

South Africa's fatal mine end-of-life failures

South Africa's government and mining industry are failing to manage the liability of mines at or near the end of their lives, leading to deadly environmental and societal impacts.



Mining majors find it impossible to get closure certificates from the government

Future Of Mining > Sustainability

21 November 2023

Comments

David Whitehouse

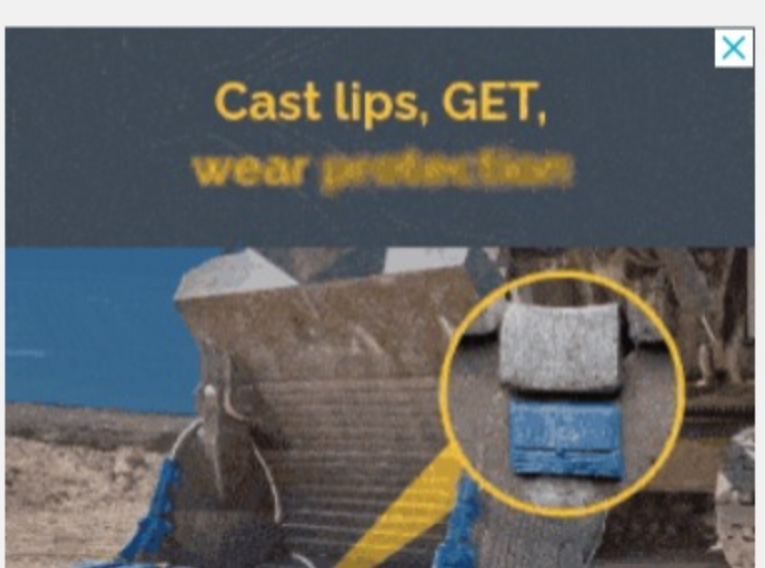
One stark example of immediate human cost is the fate of illegal workers known as *zama zamas*, many of whom are former miners.

A methane gas explosion in a disused mine in Free State province formerly owned by Harmony Gold in May killed at least 31 illegal miners, many of them from Lesotho. Harmony says it bought the shaft in the mid-1980s but never operated it due to a methane explosion which made it unsafe to operate.

Previous media analysis carried out by investigative journalist Cecilia Johnson **found reports of 312 zama zama deaths** between 2012 and 2015. Many were due to turf wars, but deaths in collapsed tunnels and explosives accidents were also common.

The environmental hazards of poor end-of-life management are also impacting communities, with the release of sulphuric acid from old coal mines posing dangers for water supply and farmland.

This is compounded by the lack of suitable land for settlement in South Africa, which means **homes are sometimes built on abandoned mine lands**.



Human Rights Watch has reported that residents near disused mines, who have every reason to fear acid contamination of their water supply, have no means of getting information about the quality of the water. Further pollution arises through wind-borne dust from waste dumps.

The issue is long-standing. South Africa's department of mineral resources in 2007 estimated that it would take 800 years for the government to rehabilitate disused mines, at a cost of 100 billion rand, or US\$5.4 billion

today.

South Africa's end-of-life problem has its roots in a legislative overhaul in 2002, under which private mineral rights were effectively nationalised and became the property of the state, says Paul Miller, who runs the AmaranthCX consultancy in Johannesburg.

Mineral rights had to be renewed by applying again for a license, but there was no incentive to do so in cases where mines had little remaining value.

Human Rights Watch says that South Africa has about 6,000 abandoned mines. Miller says that this is an exaggeration as it includes many smaller types of excavation, and estimates that the real number is in the hundreds.

A key issue, Miller says, is the sale by majors of mines near the end of their lives to smaller companies with less experience and resources. Such companies are unlikely to be able to manage the liability over the long term, and may not even survive long themselves. "There's not enough joined-up thinking as to what happens when a mining company goes wrong."

Mining majors find it impossible to get closure certificates from the government, Miller says, and questions how long companies can be expected to keep funding them. A compounding factor, he says, is the fact that the South African police no longer has a special unit concentrating on illegal trade in gold and diamonds. The result is a "toxic mix" of inadequate policing and government administration. Disused mines are a "symptom of a state that won't enforce its own laws."

Last men standing

Miners for example from Lesotho who historically worked in South Africa's mines have no other employment opportunities open to them, Miller says. So it's no surprise that they and their children are willing to brave the dangers of illegal mining, even if it means living underground for weeks at a time. Abandoned mine sites also lure people wanting copper cables which can be sold for scrap.

Illegal mining in South Africa, Miller says, "doesn't mean a man with a shovel" but well-equipped, organised groups. Even when mine shafts are capped to prevent entry, illegal miners have been able to use explosives to gain entry, Miller says. This creates obvious safety risks. Some of the gold which has been left unmined, he adds, was deliberately left untouched to protect the structural integrity of the mines.

No closure of a mine by a major company has been signed off by the government since 2002, says Ingrid Watson, an academic at the University of the Witwatersrand specialised in disused mines. The government wants to protect jobs and ensure that the full potential of mines is exhausted, she says.

Watson's 2021 PhD thesis argues that the closure process needs to start even before a mine opens, with objectives identified and the mine being planned with closure in mind. There is a tension between maximizing employment and managing environmental risks, she says. "There comes a point where the environmental costs outweigh the need to keep jobs."

She points to the fact that money paid over by mining companies to cover future costs is specific to individual mines and cannot be transferred. It is clearly impossible to predict the long-term cost of securing any one particular mine. It may make more sense for the money to be pooled and redistributed among the most difficult liabilities, she says.

Who pays?

At the level of controlling the problem, South African academics **Khodani Matshusa and Llewellyn Leonard** have argued that a co-ordinated disaster management strategy is needed to minimize loss of life at abandoned mines. The onus is on South Africa's government to find an overall resolution, says Tony Harwood, CEO of Montero Mining & Exploration. The state has to ensure a proper closure process for mines which so far has not been achieved, Harwood says.

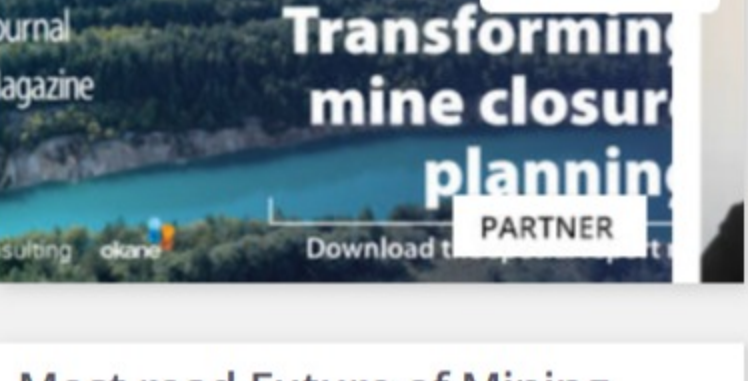
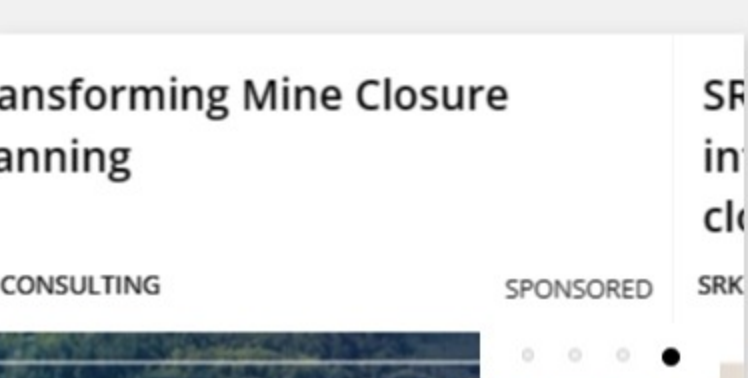
Harwood is based in South Africa, but has no mining exposure there as his company operates in Chile. The current state of disused mines creates reputational risk for South Africa, and leads to uncontrolled illegal exploitation, he says.

Turf wars between the illegal miners have worsened in recent months. The violence in Florida near Johannesburg was so bad in August that local residents ended up sleeping at a police station to protect themselves. "Who has the biggest gang wins the shaft" Harwood says. "It's a deterrent to investment. The government needs to take control." The costs of creating such a working system for closure, he says, would be modest. Experienced experts could be brought out of retirement to help, he argues. "It's the responsible route."

Miller, a former Nedbank mining and metals investment banker, says that the administration of mines suffers from "proven dysfunction" with new permits being issued without enough due diligence, especially for coal mines. He argues that mining majors have to take more responsibility in such a context. "Major international companies should not be allowed to sell their environmental liabilities."

Watson says the idea that large companies should not be able to sell mines to smaller companies is not practical while there is still viable resource. But, she says, there should not be a chain of four or five companies towards the end of a mine's life. "The legal system of closure doesn't work. Eventually we get to the point where the last company declares bankruptcy." Limiting the number of times a mine can be resold, she says, would focus attention on whether they should stay in operation or be closed.

David Whitehouse is a freelance journalist in Paris and editor-at-large of The Africa Report.



Most read Future of Mining

- 130 European organisations give 'hard no' on CRMA SUSTAINABILITY
- Critical minerals and crime: The threat to net-zero SUSTAINABILITY
- South Africa's fatal mine end-of-life failures SUSTAINABILITY
- European rare earth element imports surge 9% SUSTAINABILITY
- Sibanye goes full circle SUSTAINABILITY

Topics

- End of life
- Gold
- South africa

COMMENTS

Add a comment as David

Newest Oldest Popular

RELATED ARTICLES

De Beers' US\$2.3BN flagship Venetia expansion produces first diamonds

The initial output follows a US\$2.3 billion investment

LIFE-CYCLE / END OF LL... 25 JUL 2023

RESEARCH REPORTS Subscribe to Mining Magazine for instant report access today!

MAC: Canada leading the way on tailings management regulations

LIFE-CYCLE / END OF LL... 05 JUN 2023

El Domo earns 'milestone' water permit

LIFE-CYCLE / END OF LL... 03 OCT 2023

MSHA uncovers 242 violations at 18 US mines

LIFE-CYCLE / END OF LL... 02 AUG 2023

Jagersfontein propels dam action in South Africa

NATURAL RESOURCES 15 SEP 2022

MORE FROM THIS SECTION

Oil invaders start a lithium war

SUSTAINABILITY 20 NOV 2023

130 European organisations give 'hard no' on CRMA

SUSTAINABILITY 17 NOV 2023

European rare earth element imports surge 9%

SUSTAINABILITY 16 NOV 2023

Could the UK become Europe's lithium hub?

SUSTAINABILITY 20 NOV 2023

Critical minerals and crime: The threat to net-zero

SUSTAINABILITY 14 NOV 2023

Sibanye goes full circle

SUSTAINABILITY 09 NOV 2023

From our partners

Mining Magazine and Australia's Monthly's Digital Twins Report

Powering Up: CR is Now Powered by Epiroc

One Bucket and Lip Combo to Rule Them All

The future of New Tech on the Old

HIGHLIGHT

Mining Magazine AWARDS 2024

Nominations are NOW OPEN

Do you want to be the next winner?

Mining Magazine Sitemap

Surface Mining Development Fleet Technology / innovation Operational Excellence Geomechanics / Ground control	Underground Mining Development Fleet Technology / innovation Operational Excellence Geomechanics / Ground control	Processing Design / Build Plant Communion Chemicals / Reagents Operational Excellence	Asset Management Maintenance Supply chain management Simulation / Optimisation Life-cycle / End of life management	Infrastructure Transport Power / Remote power Logistics Natural resources Communications
Future of Mining Exploration Innovation Investment Sustainability	Most popular content Mining Magazine App MM Awards Event News Opinion Partner Content Webinar Research Reports Tags eMagazines	About Mining Magazine Advertise Contact Us Feedback Terms and Conditions Privacy Policy Cookie Policy	Subscribe to Mining Magazine Renew your subscription 30 day trial Newsletters Mining Magazine App	Social Facebook Twitter LinkedIn

Aspermont Brands



Aspermont Research Reports



Aspermont Events

