine worker supports about eight people, so the knock-on effect of every lost job is massive,” he says. “Alternative livelihoods should be a key focus of attention for all stakeholders.”

Dixon also highlighted the looming environmental impacts of gold mine closure, which has become a source of some contention between mining companies and the state. The full extent of environmental damage arising from gold mining may only emerge decades from now.

But as seen with acid mine drainage around Johannesburg, the impacts and resultant costs will be substantial.

Dixon says it is time for stakeholders to “grasp the nettle” and put to rest any unrealistic notions of South Africa’s gold mining’s imminent revival.