



Kumba Iron Ore – Sishen Mine

SEPTEMBER 2019

# FACTS AND FIGURES 2018



**MINERALS COUNCIL**  
SOUTH AFRICA



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# FOREWORD

Mining plays a significant role in the economy of our nation. It is therefore important for industry data to be freely available so that stakeholders can understand how the sector is performing. In this document, Minerals Council Chief Economist, Henk Langenhoven, and his team, use data to showcase our industry, and provide some insight into what the numbers mean for our country and the future of our mining industry.

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.**

They also allow us to accurately represent the wider impact of mining on the country and help all South Africans to develop a better, more nuanced understanding of the current state of the mining industry.

The Minerals Council's economics discipline 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 its growth.

A *Facts and Figures pocketbook 2018* was published just before the Mining Indaba 2019 and has been distributed widely – it is also currently available on the Minerals Council website. The pocketbook provides a snapshot of the industry and the impact that South Africa's mineral wealth has on our everyday lives.

This *Facts and Figures 2018* publication is both an updated version of the pocketbook and a more comprehensive statistical reference guide to the South African mining sector.

## QUICK FACTS



Contribution to GDP:

**R350.8bn**



Contribution to fixed investment:

**R91.1bn**



Total primary mineral sales:

**R498.7bn**



Royalties paid:

**R7.6bn**



Company taxes paid:

**R22.0bn**



PAYE by mining personnel:

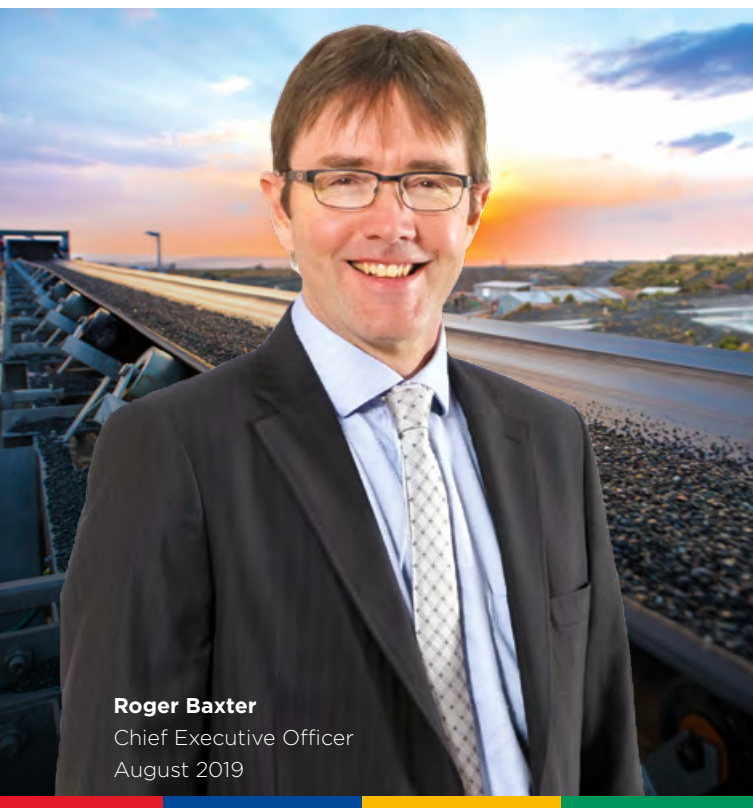
**R21.0bn**



Sibanye-Stillwater – Kroondal Mine

*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.*

# MESSAGE FROM THE CEO



**Roger Baxter**  
Chief Executive Officer  
August 2019

**It gives me great pleasure to introduce you to the latest edition of the Minerals Council South Africa's Facts and Figures booklet.**

**The year 2018 was a turning point for South Africa's mining industry, and indeed for South Africa itself, with shifts in political leadership of the country and of the political head of our primary regulatory authority.**

Those changes were necessary in order to deal with the country's previous downward spiral into recessionary conditions based on mis-governance including systemic corruption. They introduced a period of new-found business confidence. This may have been one of the factors that contributed to the increase, in real terms, of the industry's fixed investment by 13.2% during 2018. However, as we know, the damage done over 10 years is not easily nor quickly repaired.

This is particularly important because the long-term nature of mining means that an increase in fixed investment needs to be sustained for a significant period before it translates into a growing industry. That point was not reached in 2018, with both output and employment declining by 1.7% and 1.6% respectively.

These aggregate numbers do conceal some significant diversity in sectoral performances. As will be seen, there are stark declines continuing in the diamond, gold, nickel and, particularly, deep-level platinum sectors, where sectoral maturity in the face of above-inflation cost increases and unimpressive commodity prices compound the situation. At the same time, sales for iron ore, manganese and chrome ore advanced well, as did the employment numbers.

The timing of the publication of this booklet means that 'real-time' developments in markets and environments that

are often volatile do sometimes overtake events. Hence, since the beginning of 2019, the industry has seen significant rises in the prices of commodities that had previously been disappointing for some time.

Surges in palladium and rhodium prices have, at the time of writing, changed the nature of the PGM basket. Gold has seen a surge, too, as have certain other minerals. We have also seen a weakening currency that accentuates rand revenues of dollar-denominated minerals. However, as we know, a weakening currency, which is itself substantially due to weakening confidence, is a double-edged sword for an industry that is dependent on imported inputs.

The more positive area relates to safety performance. The slight improvement in the number of fatalities in 2018 compared to 2017 is largely based on the considerable improvements in the final third of the year. That improved performance has extended into 2019.

*The Facts and Figures pocketbook 2019* to be published in February 2020 will doubtless reflect on these developments and everything that happens later in the year.

In the meanwhile, we trust you will find *Facts and Figures 2018* useful and informative.

**Roger Baxter**  
Chief Executive Officer  
August 2019

# MINING AT A GLANCE

The mining sector is an important component of the South African economy and has been for over 100 years. The sector contributed R350.8 billion (nominal) or 7.3% to the gross domestic product (GDP) in 2018 (2017: 7.5%). In the same year, the sector contracted by 1.7%.

Mining sector employment represented 6.2% and 4% of total private non-agricultural employment and total non-agricultural employment, respectively. The sector employed 456,438 people in 2018, representing a decline of 1.6% from the prior year, a decline consistent with performance of the sector. The most significant job losses were experienced in the gold industry (-11.2%), the diamond industry (-9.2%) and the PGM industry (-3.3%). It is noteworthy that the following industries added jobs during 2018: manganese industry (+20.2%), chrome ore industry (+11.6%) and the coal industry (+8.8%). Total employee earnings for the mining sector for the year amounted to R134.4 billion.

The fixed investment bill contributed by the mining sector amounted to R91.1 billion (nominal), which accounted for 15% of total private sector fixed investment and 10% of total fixed investment. In real terms, the sector's fixed investment increased by 13.2% during 2018.

Total mineral sales from the mining sector amounted to R498.7 billion, of which R333.2 billion (or US\$37.6 billion) was attributable to export sales. The significance of the export earnings from a single year is exemplified by the fact that they are equal to half of the country's foreign reserves (+/- US\$50 billion). This emphasises the importance of the mining sector, which accounts for 26.7% of South Africa's total export book. Export earnings allow the government

to service debt, build foreign currency reserves and import important implements into the economy, from capital goods to medicine.

In the 2017/2018 fiscal year the industry paid R7.6 billion in royalties, representing a 31% increase on the prior year. The industry paid R22.0 billion in company taxes for the same period and contributed R21.0 billion to PAYE.



## MINING CONTRIBUTION SUMMARY 2018:

Direct contribution of mining to GDP:	<b>R350.8 billion</b> (2017: R343.6 billion)
Mining GDP growth rate (2017/2018):	<b>-1.7 %</b>
Mining contribution as % of total GDP:	<b>7.3 %</b> (2017: 7.5%)
Direct contribution of mining to fixed investment:	<b>R91.1 billion</b> (2017: R77.1 billion)
Total primary mineral sales:	<b>R498.7 billion</b> (2017: R474 billion)
Mineral export sales:	<b>R333.2 billion</b> (2017: R328 billion)
Royalties paid for 2017/2018 (fiscal):	<b>R7.6 billion</b> (2016/2017 (fiscal): R5.8 billion)
Company taxes paid:	<b>R22.0 billion</b> (2017: 19 billion)
PAYE by mining personnel:	<b>R21.0 billion</b> (2017: 19.1 billion)

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

The viability of the mining sector is the result of the interaction between selling prices and input costs.

It is important to note that the sector has no control over international commodity prices, nor does it have any influence on the level of the rand currency exchange rate.

Input costs are largely determined by domestic cost pressure, with imported costs accounting for approximately 12% of total input costs. Apart from labour costs (35%), nearly 50% of intermediary input costs are influenced by administered prices and provided by state-owned enterprises. The profitability of mining companies is therefore highly vulnerable to any adverse movements of these variables (lower commodity prices, appreciating exchange rate, exorbitant tariff or administered price increases).

Commodity prices are driven by various demand and supply dynamics. These include commodity-specific supply disruptions, rising US interest rates, an appreciation of the US dollar, growing trade tensions between major economies, and financial market pressures in some emerging market and developing economies (Source: World Bank, 2018). Adding the exchange rate into the equation also influences the realised price for South African mining companies. In 2018, the exchange rate remained moderately flat when compared to 2017. It appreciated 0.9% against the US dollar. The implication of the exchange rate performance in 2018, is that the rand price movement of various commodities mirrored that of the US dollar price, as indicated in the table.

% change in commodity prices: 2018

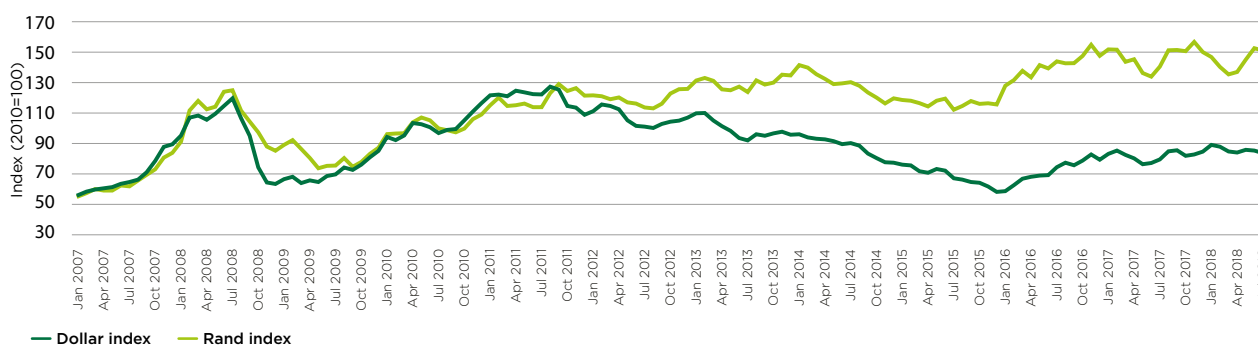
	COAL	IRON ORE	GOLD	PLATINUM	PALLADIUM	RHODIUM
DOLLAR	15	-3	1	-7	18	101
RAND	14	-3	0	-8	18	99

Source: Minerals Council South Africa

The production weighted dollar and rand commodity price indices are contained in the graph below. In 2018, the weighted dollar price index increased by 2.8%, while the weighted rand commodity price index increased by 1.9%. This index provides the following weights to the respective commodities: coal (24.4%), PGMs (23.5%), gold (16%), iron ore (12.4%) and other minerals (23.7%). This is based on sales values as published by Statistics South Africa.

Rand/dollar exchange rate strengthened by  
**0.9%** during 2018

Dollar and rand commodity price index (monthly): 2007-2018



Source: Minerals Council South Africa calculations, World Bank, South African Reserve Bank

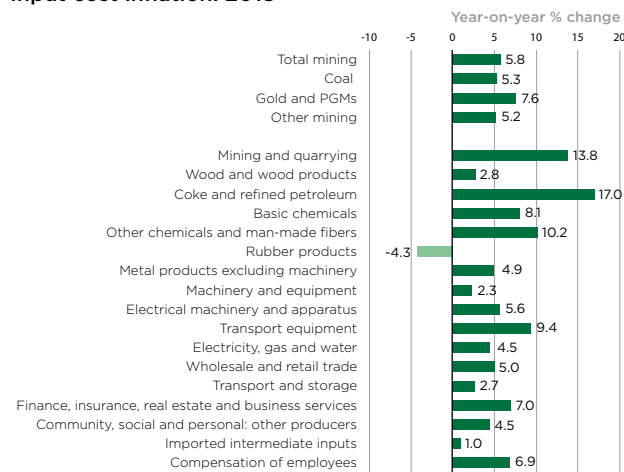
# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

Non-energy dollar commodity prices have in the recent past been driven by demand from China. As that economy rebalances to a more consumption-based economy, the demand for commodities has decreased, which is also reflected in the price of these commodities. Of late, the effects of the trade dispute between the United States and China, have softened global trade, therefore also influencing commodity prices. The rand, however, has been on a continued weakening path for the greater part of the last decade, which has supported realised rand commodity prices.

The exchange rate is a double-edged sword. While it has contributed to better realised rand selling prices, on the other hand, it also contributes to input costs. Imported products account for 12% of total input costs, therefore, a weakening exchange rate adds upward pressure to input costs.

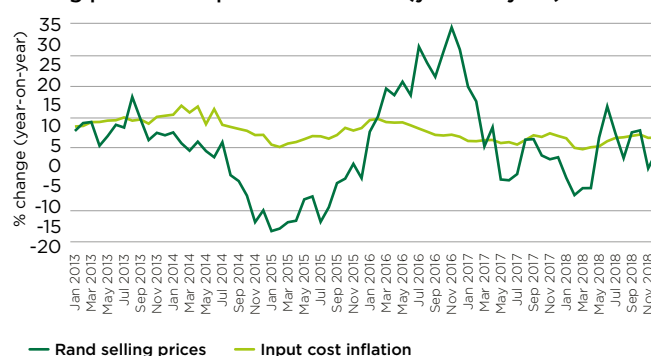
### Input cost inflation: 2018



Source: Statistics South Africa, Minerals Council South Africa

In 2018, input cost inflation for the total mining sector averaged 5.8%. Coke and refined petroleum (17%), industrial chemicals (10.2%) and transport equipment (9.4%) contributed the most significant increases to the cost basket. Operationally, the mining sector experienced a negative carry, a condition where input costs rose at a faster rate than selling prices.

### Selling price and input cost inflation (year-on-year)



Source: Statistics South Africa, Minerals Council South Africa

The graph above shows the historic context of value erosion of the mining sector, where selling prices fluctuate (and even turn negative in some instances) around a persistent input cost trend. The table alongside compares the annual average selling price performance to input cost increases. Over the observed period, the average annual increase in input costs was almost double the increase in selling prices, presenting a persistent negative carry for the mining sector.

	Rand selling prices	Input cost inflation
	%	%
2013	9.00	10.71
2014	-0.65	10.65
2015	-9.48	6.64
2016	21.58	9.02
2017	4.63	6.13
2018	2.12	5.77
Average	4.53	8.15

Source: Minerals Council South Africa

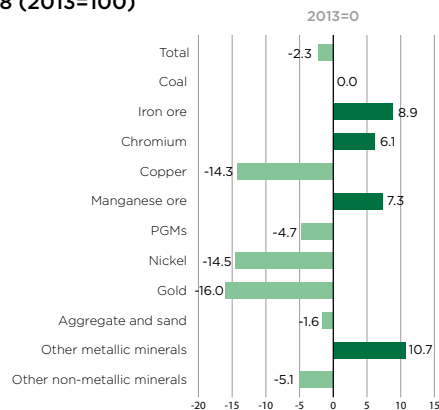
In 2018, inflation adjusted sales decreased by 2.3% for the total mining sector. The industries that recorded a sharp decline in inflation adjusted sales were: gold (-16%), nickel (-14.5%), copper (-14.3%). In the same year, the following industries recorded noteworthy increases in inflation adjusted sales: iron ore (8.9%), manganese (7.3%), chrome ore (6.1%).

Nominal sales are typically influenced by the immediate movement and interaction between dollar commodity prices and the rand exchange rate. Changes in real sales in rands, which adjust for inflation, indicate the direction of changes in physical production volumes. The Minerals Council has previously indicated a correlation, with a lag of 12 to 18 months, between changes in real sales in rands and changes in physical production volumes. Holding all factors constant, this historically-identified relationship would entail downward pressure on production in the coming 12 to 18 months. It is particularly concerning for the industries identified above as having recorded significant decreases in inflation adjusted sales in 2018.

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

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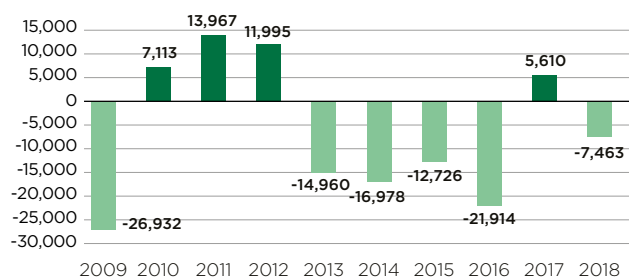
Real sales: 2018 (2013=100)



Source: Statistics South Africa, Minerals Council South Africa

The result of the interaction of all the variables above is employment gains and losses. In 2018, the total mining sector shed 7,463 jobs, a 1.6% decline, in line with the decreases in production and sales. Over the last decade, the sector has lost 62,228 jobs, with the gold mining industry contributing the most to this trend. Approximately 59,737 jobs have been lost in that sector, over the same period.

Annual employment gain/loss: 2009-2018



Total mineral sales: 2018

Group	Commodity	Local sales	Total sales	Total exports	Exports as a % of total sales
<b>Gold, PGMs, diamonds and silver</b>	Gold	35,201,487	69,683,505	34,482,018	49.5
	PGMs	10,668,195	104,896,855	94,228,661	89.8
	Diamonds	7,196,612	17,274,739	10,078,127	58.3
	Silver	35,536	382,745	347,209	90.7
	<b>Sub-total</b>	<b>53,101,830</b>	<b>192,237,844</b>	<b>139,136,015</b>	<b>72.4</b>
<b>Base minerals</b>	Chrome	11,756,993	21,802,197	10,045,204	46.1
	Copper	2,027,485	4,077,841	2,050,357	50.3
	Iron ore	5,730,332	51,227,106	45,496,775	88.8
	Lead concentrate	-	1,008,096	1,008,096	100.0
	Manganese	1,066,479	44,813,469	43,746,990	97.6
	Nickel	1,186,189	6,712,840	5,529,651	82.4
	Zinc	-	802,282	802,282	100.0
	Coal	72,899,501	146,004,073	73,104,572	50.1
	Other non-metallic	3,042,693	6,321,846	3,279,153	51.9
	Miscellaneous	14,666,738	23,697,991	9,028,250	38.1
<b>Sub-total</b>		<b>112,376,410</b>	<b>306,467,741</b>	<b>194,091,330</b>	<b>63.0</b>
<b>Grand total</b>		<b>165,478,240</b>	<b>498,705,585</b>	<b>333,227,345</b>	<b>67.0</b>

Source: Department of Mineral Resources and Energy



Harmony - Tshepong

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

### Key mineral statistics for South Africa: 2008-2018

Description	Units of measure	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Year-on -year % change 2017 to 2018
<b>Gross domestic product</b>													
Direct contribution of mining to GDP (value add)	R millions nominal terms	197,643	200,824	230,350	261,575	267,344	288,300	287,488	281,523	317,724	343,672	350,882	2.1%
Direct contribution of mining to GDP	R millions constant 2010 prices	230,663	218,830	230,350	228,646	221,990	230,772	226,791	234,247	225,035	234,522	230,514	-1.7%
Mining GDP growth rate	% year-on-year	-5.3	-5.1	5.3	-0.7	-2.9	4.0	-1.7	3.3	-3.9	4.2	-1.7	
Direct contribution of mining to GDP	US\$ equivalent	23,952	23,802	31,459	36,064	32,563	29,875	26,510	22,079	21,601	25,815	26,514	2.7%
South African GDP (market prices)	R millions nominal terms	2,369,063	2,507,677	2,748,008	3,023,659	3,253,852	3,539,977	3,805,350	4,049,884	4,359,061	4,653,579	4,873,899	4.7%
South African GDP (market prices)	R millions constant 2010 prices	2,708,601	2,666,940	2,748,008	2,838,257	2,901,078	2,973,175	3,028,090	3,064,236	3,076,466	3,119,983	3,144,539	0.8%
Mining's contribution as % of total GDP nominal terms	%	8.3%	8.0%	8.4%	8.7%	8.2%	8.1%	7.6%	7.0%	7.3%	7.4%	7.2%	
Mining's contribution as % of total GDP real terms	%	8.5%	8.2%	8.4%	8.1%	7.7%	7.8%	7.5%	7.6%	7.3%	7.5%	7.3%	
<b>Fixed investment</b>													
Direct contribution of mining to fixed investment (GFCF)	R millions nominal terms	59,084	64,574	63,555	68,420	72,106	80,609	85,615	63,791	53,864	77,178	91,098	18.04%
Direct contribution of mining to fixed investment (GFCF)	R millions constant 2010 prices	62,349	65,969	63,555	65,953	65,438	67,333	66,995	48,606	38,797	53,949	61,072	13.20%
Total private sector fixed investment (private GFCF)	R millions nominal terms	376,918	342,142	341,517	380,410	406,000	470,179	511,839	525,404	545,608	579,589	607,599	4.83%
Total South African fixed investment (GFCF)	R millions nominal terms	556,997	539,440	529,431	578,014	625,643	721,234	775,950	822,576	846,552	873,223	886,428	1.51%

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

### Key mineral statistics for South Africa: 2008-2018 *continued*

Description	Units of measure	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Year-on-year % change 2017 to 2018
Mining fixed investment growth rate	% year-on-year	25.6%	5.8%	-3.7%	3.8%	-0.8%	2.9%	-0.5%	-27.4%	-20.2%	39.1%	13.2%	-
Direct contribution to fixed investment (GFCF)	US\$ equivalent	7,160	7,654	8,680	9,433	8,783	8,353	7,895	5,003	3,662	5,797	6,884	18.74%
Mining's contribution to private sector fixed investment (GFCF) %		16%	19%	19%	18%	18%	17%	17%	12%	10%	13%	15%	-
Minings contribution as % of total investment	%	11%	12%	12%	12%	12%	11%	11%	8%	6%	9%	10%	-
<b>Sales and exports</b>													
Total primary mineral sales	R millions nominal terms	300,763	239,881	300,891	370,833	363,757	385,033	386,350	386,709	424,042	474,171	498,706	5.2%
Total primary mineral sales	US\$ equivalent	36,449	28,432	41,093	51,123	44,307	39,899	35,627	30,329	28,829	35,617	37,684	5.8%
Mining industry primary exports	R millions nominal terms	220,077	175,772	224,969	282,2976	269,120	279,673	269,264	266,604	294,897	328,470	333,227	1.4%
Mining industry primary exports	US\$ equivalent	26,671	20,833	30,725	38,921	32,780	28,981	24,830	20,909	20,049	24,673	25,180	2.1%
Total South African exports (goods and services)	R millions nominal terms	636,495	503,403	663,182	782,664	812,402	919,813	1,005,727	1,027,636	1,116,205	1,183,495	1,246,687	5.3%
Primary mineral exports as % of total South African exports	%	34.6%	34.9%	33.9%	36.1%	33.1%	30.4%	26.8%	25.9%	26.4%	27.8%	26.7%	-
<b>Employment</b>													
Mining industry direct employment	Numbers	518,725	491,794	498,907	512,874	524,869	509,909	492,931	480,205	458,291	463,901	456,438	-1.6%
Total private non-agricultural employment	Numbers	6,381,296	6,069,240	6,074,561	6,293,433	6,494,169	6,602,460	6,671,999	6,838,103	7,063,724	7,226,938	7,386,445	2.2%
Total South African formal non-agricultural employment	Numbers	10,083,177	9,966,943	9,626,647	9,942,385	10,222,218	10,524,415	10,822,211	10,935,430	11,021,260	11,288,136	11,318,851	0.3%

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

### Key mineral statistics for South Africa: 2008-2018 *continued*

Description	Units of measure	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Year-on -year % change 2017 to 2018
Mining as % of total private non-agricultural employment	%	8.1%	8.1%	8.2%	8.1%	8.1%	7.7%	7.4%	7.0%	6.5%	6.4%	6.2%	-
Mining as % of total non-agricultural formal employment	%	5.1%	4.9%	5.2%	5.2%	5.1%	4.8%	4.6%	4.4%	4.2%	4.1%	4.0%	-
Remuneration paid to employees in mining	R millions current	60,886	66,092	74,319	86,972	93,630	100,753	102,146	114,085	120,515	128,558	134,454	4.6%
Remuneration paid to employees in mining	R millions 2010 prices	49,882	58,775	74,319	101,780	117,961	136,589	140,394	175,129	195,427	222,381	243,248	9.4%
Average annual remuneration per mineworker	Rand	117,377	134,389	148,963	169,578	178,388	197,590	207,223	237,576	262,966	277,123	294,572	6.3%
<b>Exchange rates</b>													
Rand per US\$	R/US\$	8.3	8.4	7.3	7.3	8.2	9.7	10.8	12.8	14.7	13.3	13.2	-0.6%
Rand per euro	R/Euro	12.0	11.7	9.7	10.1	10.6	12.8	14.4	14.1	16.3	15.0	15.4	2.3%
Rand per British pound (GBP)	R/GBP	15.1	13.1	11.3	11.6	13.0	15.1	17.9	19.5	20.0	17.2	17.6	2.7%
<b>Commodity prices</b>													
Coal	US\$/tonne	121	65	92	116	93	80	72	57	64	85	98	14.7%
Iron ore	US\$/dm <sup>tu</sup> *	156	80	146	168	128	135	97	56	58	72	70	-2.8%
Gold	US\$/oz	872	973	1,225	1,569	1,670	1,411	1,266	1,161	1,249	1,258	1,269	0.9%
Platinum	US\$/oz	1,574	1,203	1,610	1 719	1,551	1,487	1,384	1,053	987	948	880	-7.3%
Palladium	US\$/oz	1,067	429	721	950	738	773	814	697	617	875	1,037	18.5%
Rhodium	US\$/oz	2,914	1,366	2,118	1,739	1,210	1,045	1,169	956	694	1,107	2,219	100.5%

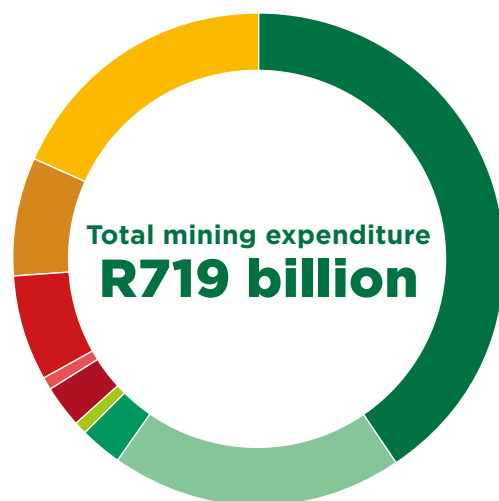
Source: Minerals Council South Africa, South African Reserve Bank, Statistics South Africa, World Bank, Department of Mineral Resources and Energy, South African Revenue Service

\* dmtu: dry metric tonne unit

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

Mining sector expenditure



Purchases	40.6%
Salaries and wages (total)	19.3%
Interest paid	2.7%
Royalties paid	1.0%
Paid rental on land and buildings	2.7%
Paid rental on plant and machinery	0.7%
Depreciation	7.0%
Losses on assets	7.7%
Other expenditure	18.3%

Mining sector royalties by commodity

	2015/16	2016/17	2017/18
Commodity	R million	R million	R million
Coal	702	1,097	1,637
Copper	-	-	-
Diamond	93	250	353
Gold and uranium	608	930	590
Industrial Minerals	155	70	99
Iron ore	643	1,629	2,167
Manganese	185	105	665
Platinum	720	804	851
Zinc	5	8	13
Other	597	909	1,243
<b>Total</b>	<b>3,708</b>	<b>5,802</b>	<b>7,617</b>

Source: South African Revenue Service



South Africa's contribution to world mineral reserves: 2017-2018

Commodity	Unit	South Africa Reserves	World		Locality of major reserves		
			Reserves	%			
Aluminium	kt	715	72,500	0.9	China	Russia	India
Antimony (metal)	kt	27	1,500,000	1.8	China	Russia	Bolivia
Chromium	Mt	200,000	500,000	40.0	South Africa	Kazakhstan	India
Coal	Mt	16,044	1,100,000,000,000	*			
Copper	kt	*	720,000	*	Chile	Peru	Australia
Diamond		70	750	9.3	Australia	Botswana	Congo
Gold (metal)	t	6,000	57,000	10.5	Australia	Russia	South Africa
Iron ore	Mt	770	82,000	0.9	Australia	Russia	Brazil
Lead (metal)	Mt	300	88,000	0.3	Australia	China	Russia
Manganese (metal)	kt	200,000	690,000	28.9	South Africa	Ukraine	Brazil
Nickel	Mt	3,700	78,000	4.7	Australia	Brazil	New Caledonia
Platinum Group Metals	t	63,000	67,000	94.0	South Africa	Zimbabwe	Russia
Silicon (metal)	Mt	84	7,200	0.1	China	Russia	USA
Silver (metal)	t	*	570,000	*	Peru	Poland	Chile
Uranium (Metal, up to \$US 80/kg U)	t	279,100	-	5.2	Australia	Kazakhstan	Canada
Zirconium minerals (metals)	kt	14,000	75,000	18.6	Australia	South Africa	India

Source: Department of Mineral Resources and Energy, US Geological Survey

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

### MINING'S CONTRIBUTION TO SOUTH AFRICA - PROVINCIAL OVERVIEW

Mining plays a big role at provincial level, offering not only employment but also supporting the respective provincial economies. In the communities where mining firms operate, they have built schools, clinics, and other social infrastructure such as roads and housing for employees, thus improving the quality of life of community members. They have also directly and indirectly supported recreational activities.

### Mining sector contribution to provincial economies (GDP value added)

Rm	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Eastern Cape	0.4	0.5	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.2
Free State	14.4	13.3	14.2	13.7	13.4	13.0	12.3	9.9	10.8	11.1	10.8
Gauteng	3.3	3.2	3.3	3.2	3.2	2.9	2.7	2.3	2.6	2.5	2.4
KwaZulu-Natal	2.0	1.8	2.0	1.9	1.9	1.9	1.8	1.4	1.6	1.6	1.6
Limpopo	31.2	28.4	29.2	30.9	29.5	29.4	28.0	26.7	28.3	28.5	28.3
Mpumalanga	25.6	24.5	25.5	27.5	28.1	25.8	24.2	22.7	23.2	23.7	23.6
North West	36.5	34.8	35.9	37.7	32.9	35.7	34.4	33.3	34.0	33.6	33.0
Northern Cape	26.6	26.5	27.6	26.4	25.8	26.9	23.3	20.2	22.0	22.0	22.0
Western Cape	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3

Source: Quantec

### Provincial overview: 2018

	Eastern Cape	Free State	Gauteng	KwaZulu-Natal	Limpopo	Mpumalanga	North West	Northern Cape	Western Cape
Compensation of employees (Rm)	210	15,370	21,471	3,584	39,688	23,163	44,681	8,645	683
Gross fixed capital formation (Rm)	117,467	4,948	8,127	2,098	20,714	16,785	23,352	4,432	305
Total mining employment	1,723	38,431	54,467	9,554	48,782	91,414	193,177	14,969	1,531
Population (2017 census)	6,499,180	2,866,704	14,278,351	11,074,546	5,778,533	4,444,073	3,856,169	1,213,998	6,510,394
Disposable income (R)	246,877	144,916	960,620	455,256	185,859	192,160	195,507	53,462	403,470

Source: Statistics South Africa

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

### Employment per commodity: 2018

	Gold	PGMs	Diamonds	Chrome	Iron ore	Manganese	Coal	Industrial minerals	Other minerals	Total
<b>2008</b>	166,423	199,948	18,474	12,279	13,257	3,976	65,484	13,352	25,533	518,725
<b>2009</b>	159,926	184,162	11,601	10,966	13,728	5,003	70,791	13,254	22,363	491,794
<b>2010</b>	157,019	181,969	11,467	13,982	18,216	5,879	74,025	13,118	23,231	498,907
<b>2011</b>	144,799	194,745	12,047	16,911	22,360	7,460	78,580	13,013	22,961	512,874
<b>2012</b>	142,200	197,752	12,332	19,762	23,380	8,685	83,244	13,795	23,719	524,869
<b>2013</b>	131,738	191,260	13,579	18,358	21,127	9,842	88,039	13,623	6,805	509,909
<b>2014</b>	119,007	186,864	15,356	18,658	21,794	9,971	86,106	13,031	6,330	492,931
<b>2015</b>	115,029	186,465	18,313	18,450	20,554	8,639	77,747	12,866	5,727	480,205
<b>2016</b>	116,572	172,556	18,789	15,449	16,651	7,242	77,259	13,222	5,797	458,291
<b>2017</b>	112,901	172,760	18,038	16,968	17,510	7,780	82,372	13,029	6,219	463,901
<b>2018</b>	100,189	167,041	16,361	18,935	18,613	9,352	89,647	12,712	6,121	456,438

Source: Department of Mineral Resources and Energy

### Employee earnings per commodity: 2018

Rm	Gold	PGMs	Diamonds	Chrome	Iron ore	Manganese	Coal	Industrial minerals	Other minerals	Total
<b>2008</b>	15,960	23,344	2,164	1,306	1,668	672	11,021	1,103	3,649	60,886
<b>2009</b>	17,371	24,879	1,790	1,457	2,178	737	12,815	1,210	3,654	66,092
<b>2010</b>	19,878	26,688	1,956	2,082	3,037	946	14,186	1,326	4,217	74,319
<b>2011</b>	20,841	30,482	2,141	2,755	6,507	1,278	16,069	1,402	5,499	86,972
<b>2012</b>	22,238	34,393	2,408	3,434	4,691	1,565	17,446	1,598	5,857	93,630
<b>2013</b>	23,930	37,710	2,871	3,841	4,848	1,947	18,949	1,680	1,387	100,753
<b>2014</b>	23,383	35,652	3,663	4,047	5,692	2,302	20,595	1,810	1,311	102,146
<b>2015</b>	24,578	44,955	4,678	4,417	6,219	2,199	19,932	1,924	1,235	114,085
<b>2016</b>	28,761	45,926	5,073	4,214	5,895	2,118	21,112	2,074	1,301	120,515
<b>2017</b>	30,168	49,484	5,430	4,734	5,826	2,391	22,442	2,129	-	128,558
<b>2018</b>	27,677	51,412	5,198	5,518	6,641	3,002	25,924	2,201	1,592	134,454

Source: Department of Mineral Resources and Energy

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

### Total mining sector employees and earnings

	Total earnings (R million)	Total employment (Number)
2008	60,886	518,725
2009	66,092	491,794
2010	74,319	498,907
2011	86,972	512,874
2012	93,630	524,869
2013	100,753	509,909
2014	102,146	492,931
2015	114,085	480,205
2016	120,515	458,291
2017	128,558	463,901
2018	134,454	456,438

Source: Department of Mineral Resources and Energy

### THE IMPACT OF THE CARBON TAX ON THE MINING SECTOR

The carbon tax will be implemented in two phases, namely:

#### Phase 1: June 2019 – December 2022

This phase is a transitional period to determine, *inter alia*, the efficacy of the implementation of the law in the reduction of national greenhouse gas emissions and to assist impacted companies with allowances to cushion the impacts of the tax on their operational costs. In this phase, the carbon will be levied on scope 1 emissions, applying to process and internal combustion emissions. The carbon tax is R120/tonne CO<sub>2</sub> emitted, which is proposed to increase at a rate of CPI+2%.

In phase 1, National Treasury has proposed the following offsets:

- 60% basic tax-free allowance
- 10% allowance for process emissions
- 10% allowance for fugitive emissions
- 0%-10% variable tax-free allowance for trade exposed companies
- 5% allowance for companies that have allocated and comply with a carbon budget
- 5% tax-free allowance for above average performance for reducing carbon emissions
- 5% or 10% tax-free allowance for carbon offset programmes

**The mining sector accounts for approximately 15% of GHG emissions, or 75MT of 502MT of GHG emissions produced in South Africa (2014). This tax could cost the industry an additional R900 million to R1.8 billion per annum in this period.**

Given that mining companies face multiple hurdles in starting renewable energy projects, most mining companies have

limited scope to get the carbon offset. The uncertainty for the mining sector is compounded by the fact that the Department of Environmental Affairs' process to finalise carbon offsets and carbon budget regulations is still to be finalised.

Additionally, in the February 2019 budget speech, the National Treasury indicated that during phase 1, the carbon tax would initially be factored in through a 10c/litre increase in the fuel/diesel price.

Between March 2014 and February 2017, the mining sector consumed an average of 900,000,000 litres of diesel in its production process. This figure declined to 416,000,000 in the fiscal year 2017/18. The assessment below models the impact on the mining sector from the introduction of a 10c/litre carbon tax on diesel. Given the mining sector's employment multipliers economy wide, the model also depicts the economy-wide impact emanating from the impact on the mining sector.

The mining sector has a jobs' multiplier of 2.8, which is one of the highest in the South Africa economy. People employed as a result of the mining sector's backward linkages were more than 1.3 million in 2018.

The impact per year from the introduction of a 10c/litre carbon tax on diesel includes:

- Net job losses of 3,703 in the mining sector
- Indirect jobs decline of 10,441
- Net jobs losses of 6,836 (after factoring in the diesel fund rebate)

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

### Phase 2: January 2023 onwards (carbon tax on scope 1 and scope 2 emissions)

At this point, it is anticipated that the draft Climate Change Bill would have come into law and as such, it will be compulsory for companies to have a carbon budget.

The tax rate of R137<sup>1</sup> (carbon tax adjusted for inflation – see table below) per tonne of CO<sub>2</sub>-eq will apply. There is still considerable uncertainty around this phase, particularly, if the tax offsets allowed in phase 1 will be maintained, and if the electricity generation sector will be allowed to pass on the cost of the tax to consumers.

#### Carbon tax escalation

	2019	2020	2021
CPI +2% (SARB - CPI forecast)	N/A	7.3%	6/7%
Carbon tax rate	120	129	137

**Source:** Minerals Council, South African Reserve Bank (SARB – CPI forecast)

**In the absence of policy certainty from the National Treasury and if the allowances granted in phase 1 are removed, the potential carbon tax liability on scope 1 emissions for the mining sector would rise to R10.2 billion per annum (75 million tonnes of GHG emissions multiplied by the carbon tax rate of R137 per tonne).**

It is important to note that mining companies cannot pass on the carbon tax to final consumers, so these costs will be absorbed by the companies.

<sup>1</sup> Minerals Council calculation, based on the CPI + 2% annual escalation proposed by National Treasury

Additionally, it is our view, that in phase 2 of the carbon tax implementation process, the full impact of the carbon tax on electricity (scope 2 emissions) will be fed through to the mining sector because the National Treasury has not yet specified any potential tax-free allowances.

#### Carbon tax impact modeled through the price of electricity (from 2022):

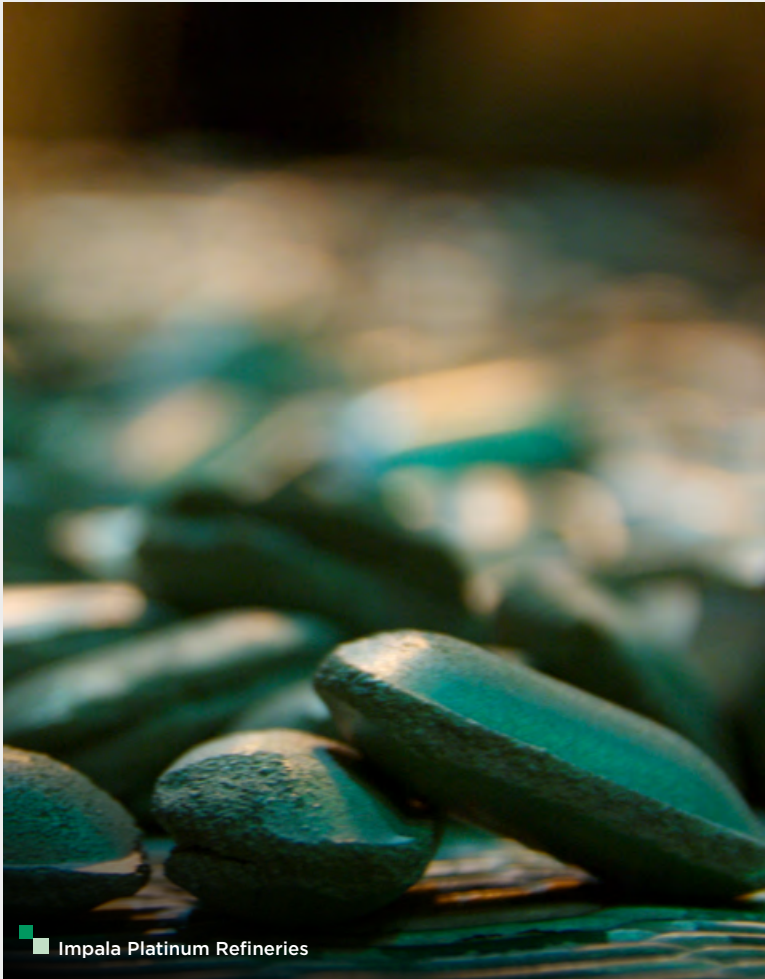
The analysis – while counter-factual in its use of historical data – is a good indicator of the impact of the carbon tax going forward.

The imposition of the carbon tax results in annual declines of:

- Approximately 6,000 jobs per year (over and above those lost in phase 1)
- R4.0 billion in output (value added)
- R2.2 billion in investment in the mining sector

The tax would also result in an increase in costs to the tune of R10.2 billion.

An August 2019 survey by the Minerals Council of its members, confirms the significant costs that will be incurred by mining companies from the introduction of the carbon tax. Across the 18 mining companies that responded to the survey, the carbon tax is estimated to cost as much as R517 million a year in phase 1 of the implementation of the tax. In the absence of the offsets allowed in phase 1, the carbon tax liability for these 18 companies is estimated to increase to R5.5 billion for each year of phase 2. This represents a 972% increase in the tax liability.



Impala Platinum Refineries

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

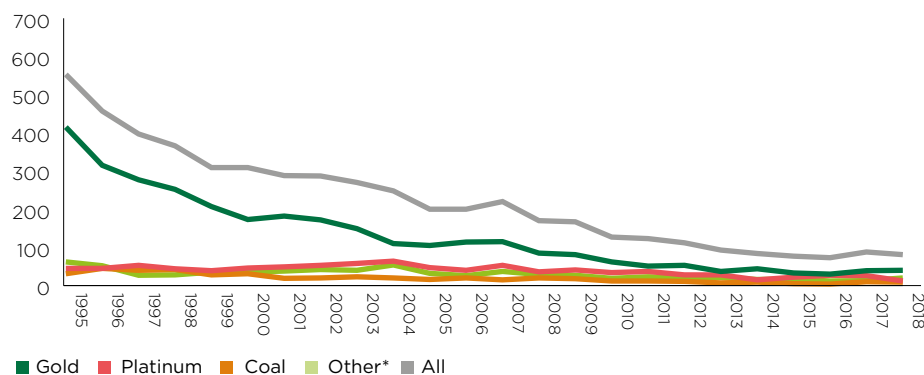
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### SAFETY AND HEALTH PERFORMANCE

#### Safety performance

The last 25 years saw an 87% reduction in the number of fatalities from 615 in 1993 to 81 in 2018. Following 2016's 73 fatalities, the lowest number in a calendar year, a deterioration started in 2017 and continued into the first half of 2018, when the number of fatalities began to rise again. This prompted the Minerals Council Board, through the CEO Zero Harm Forum, to initiate several measures to address this safety performance regression. Key among these were the National Day of Safety and Health Day in Mining, launched in August 2018, and the CEO Heartfelt Conversations. We believe that this helped the safety performance improve in the second half of 2018 with total fatalities for the year of 81 (2017: 90).

Mining fatalities per commodity (1995-2018)



Source: Department of Mineral Resources and Energy

#### Fatalities by commodity: 2017 and 2018 year on year comparison

Commodity	2017	2018	% change
Gold	40	40	-
PGMs	29	12	(59)
Coal	10	9	(10)
Other*	11	20	82
<b>Total</b>	<b>90</b>	<b>81</b>	<b>(10)</b>

\* Other includes diamonds, chrome, copper, iron ore and all others not specified above

Source: Department of Mineral Resources and Energy



AngloGold Ashanti - Mponeng

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

Although the 10% decrease in fatalities in 2018 is encouraging, we, of course, recognise that one fatality is one too many. The Minerals Council and our member companies convey our deepest sympathy to the families, friends and communities of the deceased miners. We acknowledge that there is still much work to be done by all stakeholders to achieve the industry goal of zero harm in which every mine worker returns from work unharmed every day.

The PGMs sector had a commendable decrease of 59% in the number of fatalities while the coal sector had a 10% improvement. The gold sector fatalities remained the same while the 'other' category of mines' fatalities increased by 82%. There was a 26% improvement in the number of accidents, although there were multiple fatalities from a few incidents. The primary causes of fatalities were falls of ground, transport and mining, and general accidents, which include underground fires/gas.

### Causes of fatalities: 2017 and 2018 year-on-year comparison

Cause	2017	2018	% change
Falls of ground	32	22	(31)
Transport and mining	23	17	(26)
General*	26	16	(38)
Machinery	5	2	(60)
Other**	4	24	500
Total	90	81	(10)

\* General causes of fatalities include struck, falling, drowning, inundation, mud rush, burning and scalding

\*\* Other includes electricity, fires, explosives, heat exhaustion and miscellaneous

Source: Department of Mineral Resources and Energy

### Injuries by commodity: 2017 and 2018 year-on-year comparison

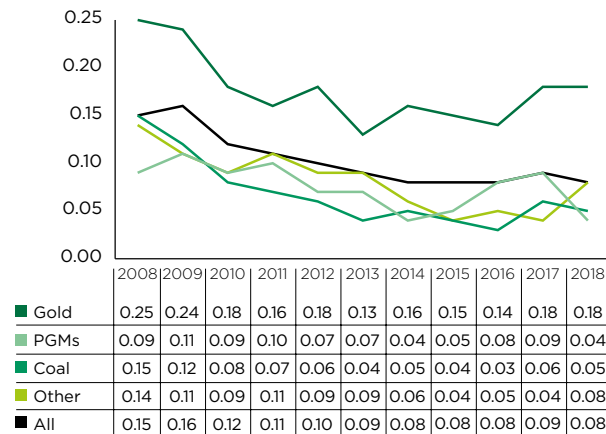
Commodity	2017	2018	% change
Gold	1,021	880	(14)
PGMs	1,048	1,154	10
Coal	202	167	(17)
Other*	398	149	(63)
Total	2,669	2,350	(12)

\* Other includes diamonds, chrome, copper, iron ore and all others not specified

Source: Department of Mineral Resources and Energy

In 2018, there was a welcome 12% reduction in the number of injuries, most of which were as a result of accidents categorised as falls of grounds, transport and mining, and general accidents.

### Fatality frequency rate per million hours worked (2008-2018)



Harmony – Masimong

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

### HEALTH PERFORMANCE

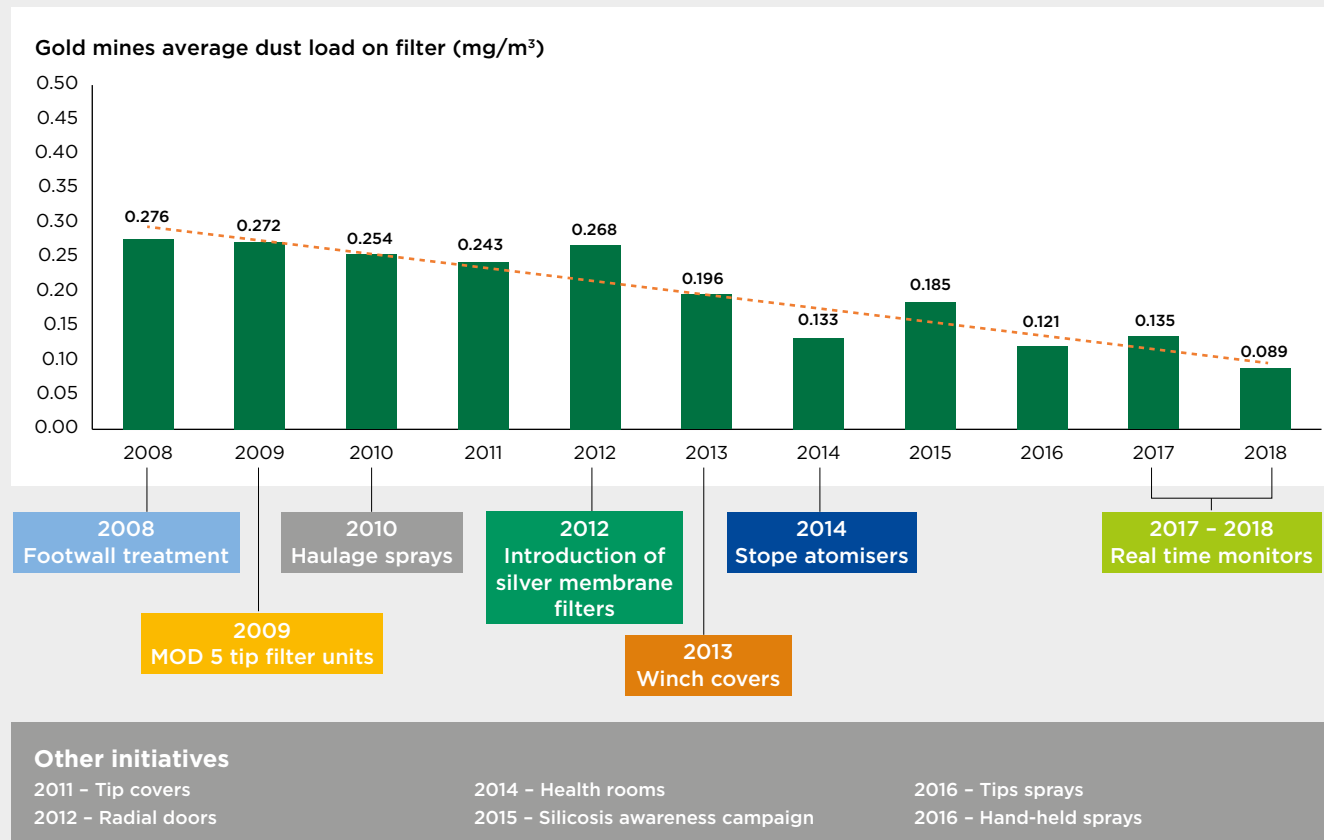
At the Mine Health and Safety Council (MHSC) Tripartite Summit held in 2014, the mining industry stakeholders agreed on milestone targets to be achieved by 2024 to improve the performance of occupational health and safety and in the pursuit of zero harm.

### Occupational lung disease

The milestone target for respirable crystalline silica (RCS) was reduced in 2014 from 0.1 mg/m<sup>3</sup> to 0.05 mg/m<sup>3</sup>. The goal is that, by 2024, 95% of all silica exposure measurement results should be below 0.05 mg/m<sup>3</sup>. In the 10-year period the proportion of measurements that may be above the new milestone level is to be reduced from 18% in 2015 to the targeted 5% in 2024. There has already been a massive reduction from 16.1% in 2015 to 8.7% in 2016.

Due to the RCS milestone target reduction, Minerals Council members were taken through a workshop on the new milestones' concepts, at which mines investigated various methods of improving the milestone data quality. This was done by investigating their current practices on sampling strategy, sampling methodology, sampling media, sampling equipment, analytical laboratories, data interpretation and data reporting. As a result, the Minerals Council also introduced a health information reporting system in 2016, and Minerals Council members were required to report their progress against the milestones.

In addition, many mining companies introduced further engineering controls to reduce exposures, as illustrated in the gold mine graphic below.

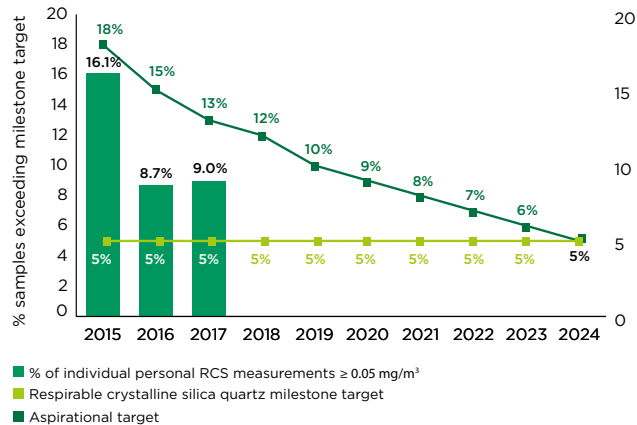


The above graphic indicates multiple interventions that the gold mining industry implemented to reduce exposures over time, highlighting that exposures cannot be prevented through a single, once-off solution. The information in this graphic formed part of the discussions around a gold mine case study at MineSAFE 2018, an annual conference that focuses on improving health, safety and environmental impact in the mining industry, while highlighting the specific actions to be taken.

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

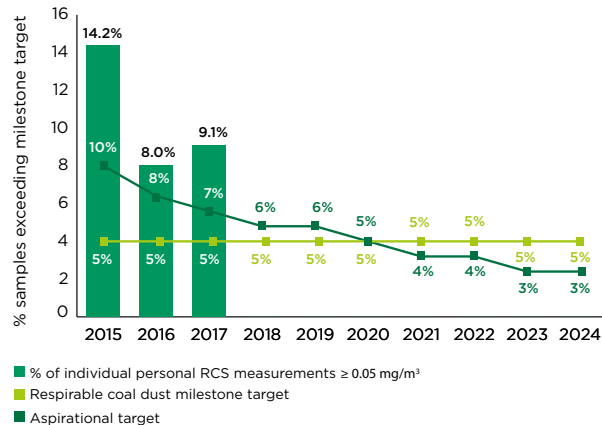
Progress towards respirable crystalline silica milestone: 2015-2017



The industry is currently on target to meet the milestone for respirable crystalline silica.

The RCS performance by our members in 2017 was well within the set aspirational target of 13%. The 2016 and 2017 exposure results, however, indicate that the industry seems to have hit a plateau, and needs to redouble its efforts to maintain its achievements and further reduce silica dust exposures.

Coal mines progress towards coal milestone: 2015-2017



The industry is NOT on target to meet the milestone for respirable coal dust.

### Other occupational diseases

The number of cases of occupational diseases reported nationally decreased by 3% from 4,632 in 2016 to 4,483 in 2017.

Noise induced hearing loss (NIHL) cases increased from 966 in 2016 to 1,141 in 2017. The total number of individual pieces of machines emitting noise levels of more than 107 dB (A) decreased from 3,222 in 2015 to 2,577 in 2017. The MHSC elimination of NIHL milestone is sound pressure levels of less than 107dB(A). Further effort is required to achieve the milestone targets such as increased collaboration with the MOSH (Mining Industry Occupational Safety and Health) team and encouragement of companies to adopt the relevant leading practices and other noise risk reduction initiatives such as the Industry-wide Buy and Maintain Quiet Initiative (IBMQI).



Royal Bafokeng Platinum - Bafokeng Rasimone Platinum Mine

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

## CONTINUED

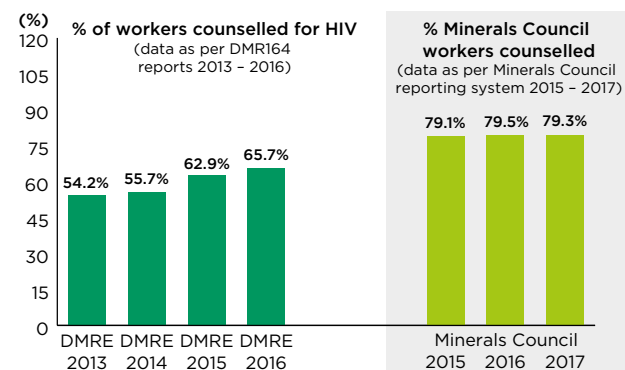
There was an increase in the number of silicosis cases reported, from 635 in 2016 to 652 in 2017. However, there was a slight decrease noted in TB cases reported from 2,580 in 2016 to 2,247 in 2017.

There was a slight reduction in overexposures to occupational hygiene stressors, except for thermal heat, which increased in 2017 compared to 2016. Airborne overexposures HEGS (homogenous exposure groups) A and B collectively reduced from 21.45% in 2016 to 20.93% in 2017, while noise over-exposure HEGS A and B collectively reduced from 68.4% in 2016 to 67.9% in 2017.

### Prevention of TB and HIV/AIDS

The percentage of employees counselled for HIV/AIDS plateaued at approximately 72% between 2015 and 2017, below the 100% milestone for HIV/AIDS.

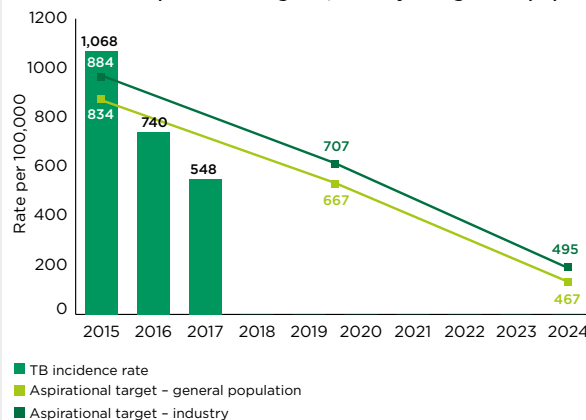
Percentage of workers counselled for HIV (2013-2017)



Source: Department of Mineral Resources and Energy

The percentage of employees screened for TB plateaued at approximately 90% in the period 2015 and 2017. Latest data suggests good progress is being made in respect of the milestone which states that, by December 2024, the TB incidence rate should be at or below the national TB incident rate. Currently, that goal is being met. TB incidence, as per Minerals Council data, has almost halved from 1,148/100,000 in 2015 to 548/100,000 in 2017. The graph below shows the DMRE total TB incidence in comparison to the South African population.

TB incidence aspirational targets (Industry and general population)



Source: Department of Mineral Resources and Energy

The extrapolation of the industry's TB incidence compared to the South African population indicates that the milestone target can be achieved if the industry continues to reduce the TB occurrence rate at the current rate.



Sibanye-Stillwater

# OUR METALS AND MINERALS



Glencore – Tweefontein Colliery

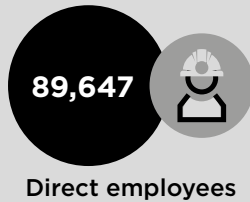


## COAL

MC Mining – Vele

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# OUR METALS AND MINERALS – COAL CONTINUED

Coal sales totalled approximately R146 billion in 2018. Historically, exports have accounted for an average of over 50% of sales since 1993. In the same period, coal export earnings averaged 12% of total merchandise exports, highlighting the industry's importance as a foreign exchange earner.

South Africa derives over 70% of its energy requirement (electricity and liquid fuels) from coal. The country exports coal mainly to India, representing 57% – or R41.6 billion – of total export sales in 2018. The European Union and western Asia are the second and third most important markets, with respective shares of 15.7% and 14.3% in 2018. In terms of volumes, exports were 28% of total production in 2018.

In 2018, the coal industry employed 89,647 people, representing about 19% of total employment in the mining sector.



## South African coal production and sales

	Production	Local sales		Export sales		Total sales	
	Tonnes '000	Tonnes '000	R'000	Tonnes '000	R'000	Tonnes '000	R'000
<b>2007</b>	247,666	182,770	19,718,642	67,675	24,447,656	250,445	44,166,298
<b>2008</b>	252,699	197,033	30,104,161	60,631	44,706,204	257,664	74,810,365
<b>2009</b>	250,538	184,677	34,442,650	60,539	31,006,559	245,216	65,449,209
<b>2010</b>	257,206	186,366	33,702,229	66,770	37,477,184	253,136	71,179,413
<b>2011</b>	250,706	177,889	37,253,525	68,807	50,548,678	246,697	87,802,202
<b>2012</b>	259,012	185,548	44,091,664	76,009	52,226,904	261,556	96,318,568
<b>2013</b>	256,563	183,950	49,603,015	74,566	51,813,484	258,516	101,416,499
<b>2014</b>	261,949	184,416	55,255,702	75,823	51,452,471	260,239	106,708,172
<b>2015</b>	252,176	179,135	56,574,200	75,376	47,543,139	254,511	104,117,339
<b>2016</b>	250,566	181,271	61,445,037	68,905	50,465,927	250,176	111,910,965
<b>2017</b>	252,271	181,306	69,055,857	70,049	61,277,987	251,355	130,333,844
<b>2018</b>	253,257	179,898	72,899,501	71,948	73,104,572	251,846	146,004,073

Source: Department of Mineral Resources and Energy

## THE IMPACT OF THE DRAFT INTEGRATED RESOURCE PLAN (IRP) 2018 ON THE COAL INDUSTRY

### Reduction in coal consumed by Eskom will affect jobs

According to the government's draft IRP, in 2030, Eskom will produce 33,847MW of power using coal, a decline from 39,126MW in 2017. This represents a 5,279MW reduction and is equivalent to 6,566,654 tonnes of coal. This translates to 2,310 direct jobs lost in the coal mining industry. With an employment multiplier of 4 this means that over 9,000 jobs will be affected in 'downstream' industries. In 2017, the coal industry indirectly employed 336,804 people. Most of these jobs are in Mpumalanga. It is therefore important that 'energy transition' projects are earmarked for this province. Failure to do so will result in untold social, economic and political instability. Already mining companies operating in the province are experiencing disruptions arising from community protests.

# OUR METALS AND MINERALS



Anglo American Platinum – Tumela Mine



Ivanplats – Mokopane

## PGMs

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167,041



Direct employees

R51  
BILLION



Employee earnings

R104  
BILLION



Total sales

## OUR METALS AND MINERALS – PGMs CONTINUED

Total nominal sales in the PGMs industry amounted to R104 billion in 2018, up from the R97 billion of mineral sales a year earlier. Although platinum prices remained under pressure throughout 2018, the basket price was assisted by strong gains in palladium and rhodium, which in dollar terms increased 18% and 100%, respectively, when compared to 2017. Between 2017 and 2018, platinum prices decreased by 7.1% (in USD).

In 2018, the PGMs industry employed 167,041 people, who earned R51 billion. During the last 10 years, employment peaked in 2012 at 197,752 people. This represents a 15% decrease in employment, compared with 2018. In nominal terms, employment earnings increased 49.4% over the same period.

An increase in the adoption of fuel cells technology, influenced by pressure to reduce carbon footprints, is expected to be supportive of PGM demand. The introduction of stricter emission standards for motor vehicles is also expected to contribute to PGM demand (platinum, palladium and rhodium) which are used in the making of catalytic converters.

Other uses of PGMs are in catalysts for bulk-chemical production and petroleum refining; in computer hard disks; in hybridised integrated circuits; in multilayer ceramic capacitors; in glass manufacturing; in jewellery; and in laboratory equipment. Platinum is used in the medical sector while platinum and palladium, along with gold-silver-copper-zinc alloys, are used as dental restorative materials. PGMs (platinum and palladium) are also used for investment purposes in exchange traded funds (ETFs).

### Platinum supply

'000 ounces	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Mine production</b>										
South Africa	4,603	4,75	4,74	4,182	4,368	3,22	4,522	4,273	4,289	4,318
Russia	793	785	818	803	741	687	721	678	708	683
North America	294	238	389	338	337	397	365	396	363	345
Others	358	411	457	472	565	541	529	619	606	607
<b>Total mine production</b>	<b>6,048</b>	<b>6,183</b>	<b>6,404</b>	<b>5,796</b>	<b>6,011</b>	<b>4,844</b>	<b>6,137</b>	<b>5,966</b>	<b>5,966</b>	<b>5,959</b>
Autocatalyst scrap	786	904	996	927	1,090	1,134	1,107	1,203	1,262	1,328
Old jewellery scrap	542	681	778	864	752	731	679	695	661	746
<b>Total supply</b>	<b>7,377</b>	<b>7,768</b>	<b>8,178</b>	<b>7,587</b>	<b>7,854</b>	<b>6,710</b>	<b>7,924</b>	<b>7,865</b>	<b>7,889</b>	<b>8,033</b>

Source: GFMS, Thomson Reuters, London Bullion Market Association

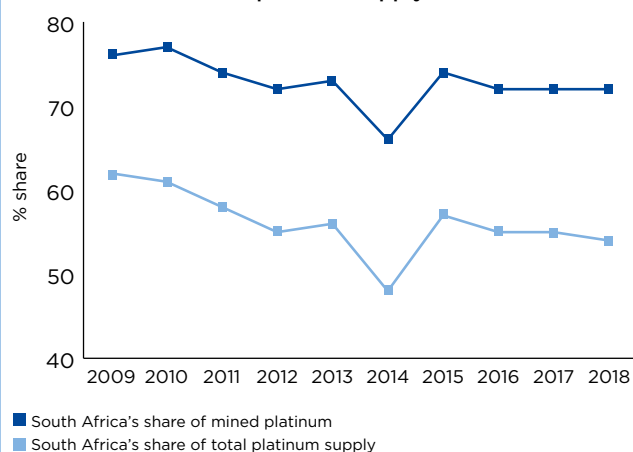
### Platinum demand

'000 ounces	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Autocatalysts	2,539	3,017	3,094	2,96	2,952	3,086	3,157	3,196	3,255	3,268
Jewellery	2,678	2,291	2,42	2,595	2,744	2,662	2,597	2,318	2,204	2,136
Chemical	283	482	487	398	435	587	439	588	573	609
Electronics	278	283	256	227	202	195	183	178	197	204
Glass	91	505	338	361	22	(71)	189	274	333	436
Petroleum	163	168	144	126	107	122	96	135	172	180
Other industrial	431	494	559	621	649	700	681	742	784	808
Retail investment	313	95	312	282	136	141	582	550	303	292
<b>Total demand</b>	<b>6,776</b>	<b>7,335</b>	<b>7,61</b>	<b>7,571</b>	<b>7,247</b>	<b>7,423</b>	<b>7,924</b>	<b>7,981</b>	<b>7,822</b>	<b>7,933</b>
Physical surplus/ (deficit)	601	434	568	16	566	(754)	(42)	(193)	(53)	(280)
Stock movements	281	(579)	(256)	(538)	(1,891)	1,079	142	35	15	(100)
of which ETF release/(build)	(384)	(579)	(156)	(238)	(891)	(221)	192	(15)	15	(100)
<b>Net balance</b>	<b>882</b>	<b>(146)</b>	<b>312</b>	<b>(522)</b>	<b>-1,325</b>	<b>325</b>	<b>99</b>	<b>(158)</b>	<b>(38)</b>	<b>(380)</b>

Source: GFMS, Thomson Reuters, London Bullion Market Association

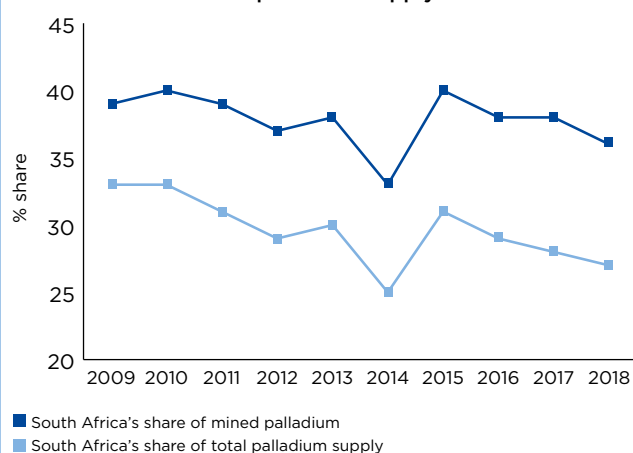
# OUR METALS AND MINERALS – PGMs CONTINUED

South Africa's share of platinum supply



Source: GFMS, Thomson Reuters, London Bullion Market Association, Minerals Council

South Africa's share of palladium supply



Source: GFMS, Thomson Reuters, London Bullion Market Association, Minerals Council

## Palladium supply

'000 ounces	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Mine production</b>										
South Africa	2,481	2,646	2,686	2,391	2,432	2,008	2,653	2,467	2,529	2,417
Russia	2,677	2,722	2,704	2,624	2,527	2,582	2,575	2,526	2,728	2,68
North America	688	726	959	953	934	978	925	932	896	967
Others	475	518	512	528	575	568	561	615	588	589
Total mine production	6,321	6,612	6,861	6,497	6,468	6,136	6,713	6,54	6,741	6,653
Autocatalyst scrap	1,077	1,307	1,514	1,472	1,587	1,826	1,763	1,956	2,16	2,265
Old jewellery scrap	217	215	194	203	182	118	82	65	47	52
<b>Total supply</b>	<b>7,615</b>	<b>8,134</b>	<b>8,569</b>	<b>8,172</b>	<b>8,238</b>	<b>8,08</b>	<b>8,558</b>	<b>8,561</b>	<b>8,948</b>	<b>8,969</b>

Source: GFMS, Thomson Reuters, London Bullion Market Association

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SA % Share of mined palladium	39%	40%	39%	37%	38%	33%	40%	38%	38%	36%
SA % Share of total palladium supply	33%	33%	31%	29%	30%	25%	31%	29%	28%	27%

## Palladium demand

'000 ounces	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Autocatalysts	4,032	5,324	5,667	6,159	6,361	6,745	7,057	7,613	7,88	8,09
Jewellery	1,11	797	674	595	525	478	324	293	285	280
Dental	602	590	567	546	511	475	449	426	408	394
Chemical	306	369	385	379	409	385	374	459	506	498
Electronics	1,14	1,26	1,25	1,242	1,134	1,109	991	938	892	852
Other industrial	84	101	103	110	110	117	116	113	124	123
Retail investment	170	80	61	37	38	45	45	45	53	59
<b>Total demand</b>	<b>7,444</b>	<b>8,521</b>	<b>8,707</b>	<b>9,068</b>	<b>9,089</b>	<b>9,354</b>	<b>9,355</b>	<b>9,887</b>	<b>10,148</b>	<b>10,297</b>
Physical surplus/(deficit)	171	(388)	(138)	(896)	(850)	-1,273	(797)	-1,326	-1,201	-1,327
Stock movement	593	(290)	1,282	(148)	(300)	(299)	577	877	294	190
of which ETF release/(build)	(507)	-1,09	532	(448)	0	(899)	727	637	384	350
<b>Net Balance</b>	<b>765</b>	<b>(677)</b>	<b>1,143</b>	<b>-1,044</b>	<b>-1,15</b>	<b>-1,572</b>	<b>(220)</b>	<b>(449)</b>	<b>(907)</b>	<b>-1,137</b>

Source: GFMS, Thomson Reuters, London Bullion Market Association

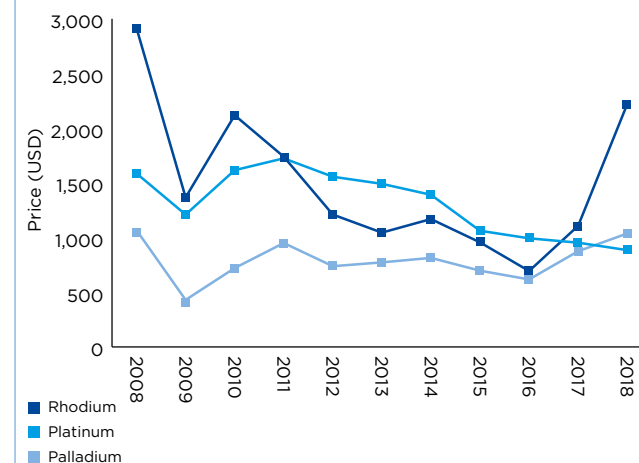
# OUR METALS AND MINERALS – PGMs CONTINUED

## South African PGM production

	Production	Local sales		Export sales		Total sales	
	Tonnes	Tonnes	R'000	Tonnes	R'000	Tonnes	R'000
2008	276	–	13,448,280	223	77,904,355	–	91,352,635
2009	271	–	4,322,869	251	53,459,307	–	57,782,176
2010	287	–	7,892,570	244	65,894,341	–	73,786,910
2011	289	–	10,619,219	244	73,234,047	–	83,853,266
2012	254	–	8,285,235	211	60,918,939	–	69,204,174
2013	264	28	8,886,103	239	75,348,535	266	84,234,637
2014	188	28	10,644,402	202	66,860,760	230	77,505,163
2015	276	32	11,149,886	254	82,988,098	286	94,137,984
2016	264	31	11,093,840	250	85,318,461	282	96,412,301
2017	262	32	11,966,660	251	85,069,237	283	97,035,896
2018	271	24	10,668,195	244	94,228,661	268	104,896,855

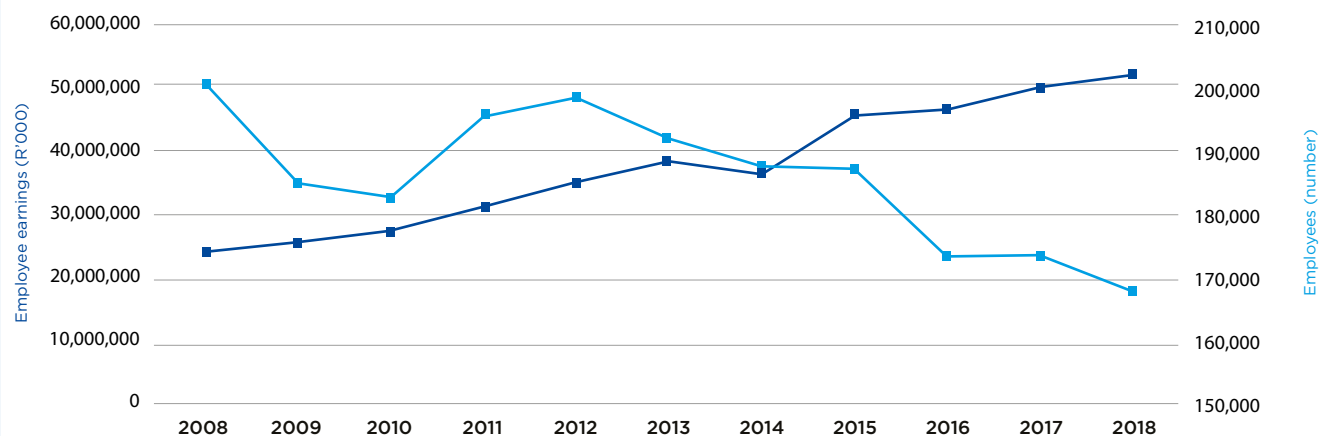
Source: GFMS, Thomson Reuters, London Bullion Market Association

## PGM (3E) selling prices



Source: Department of Mineral Resources and Energy, Minerals Council

## PGM sector employment and earnings



Source: Department of Mineral Resources and Energy




# OUR METALS AND MINERALS



 Rand Refinery



## GOLD

 Sibanye-Stillwater – West Wits Gold Plant

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100,189



Direct employees

R27.6  
BILLION



Employee earnings

R70  
BILLION



Total sales

# OUR METALS AND MINERALS – GOLD CONTINUED

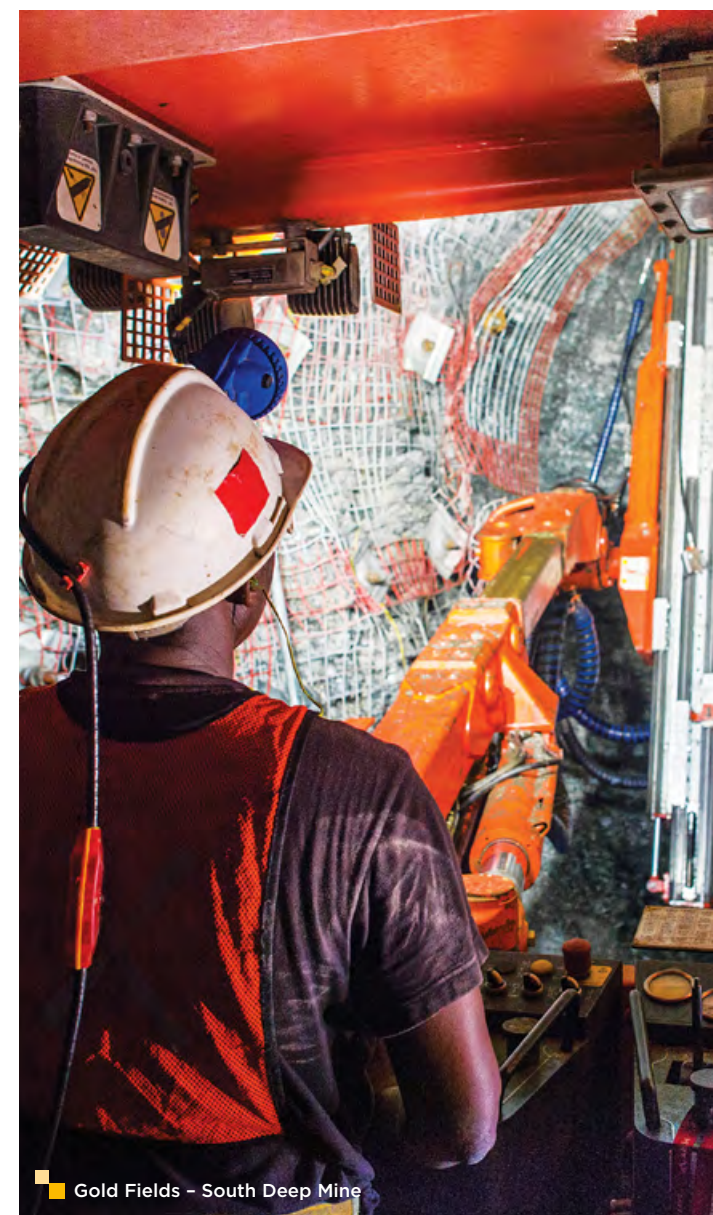
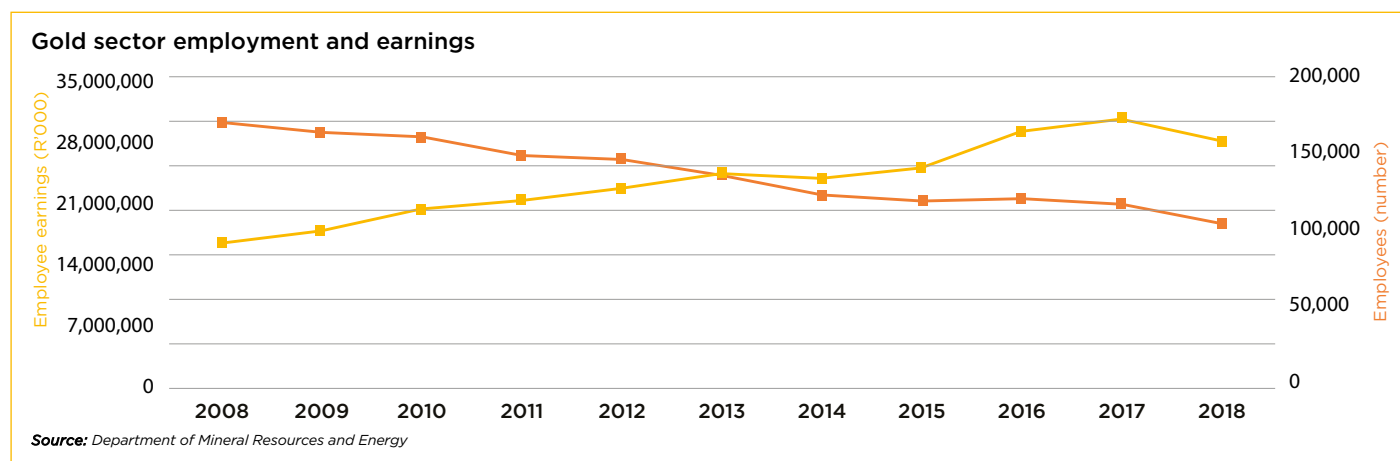
South Africa was responsible for 3.3% of global gold production in 2018. And while the country has the deepest gold mines in the world it has the third largest gold reserves (6,000 tonnes) after Australia (9,500 tonnes) and Russia (8,000 tonnes).

While the number of people employed in the sector has been on the decline since 2007, total employee earnings have soared from R15.9 billion in 2008 to R27.6 billion in 2018.

## South African gold production and sales

	Production	Local sales		Export sales		Total sales		World production	SA share
	Tonnes	Tonnes	R'000	Tonnes	R'000	Tonnes	R'000	Tonnes	(%)
2007	253	13	2,081,731	229	35,953,993	243	38,035,724	2,497.8	10.1
2008	213	9	1,997,761	190	43,994,483	199	45,992,244	2,429.9	8.7
2009	198	7	1,701,334	181	46,994,169	187	48,695,503	2,612.0	7.6
2010	189	7	2,055,698	177	51,037,449	184	53,093,147	2,793.6	6.8
2011	180	10	3,633,111	176	65,258,302	186	68,891,413	2,880.8	6.3
2012	155	11	4,862,748	165	71,961,757	176	76,824,504	2,959.1	5.2
2013	160	10	4,192,863	151	65,793,912	162	69,986,775	3,118.1	5.1
2014	152	9	3,450,902	136	59,898,125	145	63,349,026	3,202.9	4.7
2015	145	16	7,385,852	118	55,314,075	134	62,699,927	3,289.5	4.4
2016	142	25	14,919,703	104	60,572,047	129	75,491,750	3,397.3	4.2
2017	137	34	17,799,800	120	65,099,682	154	82,899,482	3,441.9	4.0
2018	117	66	35,201,487	64	34,482,018	130	69,683,505	3,502.6	3.3

Source: Department of Mineral Resources and Energy, World Gold Council



Gold Fields – South Deep Mine

# OUR METALS AND MINERALS



## KEY 2018 FEATURES



# IRON ORE

 Kumba Iron Ore – Kolomela Mine

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18,613



Direct employees

R6.6  
BILLION




Employee earnings

R51.2  
BILLION



Total sales

 Kumba Iron Ore – Sishen Mine

# OUR METALS AND MINERALS – IRON ORE CONTINUED

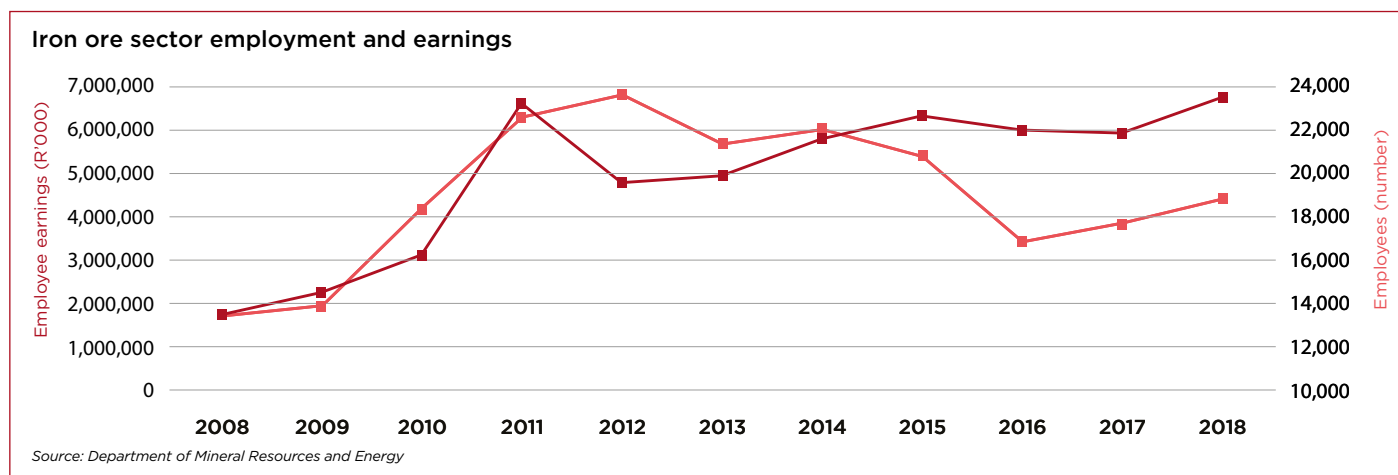
In 2018, total iron ore rand sales increased by 3.7% and tonnes sold by 2.7%. This is despite a weaker dollar price for iron ore, which decreased 2.7% and a flat exchange rate between 2017 and 2018. The higher quality of South African iron ore is supportive of strong external demand. Export sales of iron ore have doubled over the last decade to 61 million tonnes in 2018 up from 32 million tonnes in 2008.

Employment in the industry increased by 6.2% between 2017 and 2018 to 18,613 and R6.6 billion was paid to employees.

## South African iron ore production and sales

	Production	Local sales		Export sales		Total sales	
	Tonnes	Tonnes	R'000	Tonnes	R'000	Tonnes	R'000
2008	48,982,537	11,258,013	1,974,629	32,765,740	20,267,206	44,023,753	22,241,836
2009	55,313,053	8,369,099	1,888,801	44,550,151	25,242,934	52,919,250	27,131,735
2010	58,709,330	10,560,910	3,270,326	47,492,581	40,148,279	58,053,491	43,418,606
2011	58,056,897	9,844,323	4,207,746	51,890,937	58,444,148	61,735,260	62,651,894
2012	67,100,474	8,392,835	4,448,978	57,109,694	48,193,830	65,502,529	52,642,808
2013	71,644,761	9,295,336	5,776,442	58,180,390	57,360,500	67,475,726	63,136,942
2014	80,741,034	9,571,453	5,741,815	61,944,607	52,944,638	71,516,060	58,686,453
2015	72,805,534	7,512,691	5,071,073	64,175,896	34,394,014	71,688,587	39,465,086
2016	66,450,089	6,160,597	3,855,830	58,392,326	39,240,118	64,552,923	43,095,948
2017	74,789,394	7,177,079	5,187,033	60,678,253	44,188,638	67,855,332	49,375,671
2018	74,263,738	8,024,561	5,730,332	61,709,422	45,496,775	69,733,983	51,227,106

Source: Department of Mineral Resources and Energy



# OUR METALS AND MINERALS



## KEY 2018 FEATURES



# MANGANESE

Ntsimbintle – Tshipi é Ntle Manganese Mining

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9,971

Direct employees

R3  
BILLION

Employee earnings

R45  
BILLION

Total sales

Ntsimbintle – Tshipi é Ntle Manganese Mining

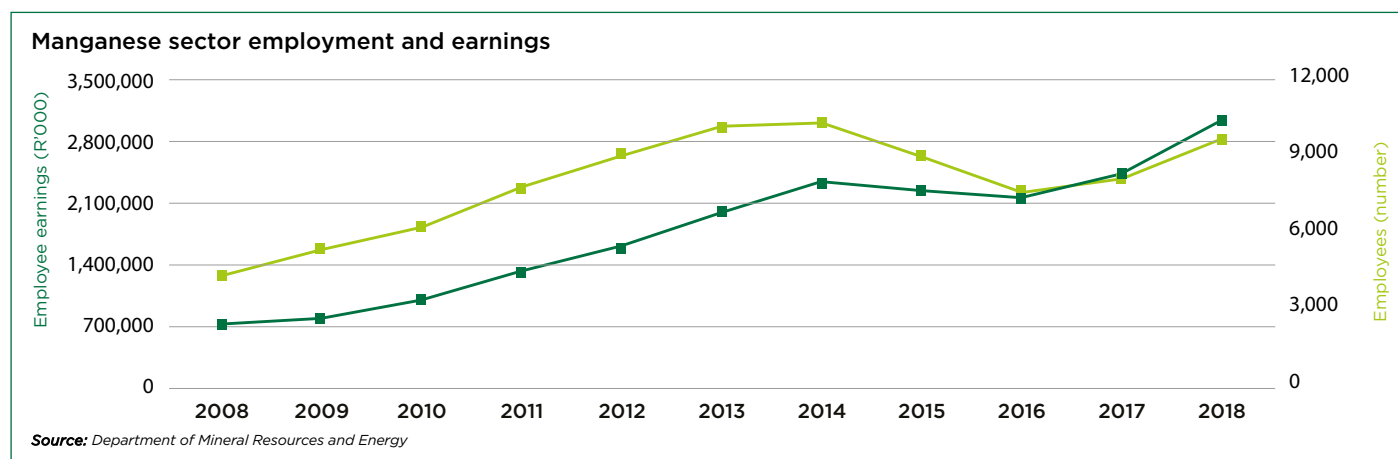
# OUR METALS AND MINERALS – MANGANESE CONTINUED

South Africa is the world's leading producer of manganese, producing more than 14.9 million tonnes in 2018, up from 14.3 million tonnes in 2017. South Africa accounts for about 78% of the world's identified manganese resources, with Ukraine accounting for approximately 10%, in second place. There are currently no satisfactory substitutes for manganese. Most manganese produced locally is exported. Since peaking at 9,971 in 2014, employment numbers have declined to 9,352 in 2018. Employee earnings amounted to R3 billion in 2018.

## South Africa Manganese production and sales

	Production	Local sales		Export sales		Total sales	
		Tonnes	R'000	Tonnes	R'000	Tonnes	R'000
2007	5,996	2,305	934,901	3,691	2,636,526	5,996	3,571,427
2008	6,807	2,118	1,761,848	4,689	15,581,560	6,807	17,343,408
2009	4,579	603	583,602	3,976	5,003,011	4,579	5,586,613
2010	7,172	1,185	1,320,564	5,986	9,340,026	7,172	10,660,590
2011	8,652	1,879	1,325,213	6,773	8,569,854	8,652	9,895,067
2012	8,952	1,454	1,134,842	7,498	9,685,812	8,952	10,820,654
2013	10,456	2,495	1,506,434	7,961	12,969,545	10,456	14,475,979
2014	12,027	2,382	1,644,399	9,644	14,734,415	12,027	16,378,814
2015	11,034	1,007	860,474	10,027	12,657,775	11,034	13,518,249
2016	10,806	986	896,947	11,245	18,860,231	12,232	19,757,177
2017	14,350	1,310	1,726,702	13,040	30,614,192	14,350	32,340,893
2018	14,918	1,361	1,066,479	13,557	43,746,990	14,918	44,813,469

Source: Department of Mineral Resources and Energy



# OUR METALS AND MINERALS



 Glencore – Tweefontein Colliery

KEY 2018 FEATURES



## CHROME ORE

 Palabora Mining Company

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19,000



Direct employees

R5.5  
BILLION



Employee earnings

R21.8  
BILLION



Total sales

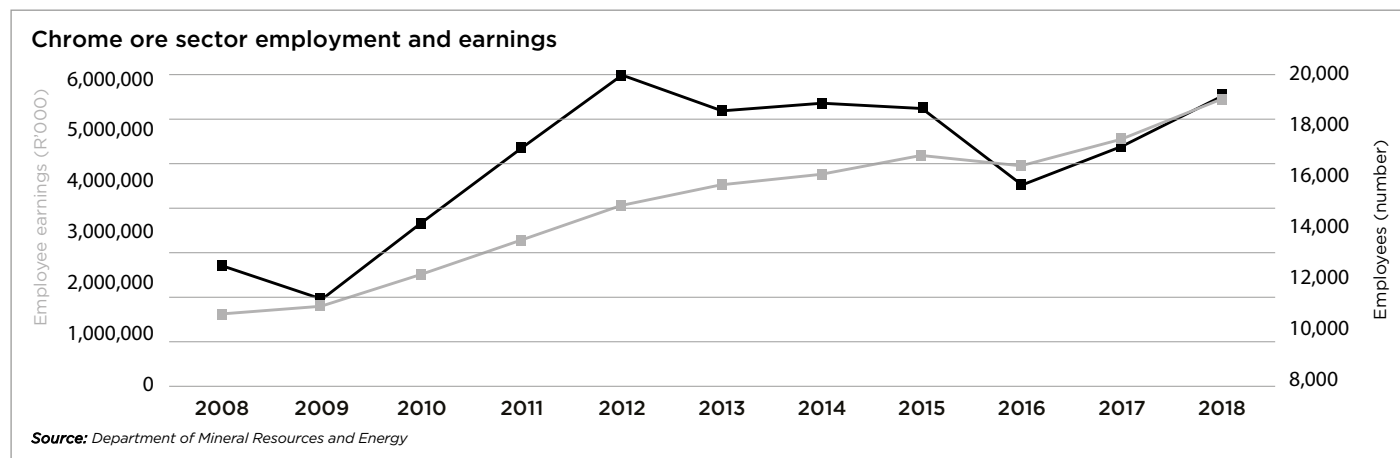
# OUR METALS AND MINERALS – CHROME ORE CONTINUED

Global chrome reserves are estimated to be in the region of 12 billion tonnes. According to the US Geological Survey (2018), South Africa and Kazakhstan host 95% of the world's chromium reserves (shipping grade), at 200,000 tonnes and 230,000 tonnes, respectively. South Africa has 72% of the world's chrome resources. While domestic sales have been volatile, demand in the export market has soared, from 762,164 tonnes in 2008 to 4 million tonnes in 2018. Likewise, employment in the industry has increased from 12,200 in 2008 to 19,000 in 2018. Employees earned R5.5 billion in 2018.

## Chrome ore production and sales

	Production	Local sales		Export sales		Total sales	
	Tonnes	Tonnes	R'000	Tonnes	R'000	Tonnes	R'000
2008	9,686,945	7,120,470	4,135,871	762,164	1,267,931	7,882,634	5,403,802
2009	6,962,140	4,855,393	2,066,278	1,132,368	1,248,337	5,987,761	3,314,615
2010	10,853,574	7,249,519	4,149,027	1,927,577	2,457,008	9,177,097	6,606,035
2011	11,016,860	7,255,825	5,250,590	2,077,609	3,458,691	9,333,434	8,709,281
2012	11,310,225	6,684,739	4,683,023	2,469,551	3,594,282	9,154,290	8,277,305
2013	13,661,244	8,483,087	5,870,717	4,168,240	5,891,833	12,651,327	11,762,549
2014	14,037,722	10,047,716	7,771,424	3,695,092	5,834,876	13,742,808	13,606,301
2015	15,653,045	9,841,821	8,098,789	4,820,551	8,104,128	14,662,372	16,202,917
2016	14,707,518	8,726,059	8,164,657	4,684,049	9,541,381	13,410,108	17,706,038
2017	16,613,206	8,919,825	10,894,320	4,687,250	12,560,328	13,607,075	23,454,648
2018	17,853,383	9,959,459	11,756,993	4,065,101	10,045,204	14,024,560	21,802,197

Source: Department of Mineral Resources and Energy



# OUR METALS AND MINERALS



Petra Diamonds – Koffiefontein Mine

## KEY 2018 FEATURES



16,361



Direct employees

R5.2  
BILLION



Employee earnings

R17  
BILLION



Total sales

# DIAMONDS

De Beers

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# OUR METALS AND MINERALS – DIAMONDS CONTINUED

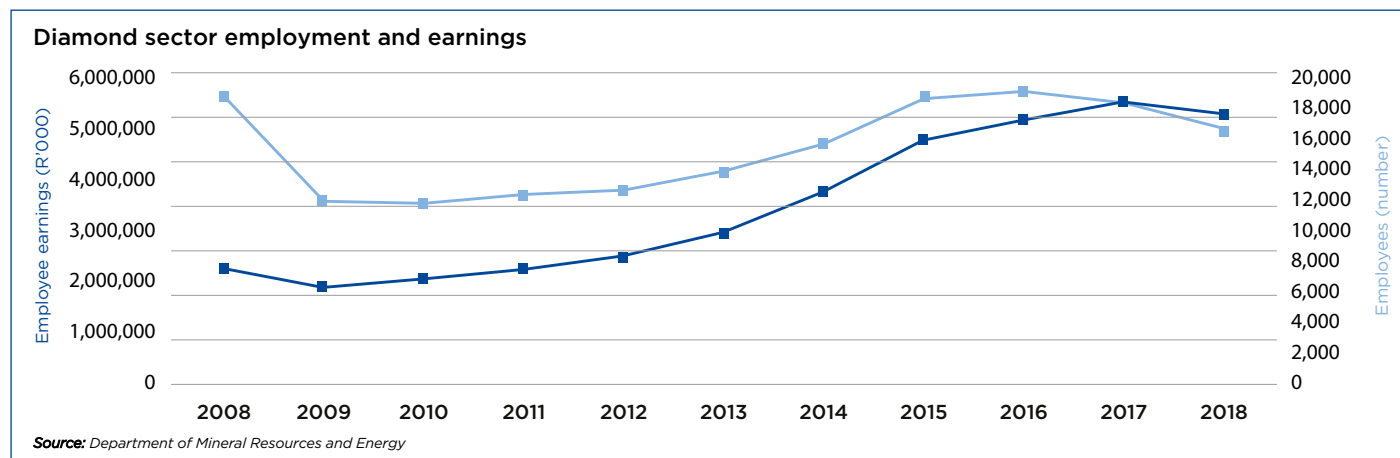
South Africa ranks among the top 10 diamond producers globally, producing 10% of the world's diamonds. In 2018 about 9.9 million carats of diamonds were produced locally.

Total employee earnings decreased between 2017 and 2018, from R5.4 billion to R5.2 billion, in line with a 9.2% decrease in employment between the same years. The industry employed 16,361 people in 2018.

## South Africa diamond production and sales

	Production	Local sales		Export sales		Total sales	
	Carats	Carats	R'000	Carats	R'000	Carats	R'000
2008	12,892,729	-	-	-	-	-	-
2009	6,103,189	-	-	-	-	-	-
2010	8,869,532	-	-	-	-	-	-
2011	7,046,277	-	-	-	-	-	-
2012	7,245,402	-	-	-	-	-	-
2013	8,159,531	3,425,339	7,552,445	3,768,082	4,792,191	7,193,421	12,344,635
2014	8,095,037	3,168,609	8,800,678	5,619,831	7,730,529	8,788,440	16,531,206
2015	8,229,657	3,138,546	8,613,267	4,650,483	5,811,860	7,789,029	14,425,128
2016	8,302,110	1,609,160	8,325,338	9,002,389	12,435,825	10,611,549	20,761,163
2017	9,678,752	1,015,882	7,912,460	9,118,652	10,230,438	10,134,534	18,142,898
2018	9,914,000	1,427,328	7,196,612	8,878,341	10,078,127	10,305,669	17,274,739

Source: Department of Mineral Resources and Energy



# OUR METALS AND MINERALS



Pretoria Portland Cement – Koffiefontein Mine

## KEY 2018 FEATURES



## AGGREGATE AND SAND

Pretoria Portland Cement – Koffiefontein Mine

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6,121



Direct employees

R1.5  
BILLION



Employee earnings

R7  
BILLION



Total sales

# OUR METALS AND MINERALS – AGGREGATE AND SAND

## CONTINUED

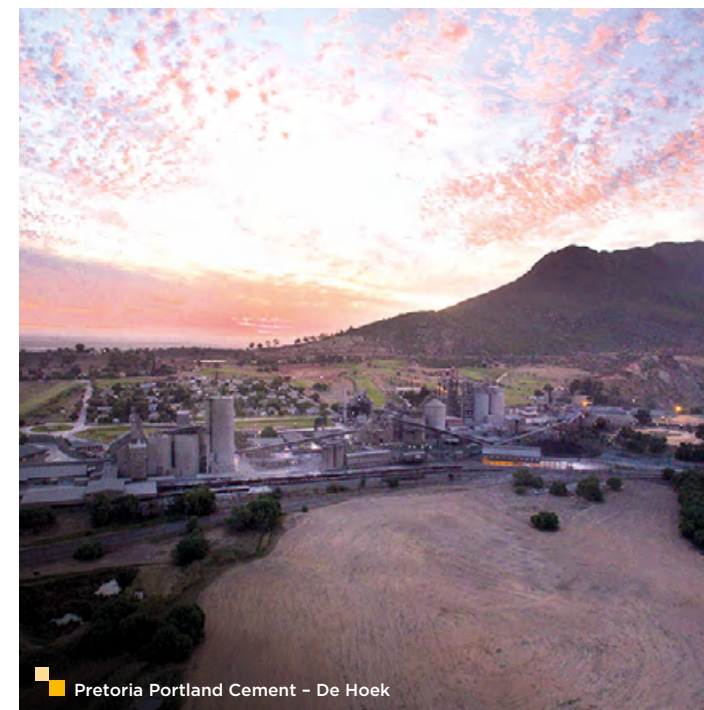
The aggregate and sand industry is closely linked to the construction sector.

The industry is the smallest contributor to mining sector employment with 6,121 employees in 2018. Employee earnings amounted to R1.5 billion in the same year.

### South African aggregate and sand sales

	Local sales		Total sales	
	Kilotonnes	R'000	Kilotonnes	R'000
2006	58,563	2,789,556	58,563	2,789,556
2007	63,873	3,374,162	63,873	3,374,162
2008	58,608	3,775,003	58,608	3,775,003
2009	53,604	3,895,686	53,604	3,895,686
2010	52,625	3,864,613	52,625	3,864,613
2011	51,595	4,062,483	51,595	4,062,483
2012	54,649	4,562,068	54,649	4,562,068
2013	60,375	5,250,636	60,375	5,250,636
2014	62,192	5,916,648	62,192	5,916,648
2015	63,779	6,502,085	63,779	6,502,085
2016	64,478	6,981,878	64,478	6,981,878
2017	64,161	7,041,618	64,161	7,041,618
2018	61,715	6,972,075	61,715	6,972,075

Source: Department of Mineral Resources and Energy



Pretoria Portland Cement – De Hoek

# OUR METALS AND MINERALS



## COPPER

Palabora Mining Company

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47,000  
TONNES



Total production

R2  
BILLION



Local sales

R4  
BILLION



Total sales

Rio Tinto – Richards Bay Minerals

## OUR METALS AND MINERALS – COPPER CONTINUED

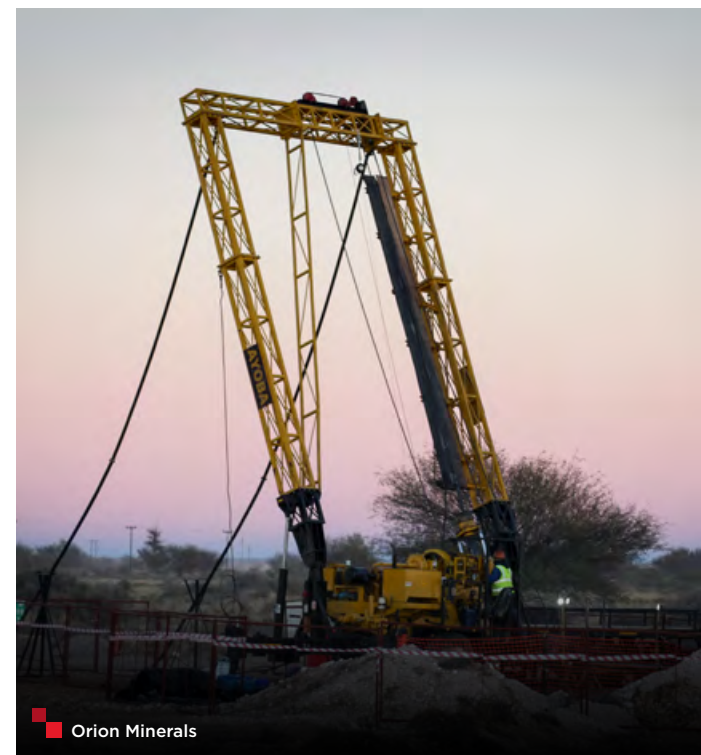
In 2018, total iron ore rand sales increased by 3.7% and tonnes sold by 2.7%. This is despite a weaker dollar price for iron ore, which decreased 2.7% and a flat exchange rate between 2017 and 2018. The higher quality of South African iron ore is supportive of strong external demand. Export sales of iron ore have doubled over the last decade to 61 million tonnes in 2018 up from 32 million tonnes in 2008.

Employment in the industry increased by 6.2% between 2017 and 2018 to 18,613 and R6.6 billion was paid to employees.

### South African copper production and sales

	Production	Local sales		Export sales		Total sales	
	Kilotonnes	Kilotonnes	R'000	Kilotonnes	R'000	Kilotonnes	R'000
2006	110	84	3,892,035	24	1,064,042	108	4,956,078
2007	117	77	4,025,725	37	1,828,126	114	5,853,851
2008	97	68	4,120,564	33	1,507,356	101	5,627,920
2009	93	68	2,835,737	27	1,024,014	95	3,859,751
2010	84	57	3,160,029	25	1,209,297	82	4,369,326
2011	89	60	3,937,749	26	1,495,100	86	5,432,849
2012	70	55	3,575,956	27	1,579,105	81	5,155,061
2013	81	56	4,056,792	26	1,760,781	82	5,817,573
2014	79	45	3,483,784	37	2,466,769	82	5,950,553
2015	77	37	2,703,423	38	2,497,528	75	5,200,951
2016	65	27	1,923,681	27	1,821,207	54	3,744,887
2017	66	26	2,120,088	30	2,207,458	56	4,327,545
2018	47	23	2,027,485	27	2,050,357	50	4,077,841


Source: Department of Mineral Resources and Energy



Copper is one of three base metal by-products of PGM mining

# OUR METALS AND MINERALS



 Vedanta Zinc International

## KEY 2018 FEATURES



# SILVER

 Impala Platinum Refineries

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**46**  
MILLION



Tonnes produced

**R36**  
MILLION



Local sales

**R383**  
MILLION



Total sales

# OUR METALS AND MINERALS – SILVER CONTINUED

Silver production has a long history in South Africa. For the last decade, silver production has been on a steady decline from 75 tonnes in 2008 to 46 tonnes in 2018.

Silver is used in electronics, brazing solders and alloys, and photography. Demand from these areas is expected to decline. On the other hand, demand for silver in ethylene oxide production is projected to remain unchanged and its use in photovoltaics is projected to increase.

In 2018, total silver sales amounted to R382 million, with export earnings accounting for 90% of total sales.

**South African silver production and sales**

	Production	Local sales		Export sales		Total sales	
	Tonnes	Tonnes	R'000	Tonnes	R'000	Tonnes	R'000
<b>2008</b>	75	8	28,272	87	318,573	95	346,845
<b>2009</b>	78	8	30,906	70	256,198	78	287,103
<b>2010</b>	79	8	35,639	79	350,440	87	386,079
<b>2011</b>	73	10	80,001	71	531,932	81	611,933
<b>2012</b>	67	6	49,591	70	533,232	76	582,824
<b>2013</b>	69	6	43,179	62	409,672	68	452,851
<b>2014</b>	37	4	27,011	55	315,097	59	342,107
<b>2015</b>	48	3	21,717	56	343,179	60	364,896
<b>2016</b>	55	4	28,338	55	384,476	58	412,814
<b>2017</b>	63	3	21,788	53	339,889	56	361,677
<b>2018</b>	46	6	35,536	57	347,209	63	382,745

Source: Department of Mineral Resources and Energy



# OUR METALS AND MINERALS



188,300  
KILOGRAMS

Total production

**A BY-PRODUCT  
OF GOLD  
MINING**

## URANIUM

 Gold Fields - South Deep

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## OUR METALS AND MINERALS – URANIUM CONTINUED

Uranium production, a by-product of gold mining, has been in decline in tandem with lower gold production for at least the past decade. After the Fukushima Daiichi nuclear disaster in Japan, as well as the increased usage of green and renewable energy sources, the use of nuclear energy has stagnated. Very few new nuclear power stations are being built outside China.

### South African uranium production

	Production Kilograms
2006	639,2
2007	618,7
2008	654,3
2009	629,0
2010	682,3
2011	656,1
2012	550,6
2013	626,3
2014	667,7
2015	527,8
2016	450,1
2017	303,7
2018	188,3

Source: Department of Mineral Resources and Energy



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