MINERALS COUNCIL
SOUTH AFRICA

#MakingMiningMatter

FACTS AND FIGURES POCKETBOOK 2019

FOREWORD

Mining plays a significant role in the economy of our nation. It is therefore important for data on our industry to be freely available so that stakeholders can understand how our industry is performing.

The Minerals Council chief economist, Henk Langenhoven, and his team have compiled this document to showcase our industry using this data, and provide some insight into what the numbers mean for our country and the future of our mining industry. The Minerals Council and our members, in close co-operation with unions and government, continue to strive for best practice in all areas, in the industry's quest for zero harm.

The availability of credible statistics which paint an accurate picture of the South African mining sector is crucial for the Minerals Council.

Statistics allow us to fulfil our mandate as the voice of mining in South Africa.

Statistics also help South Africans to develop a better, more nuanced understanding of the current state of the mining industry.

They also allow the industry to accurately represent the wider impact of mining on the country as a whole.

The Minerals Council's economics department plays a key role in gathering the data necessary for us and our members to properly understand the state of the sector and to work to improve growth across it.

A *Facts and figures 2018* interactive book was published in September 2019 and has been distributed widely – it is available on the Minerals Council website. This pocketbook provides a snapshot of the industry and the impact that South Africa's mineral wealth has on our everyday lives.

In compiling the Facts and Figures publication, the Minerals Council relies on various primary data sources such as: Statistics South Africa, the Department of Mineral Resources and Energy, the South Africa Reserve Bank, the World Bank and the United States Geological Survey.

Revisions to published data by these primary data sources is a common occurrence and a standard practice in the collection and publication of data.

As the Minerals Council depends on the latest official data as published by the primary data source, this may by extension result in subsequent revisions to our estimates and/or published numbers.

THE MINING SECTOR IN 2019*

77

MINERALS COUNCIL MEMBERS

18	Base minerals
17	Coal
13	Platinum
8	Gold/Uranium
6	Mining contractors
3	Diamonds
3	Associations

employed
454,861 people

contributed
R24.3 BILLION
in taxes to
South Africa

contributed
R360.9 BILLION
to GDP

TOGETHER THESE MEMBERS IN 2019

represented **90%**
of South Africa's mineral
production

* *Estimates based on latest statistics available*

CONTENTS

VISION

To ensure mining matters for South Africa.

MISSION

To play a leadership role in enabling the South African mining sector to achieve its real potential for 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 a member of, or remain a member of, the Minerals Council. The five values of the Minerals Council are:

- **Responsible citizenship**
- **Respect**
- **Trust**
- **Honesty**
- **Accountability**

HISTORY SNAPSHOT

1 **1867**

First diamond discovered in South Africa, near Hopetown – called Eureka, it weighed 21.25 carats

2 **1886**

George Harrison discovered the main gold reef on Langlaagte farm, leading to the Witwatersrand gold rush. Thousands of fortune seekers descend on Egoli, the 'city of gold'

3 **1889**

Witwatersrand Chamber of Mines established

10 **2001**

Association of Mineworkers and Construction Union (AMCU) launched

11 **2002**

MPRDA is promulgated into South Africa law

12 **2004**

Mining Charter is launched

13 **2012**

Marikana tragedy on the platinum belt

14 **2014**

Five-month platinum strike

15 **2016**

Mining Precinct opens its doors, aiming to boost the industry through R&D

4 **1922**

Rand Rebellion, an armed uprising of miners

5 **21 Jan 1960**

Coalbrook mine disaster – 435 lives lost in South Africa's worst mining tragedy

6 **1982**

National Union of Mineworkers (NUM) formed

7 **1987**

Largest strike in the South African mining industry, with an estimated 340,000 people downing tools on the first day

8 **10 May 1995**

Vaal Reefs mine disaster – 104 mineworkers died in worst shaft accident in South Africa

9 **1996**

Mine Health and Safety Act (MHSA) passed

16 **2017**

Chamber launched major health screening initiative

17 **2018**

MINERALS COUNCIL SOUTH AFRICA

Chamber of Mines formally renamed

18 **2019**

Khumbul'ekhaya health and safety initiative launched

MESSAGE FROM THE CEO

"The mining industry contributed R360.9 billion to GDP."

It is again a great pleasure to present to you the latest Facts and Figures pocketbook.

It is intended to provide preliminary insights into the 2019 trends in South Africa's mining industry. It will be followed, as usual, by the comprehensive Facts and Figures booklet we will publish later in the year.

Notwithstanding the manifold challenges the industry faces, the R360.9 billion value produced still represents an 8.1% contribution to GDP, which is only the direct contribution. In real terms, however, this represents a 2.8% decline on 2018 despite improved commodity prices, emphasising the critical importance of dealing with the issue of security of power supply.

The industry notes the improved health and safety performance in 2019. However, we feel deeply saddened by the passing of those colleagues who have lost their lives at work, and are painfully aware that there remains a long road ahead before we achieve our goal of eliminating fatalities due to accidents and occupational health issues.

The industry's most labour-intensive sectors – deep-

level gold and PGM mining – continued to decline for a variety of reasons, contributing to the 0.35% decline in employment. On the positive side, we see appreciable employment growth in chrome, manganese, iron ore and coal.

The year 2020 will require a concerted effort from all stakeholders to sustain and build our industry. We are committed to playing our part.

Roger Baxter
Chief Executive Officer
February 2020

THE INDUSTRY NOTES THE IMPROVED SAFETY PERFORMANCE YEAR-ON-YEAR, BUT REMAINS FOCUSSED ON ZERO HARM

MINING CONTRIBUTION SUMMARY: IN 2019*

Direct contribution of mining to GDP:
R360.9 billion
(2018: R350.8 billion)

Mining GDP growth rate (2018/2019):
-2.8%

Mining contribution as % of total GDP:
8.1% (2018: 7.3%)

Direct contribution of mining to fixed investment:
R94.7 billion
(2018: R91.1 billion)

Total primary mineral sales:
R538.9 billion
(2018: R475 billion)

Mineral export sales:
R348.2 billion
(2018: R312.0 billion)

Royalties paid:
R8.6 billion
(2018: 7.6 billion)

Company taxes paid:
R24.3 billion
(2018: R22.0 billion)

PAYE by mining personnel:
R22.7 billion
(2018: R21.0 billion)

Employment:
454,861

Employee earnings:
R135.9 billion
(2018: R134.5 billion)

Value added tax (net outflow):
R32.9 billion

Transfer duties:
R16 million

** Estimates based on latest statistics available*

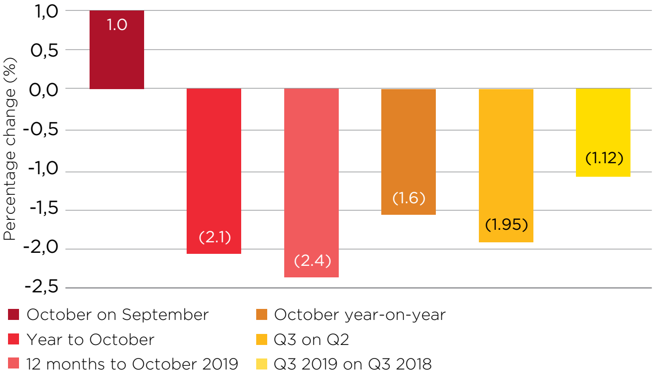
The Minerals Council estimates that in 2019 production in the mining sector will have contracted by 2.8%, similar to the decline recorded in 2018.

Although mining production saw some short-term improvement in the latter part of the year, the improvements were not strong or sustained enough to revise this outlook.

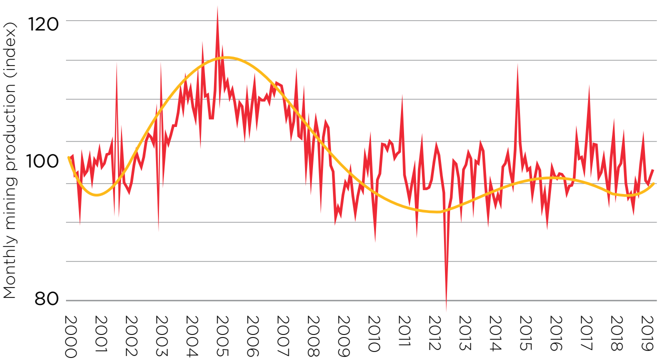
The indexed production trend shows that since 2009, South African mining production seems to be stuck in a band below the 2000 levels, which is quite concerning.

Explanations for this are logistical constraints (like rail capacity), and disruptions

Mining production (as at September 2019)



Mining production (index): 2000-2019



(electricity provision) and industrial action as well as community unrest, especially in rural mining areas.

Prices of South Africa's four major mining commodities, converted to rands, have been particularly volatile recently.

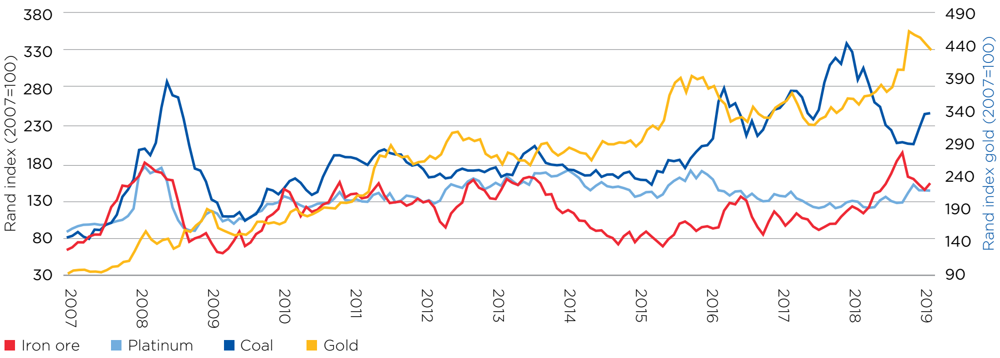
Gold has surged on global uncertainties. Coal prices dropped from October to September 2019 by 40% but recovered by December to only 27% below the peak. Iron ore prices jumped by 113% over a year to July 2019 but subsided again by 26% since. The PGM basket price, assisted by rhodium and palladium, has surged to its highest levels ever.

The weighted average rand price performance of the four major commodities is shown in red in the graph.

The commodity price movement has been overlaid on mining production. Due to the structural constraints mentioned earlier, mining production has been slow to respond to the better prices. The availability of electricity has become a major constraint on production.

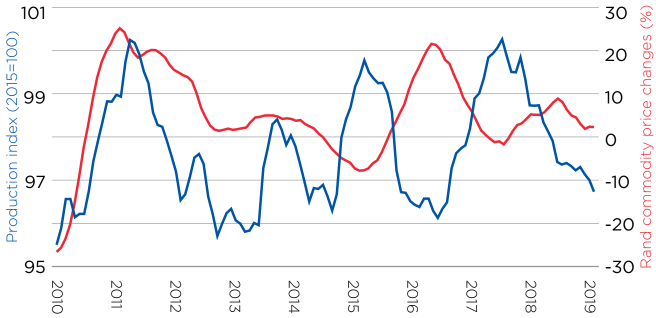
Relentlessly rising input costs for mining in South Africa is a further threat to the sustainability of the sector.

Rand commodity price indices: 2007-2019



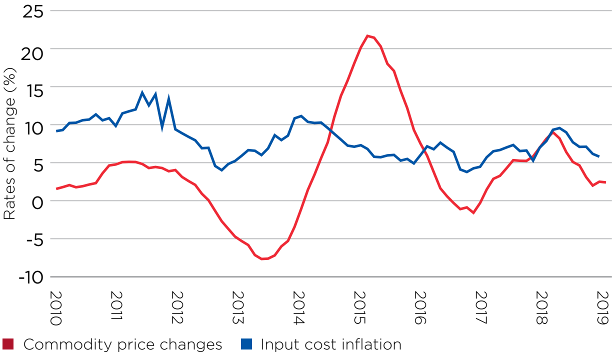
The graph shows the same price trajectory for the South African commodities, superimposed on cost escalation over the same period. The Minerals Council estimates that input cost inflation for the total mining sector was 7.6% in 2019. This is 2.9 percentage points above the national average production inflation rate.

Commodity prices versus production: 2010-2019




Vedanta Zinc International – Black Mountain Mining

Composite cost index: 2010-2019



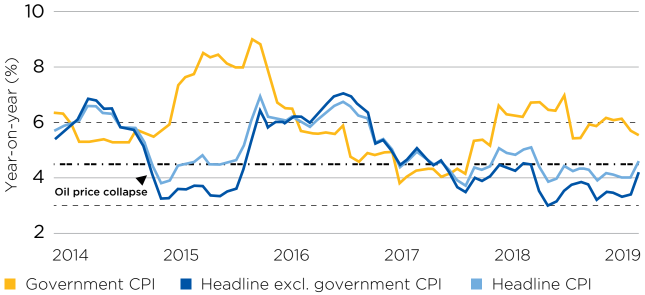
Rising electricity prices are of critical concern to the mining sector in South Africa. Mining depends directly and indirectly on government supplied infrastructure and services, amounting to R100 billion or 45% of intermediary input costs. In addition, the industry spends R35 billion on housing (2018 actual numbers).

Water	Electricity	Harbours	Rail	Road	Housing
R8 billion 4% of inputs costs	**R22 billion** 10% of input costs	**Transport and storage: R71.6 billion** 32% of input costs			**R34.6 billion** 22% of wages

Whereas the diagram above shows input cost escalation trends for all mining procurement (although a large proportion is attributable to government induced costs) the impact of government on the general cost structure of the economy is similarly debilitating.

Harmony – Masimong Mine

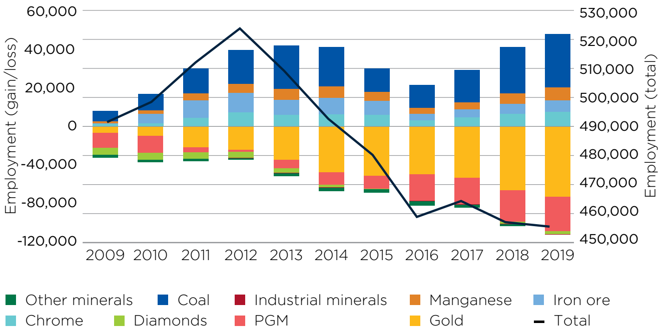
Public and private consumer price index (CPI): 2014-2019



Government CPI is a combination of assessment rates; water; electricity; petrol taxes; trains; motor license and registration fees; communication; education; university boarding fees; SABC TV license; Lotto; alcoholic beverages and tobacco; non-alcoholic beverages and soft drinks.

Source: Stats SA and SARB

Total employment gains and losses by commodity



The graph to the left shows that the cost escalation of government supplied goods and services are running at 2 percentage points higher than the headline consumer price index, and in some instance 4 percentage points higher than private sector induced cost escalation.

The graph to the left shows the cumulative employment gains and losses by commodity since 2008 (2008 = base).

The data indicates that employment levels stabilised during 2019. It seems however, that the small gains registered during 2019 stagnated towards the end of the year. It is hoped that this is not the prelude to further job losses during 2020.

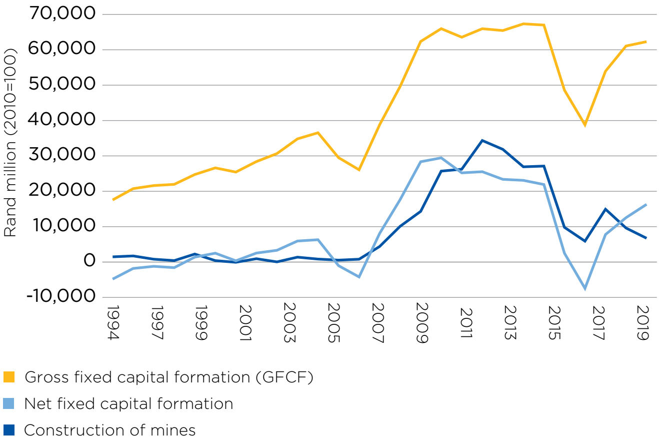
Gross fixed investment in the mining sector has showed some improvement since the middle of 2018 (blue line), after a period of stagnation from 2007, and a major decline between 2013 and the lower turning point in 2018.

The net fixed investment (after depreciation or the 'consumption of capital') trend correlates with the gross investment pattern but at a much lower level (yellow line).

A concerning trend from the disaggregated data is that spending on the construction of mines keeps on falling. Conversely, spending on machinery and transport equipment increased strongly during 2019, which resulted in depreciation falling.

The latter trend explains why net investment improved during 2019, because of the new machinery and equipment being acquired.

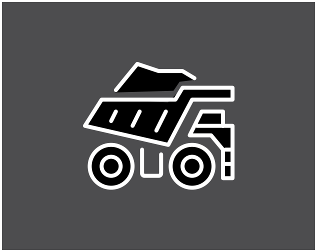
GFCF of mining by type



Seriti – Kriel Colliery

Coal is the largest component of mining by sales value and is a critically important source of primary energy (electricity and liquid fuels) that drives the economy.

South Africa is one of 50 coal producing countries in the world. It is also one of 70 countries where coal is used for commercial reasons.



In South Africa it is mainly used for electricity generation and coal-to-liquids manufacture.

Industry developments

There are three major categories of coal customers in South Africa:

- Eskom consumes about 45% (117.1Mt: 2018) of domestically produced coal
- 30% is consumed by Sasol
- 25% is for industrial and household use.

Of total production volumes, exports account for approximately 30%.

Industry constraints

- Environmental licensing, prospecting rights, mining rights
- Rail tonnage constraints (Overvaal tunnel on Coal Link line)
- The exploitation of the Waterberg reserves (requiring large investments)
- Community unrest and challenges within local government structures

Potential solutions and forecasts

- Coal has an export potential of 110Mt (compared with the current 75Mt). An additional 35Mt would entail:
  - potentially raising employment by 11,600 people
  - increasing investment by more than 10% (2017: gross fixed capital formation at R18 billion) to an estimated R20 billion per annum

Direct employees
↗ 3%

92,230

Employee earnings
↗ 8%

R27.9 billion

Royalties paid
↗ 25.8%

R2.1 billion

Production ↗ 2.2%

258.9 million tonnes

Total sales ↘ -4.5%

R139.3 billion

Value of percentage exported

39%

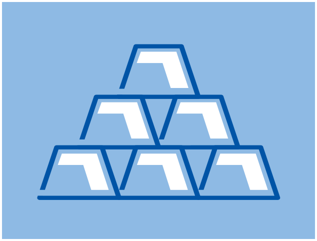
Coal production and employment: 2009 – 2019

Source: *DMRE, Minerals Council South Africa*

PLATINUM GROUP METALS (PGMs)

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

They are used largely for jewellery and in the automotive industry for their excellent catalytic properties. Other uses include investment (coins and bars), fuel cells, and many other industrial purposes.



Industry developments in 2019

- Surges in the palladium and rhodium prices during the year significantly changed the nature of the PGM basket. Palladium prices rose above that of platinum in 2019 and traded, on average, US$679/oz higher than platinum. Rhodium prices increased 76.1% in US$, while the rand price increased 91.9%. During 2019, platinum prices continued to be suppressed, decreasing 1.8% in US$ terms, however, the weaker rand assisted in lifting the realised rand price for South African producers. The rand price increased 6.9% in 2019

- The 32.5% increase in royalties paid by PGM producers for the 2018/19 fiscal year is also attributable to a higher PGM basket price

- In 2019, the largest PGM producers concluded a successful round of wage negotiations with labour unions. The negotiations were held between June and November 2019. A noteworthy development was the settlement of the wage deal without industrial action, allaying fears that had been lingering in the industry, particularly given the historic track record of wage negotiations in the industry

- We estimate that production in the sector contracted by 2.9%, mirrored by an employment decline of 1.51% or -2,528 jobs in 2019

Industry constraints

- Electricity – unreliable power supply coupled with a steep and unpredictable increase in electricity prices. In 2019, the energy regulator granted Eskom tariff increases which effectively amounts to a 9.8% increase per year over a 3-year period
- Despite plans to build own generation plants (approximately 250MW publicly communicated by PGM producers), regulatory and policy hurdles remain a significant hindrance to these projects
- Steep increases in input costs from labour, electricity and suppliers of approximately 8.66% for the PGM industry in 2019. This is double the national producer inflation rate which recorded a 4.76% increase in 2019
- Disruption to operations as a result of community protests

Potential solutions

- Promoting significant investment demand for platinum
- Increasing investment in stimulating global demand for platinum jewellery
- Playing a leading role in adopting and accelerating the roll-out of the platinum-based hydrogen economy
- Improving vehicle emission standards in Brazil, Russia, India, China and South Africa (BRICS) economies


Northam Platinum – Booysendal Mine

2019 percentage movement in PGM prices

	Platinum	Palladium	Rhodium	Iridium	Ruthenium	ZAR/US$
% US$ prices	-1.8%	49.5%	76.1%	15.3%	7.2%	8.91%
% Rand prices	6.9%	62.8%	91.9%	25.6%	16.7%	

Direct employees -1.5%

164,513

Employee earnings -1.3%

R52.1 billion

Royalties paid 32.5%

R1.12 billion

Production -2.9%

262.9 tonnes

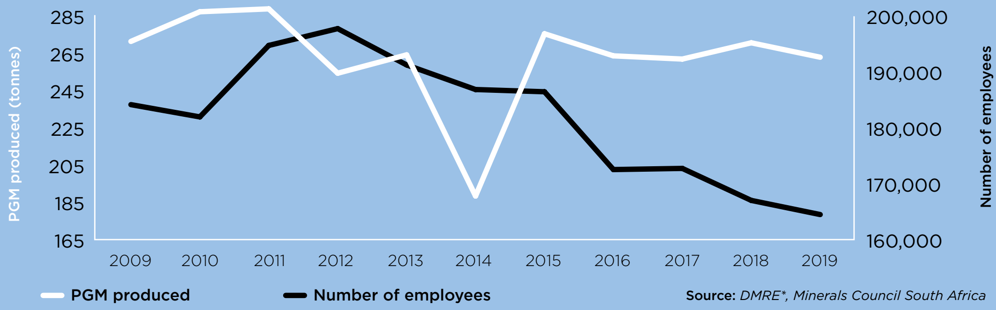
Total sales 18.9%

R124.6 billion

Value of percentage exported

91.3%

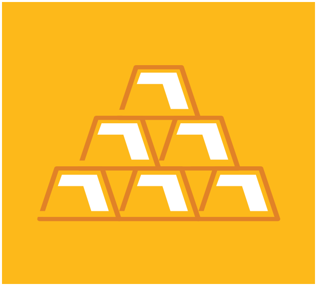
PGM production and employment: 2009 – 2019



Source: *DMRE*, Minerals Council South Africa*

* DMRE – Department of Minerals and Energy

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



Industry developments in 2019

- Gold production in South Africa was adversely impacted by two major developments in 2019. First was a five-month strike at one of the country's major gold producers, Sibanye-Stillwater, called by the labour union, AMCU (Association of Mineworkers and Construction Union), over wage increases. The strike started in November 2018 and ended in April 2019

- Second was the carbon tax which was introduced in June 2019. The tax will eat away margins in the South Africa gold industry. The Minerals Council estimates that in 2020 the industry will pay R15 million (direct and indirect) as part of its carbon tax obligation. In 2030 this is likely to rise to R1.6 billion with indirect impacts accounting for over R1.5 billion

Industry constraints

- Effectively dealing with legacy issues

- Illegal mining, crime, theft of precious metals and security at the mines – seven tonnes of gold is lost annually as a result

- Rapidly increasing input costs, which in turn threaten the sustainability of the industry. Electricity, steel and wage costs have risen much faster than producer inflation. Electricity prices have trebled in the past seven years

- Concerns over the future reliability of critical inputs such as electricity

- Ongoing legislative and tax cost increases (e.g. municipalities taking over water and electricity supply at a much greater cost to the industry)

- Falling productivity (lower grades, increasing depth)
- Community expectations, community protests and various challenges in local government
- Labour market stability (inter-union rivalry, lack of union recognition of the dire economic and financial position of some mines/shafts)

Potential solutions

- Unlocking potential through increased research and development (R&D) and rapid introduction of modern techniques to sustain production by improving productivity (more precise rock-drilling, resulting in less rock waste to surface) which counters lower grades of ore, improving advanced ore body knowledge, non-explosive mining methods, etc
- Introducing specialised police mining units and recruiting suitable expertise to tackle crime
- Stabilising the unsustainable rise in administered prices which represent 50% of intermediary costs for mines and are completely out of mining companies' control
- Trying to prevent new taxes, imposts and levies on input costs e.g. postponing the carbon tax
- Stabilising Eskom (financially and operationally), with the help of the industry

DRDGOLD – Far West Gold Recoveries

Direct employees
-5%
95,130

Employee earnings
-12%
R24.3 billion

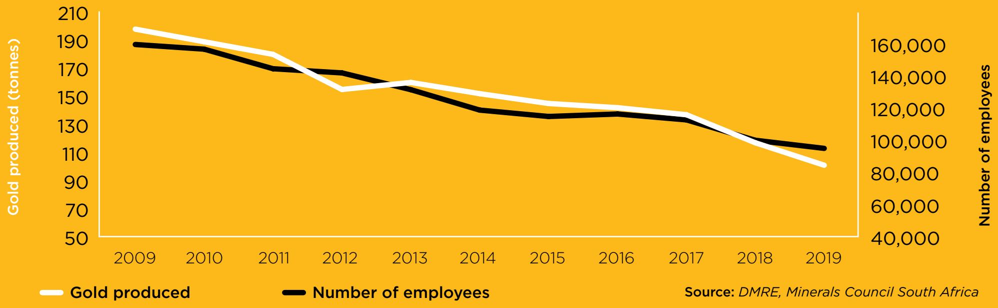
Royalties paid
-51.3%
R288.0 million

Production -13.5%
101.3 tonnes

Total sales 3.7%
R72.6 billion

Value of percentage exported
33%

Gold production and employment: 2008 – 2018



Source: *DMRE, Minerals Council South Africa*

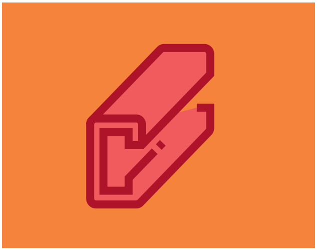
IRON ORE

Iron is the most common element on earth, comprising most of the planet's inner and outer core. Iron has been used by humans since ancient times to make tools.

Most iron is used to manufacture steel, which is in turn used in the construction, engineering, automotive, and machinery industries. The supply of iron ore is an important factor for the global economy.

Industry developments in 2019

- The tailings dam collapse in Minas Gerais, Brazil, had profound impacts for the global iron ore industry throughout 2019. The disaster resulted in the shutdown of several iron ore operations in Brazil for safety checks. Importantly, the development has resulted in increased scrutiny of tailings dam management, which is a positive development for the global mining industry's health and safety track record.
- Tropical cyclones in late March 2019, idled iron ore mines and ports in north-western Australia, which is the main producing area in the world's top iron ore export country
- The latter half of 2019 also saw restocking of Chinese port inventories, reversing the downward trend that had been apparent in the first half of the year
- The combination of the supply disruptions and increased demand contributed to the iron ore price rally in 2019.



MOST COMMON ELEMENT

Iron is the most common element on earth, comprising most of the planet's inner and outer core

Iron ore prices started 2019 averaging $75/tonne and peaked at $125/tonne (a 66% increase) owing to these developments

- Toward the end of 2019, iron ore prices moderated to close the year off at $91.5/tonne. This was a combination of seaborne supply recovering, as production from Brazil slowly returned, and declines in Chinese steel production in line with a rebalancing economy and uncertainty over the global economy

- Despite a 5.1% decrease in South African iron ore production, nominal sales increased 39.4% owing to higher prices in 2019

Industry constraints

- Known reserves in South Africa are estimated to be depleted within the next two decades, in the absence of further exploration and discoveries. Promoting a greenfield exploration boom, that incentivises exploration, is particularly urgent for the domestic iron ore industry

- Logistics – limited and expensive rail and port capacity. The dominance of the state in the logistics industry creates bottlenecks to the export capability of the industry

- Community unrest and challenges with local government structures

- Global trade tensions – which, as at the end of 2019 have been abating, have the potential to slow global growth, impair manufacturing and in turn transmit to steel and iron ore demand

- A contracting Chinese economy threatens the long-term structural demand for iron ore and will result in depressed prices

Industry solutions and opportunities

- Although a limited resource, South African iron ore is of a higher grade, commanding world prices in the upper tier

- Encouraging consolidation of remaining iron ore reserves

- Encouraging further exploration

Kumba Iron Ore – Sishen Mine

Direct employees
↗ 2.6%

19,092

Employee earnings
↗ 0.20%

R6.6 billion

Royalties paid
↘ -4.1%

R2.1 billion

Production ↘ -5.1%

70.5 million tonnes

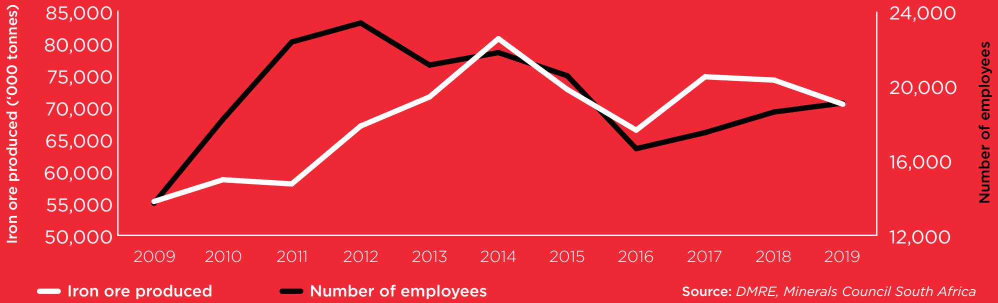
Total sales ↗ 39.40%

R71.4 billion

Value of percentage exported

91%

Iron ore production and employment: 2009 – 2019



Source: *DMRE, Minerals Council South Africa*

Manganese is the fourth most used metal on earth in terms of tonnage, behind iron, aluminium and copper.

It has numerous applications, including objects made of steel, portable batteries and aluminium beverage cans. In each case, manganese plays a vital role in improving the properties of the alloys and compounds involved in each specific application.

In steel production, manganese is essential for improving the properties of steel, making steel resistant to corrosion and abrasion. Steel production accounts for approximately 90% of manganese consumption.

South Africa hosts 74% of the known global manganese resource and 30.2% of the reserve.

Industry developments in 2019

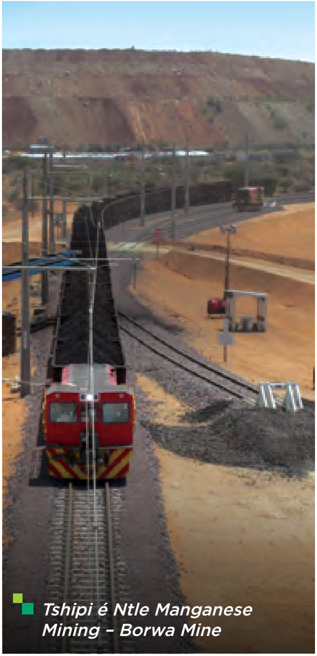
- Manganese production increased 10.5%, in line with its decade-long compound annual growth rate. The production estimate for the year is 16.4Mt
- Transnet launched the world's longest production train, which is dedicated to transporting manganese between Sishen and Saldanha, expanding export capacity by 1Mt
- 97% of domestic manganese production is exported, of which, 82% is exported to Asia (68% to China and 14% to India). Steel production dynamics in these countries drive domestic production patterns
- In late 2018 (for 2019 implementation), China introduced new legislation for rebar production, which increased the manganese intensity per tonne of steel. This is expected to be supportive of manganese demand into the foreseeable future. Similarly, on-going economic reform and predicted growth in India is expected to remain strong, which also should support steady manganese demand

Industry constraints

- Steep increases in input costs from logistics and suppliers of approximately 8.15% for manganese ore mining in 2019. This is significantly above the national producer inflation rate which recorded a 4.7% increase in the same year
- Logistics – limited rail and port capacity. The dominance of the state in the logistics industry has resulted in investment in capacity lagging demand for port and rail export capacity
- The limitation of rail capacity and reliability results in output being transported via road, which carries a cost premium of 25%
- Over the last decade, logistics costs have doubled and now account for the largest component of input costs (50% of production input costs and 34% of total input costs). Persistently high increases in logistics costs given their weight in the cost basket, threaten the sustainability and competitiveness of operators in the industry
- Community instability around mining operations has adverse implications for sustainability

Potential solutions and opportunities

- South Africa has 74% of world resource but only commands 30% of total global production
- Rail capacity to Port Elizabeth is currently only 5.5Mt per annum but could be upgraded to 12Mt
- Port Elizabeth port capacity is 6Mt but could be upgraded to 10Mt by 2023



Tshipi é Ntle Manganese Mining – Borwa Mine

Direct employees
↗ 15.9%

10,846

Employee earnings
↗ 18.6%

R3.5 billion

Royalties paid
↗ 20.6%

R802 million

Production ↗ 10.5%

16.4 million tonnes

Total sales ↗ 6.3%

R47.6 billion

Value of percentage exported

97%

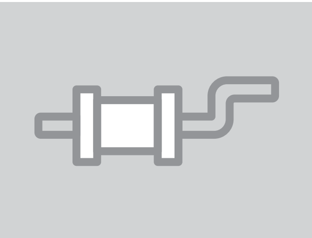
Manganese production and employment: 2009-2019

Source: *DMRE, Minerals Council South Africa*

Chrome is known for its high corrosion resistance and hardness.

It is essential in the production of stainless steel, which accounts for 85% of its commercial use. If we take into account other steel applications the proportion goes to 95%.

Around 70% of the world's chrome resources can be found in South Africa, which is also the largest producer of chrome globally.



Industry developments

Mainly because of electricity challenges in South Africa, most of our chrome is exported to China where it is processed into ferrochrome.

From 2006 to 2015 there was increased price volatility of chrome ore, mainly influenced by Chinese demand and South African supply. However, from 2017 to 2019 there was benign volatility arising from oversupply in the market of approximately 3Mt a year.

Industry constraints

- A proposed export tax will undermine production and investment in new mines. Electricity shortages and tariff hikes remain the major constraints for the upstream ferrochrome industry's spare capacity
- Electricity availability and costs – the country has virtually lost, or is not fully utilising, its ferrochrome smelting capacity
- Illegal mining of chrome

Potential solutions and forecasts

- Improving the availability of Transnet's locomotives through increased maintenance
- South Africa has 70% of the world resources but only commands 46% of production. Given the increasing demand of chrome, particularly from China, there is significant scope to increase production

Direct employees
↗ 4.0%

19,693

Employee earnings
↗ 10.0%

R6.1 billion

Production ↘ -1.8%

17.5 million tonnes

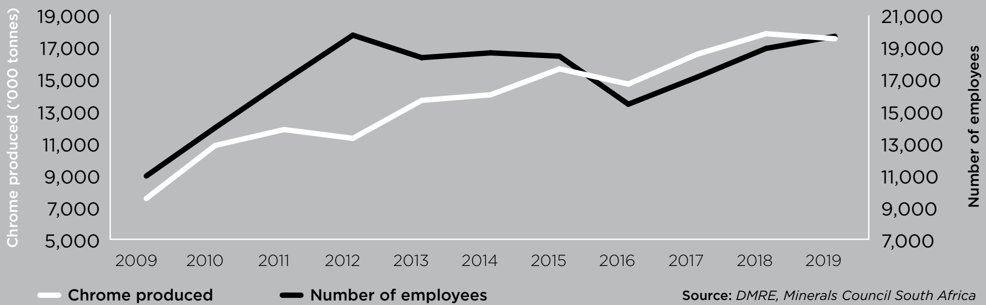
Total sales ↗ 4.4%

R22.8 billion

Value of percentage exported

47%

Chrome production and employment: 2009-2019



Source: *DMRE, Minerals Council South Africa*

DIAMONDS

Diamonds comprise an intricate lattice of carbon atoms, a crystalline structure that makes them harder than any other form in nature.

This characteristic makes diamonds not only popular in jewellery, but also desirable in high-tech cutting, grinding and polishing tools.

Industry developments

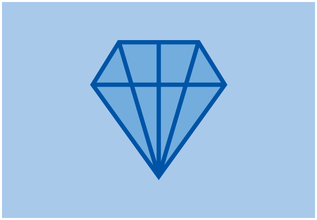
South Africa is the world's eighth biggest diamond producer.

Illegal mining has plagued the industry in recent years. Internationally there are fears that synthetic diamonds provide fierce competition for natural carats.

Classified as a luxury good, natural diamonds compete with such products as Louis Vuitton bags, Krug and Dom Perignon champagne and jewellery made by Bulgari. While these products recorded stellar performances, natural diamond production fell, leading to suggestions that synthetics are to blame.

Industry constraints

- The gazetted Mining Charter 2018:
  - The Mining Charter as gazetted now applies to the diamond sector which is legislated by the Diamonds Act (2006)
  - Requirements have been outlined according to thresholds as stipulated in Sections 4.3 and 4.4 of the Mining Charter
  - Requirements for dealers and diamond beneficiators may have an adverse impact



SOUTH AFRICA IS THE WORLD'S EIGHTH BIGGEST DIAMOND PRODUCER

on their businesses – with the unintended consequence being the ability of diamond producers to meet their required gross local sales target of 15% (medium producers) and 40% (large producers)

- This may place further pressure on an industry that has been in a decline for the past decade

- A more holistic discussion regarding the growth, transformation and competitiveness of the downstream sector is required
- Illegal mining activities are on the rise (Kimberley, Koffiefontein, Namaqualand, etc.)
- Safety (illegal miners and communities), environmental and social concerns
- Illegal mining activities undermine the Kimberley Process status of South Africa (this includes companies that have activities downstream and are driving consumer demand based on responsible sourcing)

Potential solutions and opportunities

- A clear regulatory framework needs to be outlined in instances where illegal miners are formalised into artisanal miners
- The diamond industry, the DMRE and the South African Police Service need to work together to facilitate the prosecution of those involved in illegal mining

Petra Diamonds – Finsch Mine

Direct employees
↘ -4.0%
15,728

Employee earnings
↘ -10.0%
R4.7 billion

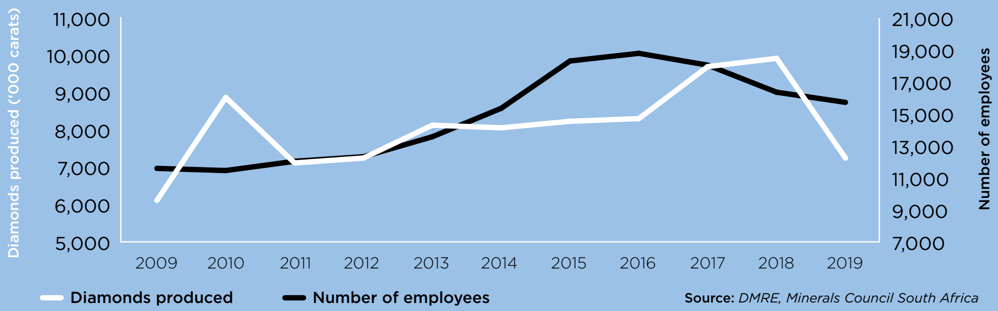
Royalties paid
↗ 2.6%
R362 million

Production ↘ -26.9%
7.2 million carats

Total sales ↘ -23.2%
R13.3 billion

Value of percentage exported
59%

Diamond production and employment: 2009-2019



Source: *DMRE, Minerals Council South Africa*

OTHER MINERALS

South Africa is richly endowed with a vast array of minerals. The country not only ranks highly in the resource or reserve quantum in some commodities, relative to the global endowment, but also in the diversity of minerals available in the country. In 2019, total sales of other minerals amounted to R28.6 billion.

In nominal terms, **zinc** recorded the most notable increase of a three-fold (330%) increase in total sales, the result of a similar increase in physical production as new production came on stream in the year.

Aggregate and sands recorded the highest total sales in this segment of R6.9 billion. This is despite a 1.8% decrease in physical production, which is a function of an ailing domestic construction sector where most of these materials are used.

The depressed construction sector is also evidenced by the 1.1% decrease in **limestone** production, which is predominately used in cement production, a key ingredient for the construction sector.

Copper production recorded a notable increase of 22% in physical production. As concerns over global emissions mount and emphasis on decarbonising the energy sector continues, copper demand is expected to remain strong. The metal is a key ingredient in electricity generation, transmission and distribution, and has a high intensity use in green energy projects.


Rio Tinto – Richards Bay Minerals

Total sales: 2009-2019

R'000	Total sales	Silver	Cobalt	Copper	Lead	Nickel	Zinc
2009	17,370,906	287,103	73,964	3,858,519	482,903	4,201,208	203,962
2010	21,219,377	386,079	151,534	4,369,326	696,738	5,984,753	323,214
2011	23,905 699	611,933	125,245	5,432,849	762,929	6,402,191	402,566
2012	24,033,821	582,824	154,759	5,155,061	811,498	6,432,346	444,536
2013	25,852,445	452,851	205,093	5,817,573	683,220	6,947,820	335,687
2014	29,753,637	342,107	260,709	5,950,553	659,777	9,135,386	455,631
2015	27,913,223	364,896	275,855	5,200,951	511,477	8,311,641	447,493
2016	25,309,551	412,814	232,124	3,744,887	884,986	7,100,366	538,325
2017	26,499,466	361,677	395,989	4,327,545	1,419,829	6,267,622	990,268
2018	26,334,653	382,745	411,184	4,077,841	1,008,096	6,712,840	802,282
2019*	28,632,475	395,728	276,404	3,272,659	1,135,429	6,670,037	3,450,754

Total production: 2009-2019

Year	Silver (t)	Cobalt (t)	Copper (kt)	Lead (kt)	Nickel (kt)	Zinc (kt)	Natural gas (kt)
2009	78	237	93	49	35	28	973
2010	79	840	84	51	40	36	1,222
2011	73	862	89	54	43	37	1,078
2012	67	1,102	70	52	46	37	934
2013	69	1,294	81	42	51	30	660
2014	37	1,332	79	29	55	26	849
2015	48	1,362	77	35	57	29	1,050
2016	55	1,101	65	39	49	27	646
2017	63	1,064	66	48	48	31	613
2018	46	1,007	47	35	43	28	492
2019*	53	1,016	56	43	43	115	540

** Estimates*

Source: DMRE, Minerals Council South Africa

Natural gas	Natural gas condensate	Salt	Special clays	Limestone and lime	Dimension stone	Aggregate and sand
1,456,921	619,455	140,309	109,863	2,110,358	–	3,826,340
2,012,516	916,225	126,305	159,085	2,283,679	–	3,809,924
2,249,668	913,467	139,829	191,943	2,606,573	–	4,066,505
2,195,735	910,269	155,294	184,177	2,530,962	–	4,476,359
1,755,972	705,006	155,253	203,323	2,825,018	474,236	5,291,394
2,312,725	1,059,806	159,937	145,249	2,796,649	508,046	5,967,061
1,966,303	528,038	160,313	154,423	2,914,197	585,471	6,492,166
1,169,034	275,667	171,313	155,073	3,020,133	595,949	7,008,880
1,200,018	256,533	190,271	188,378	3,277,553	582,165	7,041,618
1,221,606	248,360	230,215	172,062	3,523,525	617,712	6,926,184
1,396,616	314,024	253,836	166,818	3,675,403	634,036	6,990,731

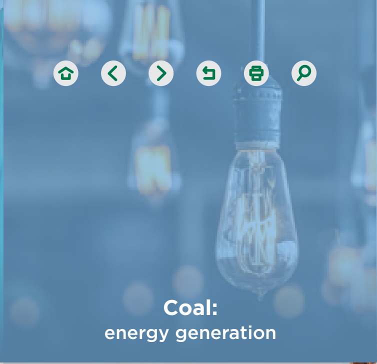
Natural gas condensate (kt)	Salt (kt)	Special clays (kt)	Limestone and lime (kt)	Dimension stone (kt)	Aggregate and sand (kt)
131	408	282	22,698	0	52,559
140	394	761	22,512	0	51,803
102	379	966	21,630	0	52,123
89	399	821	21,637	0	53,374
61	477	751	21,966	331	60,967
89	492	483	21,931	233	62,972
71	517	977	22,928	255	63,603
39	480	1,182	23,390	279	64,741
32	493	655	24,154	287	64,161
24	478	747	22,724	303	61,021
30	514	870	22,482	298	60,298

IF IT'S NOT GROWN, IT'S MINED

MINING IN OUR LIVES

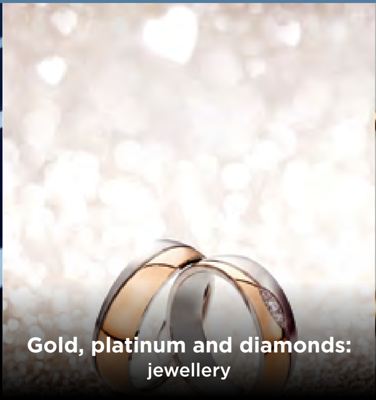
Coal and gold:
jet fuel and aircraft engines

Platinum:
glass

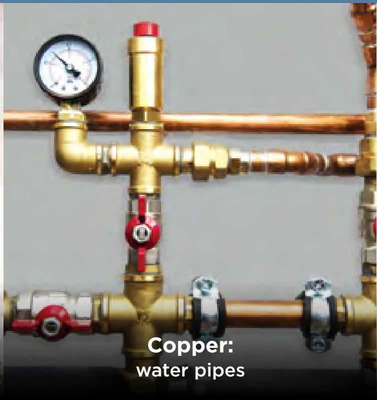


Coal:
energy generation

Platinum:
solar panels



Gold, platinum and diamonds:
jewellery

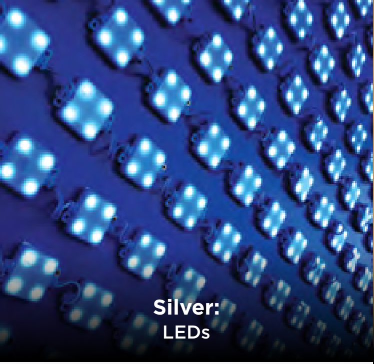


Copper:
water pipes

Copper:
door handles

Platinum:
fuel cells

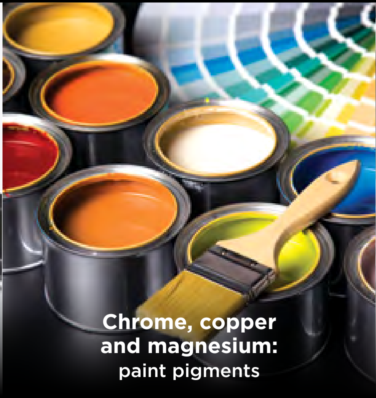
Copper:
air conditioners

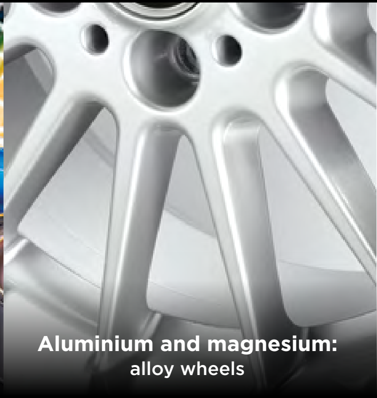

Silver: LEDs


Silver: telescopes


Platinum and gold: laptop and hard disc


Platinum and gold: watches

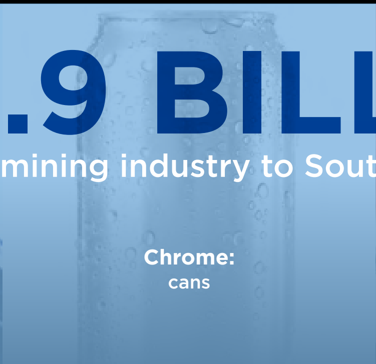

Chrome, copper and magnesium: paint pigments


Aluminium and magnesium: alloy wheels

R360.9 BILLION

contributed by the mining industry to South African GDP


Steel, aluminium, aggregate and sand: bridges


Chrome: cans


Platinum and gold: dentistry

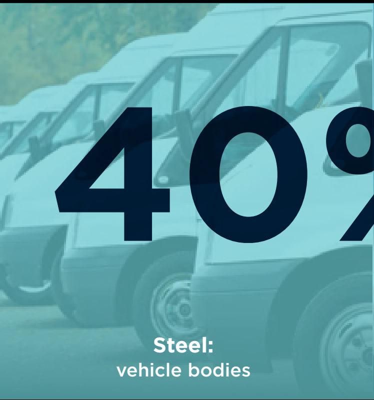
Platinum:
pacemakers

Steel and titanium:
surgical implants

Silver:
mirrors

40%

improvement in the South African mining industry safety performance

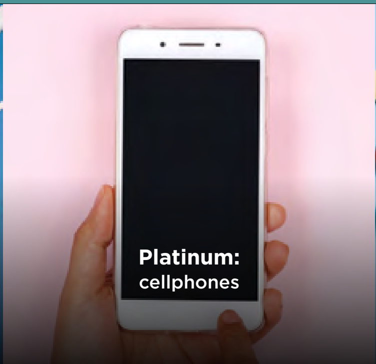


Steel:
vehicle bodies

Steel:
street light bases

Aluminium:
bike frames

Steel, copper and aluminium:
wind turbines



Platinum:
cellphones

Coal and gold:
pharmaceuticals

R94.7 BILLION

direct contribution of mining to South African fixed investment

Platinum:
airbags

Platinum:
catalytic converters

Steel and aluminium:
metal furniture

Silver, gold and titanium:
space shuttles

Gold:
coinage

Silver:
batteries

20%

overall women representation among members

Titanium:
drill bits

Aluminium:
pots

Gold:
medals and awards

OPEN TO REVEAL MINING IN OUR LIVES

AngloGold Ashanti – Mponeng Mine

SAFETY

Significant safety improvement recorded in 2019

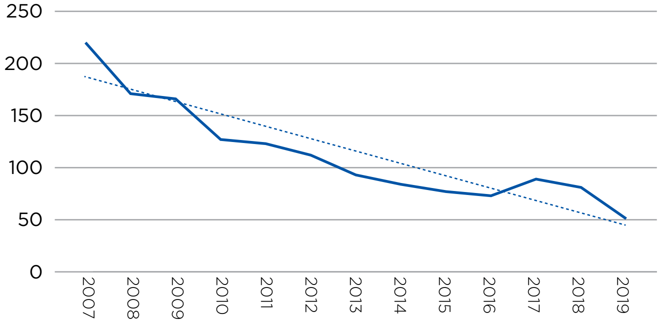
The industry recorded a significantly improved safety performance in 2019. Tragically 51 people lost their lives in mining-related accidents in 2019, compared with the 81 deaths recorded in 2018.

The last quarter of 2019 was fairly challenging given the increase in the number of accidents that occurred. Fall of ground and transportation related incidents were a concern in 2019 as a significant number of lives were lost due to these types of accidents. This challenge resulted in an increased focus on safety by all stakeholders.

As part of the annual Minerals Council National Day of Safety and Health in Mining, the Minerals Council and its member companies launched the Khumbul'ekhaya safety and health strategy. Khumbul'ekhaya is a Nguni word meaning 'remember home'. The emphasis on home acknowledges that fatalities have the greatest impact on loved ones at home and encourages mine employees and managers to bear these loved ones in mind while embarking on their daily tasks.

The Khumbul'ekhaya strategy was developed by the CEO Zero Harm Forum to drive and sustain the mining industry's pursuit of Zero Harm.

Mining industry fatalities: 2007-2019



Source: Depeartment of Mineral Resources and Energy

The key focus of the strategy includes:

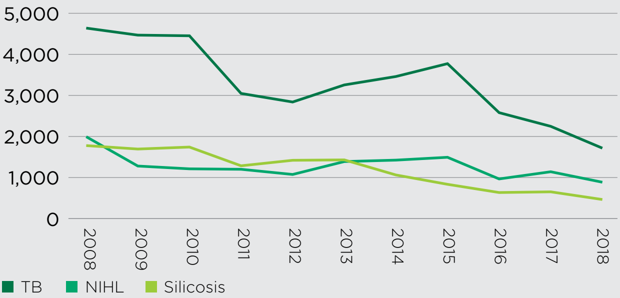
- Promoting a holistic approach to the elimination of fatalities
- Developing a system of understanding occupational deaths in and beyond employment
- Adopting methods for more effective and competitive training
- Adopting globally leading practices to learn better and faster from others

The industry remains committed to collaborative efforts as significant strides in improving industry safety and health performance have been made possible through the collaborative efforts of employees and unions, the support of the DMRE and mining companies.

HEALTH

Tuberculosis (TB), silicosis and noise induced hearing loss (NIHL) are the most common occupational diseases in mining. Data from the DMRE shows that there were 1,716 cases of TB, 886 cases of NIHL and 465 cases of silicosis reported in 2018. As there is a lag in the reporting of health-related performance, the statistics presented are for 2018. All these show significant drops from 2008, as illustrated below.

Occupational diseases in mining: 2008-2018



Under the Mineral Council's Masoyise Health Programme, counselling for HIV rose from 79.1% in 2015 to 84% in 2018, TB screening rose from 84% in 2015 to 90.3% in 2018, and TB incidence decreased from 1,068 cases/100,000 population to 435 cases/100,000 population.

Modernisation is about improving the mine of today and simultaneously developing the mine of tomorrow. The modernisation of the industry is critical if South Africa's mining sector is to survive and thrive this decade.

Mining is critical to the new, modern economy. A 'modern' view goes beyond the mere adoption of technologies; it's a way of thinking that changes the way the industry operates and the way it is perceived. Modernisation is about embracing the elements and minerals critical to a green, low-carbon future and, more importantly, pursuing an approach that does not replace people but one that places people at the centre of the approach. Technology, which includes automation and mechanisation, is just part of a modernised approach to mining.

Through modernisation the mining industry strives to address some of South Africa's technological and social challenges while building world-leading competencies in niche areas. It is intended to bring, among other things, improved competitiveness, efficiency, and investment attractiveness which in turn encourages economic growth, expanded

Gold Fields – South Deep Mine

employment, increased exports, improved tax contributions and the continued and more responsible use of South Africa's mineral resources.

As a strategic priority for the Minerals Council, modernisation programmes encourage industry-wide change.

Our programmes are centred on a philosophy of learning by doing and aim to tackle some of the sector's most concerning issues including improvements in the health and safety of miners, retaining and creating jobs, preventing the premature closure of mines, and providing essential commodities to the world in a way that is economically viable.

The Minerals Council's approach to modernisation is based on:

- Leadership – building leadership consensus
- Policy alignment – sustaining successful change
- Tools – broadening applications
- Processes – accelerating innovation
- Collaboration – working together for greater impact

Our programmes are clustered by focus with a just transition, productivity, local RDI (research, development and innovation) and procurement, and the fourth industrial revolution being the focus for 2020.


Ivanplats – Mokopane project

Mining has continued to be a significant provider of employment in South Africa.

Mining contributes to various industries and has an extensive supply chain. Jobs in mining translate to employment in other industries.

Apart from providing much needed jobs, the mining sector is a major contributor to South Africa's skills development agenda. Mining companies are required by the Skills Development Act and the Mining Charter to contribute 1% of payroll to the skills levy and 5% of payroll to human resource development respectively. This amounts to an investment in excess of R8 billion per annum into education, training and development for employees, youth, women and communities at both the basic and higher education levels.

The future success of the mining industry relies on the continuous development of technical innovation and the nurturing and retention of human capabilities. Mining companies invest in education, training and development in many forms that include learnerships, bursaries, apprenticeships, internships and adult education. These investments are made to both employed and unemployed individuals that are spread nationally and in our local mining communities. Over the past five years, more than 90% of the skills development interventions in the sector were focused on historically disadvantaged individuals and more than 90% of these interventions were in the core and critical skills for mining. The mining industry, through collaboration of all social partners, was able to achieve some of the following in 2019:

- More than 1,500 higher education bursaries awarded
- More than 1,000 higher education learners/ graduates supported through internships, graduate development programmes and work experience opportunities
- More than 1,600 artisans supported in attaining their qualifications
- More than 2,400 learnership programmes supported

Royal Bafokeng Platinum – Bafokeng Rasimone Platinum Mine

The inclusion of women in the mining sector continues to be a priority for the Minerals Council. The Minerals Council South Africa White Paper on Women in Mining was adopted as a strategy to advance this cause. The purpose of the White Paper is to streamline strategies of the mining industry to advance women in mining by focusing on advancing women representation and encouraging decisions that are in the best interests of women.

Since the promulgation of the MPRDA in 2002 and the first Mining Charter in 2004, the number of women in mining among our members has significantly increased from 3% to an overall 20% in 2019. Increase in representation has been realised across the various job categories.

Job category	Women representation (%)
Top management	25
Senior management	17
Professionally qualified employees	24
Skilled and technical employees	19

Source: Minerals Council South Africa membership data

The representation of women across the various commodities in the overall quarrying and mining sector is as follows:

Industry	2019 No of women employees	2019 % of women employees	2018 % of women employees
PGMs	19,694	12	11
Coal	13,059	14	13
Gold	11,271	12	12
Chrome	3,387	17	17
Iron ore	2,916	15	14
Diamonds	2,229	15	14
Manganese	1,713	16	16
Lime, aggregates and sand	1,385	14	18
Other minerals	1,037	17	15

Source: Department of Mineral Resources and Energy

Women representation in mining went up, marginally, in PGMs, diamonds, coal, and ‘other minerals’. It remained flat in the gold and manganese industries.

Industries that recorded marginal increases in women employment as a share of total employment were:

- The PGMs industry not only saw an increase in the number of women but also in absolute terms. In 2018 there were 19,060 women employed in the PGM industry with 19,694 in 2019.
- The number of women in the diamond industry increased to 15% in 2019 from 14% the previous year. However, in absolute terms there were 2,229 women (133 fewer) in 2019 compared to the previous year. The year 2019 was a difficult one for the diamonds industry, both domestically and globally because of competition from synthetics.
- Iron ore mining also saw an increase in the number of women.


Glencore – Lion Smelter

The mining industry's transformation progress report 2019

The mining industry used 2019 as a year to reflect on Mining Charter 2010 (MC2010) before it began a new journey with Mining Charter 2018 (MC2018). The Minerals Council, together with Moshe Capital, conducted research into the mining industry's transformation progress using the annual Mining Charter CY2018 reports from member companies.

A total of 32 member companies participated in the survey, representing 97 mining right holders which accounted for an estimated 93% of the employee base of members of the Minerals Council. The survey focused on five key elements: ownership, employment equity, procurement and enterprise development, human resource development and mine community development.

Results of the survey:

2010 Charter Target against survey results (% weighted average)

Element	2010 compliance target	% weighted average
Ownership	26% HDSA ownership	39.2
	26% Effective ownership, meaningful economic participation	23.7
Employment equity	40% of top management	58.2
	40% of senior management	52.8
	40% of middle management	61.4
	40% of junior management	70.5
	40% of core and critical skills management	78.7
Procurement and enterprise development	40% of capital goods	75.4
	70% of services spend	75.1
	50% of customers goods	79.0
	0.5% of procurement value (capital goods) – from multinational suppliers	1.4
Human resources development	5% of annual payroll in skills development	4.8
Mine community development	100% community consultation and collaboration	89.0
	1% of NPAT	2.7

Ownership

- The weighted average HDSA shareholding achieved was 39.2%.
- Only 22 of the 93 mining right holders analysed met the criteria for meaningful economic participation (effective ownership). However, it can be noted that meaningful economic participation only came into effect with MC2010. Thus, those rights holders that implemented transactions prior to that would not have been bound by those conditions.

Employment equity

- The MC2010 targets were 40% HDSA representation across each of the managerial levels. The industry view shows that all these targets were achieved.

Procurement and enterprise development

- The industry view shows that all MC2010 targets were achieved.
- 75.4% was achieved against a 40% target for capital goods. This was a great achievement, but it will soon be overshadowed as MC2018 introduced new targets for local manufacturing, 51% HDP owned and controlled companies, 51% women and majority youth-owned and controlled companies.

Human resource development (HRD)

- The industry contributed 4.8% of their annual payroll to HRD, amounting to R3.3 billion, slightly below the 5% target.

Mine community development

- The industry contributed towards 480 developmental programmes and invested a total of R1.32 billion into various mining communities and labour- sending areas.

Conclusion

Member companies involved in the research largely complied with MC2010 across all the elements, except for HRD where the industry results were slightly below the MC2010 target. MC2018 became effective on 1 March 2019 and brought forth new challenges and much higher targets on most of the elements, however, the mining industry remains fully committed to making every effort to achieve these new targets, subject to the Minerals Council application to review a few provisions in MC2018.

Illegal mining constitutes a multi-billion-rand industry and remains a significant problem for the mining industry.

It represents significant challenges and threats to national security and socio-economic development. In addition, it increases the risk of establishment of alternative and illicit economies as all illicitly produced commodities are fed into the illegal market where the government loses out on royalties, income tax and Value Added Tax.

It also increases vulnerability to transitional organised crimes, and other serious cross-border crimes. It therefore presents a serious risk to the sustainability of the mining industry and its ability to contribute to a meaningful future for all South Africans.

Illegal mining and organised crime are usually interrelated as illegal mining is very often spearheaded by globally connected criminal syndicates.

The growth in illegal mining could be attributed to a combination of a difficult socio-economic climate, limited resources at the disposal of law enforcement agencies such as police, immigration, border controls and prosecuting authorities, thriving syndicates, gaps in legislation to charge illegal miners and government's more recent approach to legalise illegal activities.

The DMRE recently implemented the issuing of small-scale mining licenses to illegal miners in the Northern Cape. This has led to a significant escalation of artisanal mining activities. There is unfortunately no distinction between illegal mining and artisanal mining activities and the absence of clarity on government's policy position around artisanal mining creates ambiguity on what law enforcement agencies are required to do to manage the issue.

In addition, ineffective and inadequate crime-combating measures, intelligence-led investigations and prosecutions of illicit mining and related crimes continues to remain a significant challenge to the effective management and mitigation of this phenomenon.

JUNIOR AND EMERGING MINERS

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

Emerging miners are typically smaller companies involved in the early phases of mining exploration or in early development.

Revenue	R billion
Turnover	48.7
Interest	0.5
Dividends	1.6
Rental/lease	1.2
Plant/lease	0.1
Profit on assets	0.8
Other income	1.6
Revenue per annum	**54.4**

Expenses	R billion
Procurement	21.2
Employee cost	10.6
Depreciation of capital	2.9
Royalties and fees	1.0
Interest paid	1.1
Rent paid	0.9
Hiring equipment	1.1
Loss on assets	5.4
Other	11.3
Expenses per annum	**55.5**

Orion Minerals – Prieska Project

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