

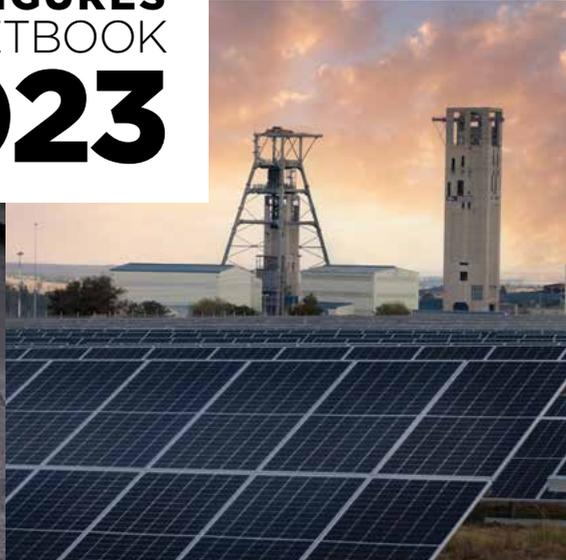


**MINERALS COUNCIL**  
SOUTH AFRICA

**FACTS  
AND FIGURES  
POCKETBOOK  
2023**



**#MiningMatters**



# Foreword

**Mining plays a significant role in the lives of our people and the economy of our nation.**



Sedibelo Platinum Mines -  
Pilanesberg Platinum Mine

**Cover (clockwise):** Sibanye-Stillwater – Leokeng School, Northam Platinum – Eland, Gold Fields – South Deep, Rand Refinery

The Minerals Council provides insights into the importance and relevance of mining for the South African economy and its citizens in our latest Facts and Figures. This pocketbook shows why #MiningMatters.

Accurate and credible statistics allow us to fulfil our mandate as the representative voice of mining in South Africa. In addition, these statistics help South Africans to develop a better, more nuanced understanding of the current state of the mining industry. The Facts and Figures publication assists all stakeholders to understand the positive impact and role of mining in the economy

and the benefits that flow through to broader society. It highlights the need to nurture and grow the mining industry so that it can increase its relevance and contribution to society.

The Minerals Council's economics team plays a key role in gathering the data.

This pocketbook is published in February each year. We depend on the latest,

but incomplete, 2023 official data as published by various primary sources. This will result in subsequent revisions to the preliminary estimates and/or published numbers as additional or more complete data becomes available.

The comprehensive Facts and Figures 2023 publication, which will contain these revisions and data additions, will be published in Q3 2024.

*In compiling this Facts and Figures publication, the Minerals Council relies on various primary data sources such as Statistics South Africa (Stats SA), the Department of Mineral Resources and Energy (DMRE), the South African Reserve Bank (SARB), the South African Revenue Services (SARS), the World Bank, the International Monetary Fund (IMF) and the United States Geological Survey.*



The Minerals Council South Africa has 73 members, representing 90% of South Africa's mineral production that was valued at R1.1 trillion in 2023. Members have interests in a wide range of minerals with many companies mining several minerals.

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## The mining sector in 2023



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## VISION

To ensure mining matters for South Africa.



## MISSION

To lead in enabling the South African mining sector to achieve its full potential through investment, growth, transformation, and development in a socially and environmentally responsible manner.



## VALUES

Members are obliged to conduct their business according to the agreed Minerals Council values, which dictate the minimum standards of conduct required of them in order to become or remain a member of the Minerals Council. The five values of the Minerals Council are:



**Responsible citizenship**



**Respect**



**Trust**



**Honesty**



**Accountability**

## Message from the CEO



### **The South African mining sector went through several trials and tribulations in 2023.**

These include unprecedented electricity load-curtailment that was a particular constraint on deep-level mining in the precious metals industry, debilitating rail and port failures that adversely impacted the bulk commodities sub-sector, pervasive criminal activity, and the devastating loss of life late in the year that set back the progress to improve the industry's safety performance. In addition, the commodity price cycle turned against PGM and coal miners. Against this backdrop, overall real mining output declined by around 0.5% in 2023.

Despite these headwinds, it is gratifying that the Facts

and Figures Pocketbook 2023, our flagship annual overview of the sector, again illustrates the crucial contribution of the mining sector to the South African economy and the broader society. Just as one example of this, provincial data released by Stats SA in 2023 showed that mining was the largest sector in four of the nine provinces during 2022. These provinces are North West, Limpopo, Mpumalanga and the Northern Cape, with mining contributing between 20% and 30% to the GDP of these provinces.

***“Mining was the largest economic sector in four of the nine provinces during 2022”***

## Message from the CEO continued

In addition, formal sector employment trends are a particular highlight that showcase the significance of the sector. According to Stats SA's Quarterly Employment Statistics, outside of the community, social and personal services sector, mining is the only major sector in South Africa where the level of formal employment in Q3 2023 was higher (+6.3%) than the pre-COVID-19 period in Q4 2019. Although this heartening performance is something to be proud of, it should not detract from the fact that parts of the industry are under severe strain and that recent company-specific announcements indicate looming retrenchments in specific sub-sectors.

Amid a weak commodity price environment, elevated input costs and the other constraints on doing business in South Africa, the PGM sector is a case in point. The coal industry was also weighed down by

a sharp (-55%) downward price correction from the highs in 2022, as well as Transnet rail woes that curtailed export volumes. Transnet logistical issues also adversely impacted the iron ore and chrome sectors. Thankfully, in the case of iron ore, well-supported prices in the second half of the year shielded the sector. While input costs remained elevated, the gold industry benefited from record-high (nominal) prices of more than \$2,000/oz.

With 2023 in the rear-view mirror, let me end on a cautiously optimistic note for 2024. Global inflation seems to have turned the corner, and policy interest rates are expected to follow inflation lower as we move through the year. This should support global economic growth and underpin commodity prices. Domestically, although the operating environment is expected to remain challenging, we look forward to less intense and

frequent load-shedding, progress on the mining logistical front, an improved mine safety performance, and a downward trend in criminality around mine sites. Should these improvements materialise, it will bode well for an even greater contribution from mining to the overall economy. Finally, 2024 brings another opportunity for our democracy to manifest as we strive for an inclusive and progressive South Africa, through our preferences at the ballot box. It is a most critical election which we must approach with responsible citizenship.

I am hopeful for a year of constructive engagements with all our stakeholders.

**Mzila Mthenjane**  
Chief Executive Officer

February 2024

**#MiningMatters**

# MINING AT A GLANCE

Snapshot 2023<sup>1</sup>:



▼	▼	▼	▼	▼	▲
<b>Value of production</b>	<b>Direct GDP contribution<sup>2</sup></b>	<b>Percentage contribution to GDP</b>	<b>Total primary sales</b>	<b>Minerals exports</b>	<b>Employment<sup>3</sup></b>
<b>R1.1 trillion</b>	<b>R425.6 billion</b>	<b>6.2%</b>	<b>R786.2 billion</b>	<b>R781.6 billion</b>	<b>477,000</b>
(2022: R1.2 trillion)	(2022: R483.3 billion)	(2022: 7.3%)	(2022: R883.5 billion)	(2022: R882.8 billion)	(2022: 469,353)
▲	▲	▼	▲	▼	
<b>Employee earnings</b>	<b>PAYE by mining employees</b>	<b>VAT (net outflows)</b>	<b>Company tax paid</b>	<b>Royalties<sup>4</sup></b>	
<b>R186.5 billion</b>	<b>R31.3 billion</b>	<b>R37.2 billion</b>	<b>R89.9 billion</b>	<b>R14.1 billion</b>	
(2022: R174.2 billion)	(2022: R271 billion)	(2022: R28.9 billion)	(2022: R73.6 billion)	(2022: R25.3 billion)	

<sup>1</sup> Estimates are based on the most recent data available up to the date of this publication.

<sup>2</sup> Based on current market prices.

<sup>3</sup> Full year employment estimate based on most recent data available up to the third quarter of 2023.

<sup>4</sup> Based on National Treasury's estimates as in the Statement of National Revenue, Expenditure and Borrowing from April 2023 to October 2023.

# Overview: the state of mining 2023

## Global context

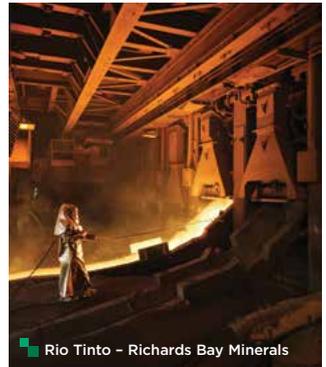
Global economic conditions were not favourable to the South African mining sector in 2023. Slowing real GDP growth in some of our key export markets, including the Eurozone (EZ) and the United Kingdom (UK), as well as structural constraints in China, adversely impacted the demand for commodities. Global manufacturing production, which is of particular importance to the mining sector, remained under pressure after losing ground in 2022. In addition, elevated global inflation led to restrictive monetary policy by central banks around the world. This contributed to increasing the cost of capital for domestic mining companies. Furthermore, the squeeze on household disposable income in the G7 advanced countries brought about by higher borrowing

costs dampened the demand for luxury goods, including diamonds.

Changing expectations about central bank policy actions and rising geopolitical tensions meant that international currency markets remained volatile. On average, the United States (US) dollar weakened against the euro in 2023, but traded stronger versus the Japanese yen.

In late 2023, the IMF and private sector forecasters projected that global real GDP growth moderated towards 3% in 2023, down from 3.5% recorded in 2022. Increasingly, growth patterns diverged in South Africa's main trading partners. Despite aggressive policy interest rate increases, GDP growth in the US remained robust in 2023. In stark contrast, growth stalled in the EZ and the UK during Q3

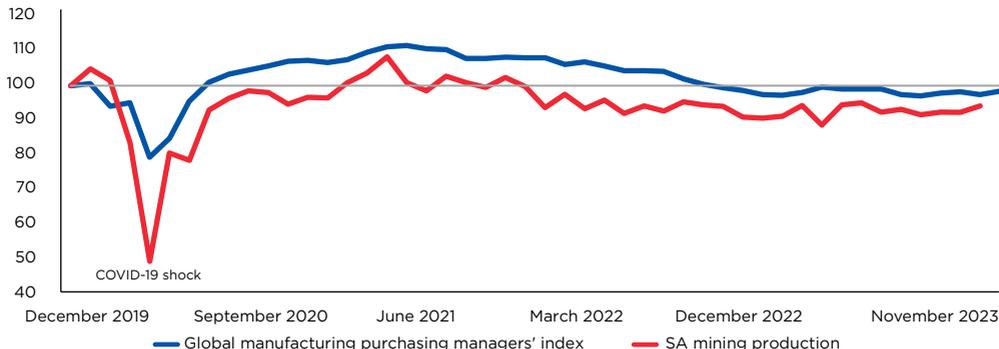
2023. The Chinese economy bounced back from the draconian zero-COVID-19 policy pursued until late-2022. However, lingering problems in the property market and ongoing trade tensions with the US undermined the GDP growth recovery in China. In the second half of 2023, a ramp-up of policy stimulus from Chinese authorities provided some support to industrial mineral prices, including iron ore.



Rio Tinto - Richards Bay Minerals

## Easing in global manufacturing momentum a drag on South African mining production

December 2019 = 100

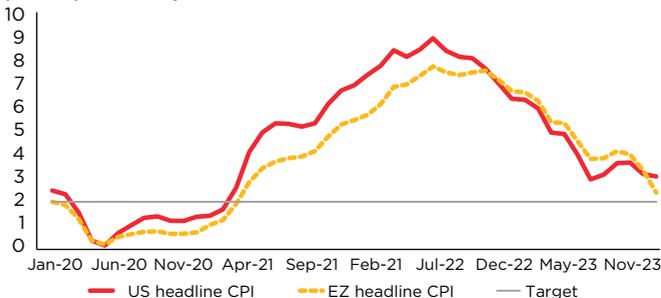


Source: S&P Global, Stats SA, Minerals Council

Also positive was that the rate of increase in global inflation eased notably in the second half of 2023. This caused central banks in the US, the EZ and the UK to halt their aggressive policy interest rate hiking cycles. The general expectation is that leading central banks, including the US Federal Reserve (Fed), will cut policy interest rates in 2024.

## Consumer inflation (CPI) in the US and EZ heading back to target

year-on-year % change



Source: Organisation for Economic Co-operation and Development (OECD)

# Overview: the state of mining 2023 continued

## Mixed bag for South African export commodity prices in 2023

In broad terms, commodity exports contributed around 55% to the value of total South African merchandise exports in the first 11 months of 2023. Roughly 80% of South Africa's commodity export revenue in 2023 was derived from shipments of PGMs, coal, gold and iron ore. Commodity export revenue was boosted by the rand that was, on average, almost 13% weaker against the US dollar in 2023 than the previous year. However, the support from a weaker currency was diluted by sharp falls of more than 40% in the dollar-based basket\* price of PGMs, and 55% for the price of coal.

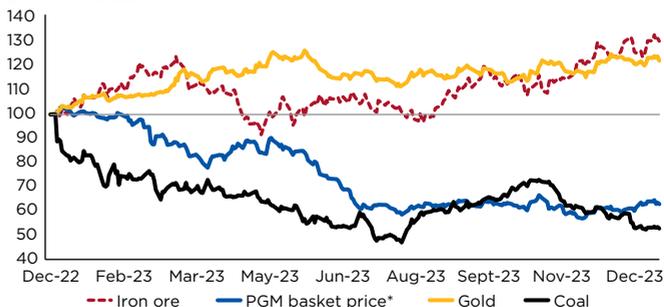
Growing concerns about the future demand for PGMs as the electrical vehicle



The rand prices of gold and iron ore both increased by more than **20%**

### Key South African commodity prices (measured in rand) diverged in 2023

December 2022 = 100



Source: Refinitiv, Minerals Council

market takes off weighed on the price of rhodium, in particular. The price of palladium normalised from the sharp gains in 2022 after Russia, a major producer, invaded Ukraine. Similarly, the coal price corrected sharply lower after surging

in 2022 amid renewed European demand as the continent was forced to reduce its reliance on gas imports from Russia.

\* Basket consists of platinum, palladium and rhodium.

In stark contrast to the price declines for PGMs and coal relative to December 2022, the rand prices of gold and iron ore both ended 2023 more than 20% higher. Gold was supported by a weaker US dollar, investor demand amid geopolitical uncertainties that drove a flight to safe-haven assets and sustained robust central bank buying. A ramp-up of fiscal and monetary stimulus measures from Chinese authorities in the second half of 2023, including steps to stabilise a weak property market, helped to lift the iron ore price.

### South African mining output going backwards

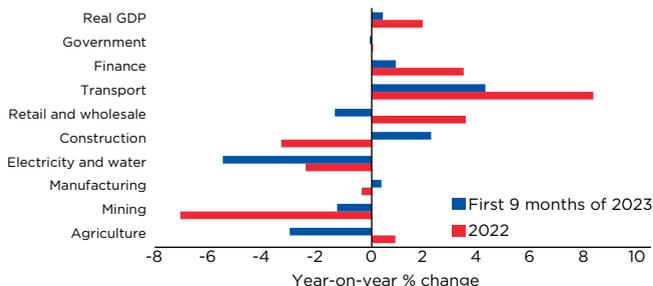
Besides the easing in global growth momentum, several domestic constraints continued to weigh on South African mining production. The strain on the sector was highlighted by Stats SA's

Q3 2023 real GDP data. This showed that in real terms mining sector output contracted by 1.3% in the year to September 2023. This decline follows a steep contraction of more than 7% in 2022. Mining was one of only two of the major sectors in the economy where output (measured year-on-year) declined in 2022 and again during the first three quarters of 2023.

Amid record load-shedding in 2022 and a further

deterioration in energy availability during 2023, electricity and water is the only other sector where output declined in both 2022 and during 2023. This again emphasises the close correlation between the (un)availability of power in South Africa and mining production. In October 2023, the levels of electricity and mining production were both still around 6% down on the pre-COVID-19 level in December 2019.

### Mining GDP underperformed all other sectors since 2022

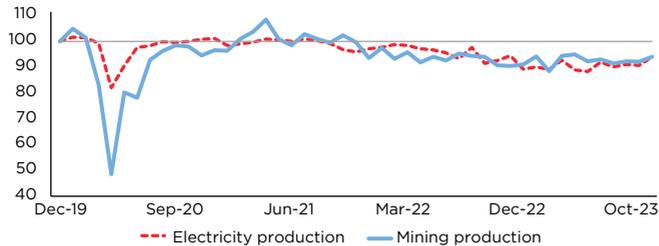


Source: Stats SA, Minerals Council

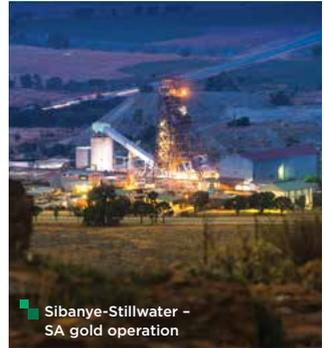
# Overview: the state of mining 2023 continued

## As in 2022, record load-shedding again weighed on mining output

December 2019 = 100



Source: Stats SA, Minerals Council



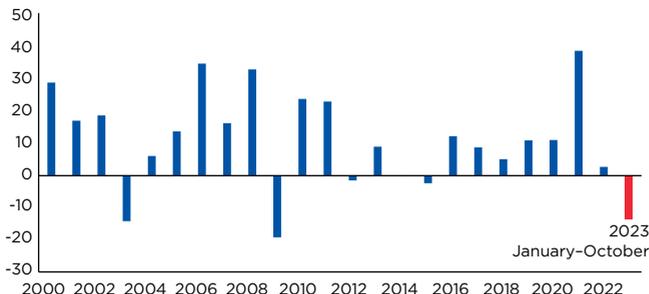
From a low base in October 2022, annual mining output growth improved to 3.9% year-on-year in October 2023. Even so, real mining output is estimated to have declined by around 0.5% during the entire 2023. Several factors potentially constrained production in the final months of 2023. These include:

- A ramp-up of load-shedding by Eskom in November and the first half of December
- The tragic safety incident at a major PGM miner in November that resulted in no production at the affected shaft
- Work stoppages because of labour unrest in the gold and PGM mining sectors
- Lower near-term production guidance in the iron ore sector amid bulging inventories due to Transnet's rail transport failures.

The combination of declining production and lower commodity prices in some key mining sub-sectors meant that South African mineral sales (in nominal terms) declined by 13.6% year-on-year in the first 10 months of 2023. This strongly implies that in 2023, nominal mineral sales will post not only the first calendar year decline since 2015 but also the largest annual fall since the aftermath of the global financial crisis in 2009.

## Mineral sales posted first calendar year decline since 2015

year-on-year % change



Source: Stats SA

## Mining sector profitability under significant pressure

Gross operating surplus, a broad measure of profitability in the mining sector, declined sharply by 22.5% year-on-year in the first nine months of 2023. This was by far the worst profit performance of all the key sectors in the economy. If the mining sector is excluded from GDP, the country-wide

(non-mining) operating surplus increased by 8.4% year-on-year through September 2023. The divergence in profit growth between the mining sector and the rest of the economy was already evident in 2022 when, according to the gross operating surplus data, profits stagnated in mining while they rose by more than 9% in the non-mining economy.

## Mining export volumes constrained by Transnet rail failures

Overall mineral export revenue declined by more than 11% year-on-year in the first eleven months of 2023. As was the case in 2022, bulk commodity exporters (coal, chrome, iron ore and manganese) continued to be constrained by failing Transnet rail infrastructure, with significant export tonnages and revenue lost. The situation is especially stark for coal and iron ore exports. Based on SARS customs data, coal export tonnages declined from 72.5 million tonnes in the first 11 months of 2019 to 66.6 million tonnes in the same period during 2022. There was only a modest recovery to 67 million tonnes in the first 11 months of 2023.

# Overview: the state of mining 2023 continued

In the case of iron ore, export tonnes declined to 53.9 million tonnes between January and November 2023, down from 60.5 million tonnes between January and November 2019. Based on average prices in the first eleven months of 2023, if South Africa exported the same quantities in 2023 as in 2019, the country would have earned an (estimated) additional R27 billion in export revenue from coal and iron ore.

## Export losses 2023 vs. 2019\* (January – November)

	Tonnes (million)	Rand (billion)
Iron ore	-6.6	-15.1
Coal	-5.5	-12.1
<b>Combined</b>	<b>-12.1</b>	<b>-27.2</b>

Source: SARS, Minerals Council

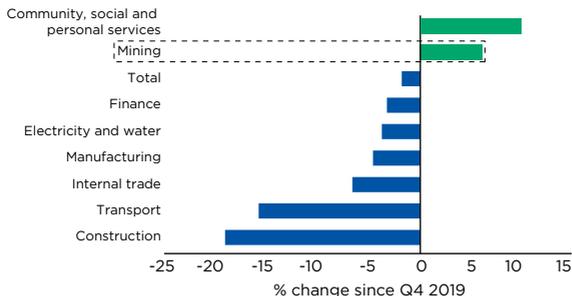
\* 2019 has been used as the comparative period before the disruptions to mining and exports due to COVID-19 as well as Transnet's rail performance deterioration.



## Mining employment defies poor operating environment

According to Stats SA's quarterly employment statistics, 480,893 people were employed in the formal mining sector during Q3 2023. This was 12,000, or 2.6%, more than in the corresponding period of 2022. During the first three quarters of 2023, formal sector mining employment increased by 2.2% year-on-year, far outstripping the 1.3% increase in total formal sector (excluding mining and the agricultural sector) employment. A longer-term perspective also illustrates how the mining sector has outperformed on the formal employment front. Besides the community, social and personal services sector, mining is the only major sector where the level of formal employment in Q3 2023 was higher than the pre-COVID-19 period in Q4 2019.

## Formal non-agricultural employment trends



Source: Stats SA, Minerals Council

## Capex holding up, but limited to machinery and equipment

The environment for private sector fixed investment (capex: capital expenditure) in South Africa remains constrained by low demand and depressed business confidence. Even so, total private sector fixed investment increased by 4.8% year-on-year in real terms during the first three quarters of 2023. This was overwhelmingly driven by capital outlays on machinery

and equipment, which gained 7.7% year-on-year in the first nine months of 2023. The robust rise in machinery and equipment capex is linked to the boom in green energy investment. This is to sustain current operations as opposed to capacity expansion capex.

Stats SA's quarterly capital expenditure survey showed that nominal capex in the mining sector rose by a robust 23.7% year-on-year in the first three quarters of 2023. When deflated by the

Producer Price Index (PPI), mining capex rose by 15.4% year-on-year in real terms. Although a sectoral split by asset class is not provided, it is most likely that outlays on machinery and equipment also dominated the mining capex figures. In terms of the outlook, an unfavourable price environment (in the PGM space) and logistical constraints (in iron ore) saw mining firms scale back capex guidance at the end of 2023.

## Input cost pressures ease, but remain elevated

After surging in 2022 in the wake of higher energy (oil and coal) prices, the rate of increase for mining input costs moderated through most of 2023. This was in line with general price trends in the economy, as reflected in the CPI and PPI measures. These measures all benefited from year-on-year declines in fuel costs during the second and third quarters of 2023.

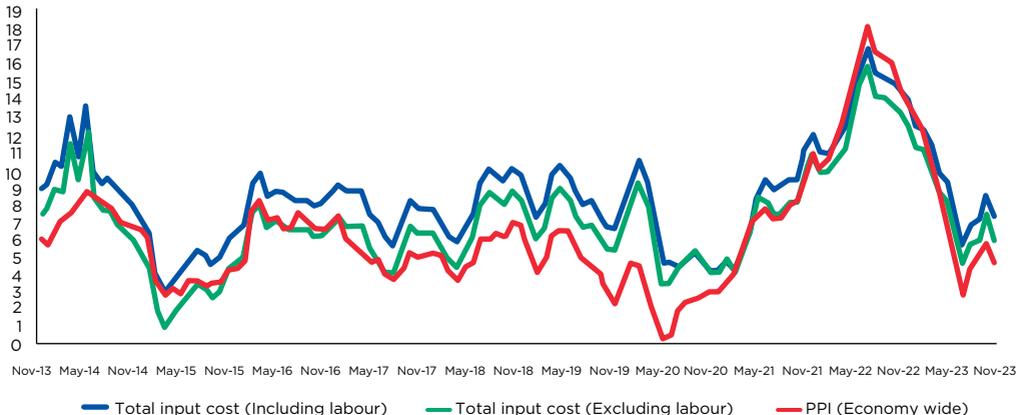
# Overview: the state of mining 2023 continued

However, as shown below, the rate of increase for mining input costs remained somewhat above the CPI and PPI. Mining input costs increased by 7.2% year-on-year in November, above the headline PPI reading of 4.6% and the headline CPI figure of 5.5% .



## Total mining input cost inflation (monthly year-on-year weighted %)

Year-on-year change



Source: Stats SA, Minerals Council



# Our metals and minerals

## PLATINUM GROUP METALS

**PGMs consist of six noble metals namely: platinum, palladium, rhodium, ruthenium, osmium and iridium. Platinum, palladium, rhodium and iridium are the primary metals of significant economic value.**

PGMs are used in a wide range of applications. One of the most prominent uses is in the production of jewellery and in the automotive industry, where their catalytic properties are highly valued. PGMs are also used in fuel cells, where they help to convert chemical energy into electrical energy. In addition, they are commonly used for investment purposes in the form of coins, bars and Exchange Traded Funds (ETFs) due to their intrinsic value and scarcity.

Moreover, PGMs are widely utilised in various industrial



# 181,806

Direct employees

applications for their unique properties such as high melting points, excellent conductivity and corrosion resistance. They are also frequently used in medical and electronic applications due to their biocompatibility and electrical properties. In medical applications, they are used for implants, diagnostic tools and radiation therapy. In the electronic industry, they are used for semiconductors, capacitors and transistors, among other things.

### Industry developments:

- PGM industry sales continue to be the largest contributor to total mining sector sales having

surpassed coal sales in 2020. South Africa continues to be the single biggest producer of PGMs in the world.

- However, based on the actual output data for the first nine months of 2023, our production forecast estimates a decline in PGM production of 11% at 239.9 tonnes for 2023. Load curtailment and operational difficulties impacted concentrators and smelters, which resulted in increased work-in-progress inventory. Production is around 10.6% below pre-COVID-19 levels and the sustained declines in physical output coupled with a significant decline

in the PGM basket price continue to be a concern.

- Due to a rapid and precipitous decline in the PGM basket price, total PGM sales values for 2023 are expected to decrease by 33.3% compared to the previous year. The drop in sales also aligns with reduced production due to electricity constraints and other operational difficulties.
- Rhodium prices experienced a significant decline in 2023, falling from a high of \$12,400 per troy ounce in January 2023 to around \$4,400 by December. Similarly, the price of palladium also dropped sharply. Since these two metals accounted for 60% of the PGM basket price split in 2023, their price deterioration had a noticeable impact on PGM producers' revenues.

### PGM average prices 2023

	R/troy ounce	US\$/troy ounce
Platinum	14.3%	1.2%
Palladium	-27.9%	-36.1%
Rhodium	-51.1%	-56.5%
Iridium	18.8%	5.1%
Ruthenium	-4.6%	-15.8%

- International PGM prices in 2023 were markedly lower with the dollar price of palladium, rhodium and ruthenium falling by 36.1%, 56.5% and 15.8% respectively. However, the rand price decrease was softer due to a weakening in the rand/dollar exchange rate. The rand price of platinum increased by 14.3% in 2023 after accounting for the exchange rate effect. Platinum, however, only accounted for 30% of the PGM basket in terms of value/income.
  - Input costs continue to increase significantly with an average input cost escalation of 9% for the industry in 2023. This, coupled with lower prices, negatively impacted the profitability of the sector. Input cost escalation outstripped commodity price escalation since August 2023, essentially leading some PGM producers to go into cash-burning scenarios.
- Industry constraints:**
- Electricity supply shortages remain the biggest challenge for

# Our metals and minerals

## PLATINUM GROUP METALS

continued

South African PGM production and exports. The unreliable nature of electricity supply coupled with steep increases in electricity prices is a binding constraint on the industry, which is a large electricity consumer because it mines, smelts and refines its metals.

- A weak PGM basket price environment amid concerns about future demand.
- Most PGM production takes place at underground operations. These operations are costly and labour-intensive. In addition, high investment costs limit the scope for mechanisation and modernisation of machinery, equipment and other capital goods.

### Industry outlook:

- South African PGM miners are increasingly discussing the need to restructure

unprofitable production following the significant decline in the PGM basket price as well as high input costs. Electricity and labour costs account for most of PGM miners' total costs. In light of this, various prominent PGM miners are restructuring their operations potentially impacting between 4,000 to 7,000 jobs. These numbers are not yet reflected in the employment numbers quoted in this publication.

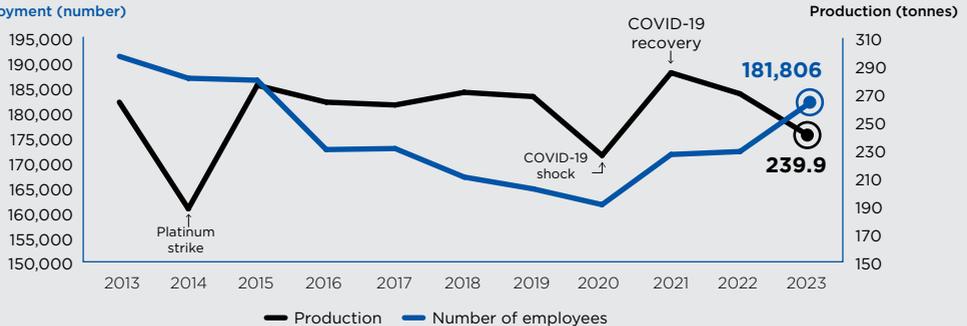
- The continued global economic slowdown seen in some of our major trading partners has decreased demand for PGMs. In particular, demand for platinum, palladium and rhodium, which are used in the automotive and industrial sectors, will remain suppressed if global economic activity does not pick up. Even if overall

activity improves, there is notable uncertainty about future PGM demand (see below).

- Platinum investment demand in the form of bars, coins and ETFs, is forecast to be negatively impacted due to persistently high interest rates around the world. High interest rates reduce demand for non-yielding assets like platinum ETFs. However, there could be some relief within the next 12 months as global interest rates are expected to move lower.
- There is a great deal of uncertainty in the industry concerning technological advancements and research and development. This includes the extent of future demand for internal combustion engine (ICE) vehicles, battery electric vehicles (BEVs) and the hydrogen economy.

## PGM industry - employment and production

Employment (number)



Source: DMRE. Minerals Council

PGM	% Change	
	2023	% change on 2019 (pre-COVID)
Direct employees	181,806	0.34%
Employee earnings (rand billion)	74.6	6.3%
Royalties (rand billion)	14.9	159.5%
Production (tonnes)	239.9	-11.0%
Total sales (rand billion)	199.0	-33.3%
Percentage of value exported '23	92.5%	46.3%

Source: DMRE, SARS and Minerals Council

# Our metals and minerals

## PLATINUM GROUP METALS

continued

### Hydrogen economy

The hydrogen economy is expected to be a significant driver of PGM demand for the foreseeable future, particularly given the global drive to reduce carbon emissions. Hydrogen, as a clean and versatile energy carrier, is gaining attention for various applications, including fuel cells used in transportation and

power generation. PGMs like platinum, palladium, ruthenium and iridium are essential catalysts in hydrogen fuel cells and this technology is anticipated to drive future demand for PGM metals. The role of research and development is also affecting the PGM industry. For example, the use of PGM metals such as palladium in fuel cells is

waning due to the relatively high cost of the metal, which leads to research into substitution with other, cheaper metals such as platinum. Undoubtedly, the hydrogen economy and the drive towards clean and renewable energies will rebalance demand for the PGM commodity basket in the long run.



Sedibelo Platinum Mines - Pilanesberg Platinum Mine

# Our metals and minerals

## COAL

**At around 250 million tonnes per annum, the coal industry is the largest component of South African mining in terms of production volumes.**

South Africa's economy relies on coal as the primary input source of energy for electricity production, with bituminous coal accounting for 99% of production and anthracite coal for the remaining 1%. Around 94.7% of South African coal exports were transported through the port of Richards Bay while the remaining 5.3% were carried through the Port of Durban. In terms of export destination, Asia was the largest market, accounting for 81.9% of all exports. Among Asian countries, India was the biggest buyer of South African coal with a share of around 42.7%. Meanwhile,



# 94,531

Direct employees

Europe accounted for 14.8% of coal exports in 2023.

Two-thirds of locally produced coal volumes were sold domestically, with the majority going to Eskom, while only a third was exported in 2023.

### Industry developments in 2023:

- In 2023 coal production is forecast to be 0.7% lower than the previous year, registering 228.5 million tonnes. This represents a 1.5 million tonne decline. Production is expected to be 11.6% lower in 2023 compared to 2019, the year before the COVID-19 pandemic.
- Based on the actual sales data for the first nine

months of 2023, total coal sales fell sharply by around 22.1% in 2023 compared to 2022. This is mostly due to a 55.7% decline in dollar-based coal prices from around \$276/Mt in 2022 to \$122/Mt in 2023.

- In 2023, coal companies took shared responsibility for safeguarding the 600km rail line to Richards Bay to counteract the effects of cable theft and vandalism. This initiative has had a positive impact, resulting in a significant decrease in the number of such incidents. However, due to the sudden decline in prices, the cost of continuing with this effort has become unsustainable.

# Our metals and minerals

## COAL

continued

- The Coal Leadership Forum of the Minerals Council is working with other bulk commodity forums to engage Transnet, the Department of Public Enterprises (DPE) and the DMRE to find a lasting solution to the problems in the rail and port sectors. Specifically, they are addressing the issues that are indirectly impacting the Richards Bay Coal Terminal, the Port of Richards Bay and the connecting rail network on the Northern Corridor.
- To address some of these issues, the Minerals Council helped establish and is involved in initiatives of the Presidency to halt and reverse the decline in rail performance and port logistics through the NLCC.

### Industry constraints:

- Inadequate supply of locomotives and inefficient rail and port challenges continue to

harm coal exports. While prevailing coal prices no longer justify the additional cost of road transportation of export coal, road transportation leads to infrastructure damage, air pollution and various other negative externalities.

- Global sentiments against coal use have negatively affected long-term investment in the industry. The COP28 conference, held in December 2023, pledged to transition from fossil fuels like coal. As a result, longer-term demand (beyond 2030) for coal will be limited while near-term demand over the next several years should remain steady.

### Industry outlook:

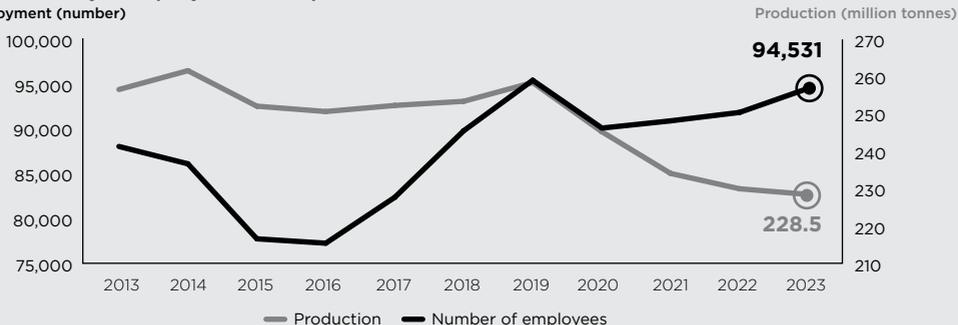
- After 2030, Eskom plans to decommission approximately 24,100MW of coal-fired electricity generation capacity according to the latest

Integrated Resource Plan (IRP), which will significantly reduce coal demand from domestic power plants.

- However, the draft IRP 2023, which was released in January 2024, indicates that most of the planned coal power station decommissioning will be postponed in light of the current electricity crisis. Yet there is no indication or clarity in terms of revised dates or the quantum of the postponement in the draft IRP. According to Eskom's 2022/23 Integrated Report, Eskom burned 102.4Mt of coal. If the planned decommissioning of 24,100MW by 2034 were to remain a policy priority, the demand for coal by Eskom would be reduced. As a result, the export market will play a crucial role in maintaining mining and logistics jobs.

## Coal industry - employment and production

Employment (number)



Source: DMRE, Minerals Council South Africa

<b>COAL</b>	<b>2023</b>	<b>% Change on prior year</b>	<b>% change on 2019 (pre-COVID)</b>
Direct employees	<b>94,531</b>	2.9%	-0.9%
Employee earnings (rand billion)	<b>33.9</b>	5.3%	16.3%
Royalties (rand billion)	<b>3.3</b>	65.3%	58.2%
Production (million tonnes)	<b>228.5</b>	-0.7%	-11.6%
Total sales (rand billion)	<b>192.2</b>	-22.1%	36.5%
Percentage of value exported '23	37.8%		

Source: DMRE, SARS and Minerals Council

# Our metals and minerals

## GOLD

**Gold remains one of the world's most coveted metals as it is revered for its beauty and symbolism and is held as a store of value. This versatile metal is malleable, conductive and does not tarnish, making it ideal for use in jewellery and many industrial applications.**

In recent years, the COVID-19 pandemic, ensuing economic uncertainty, double-digit inflation figures in most economies around the world and rising geopolitical tensions have re-emphasised the safe-haven characteristic of gold as a long-term store of value.

Against this backdrop, gold prices have hovered around \$2,000 an ounce and gold remains a haven for



# 93,589

Direct employees

investors. An added source of gold demand in recent years has been increased central bank buying.

### Industry developments:

- The US dollar price of gold strengthened by around 8% to \$1,943 an ounce in 2023 while rand prices increased by 22% year-on-year, mostly assisted by the weakening of the exchange rate. In late 2023, gold prices rose to above \$2,000 an ounce.
- The rising gold prices have enabled South African gold producers to maintain production levels by making marginal deposits profitable.
- Nonetheless, South African gold production is predicted to have marginally decreased by 0.8% to around 95.6 tonnes in 2023. Sporadic and unreliable electricity supply is a significant constraint on production, along with various other constraints such as illegal mining, crime, theft, and heightened input costs. Considering this, various prominent gold miners have announced retrenchments impacting around 3,000 jobs. These numbers are not yet reflected in the employment numbers quoted in this publication.
- The effects of electricity supply constraints are

seen in gold export and local sales volumes, which decreased by 9% and 30.3% respectively, as smelters were unable to keep up with the refining of gold ore for the local and export market.

- Despite the drop in volumes, and given the strong gold price, our estimates indicate that total gold sales increased by 9.8% year-on-year in 2023 with sales up 38% compared to pre-pandemic levels.

#### Industry constraints:

- South Africa's gold sector is characterised by deep-level underground mining. This brings with it risks and hazards that require constant adherence to high safety and health standards and procedures. High temperatures and humidity at deep levels also create difficult

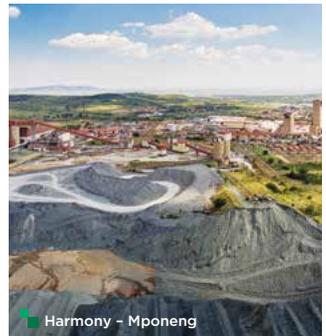
working conditions for labour, which decreases productivity.

- The industry experiences costly electricity and water supply shortages that are particularly problematic in deep-level underground mining of gold.
- Decreasing ore grades is also a significant challenge faced by the sector that make production less efficient.

#### Industry outlook:

- Global uncertainty such as the Russia-Ukraine war and conflict in the Middle East is expected to drive demand for gold as a safe store of value for investors.
- In the absence of urgent structural solutions to the electricity crisis in South Africa, the investment prospects for the sector are expected to

remain bleak. Electricity accounts for a significant portion of intermediate input costs, given the deep-level operations that characterise the country's gold mines. The intermittent nature of the electricity supply has health and safety concerns, while the steep price trajectory of electricity tariffs is also a major concern from an input cost perspective.



Harmony - Mponeng

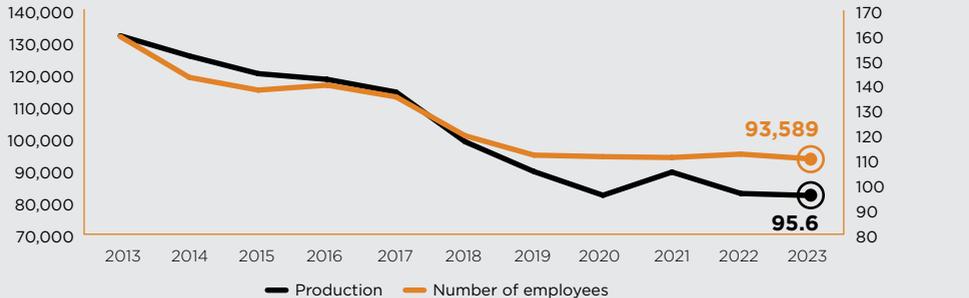
# Our metals and minerals

## GOLD

continued

### Gold industry - employment and production

Employment (number)



Source: DMRE, Minerals Council South Africa

<b>GOLD</b>	<b>2023</b>	<b>% Change on prior year</b>	<b>% change on 2019 (pre-COVID)</b>
Direct employees	<b>93,589</b>	-1.5%	-1.2%
Employee earnings (rand billion)	<b>34.3</b>	6.5%	29.4%
Royalties (rand million)	<b>511</b>	-16.0%	77.70%
Production (tonnes)	<b>95.6</b>	-0.8%	-9.1%
Total sales (rand billion)	<b>105.7</b>	9.8%	38.0%
Percentage of value exported '23	95.8%		

Source: DMRE, SARS and Minerals Council

# Our metals and minerals

## IRON ORE

**Iron is the most common element on earth, comprising most of the planet's inner and outer core. Around 95% of South Africa's iron ore production is high-quality hematite (Fe<sub>2</sub>O<sub>3</sub>) which is sought after for steelmaking.**

Globally, around 98% of iron ore is used in the production of steel. Steel is an essential material in construction, infrastructure, transportation and various manufacturing industries.

In the construction industry, steel is used in buildings, bridges, roads and other infrastructure projects. In the manufacturing sector, steel derived from iron ore is essential for the manufacturing of vehicles,



# 23,439

Direct employees

ships, trains and other transportation equipment as well as machinery, appliances, tools and various equipment.

### Industry developments in 2023:

- Iron ore production is expected to grow by 3.3% in 2023 to 65.8 million tonnes. Iron ore sales are expected to increase by around 4.2% reaching R96.9 billion.
- Iron ore prices were relatively robust in 2023, remaining unchanged on average relative to 2022 at \$120/dmtu (dry metric tonne).
- Port and rail inefficiencies on the Cape Corridor line have meant a build-

up of iron ore stockpiles to unsustainable levels at mines. An overall estimated 9 million tonnes of iron ore was also reportedly stockpiled at mines and Saldanha Bay port awaiting export. As a result, a major iron ore company started to cut back production in Q4 2023 to manage stockpiles and profitability.

- The Minerals Council's Northern Cape Mines Leadership Forum continues to engage the Northern Cape provincial government and the Department of Water and Sanitation to structure a suitable collaboration arrangement to ensure a sustainable, cost-

# Our metals and minerals

## IRON ORE

continued

effective supply of water from the Vaal Gamagara Water Supply Scheme (VGGWSS). This scheme is essential for mining operations in the Northern Cape, which includes iron ore and manganese.

### Industry constraints:

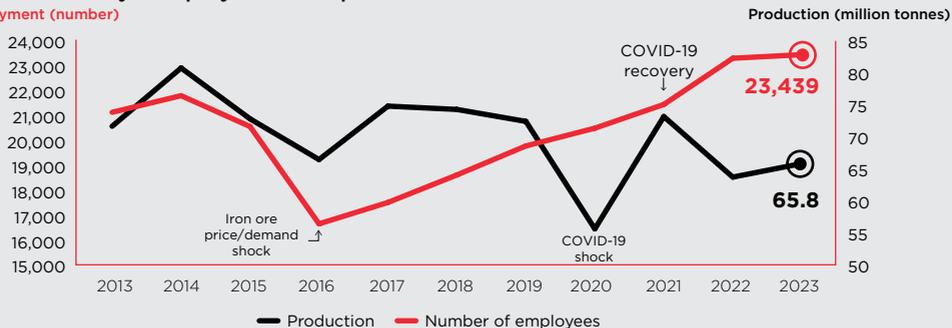
- The continued deterioration of the rail network and inefficient ports, compounded by multiple equipment breakdowns at Saldanha Bay, including stacker reclaimers, ship loaders and blocked chutes along with adverse weather conditions, negatively impacted iron ore export volumes in 2023.
- Transnet cannot presently discharge its contractual commitments to its existing customers because of poor operational performance. The iron ore rail channel's nameplate capacity is 60 million tonnes per annum. At current rates, Transnet will underperform, having transported around 55 million tonnes in 2023.
- Access to water and the maintenance of water infrastructure remains a challenge for communities and businesses in the Northern Cape. Without water, most mining operations will cease production.

### Industry outlook:

- The iron ore industry is actively engaging Transnet and the government through the National Logistics Crisis Committee (NLCC) to improve rail performance and allow for private sector participation on the corridors.
- The Freight Logistics Roadmap, which was formally adopted by Cabinet in December 2023, will hopefully facilitate mining companies' participation in the raiing and shipping of their commodities in an efficient and cost-effective manner.

## Iron ore industry - employment and production

Employment (number)



Source: DMRE, Minerals Council South Africa

IRON ORE	2023	% Change on prior year	% change on 2019 (pre-COVID)
	Direct employees	<b>23,439</b>	0.6%
Employee earnings (rand billion)	<b>R9.1</b>	-2.1%	30.0%
Royalties (rand billion)	<b>6.9</b>	64.9%	232.3%
Production (million tonnes)	<b>65.8</b>	3.3%	-9.1%
Total sales (rand billion)	<b>96.9</b>	4.2%	37.1%
Percentage of value exported '23	95.5%		

Source: DMRE, SARS and Minerals Council

# Our metals and minerals

## CHROME

**South Africa is the world's largest producer of chromite ore, with over 19 million tonnes estimated to have been produced in 2023.**

Some of this ore is further processed to extract chrome, which is then combined with other materials and smelted in an electric arc furnace. The end product of this process is ferrochrome, which is a type of alloy that contains high levels of chromium and is often mixed with iron. Ferrochrome has a wide range of applications, such as in the production of stainless steel used for anything from kitchenware to industrial machinery.

Chromium finds its applications in several other industries. One of its uses is in chrome plating, where it forms a protective layer on surfaces. It is also used in the manufacturing



# 20,411

Direct employees

of catalytic converters for automobiles. Additionally, chrome compounds are used as pigments in paints, inks and plastics. Chromium compounds are also used as catalysts in certain chemical reactions, including those in the production of plastics and synthetic rubbers.

The chrome industry has maintained stable production performance. In 2023, production stayed constant in year-on-year terms but, compared to 2019 levels, production increased by 8.1%.

### Industry developments in 2023:

- Of the estimated 19.1 million tonnes of chrome ore produced, 46.1% was exported to China alone in 2023.
- Based on the actual sales data for the first nine months of 2023, total sales for 2023 increased by 63.5% from 2022 to

Furthermore, SARS data shows that a further 43.2% of exports went to Africa followed by the EU at 1%. It is worth noting that the export figures to Africa can be misleading. This is because a significant portion of South Africa's chrome is exported through Mozambique's Maputo harbour, which acts as an intermediary before it reaches its final destination. The reason for this is the near-complete failure of Transnet's ability to export chrome locally through Richards Bay.

R55.4 billion while physical production volumes were unchanged year-on-year.

### Industry constraints:

- Transnet is currently facing a major locomotive shortage, which is affecting the export of chrome from Richards Bay and Durban. Approximately 40% of all chrome exports pass through these two ports and, at present, the primary way to transport the goods to the ports is through trucks on the road.
- Inadequate port handling equipment at some of the ports, particularly Durban, is also negatively affecting export volumes.
- Approximately 55% of chrome exports are transported via trucks on the N4 route to reach Maputo harbour in Mozambique through Komatipoort. However, this has resulted in queues of trucks stretching

for kilometres, waiting for customs clearance to enter Mozambique. This bottleneck has significantly affected the chrome export industry, and has caused South African ports to suffer revenue losses worth millions of rands due to their inability to handle the export traffic.

- Insufficient electricity supply has hindered the local chrome beneficiation industry, causing a decline in global competitiveness, particularly in ferrochrome production and export. Moreover, double-digit annual electricity tariff increases further exacerbate the situation.

### Industry outlook:

- Chrome export volumes will remain constrained in the near term due to Transnet's rail and operational constraints. In the meantime, road

transportation comes at a premium of roughly 40% compared to rail use. The constraints in the supply of chrome brought about by these challenges have resulted in an artificial increase in the price of chrome that is indirectly benefiting chrome producers.

- The bulk of the demand for chrome from South Africa comes from China, which has seen slower growth in recent times. According to IMF predictions, China's growth rate is expected to drop to 4.2% in 2024, compared to the just above 5% it achieved in 2023. As a result, bar further Chinese stimulus measures, the demand for chrome is likely to remain stagnant in 2024.

# Our metals and minerals

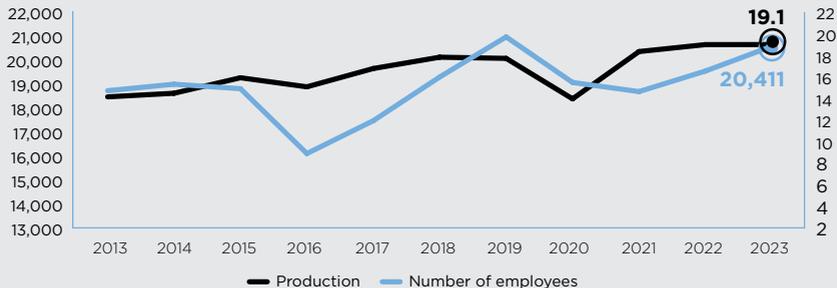
## CHROME

continued

### Chrome industry - employment and production

Employment (number)

Production (million tonnes)



Source: DMRE, Minerals Council South Africa

CHROME	2023	% Change on prior year	% change on 2019 (pre-COVID)
Direct employees	20,411	5.9%	-2.1%
Employee earnings (rand billion)	7.0	5.1%	10.1%
Royalties (rand million)	N/A	-	-
Production (million tonnes)	19.1	0.0%	8.1%
Total sales (rand billion)	55.4	63.5%	149.8%
Percentage of value exported '23	53.4%		

Source: DMRE, SARS and Minerals Council

# Our metals and minerals

## MANGANESE

**South Africa is estimated to host around 80% of the world's identified manganese resources. In those processes where manganese is used, there is no known satisfactory substitute.**

Manganese is primarily used in the steelmaking process where its addition aids in reducing brittleness and imparts strength to steel products. Manganese also has powerful deoxidation capacity in steel, preventing corrosion, makes steel more resistant to abrasion and increases the hardenability rate, thereby reducing brittleness. Steelmaking alone accounts for around 90% of overall manganese demand.



# 11,804

Direct employees

Aluminium production is the second most important in terms of manganese demand. Small amounts of manganese are found in aluminium, which enhances its corrosion resistance. Aluminium-manganese alloys and aluminium-manganese-magnesium alloys have applications in areas such as kitchenware, roofing, car radiators, transportation and, most commonly, cans.

The main non-metallurgical application of manganese is in the batteries industry. Manganese dioxide is used as a depolariser in dry-cell battery fabrication.

The manganese industry has maintained stable sales and

production performance. Compared to pre-COVID-19 2019 levels, production and sales are expected to have increased by 14.6% and 7% respectively in 2023.

### Industry developments in 2023:

- Of the estimated 21 million tonnes of manganese sold in 2023, 91.1% was exported. Of this export volume share, 90.5% went to Asia (64% to China, 15% to India, 4.3% to Singapore, 3.7% to Malaysia and 3% to Japan) followed by the European Union (EU) at 7%. This is mostly driven by the demand for steel in these countries.

# Our metals and minerals

## MANGANESE

continued

- Based on the actual sales data for the first nine months of 2023, total sales for 2023 were down 1.2% relative to 2022 at R47.7 billion, while physical production volumes increased by 2.0% year-on-year.
- Transnet Freight Rail (TFR) finished upgrading the Mamathwane crossing loop in the Northern Cape in July 2023. The loop extension has increased capacity by 1.5 million tonnes per annum, which is expected to benefit exporters. This upgrade will help to reduce congestion on this section of rail and allow for an additional four rail slots per week.

### Industry constraints:

- Due to constraints and limitations on the rail system along the Cape Corridor, a vast amount

of manganese has been transported via road. The physical limitations of the rail infrastructure have resulted in negative externalities, such as road damage and air pollution, particularly around Gqeberha.

- Transnet's current network can only handle approximately 15 million tonnes of manganese ore per annum. However, the annual export of manganese ore amounts to around 18 million tonnes, which leaves an excess of over 3 million tonnes of manganese ore being transported via road.
- The locomotive fleet servicing manganese has reached the end of its life cycle and will need to be replaced by Transnet soon. This introduces operational

inefficiencies. In the meantime, transportation of manganese ore by road carries a higher cost premium.

- Port disruptions and inefficiencies by Transnet Port Terminals at Gqeberha and Saldanha harbours, which in 2023 processed around 70.5% and 25.4% of all manganese exports respectively, hamper manganese export performance and potential.

### Industry outlook:

- The Chinese economy is experiencing tepid growth, mainly due to the struggling real estate and construction sectors. As a result, the demand for industrial minerals, such as manganese and steel, is expected to be subdued. South African manganese exports are highly dependent on the demand for raw minerals

from these two Chinese sectors. It remains to be seen how effective recent Chinese stimulus measures will be in lifting these sectors.

- Planned rail and port infrastructure upgrades at Gqeberha and Ngqura, as specified in the Port Development Framework Plans, are expected to increase overall port capacity for manganese.

- According to the IMF, economic growth in Asia is expected to be approximately 4.8% in 2024, which is a slight decrease from 5.2% in 2023. The growth rate for China is expected to be around 4.2%, and India's economy is expected to grow by 6.3%. On the other hand, Europe is expected to grow by only 1.2%. Since Asia is

the largest market for South African manganese exports, it is expected that there will be an increase or at least stabilisation of the current demand for manganese, given the forecast GDP growth rate for 2024.



Tshipi é Ntle Manganese Mining – Tshipi Borwa mine

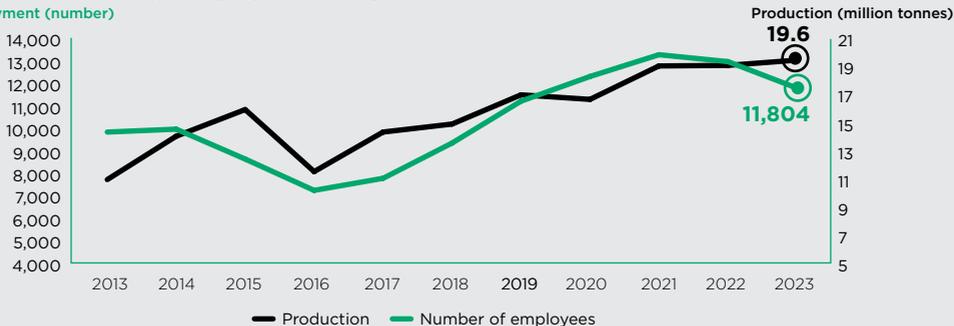
# Our metals and minerals

## MANGANESE

continued

### Manganese industry - employment and production

Employment (number)



Source: DMRE, Minerals Council South Africa

MANGANESE	2023	% Change on prior year	% change on 2019 (pre-COVID)
Direct employees	<b>11,804</b>	-6.3%	5.2%
Employee earnings (rand billion)	<b>5.18</b>	-0.5%	33.4%
Royalties (rand million)	<b>642</b>	305%	-20%
Production (million tonnes)	<b>19.6</b>	2.4%	15%
Total sales (rand billion)	<b>47.7</b>	-1.2%	5.9%
Percentage of value exported '23	97.1%		

Source: DMRE, SARS and Minerals Council

# Our metals and minerals

## INDUSTRIAL MINERALS

**South Africa is richly endowed with a vast and diverse array of minerals, making it a global leader in both the quantity and variety of minerals available.**

Based on the actual sales data for the first nine months of 2023, total sales of industrial minerals is projected to amount to R25.9 billion, reflecting a 21.2% increase compared to 2022.

Similarly, non-metallic sales are projected to have maintained substantial growth in 2023 with sales up by around 42% at R13 billion. This sector, which includes minerals such as silica, vermiculite and feldspar, contributed 50.5% to total sales. This was followed by the aggregate and sand sector and the limestone and lime sector each contributing 27.1% and 17% respectively.



# 11,459

Direct employees



Pretoria Portland Cement

# Our metals and minerals

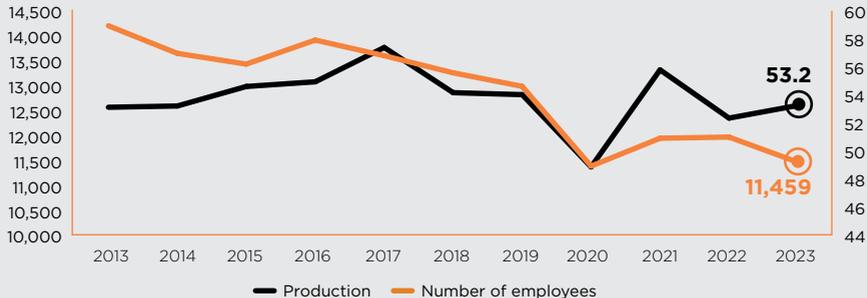
## INDUSTRIAL MINERALS

continued

### Industrial minerals - employment and production

Employment (number)

Production (million tonnes)



Source: DMRE, Minerals Council South Africa

INDUSTRIAL MINERALS	2023	% Change on prior year	% change on 2019 (pre-COVID)
Direct employees	11,459	-4.2%	-8.6%
Employee earnings (rand billion)	2.5	-2.2%	8.3%
Royalties (rand billion)	1.36	127.2%	482.70%
Production (million tonnes)	53.2	1.7%	-1.4%
Total sales (rand billion)	25.9	21.2%	44.8%
Percentage of value exported '23	32.80%		

Source: DMRE, SARS and Minerals Council

# COMMODITY

Industrial mineral category	Non-metallic other	Limestone and lime	Aggregate and sand	Special clays	Dimension stone	Brickmaking materials	Salt	Building material
<b>Contribution to total sales (%)</b>	<b>50.5%</b>	<b>17.0%</b>	<b>27.1%</b>	<b>0.6%</b>	<b>2.8%</b>	<b>0.5%</b>	<b>1.3%</b>	<b>0.1%</b>

Feldspar	Limestone	Aggregate	Attapulgite	Granite	Clay brick making	Salt coarse	Shale for cement
Feldspar: Lumpy	Limestone: ROM	Aggregate: Base (g1-g)	Bentonite	Granite: Blocks	Shale brickmaking	Salt processed	
Feldspar: Ground	Limestone: Dolomitic ROM	Aggregate: Sub-base (g4-g)	Fireclay	Granite: Sawn slabs	Building materials other		
Gypsum	Limestone: Cement	Aggregate: Over 26mm	Flint clay	Granite: Any	Shale for cement		
Mica	Limestone: Agricultural	Aggregate: Between 13mm to 26mm	Plastic clay	Slate			
Phosphate concentrate	Limestone: Fluxing	Aggregate: Between 4.75mm to 13mm	Kaolin				
Pyrophyllite	Limestone: Any	Aggregate: Sand crusher					
Silica	Lime	Aggregate: Crusher run					
Silica: Crude	Lime: Quicklime pyrometallurgical	Aggregate: Any					
Silica: Processed	Lime: Quicklime chemical	Sand natural					
Sodium sulphate	Lime: Hydrated lime water purification						
Sulphur	Lime: Hydrated lime chemical						
Talc	Lime: Hydrated lime any						
Talc: Crude							
Vermiculite							

The industry employed **11,459** people in 2023, who in turn earned R2.5 billion. The industry's employment has remained relatively flat over the last decade.

# Our metals and minerals

## DIAMONDS

**Diamonds are the hardest natural substance on earth. Their hardness is measured on the Mohs scale, from 1 to 10, and diamonds score a perfect 10.**

The primary use of diamonds is in jewellery. They are highly valued for their brilliance, durability and symbolism. Diamonds are commonly used in engagement rings, necklaces, earrings and other forms of high-end jewellery.

Diamonds are also used in medical equipment such as surgical blades and drills due to their sharpness and durability. They are also used in certain medical imaging devices.

The last time diamond production in South Africa exceeded 10 million carats was in 2008. After the Global



# 15,059

Direct employees

Financial Crisis, this declined to single-digit numbers and only in 2022 did production reach in excess of 10 million carats again.

### Industry developments:

- In 2023, diamond production fell back sharply by an estimated 42.4% year-on-year to around 6.1 million carats. When comparing 2023 to pre-COVID-19 levels of 2019, production is expected to have been 15.5% lower.
- Based on the actual sales data for the first nine months of 2023, the value of total diamond sales is expected to fall by 32.3% in 2023 compared to the previous year, mainly on account of lower demand and lower international prices. Compared to 2019, the total value of sales is projected to have been around 37.4% higher in 2023.
- The Minerals Council continues to engage the National Treasury and SARS on the removal of:
  - The requirement for a provisional VAT on imported rough diamonds. The removal of this would aid the cash flow position of beneficiaries.
  - VAT payment by tourists on the local sale of diamond

jewellery purchases exceeding R10,000. This will mean that tourists will not have to go through the highly administrative process of claiming back VAT by submitting proof of where they obtained the cash - whether it be from an ATM, a bank or a Bureau de Change. The process limits the volume of diamond sales to tourists.

- Provisional VAT payments on temporary imports to South Africa, which applies to shipments higher than R14,000. SARS requires jewellery firms from neighbouring countries to pay this amount upfront. The result is that neighbouring firms are dissuaded from acquiring domestic services for repairs,

warranty claims, sending gemstones for grading and sending sweeps and filings.

### Industry constraints:

The industry faces a number of challenges such as the Diamond Export Levy Act, the role of the State Diamond Trader (SDT) and the Diamond Exchange and Export Centre (DEEC), and the Section 74 Exemption in the Diamond Act), among others.

For example, regarding the Diamond Export Levy Act, the view of the Minerals Council is that it unfortunately does not take into account the economic circumstances of the downstream cutting and polishing industry. There have been instances where downstream players would buy diamonds on dealer licences and then export the diamonds without beneficiation.

### Industry outlook:

- In South Africa, production has decreased substantially due to the planned end of Venetia's open pit operations which reached its end of life in December 2022. Venetia will continue to process lower-grade surface stockpiles as the underground operations ramp up production over the next few years. Venetia mine, owned by the De Beers Group, accounts for around 40% of all diamonds produced annually.



# Our metals and minerals

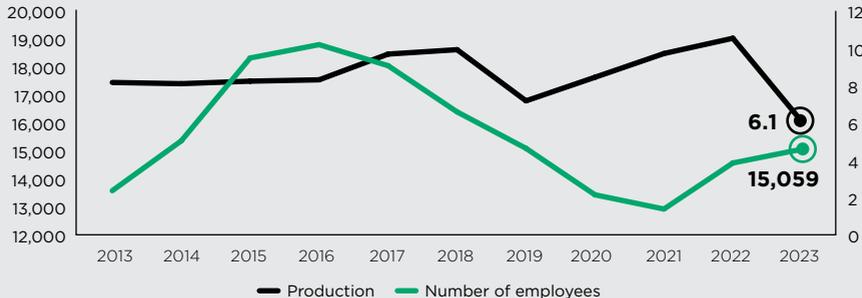
## DIAMONDS

continued

### Diamonds industry - employment and production

Employment (number)

Production (million carats)



Source: DMRE, Minerals Council South Africa

DIAMONDS	2023	% Change on prior year	% change on 2019 (pre-COVID)
Direct employees	<b>15,059</b>	3.4%	-0.2%
Employee earnings (rand billion)	<b>6.5</b>	9.7%	32.4%
Royalties (rand million)	<b>101</b>	253.0%	-72.1%
Production (million carats)	<b>6.1</b>	-42.4%	-15.5%
Total sales (rand billion)	<b>18.0</b>	-32.3%	37.4%
Percentage of value exported '23	58.2%		

Source: DMRE, SARS and Minerals Council

## Junior and emerging miners

**While junior mining generally refers internationally to prospecting companies involved in the early stages of mining development, in South Africa the term is used more broadly to include exploration as well as small- to mid-tier producers.**

The Minerals Council represents various such miners including in the form of member organisations such as the Aggregate and Sand Producers Association of Southern Africa (ASPASA), the Clay Brick Association of South Africa and the South African Diamond Producers Organisation (SADPO).

Emerging miners is also a South African term used to refer to smaller new entrants to the industry typically being black economic empowerment companies.

The latest estimates of the size of this sector indicate that the overall revenue and expenditure of the junior and emerging mining sector in South Africa is as follows:

<b>Revenue</b>	<b>R million</b>
Interest received	383
Dividends received	4,243
Royalties received	27
Received rental on land and buildings	110
Received rental on plant and machinery	775
Profit on assets	1,768
Other income	1,898
<b>Total turnover</b>	<b>91,358</b>

*Source: Minerals Council*

<b>Expenses</b>	<b>R million</b>
Purchases	38,688
Employment costs	17,641
Interest paid	1,652
Royalties paid	865
Paid rental on land and buildings	1,308
Paid rental on plant and machinery	2,730
Depreciation	5,192
Losses on assets	996
Other expenditure	23,784
<b>Total expenditure</b>	<b>92,856</b>

*Source: Minerals Council*

## Junior and emerging miners continued

In addition, the sector employs 48,000 people in direct jobs, which is about 10% of the total industry workforce. In terms of the commodities mined, the highest concentration is in industrial minerals followed by diamonds, coal, iron ore and manganese, gold, chrome and PGMs.

While in South Africa the junior sector comprises mainly smaller producers, there is a smaller exploration sector. This sector has become the target of the Minerals Council's thrust to attract more investment into exploration. Over the past 10 years, South Africa's share of global exploration dollars has dropped from 2% to below 1%. This contrasts with countries such as Canada and Australia, which attract anything between 5% and 7% of global exploration dollars annually.

This is also reflected in the various stock exchanges: the Johannesburg Stock Exchange (JSE) has less than 10 listed junior companies, whereas the Toronto Stock Exchange (TSX) has over 1,200 listed junior companies.

The Minerals Council is involved in active lobbying

efforts with the DMRE, the Council for Geoscience, National Treasury and the JSE to improve the support of the financial services industry for exploration in South Africa. Part of this involves a tax incentive to promote exploration in the country.



# Critical minerals

## **In today's rapidly evolving technological landscape, the term 'critical minerals' has emerged as a focal point in discussions about industrial and economic development.**

These minerals, often scarce and possessing unique properties, play an indispensable role in powering modern technology and shaping various industries. Their significance extends far beyond their scarcity; critical minerals are the building blocks of innovation, acting as catalysts for advancements in renewable energy, electronics, aerospace and healthcare sectors.

South Africa, a nation rich in diverse mineral resources, stands at a pivotal juncture where it can harness the

potential of critical minerals to drive profound economic transformation. With a treasure trove of valuable resources beneath its soil, ranging from rare earth elements and PGMs to phosphates and lithium, the country possesses a unique advantage in addressing global demands and securing its economic future. The need for increased exploration in South Africa cannot be underestimated to ensure the discovery of mineable deposits of critical minerals. Overall, critical minerals find use in and are important in three main thematic applications.

### **1. Critical battery and vehicle metals applications:**

In the realm of battery and vehicle technologies, critical minerals take centre stage as they underpin the transition towards cleaner and more sustainable energy

sources. These minerals are fundamental components of rechargeable batteries used in electric vehicles and renewable energy storage systems. As the growth of the electric vehicle market is projected to surge, it is deeply intertwined with the availability of supply and sustainability of these critical minerals.

### **2. Renewable energy technology (e.g. wind and solar):**

Renewable energy sources, such as wind and solar, play a pivotal role in reducing greenhouse gas emissions and transitioning towards a more sustainable energy future. Critical minerals are essential components of renewable energy technologies, enabling the efficient generation, storage and distribution of clean energy. Neodymium, dysprosium, and praseodymium, which

## Critical minerals continued

are rare earth elements, are crucial for the production of high-performance permanent magnets used in wind turbines. These magnets, along with copper - a vital material in electrical wiring and connections, facilitate the generation of electricity from wind power and its transmission to the grid.

Silicon is fundamental to manufacturing solar cells, converting sunlight into electricity in photovoltaic panels. Tellurium and indium play a role in enhancing the efficiency of thin-film solar cells, contributing to effective solar energy conversion. Additionally, minerals like lithium, nickel, cobalt and graphite are instrumental in energy storage systems, particularly lithium-ion batteries. These batteries support the seamless integration of intermittent

renewable energy sources like wind and solar into the grid. The role of rare earth elements, such as europium and terbium, extends to lighting as they are used in phosphors for energy-efficient lighting solutions like LEDs (light-emitting diodes).

The growth of renewable energy industries underscores the importance of securing a stable supply of these critical minerals, while also addressing environmental considerations related to their extraction and processing. Understanding and managing the intricate relationship between critical minerals, sustainable technology advancement and environmental responsibility is vital for shaping a greener and more resilient global future.

### 3. Critical hydrogen economy metals applications:

The emerging hydrogen economy is another transformative space where critical minerals find significance. Hydrogen, as a clean and versatile energy carrier, is gaining attention for various applications, including fuel cells used in transportation and power generation. PGMs like platinum, palladium, ruthenium and iridium are essential catalysts in hydrogen fuel cells. Moreover, rare earth elements are employed in manufacturing electrolyzers for producing green hydrogen through water electrolysis. These minerals form the backbone of technologies that are pivotal

to decarbonising industries and achieving carbon-neutral energy systems. In addition, PGMs continued to be important in internal combustion engines where platinum, palladium and rhodium are used in catalytic converter systems to promote the conversion of harmful pollutants into less harmful compounds.

Again, a similar intricate interplay emerges when considering the hydrogen economy. For example, electrolyser technologies employ various materials, including rare earth elements, with evolving supply dynamics. As technological breakthroughs occur and markets mature, the demand for certain

minerals might rise or wane unpredictably. Similarly, the use of palladium in fuel cells is waning due to the high cost of the metal and there is a slow substitution by other metals such as platinum and ruthenium – and all the while internal combustion engines and demand is still present.



 DRDGOLD - Ergo plant

## Critical minerals continued

### Critical mineral lists of South Africa's trading partners

	Critical mineral	US	UK	Australian	EU	Canadian	Japanese	Indian	China
1.	High-purity alumina	Yes	Yes	Yes	Yes	Yes	No	No	No
2.	Antimony	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3.	Arsenic	Yes	Yes	No	Yes	No	Yes	Yes	No
4.	Barite	No	No	Yes	No	No	No	No	No
5.	Beryllium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6.	Bismuth	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7.	Boron	No	No	No	No	No	No	No	Yes
8.	Coking coal	Yes	No	No	No	Yes	No	No	No
9.	Cerium	Yes	No	No	Yes	No	Yes	Yes	Yes
10.	Cesium	Yes	No	No	Yes	Yes	No	No	Yes
11.	Chromium	Yes	No	No	No	Yes	Yes	Yes	Yes
12.	Cobalt	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13.	Dysprosium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14.	Erbium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15.	Europium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16.	Fluorspar	Yes	No	No	No	No	No	No	No
17.	Gadolinium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18.	Gallium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19.	Germanium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

## Critical mineral lists of South Africa's trading partners

	Critical mineral	US	UK	Australian	EU	Canadian	Japanese	Indian	China
20.	Graphite	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
21.	Hafnium	Yes	Yes	No	Yes	No	Yes	No	No
22.	Holmium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23.	Indium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
24.	Iridium	Yes	No	No	No	No	No	No	Yes
25.	Lanthanum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26.	Lithium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27.	Lutetium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28.	Magnesium	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
29.	Manganese	Yes	No	Yes	No	Yes	No	No	Yes
30.	Molybdenum	No	No	No	No	No	No	No	Yes
31.	Neodymium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32.	Nickel	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33.	Niobium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34.	Palladium	Yes	Yes	No	No	No	No	No	Yes
35.	Platinum	Yes	Yes	No	No	No	No	No	Yes
36.	Praseodymium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37.	Promethium	No	No	No	No	No	No	No	Yes
38.	Rhenium	No	No	No	No	No	No	No	Yes

## Critical minerals continued

### Critical mineral lists of South Africa's trading partners

	Critical mineral	US	UK	Australian	EU	Canadian	Japanese	Indian	China
39.	Rhodium	Yes	No	No	No	No	No	No	Yes
40.	Rubidium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41.	Ruthenium	Yes	No	No	No	No	No	No	Yes
42.	Osmium	No	No	No	No	No	No	No	Yes
43.	Samarium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44.	Scandium	Yes	Yes	No	Yes	Yes	No	No	Yes
45.	Selenium	No	No	No	No	No	No	No	Yes
46.	Tantalum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47.	Tellurium	No	No	No	No	Yes	No	No	No
48.	Terbium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49.	Thulium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50.	Tin	Yes	Yes	Yes	Yes	Yes	No	No	Yes
51.	Titanium	Yes	Yes	Yes	Yes	Yes	Yes	No	No
52.	Tungsten	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
53.	Vanadium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
54.	Ytterbium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55.	Yttrium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
56.	Zinc	No	Yes	No	No	Yes	No	No	No
57.	Zirconium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

# Health

## Occupational diseases, tuberculosis (TB) and HIV (human immunodeficiency virus) reported to the Minerals Council

Through the Minerals Council's flagship Masoyise Health Programme, performance against the industry occupational health milestones is monitored and it is reported on in this section.

In 2023, 114 companies representing 416,545 employees registered on the Minerals Council Occupational Health Information Management System. This accounted for 401 mines in South Africa, which represent about 87.3% of the estimated 477,000 employees in the mining industry.

## Occupational disease, TB and HIV statistics

There has been a steady increase in the reporting of occupational diseases both to the DMRE and to the Minerals Council. Simultaneously, there has also been a sharp decline in the number of diseases as can be seen in the table below.

### Occupational diseases reported to Minerals Council 2022 vs 2023 per commodity

Commodity	Silicosis		Pulmonary TB		Silicosis and TB		Noise-induced hearing loss (NIHL)		Total	
	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023
Gold	156	76	440	254	-	2	6	-	602	332
Platinum	23	14	259	191	-	4	-	-	282	209
Coal	-	-	95	49	5	-	7	8	107	57
Diamonds	-	-	6	7	-	-	6	4	12	11
Chrome	1	-	23	14	2	-	6	2	32	16
Manganese	-	-	6	5	-	-	-	1	6	6
Iron ore	-	-	21	21	-	-	-	2	21	23
Others	-	-	2	22	-	-	1	1	3	23
<b>Total</b>	<b>180</b>	<b>90</b>	<b>852</b>	<b>563</b>	<b>7</b>	<b>6</b>	<b>26</b>	<b>18</b>	<b>1,065</b>	<b>677</b>

## Health continued

All mines report annually to the DMRE on occupational diseases, TB and HIV. The provisional statistics from the Minerals Council for 2023 are reported on.

### **Occupational diseases reported to the Minerals Council 2023**

Reports from all mines showed a decrease of 36.5% in the total number of occupational diseases reported by mines, from 1,065 cases in 2022 to 677 cases in 2023.

We note that 2023 figures are up to Q4 2023 and are provisional and subject to change.

### **TB and HIV reported to Minerals Council for 2023**

Mines are required to report on TB and HIV. At Q4 2023, 270 mines representing approximately 416,545 employees had reported. This is compared to 390 mines representing approximately 427,048 employees that reported in 2021/2022.

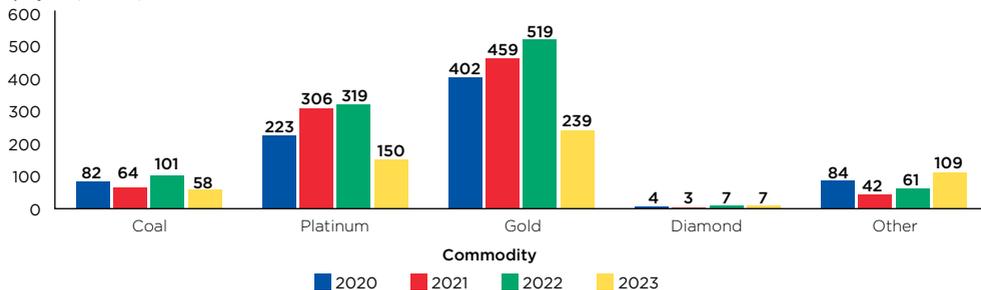
In Q4 2023, 83% of employees were provided with HIV counselling and 88% of employees were screened for TB. This is an improvement in comparison with 83% and 82% respectively noted at year end 2022. There has been an improvement of TB incidence rates year-on-year for most commodities compared to the national TB incidence.



Sibanye-Stillwater – SA gold operation

## TB incidence milestone performance 2023

Employees (number)



## Milestone performance

Performance against the industry and Masoyise occupational health milestones is monitored, and it is reported on below.

## Health performance milestones 2022 vs 2023

Milestone	2022	2023
Employees screened for TB (%)	83	88
Employees counselled for HIV (%)	82	83
Hypertension screening (%)	83	85
Diabetes screening (%)	79	81
Obesity screening (%)	0	83
Cholesterol screening (%)	0	19
Mental health screening (%)	0	4
Pneumoconiosis in novices (%)	0	6
Standard threshold shift (NIHL) (%)	19	2



Harmony - Kusasalethu

# Health continued

## Occupational hygiene milestones

During the 2014 Mine Health and Safety Council (MHSC) Summit, all stakeholders agreed that the industry should accelerate the reduction of exposure to respirable crystalline silica dust, respirable coal dust, respirable platinum mine dust and equipment noise as part of the journey toward the elimination of occupational diseases related to these hazards.

The Minerals Council's members further agreed to aspirational targets for each milestone per year in order to progress towards achieving the agreed milestones by December 2024.

The data reported below is from the Occupational Health Reporting System of the Minerals Council

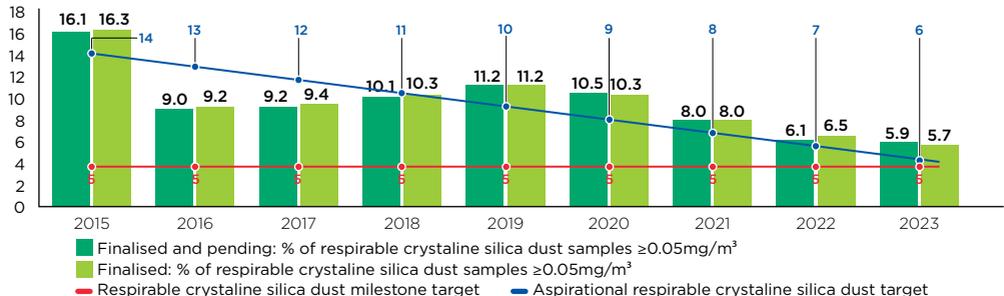
## Respirable crystalline silica dust milestone

By December 2024, 95% of all exposure measurement

results will be below the milestone level for respirable crystalline silica of  $0.05\text{mg}/\text{m}^3$ .

The data indicates that the industry has progressed well towards the achievement of the respirable crystalline silica dust milestone and achieved the aspirational target of 6% at the end of 2023. The graph below depicts the industry performance from 2015 to 2023.

## % of respirable crystalline silica dust samples $\geq 0.05\text{mg}/\text{m}^3$



## Coal dust milestone

By December 2024, 95% of all exposure measurement results will be below the milestone level for coal dust respirable particulate of  $1.5\text{mg}/\text{m}^3$ .

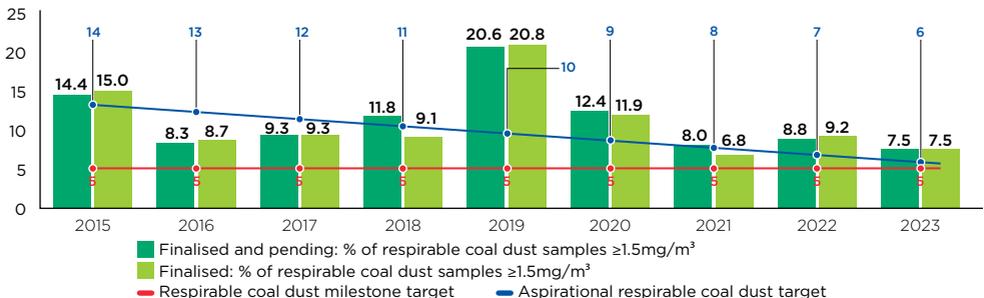
The data indicates that the industry progressed well towards the achievement of the respirable coal dust milestone up to 2021, when

the aspirational target of 8% was met at the end of 2021.

The Industry performance for 2022 however regressed, resulting in the industry not achieving the agreed aspirational target of 7% for the end of 2022, nor the agreed aspirational target of 6% for the end of 2023. The graph below depicts the industry performance from 2015 to 2023.



## % of respirable coal dust samples $\geq 1.5\text{mg}/\text{m}^3$



# Health continued

## NIHL milestone

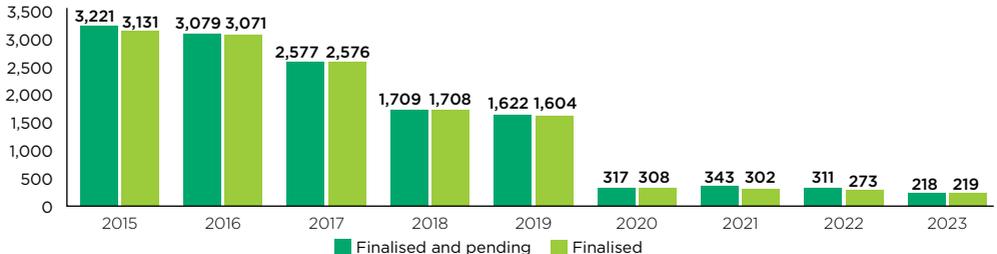
By December 2024, the total operational or process noise emitted by any equipment must not exceed a milestone sound pressure level of 107dB(A).

The data indicates that up to 2020 the industry progressed well towards achieving the equipment noise milestone, with the number of pieces of equipment emitting noise reduced from 3,221 in 2015 to 317 in 2020. The industry has made very little progress towards the achievement of the equipment noise milestone since 2021, with the number of pieces of equipment emitting noise only being reduced from 317 to 219 by the end of Q3 2023.

with the number of pieces of equipment emitting noise reduced from 3,221 in 2015 to 317 in 2020. The industry has made very little progress towards the achievement of the equipment noise milestone since 2021, with the number of pieces of equipment emitting noise only being reduced from 317 to 219 by the end of Q3 2023.



## Total number of individual pieces of equipment $\geq 107\text{dB(A)}$



# Safety

## **Following a vastly improved safety record in 2022, 2023 was a setback for the South African mining industry in respect of occupational safety.**

On Monday, 27 November 2023, a winder incident at one of the platinum operations in the North West resulted in 13 mineworkers losing their lives while others were seriously injured. The Minerals Council extends its heartfelt condolences to all the families, friends and colleagues affected by the tragic accident.

This tragic incident serves as a stark reminder that there can never be any

lapse in focus and vigilance regarding safety on mines. It is the most important aspect of mining and one that receives the industry's undivided leadership attention.

Nonetheless, safety lagging indicators throughout the year trended very positively in comparison to 2022, a year that saw the best performance on safety in the history of the industry. Throughout 2023 the industry maintained an average improvement of between 4% to 6% on lagging indicators with agencies such as transport and mining seeing an average improvement of around 60%.

The fall of ground performance was a concern early in the year as the trend showed a marked decrease compared to 2022. By 11 December 2023 the industry had recorded 14 fall of ground fatalities compared to 6 for the full year in 2022.



## Safety continued

Provisional statistics from the DMRE, as at 11 December 2023, show an overall regression in safety performance. Industry statistics for this period compared to the same period in 2022 show a 20%

regression in overall fatalities with 54 fatalities recorded against 45 in 2022. The table below shows the number of fatalities per commodity for 2023. Data provided is provisional and accurate up to 11 December 2023, but is subject to change.

### Fatalities 2023

	Gold	Coal	Platinum	Other
January	-	-	-	-
February	-	1	1	1
March	5	1	1	1
April	7	1	-	-
May	-	1	-	-
June	1	-	1	-
July	1	-	1	1
August	2	-	2	2
September	2	1	1	-
October	2	1	1	1
November	-	-	13	-
December	-	-	1	-
<b>Total:</b>	<b>20</b>	<b>6</b>	<b>22</b>	<b>6</b>
<b>Industry total:</b>	<b>54</b>			



The platinum and gold sectors were the highest contributors to fatalities, with 22 and 20 fatalities in 2023 respectively.

Transportation and mining, general, fires, electricity and explosives were the agencies that experienced a reduction in the number of fatalities, while all the other agencies recorded regressions.

The Minerals Council Board and the CEO Zero Harm Forum continue to monitor the progress on the trackless mobile machinery project that will address

transport-related incidents. The industry continued to implement several low-hanging fruit solutions with a focus on traffic flow and risk analysis. The marked improvement in this

category can be attributed to the efforts on traffic management now bearing results as many companies have matured their approach to interactions between vehicles and personnel.

Efforts have also increased in managing compliance with the regulations that came into effect in December 2022.

### Number of fatalities per classification

Classification	01/02/2022 - 11/12/2022	01/01/2023 - 11/12/2023
Fall of ground/rockfall	5	14
Machinery	-	2
Transportation and mining	19	8
General	17	15
Conveyance accidents (shaft/winder)	1	13
Electricity	1	-
Fires	1	-
Explosives	1	-
Subsidence or caving	-	-
Heat sickness	-	-
Diving sickness	-	-
Occupational diseases	-	-
Miscellaneous (specify)	-	2
<b>TOTAL</b>	<b>45</b>	<b>54</b>

## Safety continued

### Reduction in injuries per classification

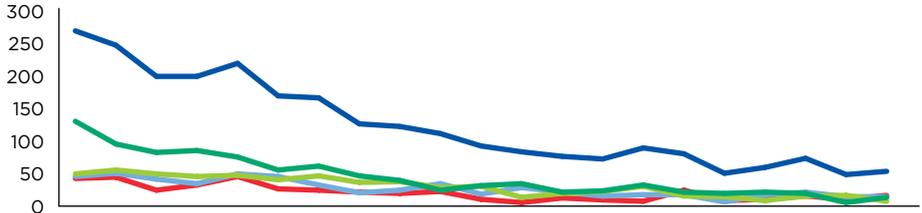
Classification	01/02/2022 - 11/12/2022	01/01/2023 - 11/12/2023
Fall of ground/rockfall	284	274
Machinery	159	149
Transportation and mining	340	354
General	1,149	1,008
Conveyance accidents (shaft/winder)	22	18
Electricity (not causing fire)	17	15
Fires	6	14
Explosives	2	6
Subsidence or caving	-	-
Heat sickness	3	14
Diving sickness	-	-
Occupational diseases	1	-
Miscellaneous (specify)	5	55
<b>TOTAL</b>	<b>1,988</b>	<b>1,907</b>

The industry recorded a 4% reduction in serious injuries in 2023 with a total of 1,907 compared to 1,988 in 2022. The gold sector was the only

commodity that experienced a regression in injuries sustained with an increase of 7%, while the platinum sector saw a 9% reduction in serious

injuries. Coal and other commodities regressed by 10% and 4% respectively.

## Fatalities per classification

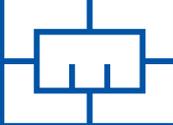


2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Falls of ground	131	96	83	86	76	56	62	47	40	25	32	35	22	24	33	22	20	22	20	6	14
Transportation and mining	50	56	50	46	48	41	47	37	38	29	31	14	20	23	31	16	15	9	16	17	8
General	46	51	42	35	50	46	33	21	25	35	19	29	22	16	18	18	7	18	22	15	15
Other	43	45	25	33	46	27	25	22	20	23	11	6	13	10	8	25	9	11	16	11	17
All	270	248	200	200	220	170	167	127	123	112	93	84	77	73	90	81	51	60	74	49	54



Sibanye-Stillwater - SA operations



**MINERALS COUNCIL**  
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