 Petra Diamonds - Finsch mine

SEPTEMBER 2018

# FACTS AND FIGURES 2017

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**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 data on our industry to be freely available so that stakeholders are able to understand how our industry is performing. The Minerals Council (formerly Chamber of Mines) 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. This year we have included a safety and health section. 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.**

They also help South Africans to develop a better, more nuanced understanding of the current state of the mining industry. This also allows 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 pocketbook "Mine SA 2017" was published just before the Mining Indaba 2018 and has been distributed widely – it is also currently available on the Minerals Council website. The pocketbook provides a snapshot glimpse into the industry and the impact that South Africa's mineral wealth has on our everyday lives.

This "Facts and Figures 2017" publication is both an updated version of the pocketbook and a more comprehensive statistical reference guide to the South African mining sector.

## QUICK FACTS

**R126 billion**  
employee earnings

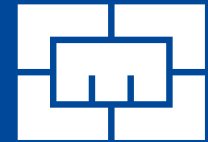
**R335 billion**  
contribution to 2017 GDP

**88%**  
of metals exported

**464,667**  
direct jobs created

Approximately  
**4.5 million**  
dependants supported

**R630 billion**  
production



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# MESSAGE FROM THE CEO



**MINERALS COUNCIL**  
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■ The new face of the Minerals Council South Africa

**Roger Baxter**  
Chief Executive Officer

South Africa's modern economy is founded on the mining industry. The industry was the basis for the development of many other economic sectors, from the steel industry to construction, forestry, and financial services, including the Johannesburg Stock Exchange.

The Minerals Council led a national campaign of Safety & Health Days in Mining 2018, launched on 17 August 2018.

Despite South Africa's economy having diversified over time, the mining industry remains a central part of the economy, with a contribution of over 17% through direct inputs and its supply chain. Yet the industry believes it could make a significantly greater contribution, even in these volatile international economic times, given a better and more certain national policy and operating environment.

In the existing environment, the mining industry made the following contributions in 2017:

- **R335 billion** to GDP
- **R81 billion** to fixed investment
- **R19 billion** paid in taxes
- **R7.5 billion** paid in royalties

- **464,667 employees** who in turn supported some **4.5 million dependents**
- Employee earnings of **R126 billion**
- **R300 billion** spent on goods and services
- **R7 billion** spent on skills development
- **R2 billion** spent on community development
- **R10 billion** in employee tax collected by mining

The international economic slowdown which began in 2008 had a dampening effect on the mining industry the world over. Locally, economic issues, such as rapid increases in mining input prices, particularly electricity and labour costs, exacerbated this trend. But as the global economy begins to show some signs of recovery, there are also some positive signs for the industry.

# MESSAGE FROM THE CEO

continued

South Africa's gross fixed investment in mining grew to R80.9 billion in 2017 (R67.6 billion in 2016) representing 18.2% of private and 10.8% of total fixed investment in the economy, hopefully a sign of better things to come.

The weighted dollar commodity price index (coal, iron ore, gold and platinum) for South Africa hardly moved between 2016 and 2017. In dollar terms, this is due to the lacklustre price trend for gold (+0.8%) and the decline in platinum prices (-4%), negating the increases in the prices of coal (+28%) and iron ore (+22%). The equivalent rand index also hardly moved (given differential price movements and weights). Total sales of commodities exported increased by nearly 7% (in real terms) in 2017 on 2016. Total production of commodities increased by 4.6% between 2016 and 2017.

On average, the rand strengthened against the dollar by 10% over the same period. The rand continued to strengthen from the beginning of 2018 due to a renewal of political confidence but weakened in August due to both local and international issues. The currency movements are a double-edged sword for the industry's exports.

The Minerals Council believes that much more work is required on the draft Mining Charter III to create a Charter that promotes competitiveness, investment, growth and transformation in the mining industry, and that will support growth and prosperity for South Africa as a whole. Without competitiveness, investment in new exploration and mining will be limited, and the mining sector would continue to decline.

The Minerals Council is saddened and disappointed by the industry's deterioration in safety performance measured by the increase in fatalities in 2017 and into 2018.

A critical element of the Minerals Council's leadership role was the establishment in 2012 of the CEO Zero Harm Forum to acknowledge the value of leading by example. The Forum, comprising mining company CEOs, meets on a quarterly basis and directs and guides industry's efforts in respect of safety and health. Among its priorities have been the development and management of critical controls for fatal risks, and instilling a culture in the industry that will change the behaviour of people at all levels to enhance their compliance and agility for change.

In addition to the active steps being taken by the Minerals Council and its members to address safety matters, and to get the industry's quest for zero harm back on track, the Minerals Council led a national campaign of Safety & Health Days in Mining 2018, launched on 17 August 2018.

As the Minerals Council looks forward to a new dawn for our country and its mining industry, I hope that this Facts and Figures 2017 publication will prove useful to those monitoring trends and progress.



**ROGER BAXTER**  
Chief Executive Officer



**MINERALS COUNCIL**  
SOUTH AFRICA



■ Harmony – Tshepong mine

# MINING'S 2017 CONTRIBUTION TO SOUTH AFRICA

**Research worldwide shows that, due to better technologies used to explore for minerals and more efficient use of commodities, the importance of mining does not abate.**

According to the national statistics compiled by the South African Reserve Bank, the inflation-adjusted monetary value of mining's contribution to the South African economy has not fluctuated much since 1960, remaining at an average of R350 billion per annum in 2017 numbers. The mining sector provided the base for the South African economy to industrialise and become a middle income country, far ahead of its African peers. Cyclical expansion and contraction does occur, however.

Indications (on balance) are that 2017 was a lower turning point for the mining sector. Due to higher economic growth in the world, the dollar prices of commodities started to recover, and were it not for the stronger rand exchange rate (10% appreciation), rand prices would have been higher too. Higher production (+3.4%), however, led to higher export sales (+7%). Value added to the South African economy increased by 4.6%, but due to continuous and

accelerating cost increases (from 5.5% in January to 7% in December), profitability remained elusive and unpredictable (decline in net profits before taxes is estimated at 10% for 2017). Employment in the sector is estimated to have grown by about 1.6% from 2016 to 2017. Gross fixed investment improved by 16% after an historic low in 2016. These signals give hope of recovery.

The sector contributed as follows to the South African economy in 2017:

- Exports of R307 billion (R295 billion in 2016) representing 27% of the country's R1.1 trillion total
- Production rose to R630 billion (R574 billion in 2016) – 7.4% of R8.6 trillion South African production
- Value added rose to R334 billion (R307 billion in 2016) – 6.8% of R4.6 trillion South African value added
- Mining sector employment rose to 464,667 (457,290 in 2016) – 6.1% of private non-agricultural employment or 4.8% of total non-agricultural employment

- Gross fixed investment in mining grew to R80.9 billion (R67.6 billion in 2016) representing 18.2% of private and 10.8% of total fixed investment in the economy

This serves to illustrate that “mining really does matter for South Africa”.

Mining is a  
**‘SUNRISE INDUSTRY’**  
and it remains the  
“flywheel” of the South  
African economy.

## 6.8% contribution

to South Africa's gross domestic  
product by the mining sector in 2017



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Glencore – Magareng Chrome Mine



# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY



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**The year 2017 marked 10 years since the global financial crisis and the collapse of the commodity price cycle. Countries that responded with appropriate economic policies have recovered whereas others, like South Africa, failed to provide a policy environment conducive to growth.**

As world economic growth has recovered with concomitant resumption of growth in international trade and higher demand (and prices) for commodities, the mining sector has responded positively.

International geopolitical tensions eased towards the end of 2017 with the US returning to a “Monroe doctrine”- like self-imposed isolation and, although brash, it was not cause for instability.

Renewed world economic growth, resulting in higher demand for commodities, seems to indicate that the commodity cycle has reached the lower turning point of the cyclical trough and will slowly recover from here on.

South Africa's dismal economic growth performance was fuelled by a crescendo (towards the end of 2017) of contradictory and inappropriate economic policies stifling growth with almost complete focus on redistribution as opposed to growth. In many cases, there was brazen looting of assets

from private and public coffers. The mining sector was at the face of this onslaught, and suffered greatly from uncertain policies towards it, causing costs to rise dramatically and loss of competitiveness. The sector grew unattractive to investors.

The mining sector's share of the South African economy is estimated to have been 6.8%, marginally down from the 7% of overall gross domestic product (GDP) recorded in 2016. This despite the fact that growth resumed from the dismal decline (-4.3%) in 2016 to an expansion of about 4.6% in 2017, contributing R335 billion to GDP.

Due to higher mining production, employment is estimated to have increased by 1.6% to 464,667 during 2017. This has finally arrested the rate of job losses, which stood at 30,000 jobs between 2014 and 2017. Among the major commodities, estimates point to the gold sector having shed another 4,000 jobs between 2016 and 2017 while the PGMs, iron ore, diamonds, chrome and manganese sectors employed more people in 2017 than in 2016. Mining employment represents 6.1% of private non-agricultural employment and 4.8% of total non-agricultural employment.

The sector contributed R80.9 billion to fixed investment in 2017, which constituted

18.2% of private-sector fixed investment and 10.8% of the country's total fixed investment for the year. In the decade between 2007 and 2017, the mining industry's fixed investment has been on a downward trajectory. The recovery in fixed investment is a sign of better prospects for the sector, but it still hung in the balance at the end of 2017.

The industry exported R307 billion worth of produce, which is 27% of the country's R1.1 trillion export book. The 10% strengthening of the rand against the US dollar in 2017 adversely affected the rand receipts for exports. On a US dollar-equivalent basis, exports increased by 16.1%, but only by 7% in rand terms.

In the 2016/2017 fiscal year, the industry paid R5.8 billion in royalties, representing a 56% increase on the previous year. The industry paid R16 billion in taxes over the same period.

The state of mining in 2017 was again influenced by a complex set of dynamics. The sales performance of the sector is largely determined by the dollar commodity price trends translated into “landed” rand prices.



■ DRDGOLD – Gold pour

# OVERVIEW

# OF THE SOUTH AFRICAN

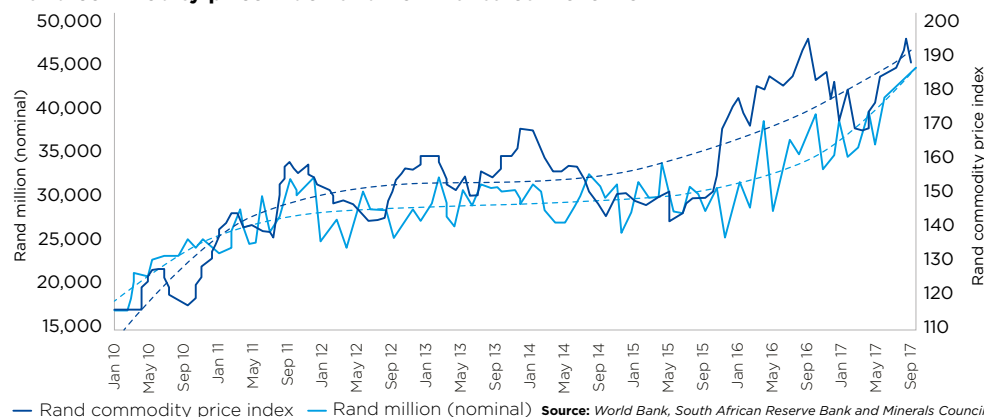
# MINING INDUSTRY

continued



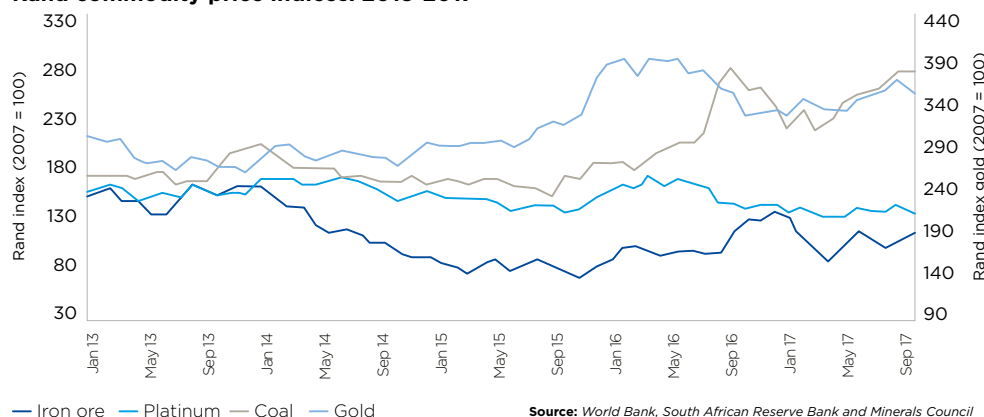
MINERALS COUNCIL  
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**Rand commodity price index and nominal sales: 2010-2017**

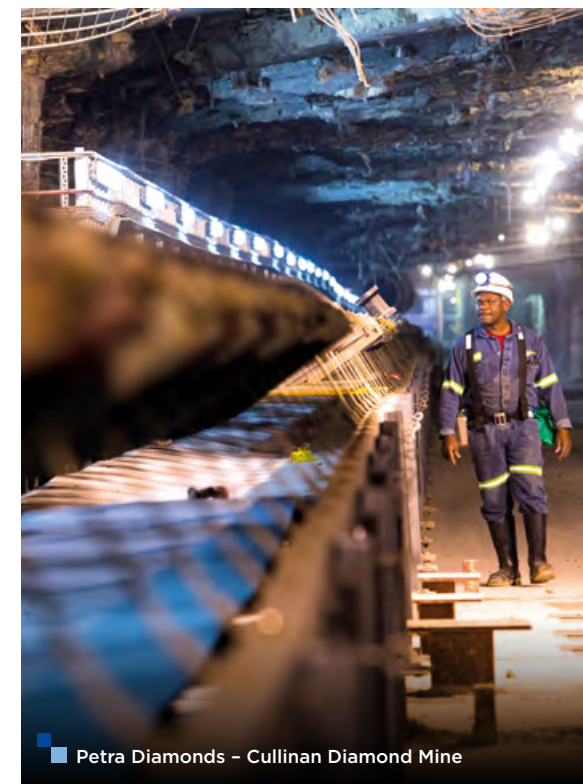


The overall weighted dollar commodity price index (coal, iron ore, gold and platinum) for South Africa hardly moved between 2016 and 2017. In dollar terms, this was due to gold's lacklustre price trend (+0.8%) and the decline in the platinum price (-4%), negating increases in the price movements of coal (+28%) and iron ore (+22%). The equivalent rand commodity price index also hardly moved (given differential price movements and weights). Please see the graph on annualised production versus rand commodity price trends in this section for details. A rise during 2016 was negated by a decline during 2017, leaving the average prices virtually unchanged.

**Rand commodity price indices: 2013-2017**



Each major commodity exhibited unique trends (in rand terms), which could, in general, be explained by the differential recovery in markets for South African commodities.



Petra Diamonds – Cullinan Diamond Mine

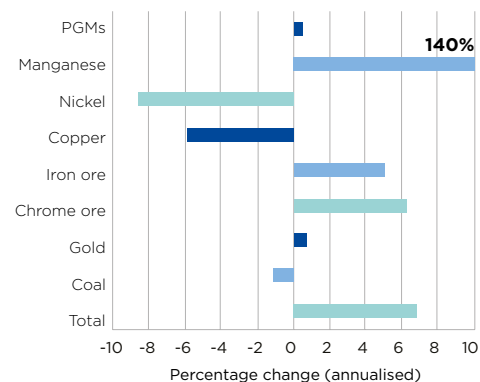


# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



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**Sales performance of various commodities in 2017**

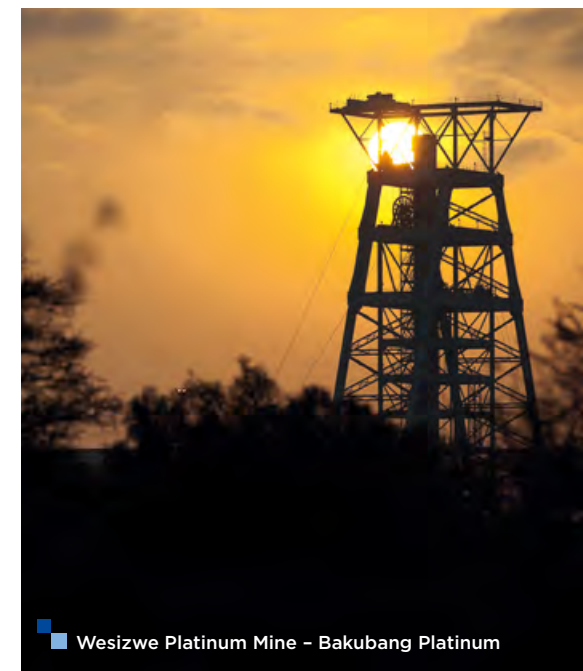


Source: Statistics South Africa and Minerals Council

Total production of commodities increased by 4.6% between 2016 and 2017. On average, the rand appreciated against the dollar by 10% over the same period. It is clear that production trends do not directly correlate with commodity price movements, as depicted in the graph above. A lag of one year to 18 months is evident between the two variables in recent years.

In rand terms, each major commodity exhibits unique trends, which in general can be explained by the differential recovery in markets for South Africa commodities:

- The **gold** price declined by more than 8% between 2016 and 2017, mainly driven by geopolitical uncertainties subsiding during 2017. Sales of gold were up by about 1%, but production declined by 3%.
- **Platinum** prices declined by over 12% over the same period, mainly due to environmental issues and the uncertainty regarding the pace and technological direction of electric vehicle development. Platinum sales grew by 0.5% (in real terms) but production declined by 4.1% over the period.
- **Coal** export prices improved by 17% between 2016 and 2017, and are more or less on par with the prices achieved during the 2008 commodities price peak. The volume of coal sold declined slightly (-1%) over the period, but production increased by 1.5%. India seems to have an insatiable demand for South African coal.
- **Iron ore** prices increased by over 12% between 2016 and 2017. The high-quality iron ore puts South Africa in the “higher tier” price range due to Chinese environmental concerns, which has forced lower-quality iron ore prices to decline. The volume of sales of iron ore increased by more than 5% and production by 12% over the period.
- The two star performing commodities were **chromium** and **manganese**. Sales of the former increased by over 6% and production by over 14% during the period. Chromium prices increased by 63% over the period. Manganese sales jumped by nearly 140% and production by nearly 40% between 2016 and 2017. Manganese prices accelerated by 20% over the same period. These movements are also related to the pace and technological direction of electric vehicle development. Overall sales of commodities exported increased by nearly 7% (in real terms) in 2017 on 2016.



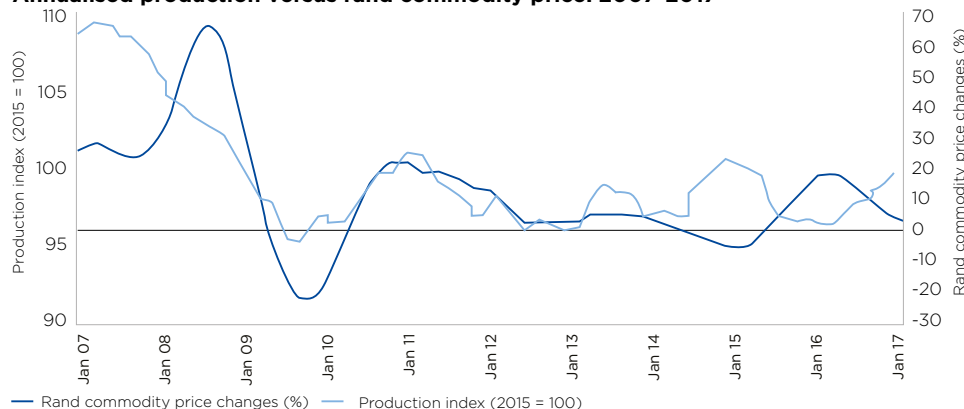
Wesizwe Platinum Mine – Bakubang Platinum

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



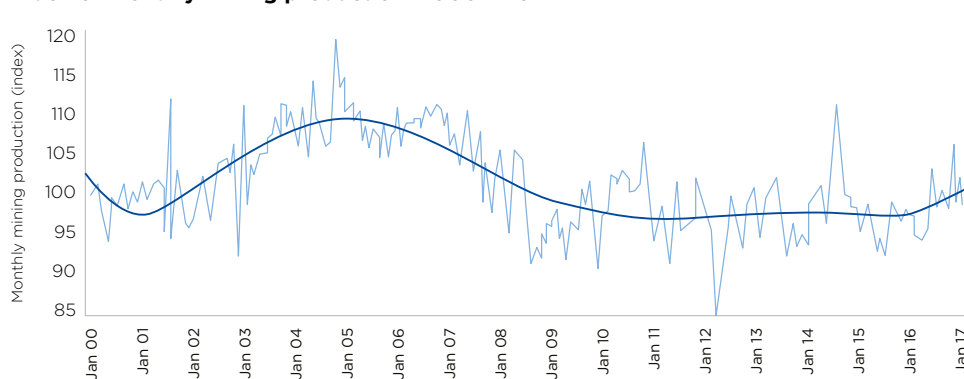
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Annualised production versus rand commodity price: 2007-2017



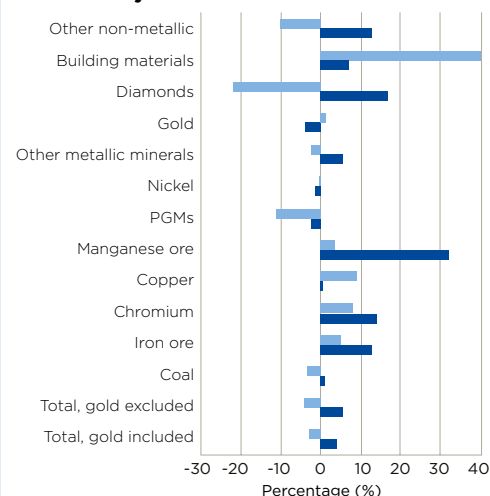
Source: World Bank, South African Reserve Bank, Statistics South Africa and Minerals Council

Index of monthly mining production: 2000 - 2017



Source: Statistics South Africa

Production performance by commodity: 2017



Source: Statistics South Africa and Quantec 2017

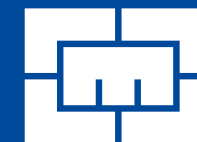
The sector as a whole struggled to remain profitable. This was mainly due to commodity prices not improving strongly and domestic costs continuously rising. Mining input costs increased by nearly 6% over the same period.



Gold Fields - South Deep Gold Mine

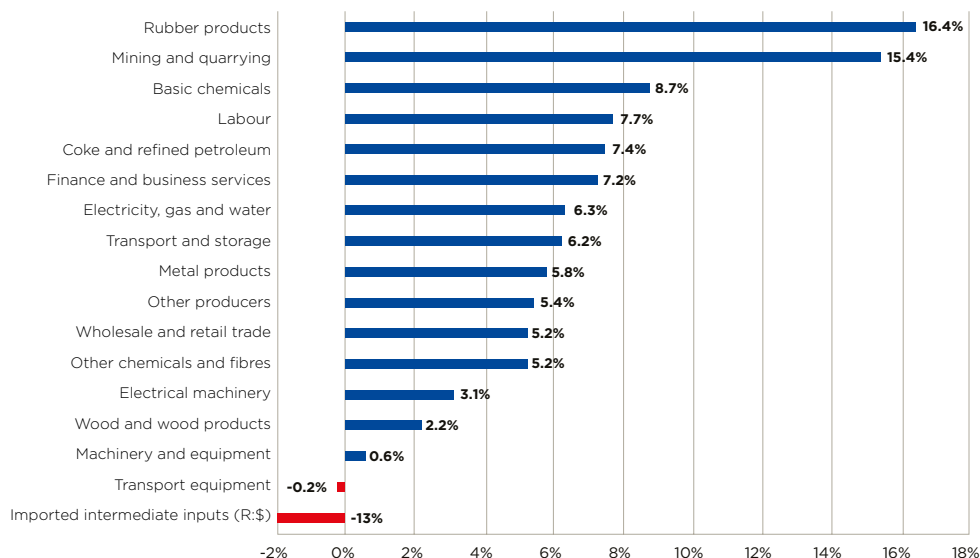
# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

continued



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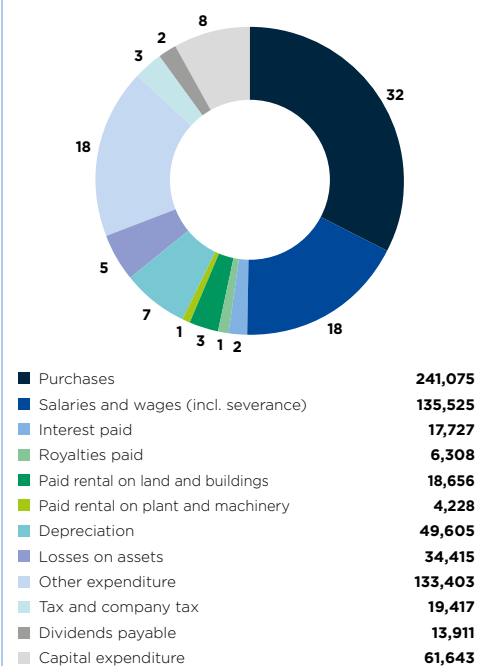
**Differential increases in cost components: 2017**



Source: Minerals Council

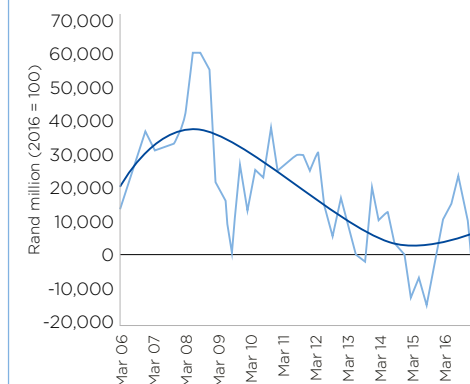
In 2017, the Economics Department developed a mining input cost index. Based on this research, the contribution of intermediate inputs was 69.5% and labour 30.5% during 2017. The split of intermediary input cost is depicted by the graph alongside, which was developed from the estimated input-output tables for mining, augmented by company data as reported in their published reports. More than 50% of these costs (petroleum, electricity, transport and storage) are administered prices.

**Mining industry expenditure 2017 (R million)**



Source: Statistics South Africa and Minerals Council

**Quarterly net profit and losses before taxes: 2006-2017**



Source: Statistics South Africa: Quarterly Financial Surveys 2017



# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



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Rapidly rising costs, a large proportion of which are completely out of mining companies' control, keep eroding profitability in the sector. Apart from costs eroding profitability, they also have a direct impact on employment. As an example, the potential job losses related to the attempted 20% electricity tariff increase by Eskom would have cost 48,000 mining job opportunities. NERSA only awarded a 5.2% tariff increase after serious opposition from the Minerals Council and other private-sector organisations.

The uncertain, and sometimes openly hostile, domestic policy environment has had a direct and negative impact on the mining sector. The cabinet reshuffle, which included firing Finance Minister Pravin Gordhan in March and April 2017, and the subsequent downgrading of South Africa's sovereign credit rating, had a negative impact on the sector's cost of capital. Lingering uncertainty regarding the revised Mining Charter weighed heavily on investor confidence and mining share prices, which countered the optimism of commodity prices stabilising and, for some commodities, rising. These factors, if not rectified, will continue to have a negative impact on fixed investment in mining and may therefore result

in the country's mining sector losing out on the next commodity price cycle upturn.

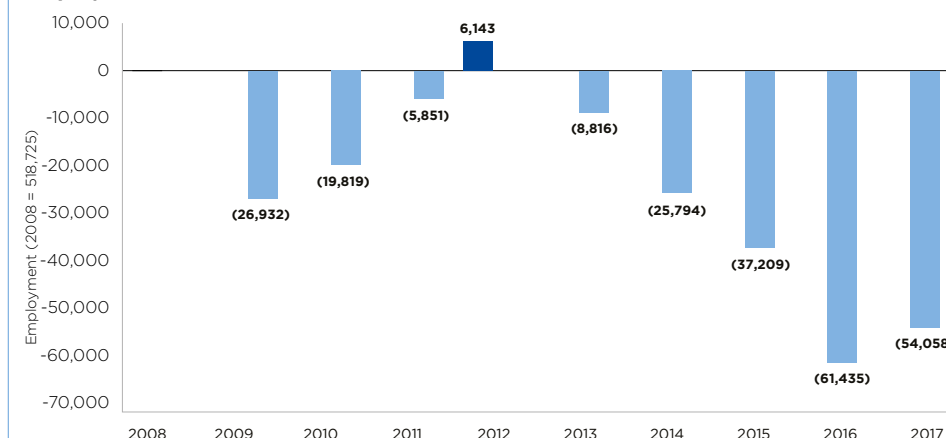
The mining sector continued to provide significant employment in South Africa. Total employment for 2017 was 464,667 people, which is slightly higher than it was in 2016.

## Number of employees and earnings: 2017

Commodity	Employment	Total earnings R'000
Gold	112,200	29,027,067
PGMs	175,770	48,258,265
Iron ore	21,794	5,791,755
Chrome	17,535	4,775,778
Manganese	8,314	2,437,046
Diamonds	18,227	5,243,203
Coal	81,962	22,415,572
Aggregate and sand	7,390	1,244,248
Other mines and quarries	21,475	6,817,005
<b>Total</b>	<b>464,667</b>	<b>126,009,944</b>

Source: Department of Mineral Resources

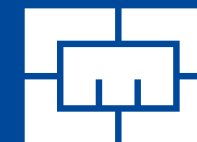
## Employment losses: 2008 - 2017



Source: Statistics South Africa and Minerals Council

The graph above shows the job losses in mining since 2008.

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



**MINERALS COUNCIL**  
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## Commodity summary: 2017

Group	Commodity	Local sales R'000	Total sales R'000	Total exports R'000	Exports as a % of total sales
<b>GOLD, PGMS, DIAMONDS AND SILVER</b>	Gold	17,681,881	82,784,283	65,102,402	78.6
	PGMs	11,971,452	97,040,689	85,069,237	87.7
	Diamonds	7,899,725	18,095,432	10,195,708	56.3
	Silver	21,788	361,677	339,889	92.0
	<b>Sub-total</b>	<b>37,574,846</b>	<b>198,282,081</b>	<b>160,707,236</b>	
<b>BASE MINERALS</b>	Chrome	10,819,578	23,406,141	12,586,563	46.2
	Copper	2,120,087.6	4,327,545	2,207,458	49.0
	Iron ore	5,137,619	49,326,257	44,188,638	89.6
	Lead concentrate	0	1,419,830	1,419,830	100
	Manganese	1,724,512	32,361,939	30,637,427	94.7
	Nickel	1,344,463	4,923,158	6,267,622	81.7
	Zinc	0	1,088,563	1,088,563	100
	Coal	69,083,470	130,361,457	61,277,987	47.0
	Other non-metallic	3,581,072	6,120,903	2,538,831	41.5
	Miscellaneous	12,560,346	20,918,970	8,358,623	31.5
	<b>Sub-total</b>	<b>108,226,503</b>	<b>275,599,227</b>	<b>167,372,723</b>	
<b>Grand total</b>		<b>145,801,349</b>	<b>473,881,308</b>	<b>328,079,959</b>	

Source: Department of Mineral Resources, 2017



Petra Diamonds - Finsch underground mine

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued

## Stock exchange comparison (as at 21 June 2018)

Compared to the resource indices in global stock exchange peers, the South African performance has been extremely poor as depicted in the table. It cannot be stressed enough that stock exchange performance is a function of investment into or out of a jurisdiction.

A negative performance is indicative of declining levels and confidence and investment in an industry.

The South African performance as depicted above is undoubtedly a cause for concern and indicates the view investors hold of the South African mining sector.

## Stock Exchange resource indices

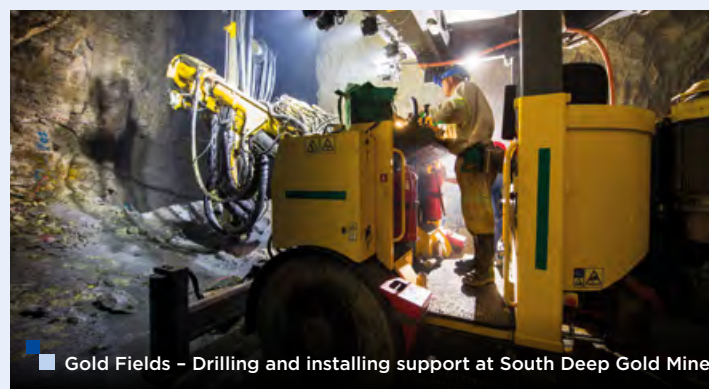
Measured period	Johannesburg Stock Exchange (Resources index)	Australia Stock Exchange (Resources index)	Toronto Stock Exchange (Resources index)
	%	%	%
Month-to-date	1.96	0.94	(0.93)
Quarter-to-date	16.32	13.68	5.59
Year-to-date	11.24	6.93	2.24
1 year	37.08	38.29	20.73
3 years	(2.98)	8.51	5.76
5 years	(8.78)	3.61	2.88
10 years	(44.20)	(4.04)	(2.19)

Source: ShareNet and S&P Global Market Intelligence

One way to measure the market's reaction to policy changes is to observe stock market performance. This table shows the performance of the JSE resource index as compared with the resource indices of the Australian and Toronto Stock Exchanges over time.

Our interpretation of the performance of the South African resource index is that it shows lingering concerns relating to regulatory and policy uncertainty. The table indicates that the longer dated performance, as measured in three, five and 10 years, recorded decreases of -3%, -8.7% and -44% respectively.

This is indicative of declining levels in investment and confidence in the South African resource sector. Compared to its peers, the South African resource index has performed dismally. And this is on the back of the world economy having improved since the global financial crisis of 2007/8.



Gold Fields - Drilling and installing support at South Deep Gold Mine



# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



MINERALS COUNCIL  
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## Key mineral industry statistics for South Africa

Description	Units of measure	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year-on-year % change
<b>GROSS DOMESTIC PRODUCT</b>													
Direct contribution of mining to GDP (value add)	R'millions nominal terms	157,672.0	197,643.0	200,824.0	230,349.7	261,575.4	267,343.9	288,300.4	287,487.5	282,888.5	307,302.1	334,667.5	8.9%
Direct contribution of mining to GDP	R'millions constant 2010 prices	243,662.5	230,662.8	218,830.4	230,350.1	228,645.5	221,989.8	230,771.8	226,790.6	233,744.6	224,016.0	234,305.2	4.6%
Mining GDP growth rate	% year-on-year	-0.6	-5.3%	-5.1%	5.3%	-0.7%	-2.9%	4.0%	-1.7%	3.1%	-4.2%	4.6%	
South African GDP (market prices)	R'millions nominal terms	2,109,501.0	2,369,063.0	2,507,676.0	2,748,008.3	3,023,659.1	3,253,851.9	3,539,977.0	3,805,349.6	4,051,420.7	4,350,314.2	4,651,784.8	6.9%
South African GDP (market prices)	R'millions constant 2010 prices	2,624,840.0	2,708,600.0	2,666,939.0	2,748,008.0	2,838,257.1	2,901,077.8	2,973,175.0	3,028,089.8	3,066,835.3	3,084,174.1	3,124,887.1	1.3%
Mining's contribution as % of total GDP nominal terms	%	7.5	8.3	8.0	8.4	8.7	8.2	8.1	7.5	7.0	7.1	7.2	-
Mining's contribution as % of total GDP real terms	%	9.3	8.5	8.2	8.4	8.1	7.7	7.8	7.5	7.7	7.3	7.5	-
<b>FIXED INVESTMENT</b>													
Direct contribution of mining to fixed investment (GFCF*)	R'millions nominal terms	40,628.0	59,084.0	64,574.0	63,555.0	68,420.4	72,106.0	80,608.7	85,615.3	75,096.1	67,654.5	80,877.4	0.03%
Direct contribution of mining to fixed investment (GFCF*)	R'millions constant 2010 prices	49,643.0	62,349.0	65,969.0	63,555.0	65,952.7	65,437.8	67,332.6	66,994.5	57,207.0	48,623.6	56,337.9	-1.35%
Total private sector fixed investment (private GFCF*)	R'millions nominal terms	307,189.0	376,918.0	342,142.0	341,517.0	380,411.0	406,000.0	470,085.0	511,839.4	528,005.6	537,180.6	548,856.7	-0.95%
Total SA fixed investment (GFCF*)	R'millions nominal terms	435,548.0	556,997.0	539,440.0	529,431.0	578,014.0	625,643.0	721,234.0	775,949.7	828,245.1	848,911.6	871,476.0	1.55%

\* GFCF: Gross fixed capital formation

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY *continued*

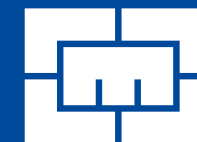


## Key mineral industry statistics for South Africa *continued*

Description	Units of measure	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year-on-year % change
Mining fixed investment growth rate	% year-on-year	-	25.6	5.8	-3.7	3.8	-0.8	2.9	-0.5	-14.6	-15.0	15.9	-
Mining's contribution to private sector fixed investment (GFCF*)	%	13.2	15.7	18.9	18.6	18.0	17.8	16.9	16.73	14.22	12.59	14.74	0.99%
Minings contribution as % of total investment	%	9.3	10.6	12.0	12.0	11.8	11.5	11.0	11.0	9.1	8.0	9.3	-1.49%
<b>SALES AND EXPORTS</b>													
Total primary mineral sales	R'millions nominal terms	223,901.2	300,763.1	239,881.1	300,891.1	370,832.7	363,756.5	385,033.1	386,350.0	386,709.4	424,041.9	473,881.3	11.8%
Mining industry primary exports	R'millions nominal terms	160,685.4	220,077.1	175,772.1	224,968.8	282,296.6	269,119.8	279,673.1	269,263.6	266,604.0	294,896.8	328,080.0	11.3%
Total SA exports (goods and services)	R'millions nominal terms	470,275.7	638,035.6	503,945.2	652,274.8	771,622.7	797,334.0	900,381.2	969,876.4	1,004,468.2	1,080,809.6	1,147,193.6	6.1%
Primary mineral exports as % of total SA exports	%	34.2	34.5	34.9	34.5	36.6	33.8	31.1	27.8	26.5	27.3	28.6	-
<b>EMPLOYMENT</b>													
Mining industry direct employment	numbers	495,150	518,725	491,793	498,906.8	512,874	524,868	509,909	492,931	480,204	457,661	464,667	1.1%
Total private non-agricultural employment	numbers	7,667,329	7,733,514	7,379,221	7,248,651.8	7,340,934	7,411,984	7,443,508	7,382,081	7,366,387	7,562,929	7,576,175	0.2%
Total SA formal non-agricultural employment	numbers	9,260,478.3	9,403,045.5	9,112,119.5	9,032,440.3	9,208,068.8	9,311,779.3	9,433,330.8	9,497,001.8	9,429,856.3	9,667,654.0	9,619,975.0	-0.5%

\* GFCF: Gross fixed capital formation

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY *continued*



**MINERALS COUNCIL**  
SOUTH AFRICA

## Key mineral industry statistics for South Africa *continued*

Description	Units of measure	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year-on-year % change
Mining as % of total private non-agricultural employment	%	6.5	6.7	6.7	6.9	7.0	7.1	6.9	6.7	6.5	6.0	6.1	
Mining as % of total non-agricultural formal employment	%	5.3	5.5	5.4	5.5	5.6	5.6	5.4	5.2	5.1	4.7	4.8	
Remuneration paid to employees in mining	R'millions current	50,072.9	60,886.4	66,091.6	74,318.5	86,972.1	93,630.5	100,752.7	102,146.4	114,084.9	120,450.1	126,009.9	4.6%
Remuneration paid to employees in mining	R'millions 2010 prices	67,376.0	81,926.2	88,930.1	100,000.0	117,026.1	125,985.3	135,568.8	137,444.0	153,508.0	162,072.7	169,553.8	4.6%
Average annual remuneration per mineworker	Rand	101,126.7	117,376.9	134,388.8	148,962.8	169,577.8	178,388.4	197,589.7	207,222.5	237,575.5	263,186.0	272,235.7	3.4%
<b>EXCHANGE RATES</b>													
Rand per US\$ exchange rate	R/US\$	7.1	8.3	8.4	7.3	7.3	8.2	9.7	10.8	12.8	14.7	13.3	-9.5%
Rand per Euro	R/Euro	9.7	12.1	11.7	9.7	10.1	10.6	12.8	14.4	14.1	16.3	15.0	-7.6%
<b>COMMODITY PRICES</b>													
Gold price	Rand per ounce	4,915.2	7,198.1	8,192.0	8,969.7	11,381.3	13,697.7	13,615.2	13,730.8	14,796.4	18,355.0	16,764.8	-8.7%
Gold price	US\$/oz	696.8	872.3	970.9	1,225.0	1,569.2	1,668.4	1,410.9	1,266.2	1,160.4	1,247.9	1,259.3	0.9%
Platinum price	Rand per kg	9,184.1	12,582.1	10,056.6	11,777.2	12,397.5	12,721.0	14,282.8	14,952.9	13,309.6	14,463.7	12,618.6	-12.8%
Platinum price	US\$/oz	1,301.9	1,524.8	1,191.9	1,608.4	1,709.3	1,549.5	1,480.0	1,378.9	1,043.8	983.3	947.8	-3.6%

**Source:** Minerals Council, South African Reserve Bank, Statistics South Africa and Department of Mineral Resources



# OVERVIEW

# OF THE SOUTH AFRICAN

# MINING INDUSTRY

continued



MINERALS COUNCIL  
SOUTH AFRICA

## Impact of the CO<sub>2</sub> tax on output, jobs and investment in the mining sector

Reduction in output resulting from CO <sub>2</sub> tax (R billion)				
Year	Gold**	Coal	Other*	Total mining
2000	0.5	1.1	2.4	3.9
2001	0.5	1.1	2.3	3.9
2002	0.6	1.1	2.4	4.0
2003	0.6	1.1	2.4	4.1
2004	0.5	1.2	2.6	4.3
2005	0.5	1.2	2.7	4.3
2006	0.6	1.2	2.5	4.3
2007	0.7	1.2	2.4	4.3
2008	0.9	1.2	2.0	4.1
2009	0.9	1.2	1.7	3.8
2010	1.0	1.2	1.9	4.0
2011	1.2	1.2	1.6	4.0
2012	1.2	1.2	1.4	3.9
2013	1.2	1.2	1.6	4.1
2014	1.2	1.3	1.5	4.0
2015	1.2	1.2	1.7	4.2
2016	1.5	1.2	1.3	4.0

Job losses resulting from CO <sub>2</sub> tax				
Year	Gold**	Coal	Other*	Total mining
2000	2,374	238	2,165	4,777
2001	2,212	235	2,216	4,664
2002	2,143	220	2,357	4,719
2003	2,117	219	2,594	4,930
2004	2,019	233	2,947	5,199
2005	1,797	264	3,079	5,139
2006	1,787	267	3,226	5,226
2007	1,858	280	3,592	5,730
2008	1,862	303	3,838	6,002
2009	1,789	328	3,574	5,691
2010	1,756	343	3,674	5,773
2011	1,620	364	3,951	5,935
2012	1,591	385	4,098	6,073
2013	1,474	407	4,019	5,900
2014	1,331	399	3,974	5,704
2015	1,287	360	3,925	5,572
2016	1,303	359	3,630	5,292

Reduction in investment due to CO <sub>2</sub> tax (R million)				
Year	Gold**	Coal	Other*	Total mining
2000	202	102	687	991
2001	212	110	743	1,066
2002	236	125	846	1,207
2003	241	131	890	1,263
2004	191	106	723	1,020
2005	166	95	647	907
2006	241	141	965	1,347
2007	302	180	1,241	1,723
2008	370	227	1,567	2,164
2009	383	240	1,667	2,290
2010	361	232	1,614	2,206
2011	366	240	1,683	2,290
2012	355	239	1,678	2,272
2013	329	240	1,698	2,287
2014	346	244	1,732	2,322
2015	334	241	1,723	2,299
2016	314	232	1,666	2,213

Supposing that the CO<sub>2</sub> tax had been introduced in 2000 and that it was not electricity neutral, these tables show the impact on output, jobs and investment.

This assumes an annual electricity price increase of 5%. The CO<sub>2</sub> tax is electricity neutral until 2020.

In deciphering the tables, in 2016 for example, there would have been an output reduction of R4 billion; 5,292 jobs lost and investment reduced by R2.2 billion.

\* Other includes PGMs, iron ore, manganese, chrome etc.

\*\* Gold long-run equation was run on production volumes. It was later converted to monetary values.

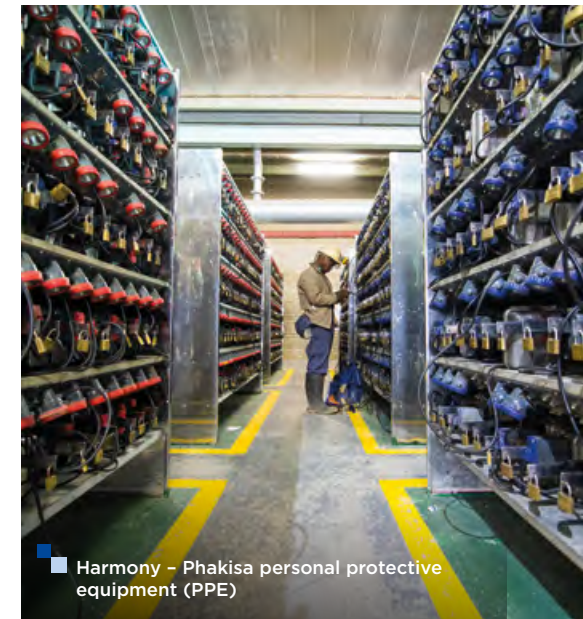
Source: Minerals Council

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY *continued*

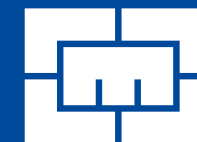
## Impact of the CO<sub>2</sub> tax on output, jobs and investment in the mining sector *continued*

### Key points

1. Mining in South Africa is a marginal industry. A slight increase in some of the cost items (electricity, liquid fuels, transport, etc.), impacts on the profitability and sustainability of especially marginal operations, even driving some operations out of business. This results in a number of job losses. Of the three mining real variables modelled in this book – output, employment and investment – electricity prices significantly and negatively affect mining employment. This is not good news for two reasons:
  - Among the major macro-economic objectives of government is increasing employment. The mining sector is one of the country's major employers, with the second highest median wage earnings, after the utilities sector. Any policy that reduces mining employment should be discouraged. The mining sector, working along with national and provincial governments, is at the centre of driving a number of national government imperatives including job creation and social upliftment through provision of housing, medical and education facilities and local economic development (LED) initiatives in the communities where the mines are located.
  - South African miners are predominantly marginal players; thus, even the smallest increase in costs often results in the shutting down of entire operations or the retrenchment of employees.
2. The Minerals Council's view is that since mining is a marginal sector, mining companies should be exempted from the CO<sub>2</sub> tax, based on the aforementioned rationale.
3. An increase in costs will reduce overall mining output, investment and employment. In our analysis which looked at two industries (gold and coal mining), gold mining will be the most affected by the introduction of the CO<sub>2</sub> tax. The impact will be through indirect taxation via the price of electricity (especially after 2020).
4. Mining is a price taker and cannot pass on the effect of the tax to the final price without losing competitiveness, thus negatively impacting on its overall profitability and sustainability of mines. South Africa as an investment destination would not be attractive.



# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



**MINERALS COUNCIL**  
SOUTH AFRICA

## Mining industry royalties paid (R million)

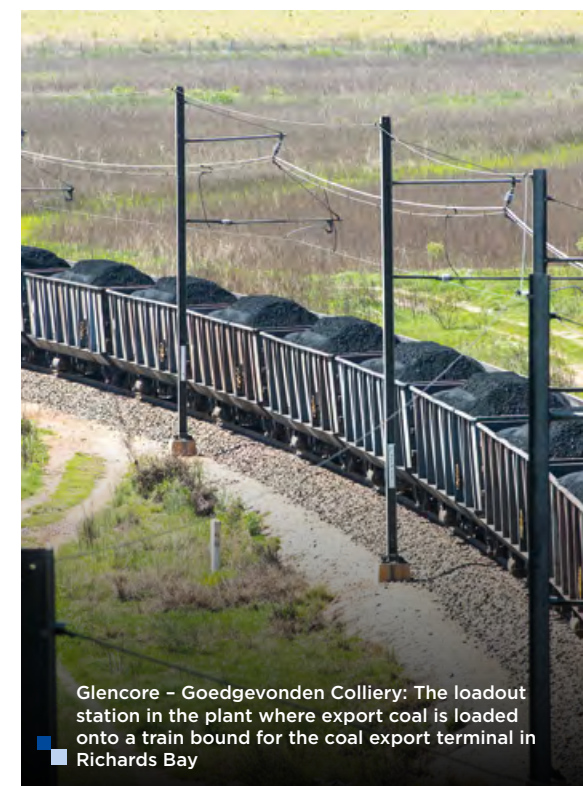
	2014/15	% of total	2015/16	% of total	2016/17	% of total	Year-on-year growth
Coal	713	13.2%	02	18.9%	1,097	18.9%	56.4%
Copper	-	0.0%	-	0.0%	-	0.0%	0.0%
Diamond	185	3.4%	93	2.5%	50	4.3%	169.0%
Gold and uranium	787	14.5%	608	16.4%	930	16.0%	53.0%
Industrial minerals <sup>1</sup>	324	6.0%	155	4.2%	70	1.2%	-54.6%
Iron Ore	2,102	38.8%	643	17.3%	1,629	28.1%	153.2%
Manganese	115	2.1%	185	5.0%	105	1.8%	-43.4%
Platinum	548	10.1%	720	19.4%	804	13.9%	11.6%
Zinc	13	0.2%	5	0.1%	8	0.1%	52.2%
Other <sup>2</sup>	34	11.7%	597	16.1%	909	15.7%	52.2%
<b>Total</b>	<b>5,422</b>	<b>100.0%</b>	<b>3,708</b>	<b>100.0%</b>	<b>5,802</b>	<b>100.0%</b>	<b>56.5%</b>

<sup>1</sup> Industrial minerals are geological materials mined for their commercial value, not mineral fuels and not sources of metallic minerals. They are used in their natural state or after beneficiation either as raw materials or as additives in a wide range of applications (industrial minerals are all those minerals other than gold, PGMs, coal, iron ore, chrome, manganese, diamonds, etc.).

<sup>2</sup> The commodities grouped under Other are: chrome, fluorspar, nickel, oil and gas, phosphates, vanadium and unspecified.

Movement in commodity prices has been mixed, with some commodities having recovered from the financial crisis of 2007/08, which boosted exploration budgets.

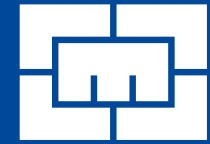
Globally, in 2017, mining firms spent R111.7 billion in exploration up from R97.1 billion the previous year. As has been the trend in recent years, Latin America remained the most popular attraction in gold mining exploration. Africa attracted 14% of the global exploration budget. In Africa the top four attractive destinations were the Democratic Republic of the Congo, Burkina Faso, Tanzania and South Africa. In 2017, South African companies spent over R11 billion in exploration compared to R14.1 billion the previous year.



Glencore - Goedgevonden Colliery: The loadout station in the plant where export coal is loaded onto a train bound for the coal export terminal in Richards Bay

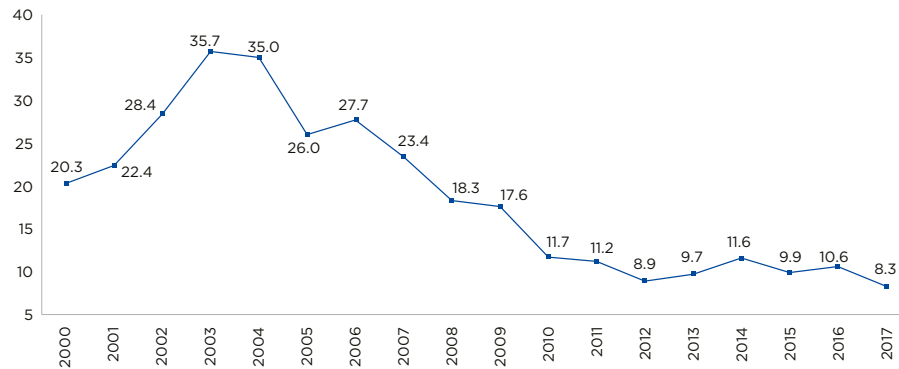


# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



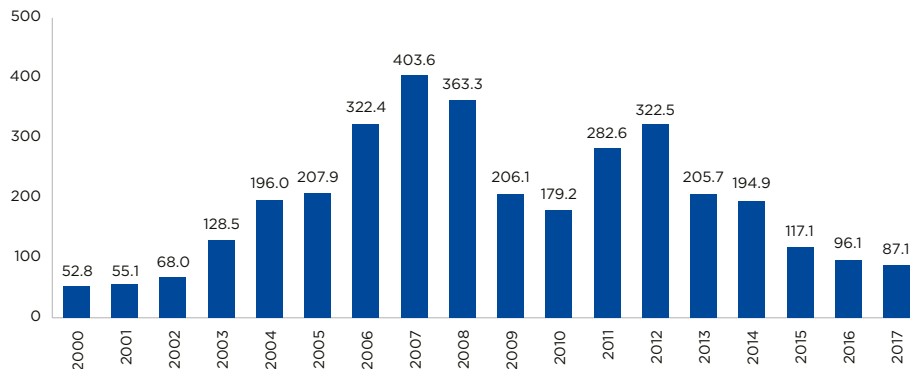
MINERALS COUNCIL  
SOUTH AFRICA

South Africa's share of African exploration budgets: 2000-2017 (%)

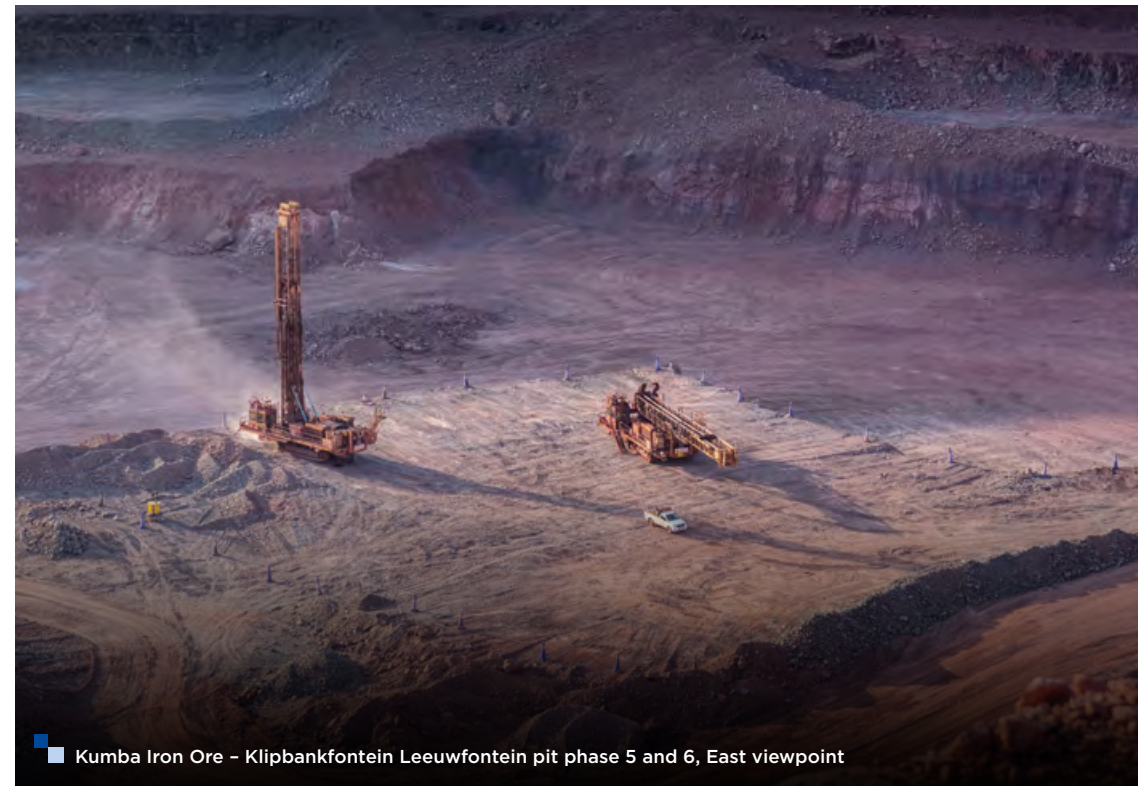


Source: S&P Global Market Intelligence

South Africa's exploration budgets: 2000-2017 (US\$)

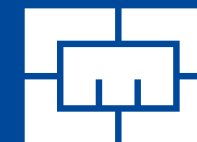


Source: S&P Global Market Intelligence



Kumba Iron Ore - Klipbankfontein Leeuwfontein pit phase 5 and 6, East viewpoint

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



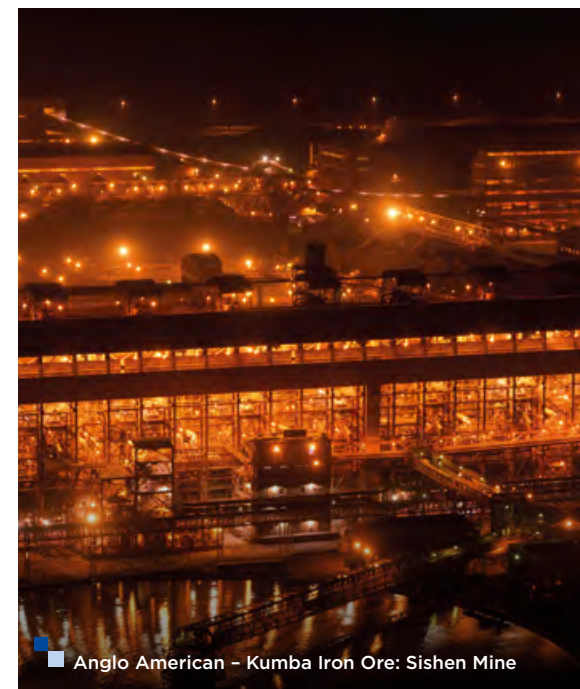
**MINERALS COUNCIL**  
SOUTH AFRICA

South Africa's role in world mineral reserves, production and exports 2017 (latest available data)

Commodity	unit	South Africa	World		Location of major reserves		
		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 \$US80/kg)	t	279,100		5.2	Australia	Kazakhstan	Canada
Zirconium minerals (metals)	kt	14,000	75,000	18.6	Australia	South Africa	India

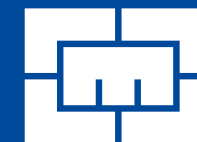
**Source:** Department of Mineral Resources and US Geological Survey, Reston, Virginia

\* Not available



Anglo American - Kumba Iron Ore: Sishen Mine

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



**MINERALS COUNCIL**  
SOUTH AFRICA

## MINING PLAYS A BIG ROLE IN SOUTH AFRICA

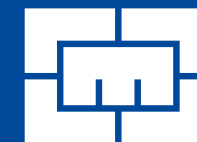
Mining offers not only employment but also supports the respective provincial economies. In the communities where mining firms operate, they have built schools, clinics, and other social infrastructure such as roads and housing for employees, thus improving the quality of life of community members. They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

### Provincial overview (latest available data)

Provincial overview (2017)	Eastern Cape	Free State	Gauteng	KwaZulu-Natal and Pietermaritzburg	Limpopo	Mpumalanga	North West	Northern Cape	Western Cape
Capital	Bhisho	Bloemfontein	Johannesburg	Ulundi and Pietermaritzburg	Polokwane	Nelspruit	Mafikeng	Kimberley	Cape Town
Total area (000km <sup>2</sup> )	168,965	129,825	18,178	94,361	125,753	76,494	104,881	372,889	129,462
% of SA area (province)	13.8	10.6	1.4	7.7	10.3	6.3	8.6	30.5	10.6
Total population (2016 census)	6,996,976	2,834,714	13,399,724	11,065,240	5,799,090	4,335,964	3,748,435	1,193,780	6,279,730
% of total SA population	12.6%	5.1%	24.1%	19.9%	10.4%	7.8%	6.7%	2.1%	11.3%
Real gross value added at basic prices, R millions constant 2010 prices	210.8	143.7	975.4	446.8	199.1	201.0	60.7	168.3	387.7
Mining GDP 2010 (R' billions - nominal terms 2016)	0.60	18.06	22.34	8.30	55.51	49.93	17.27	52.34	0.95
Mining (% contribution to provincial GDP 2016)	0.3	12.6	2.3	1.9	27.9	24.8	28.4	31.1	0.2

**Source:** Statistics South Africa, Department of Trade and Industry, Department of Mineral Resources and Minerals Council

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



**MINERALS COUNCIL**  
SOUTH AFRICA

## Number of employees in mining sector per province: 2007-2016

Province	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Eastern Cape	2,069	2,160	1,636	1,658	1,661	1,737	1,723	1,762	1,835	1,851
Free State	54,515	55,524	53,044	52,831	49,810	49,779	47,067	43,519	42,603	43,347
Gauteng	87,039	87,525	81,125	79,638	74,735	73,858	68,938	63,632	62,131	61,759
KwaZulu-Natal	7,785	8,305	7,854	8,134	8,485	8,974	9,313	9,234	8,786	8,811
Limpopo	47,941	51,261	47,703	49,095	52,936	54,728	53,461	53,101	52,945	49,124
Mpumalanga	68,637	73,661	76,970	79,952	83,831	88,141	91,636	89,434	82,352	81,893
North West	210,727	222,913	208,689	212,717	225,523	230,481	221,720	217,187	215,767	199,087
Northern Cape	16,777	17,711	15,531	15,796	16,762	17,241	16,653	16,489	16,543	15,260
Western Cape	1,901	1,975	1,494	1,512	1,515	1,573	1,557	1,582	1,656	1,656
<b>Total</b>	<b>497,391</b>	<b>521,035</b>	<b>494,046</b>	<b>501,333</b>	<b>515,258</b>	<b>526,512</b>	<b>512,068</b>	<b>495,940</b>	<b>484,618</b>	<b>462,788</b>

Source: Department of Mineral Resources

## Employment by commodity: 2005-2017

Year	Gold	PGM	Diamonds	Chrome	Iron ore	Manganese	Coal	Aggregate and sand
2005	160,635	155,034	22,033	7,894	7,492	3,335	56,971	4,080
2006	159,782	168,530	19,686	7,899	8,859	3,333	57,777	5,210
2007	166,064	186,410	19,471	9,796	13,857	3,239	60,439	5,133
2008	166,423	199,948	18,474	12,279	13,257	3,976	65,484	5,834
2009	159,926	184,162	11,601	10,966	13,728	5,003	70,791	6,427
2010	157,019	181,969	11,467	13,982	18,216	5,879	74,025	6,852
2011	144,799	194,745	12,047	16,911	22,360	7,460	78,580	7,009
2012	142,200	197,752	12,332	19,762	23,380	8,685	83,244	7,122
2013	131,738	191,260	13,579	18,358	21,127	9,842	88,039	7,719
2014	119,007	186,864	15,356	18,658	20,554	9,971	86,106	7,510
2015	115,029	186,465	18,313	18,450	20,554	8,639	77,747	7,421
2016	116,506	172,424	18,803	15,450	16,600	7,242	77,229	7,525
2017	112,200	172,171	17,991	17,991	17,345	7,981	82,248	7,602

Source: Department of Mineral Resources



# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



**MINERALS COUNCIL**  
SOUTH AFRICA

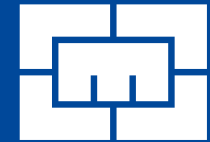
## Total employee earnings by commodity (R'000)

Year	Diamonds	Gold	Platinum group metals	Chromite	Iron ore	Manganese	Aggregate and sand	Coal	Dimension stone	Limestone	Salt	Other mines	South Africa
2000	1,072,164	9,846,411	4,373,273	325,815	345,814	133,244	158,611	4,287,493	82,010	149,925	19,234	1,334,320	22,128,314
2001	1,290,555	10,903,634	4,915,313	379,309	379,713	133,279	154,038	4,451,185	86,595	158,131	21,662	1,495,105	24,368,519
2002	1,432,679	11,323,540	5,936,849	338,978	457,804	182,034	161,584	4,468,143	85,229	164,840	22,170	1,654,567	26,228,418
2003	1,992,198	12,496,400	7,243,123	419,776	523,607	211,635	203,082	5,481,105	84,714	185,532	27,062	1,959,123	30,827,356
2004	2,282,937	12,609,512	9,063,872	468,816	575,174	241,566	242,043	5,863,461	103,154	223,623	31,519	1,950,265	33,655,942
2005	2,632,182	12,153,245	11,357,785	556,587	623,842	293,319	312,073	6,481,823	118,864	230,035	31,467	1,891,757	36,682,979
2006	2,167,797	12,865,125	12,585,340	636,356	683,582	319,894	371,897	7,269,836	98,177	251,895	35,518	2,162,490	39,447,907
2007	2,192,902	14,506,401	18,341,043	881,651	1,362,293	405,313	459,706	8,692,014	111,891	286,468	39,014	2,794,189	50,072,886
2008	2,163,887	15,960,051	23,344,340	1,305,781	1,667,837	671,654	544,072	11,020,687	163,829	321,773	34,482	3,687,992	60,886,385
2009	1,790,007	17,371,250	24,879,139	1,457,366	2,178,041	736,842	620,999	12,815,351	156,389	359,952	39,330	3,686,923	66,091,591
2010	1,956,333	19,877,668	26,688,348	2,082,481	3,037,418	946,139	693,767	14,186,482	140,990	410,250	42,973	4,255,700	74,318,549
2011	2,141,484	20,840,802	30,481,697	2,754,694	6,506,608	1,277,636	746,991	16,068,639	133,459	425,537	45,744	5,548,777	86,972,067
2012	2,408,198	22,238,338	34,393,197	3,434,492	4,690,573	1,565,264	892,093	17,445,779	160,570	438,208	48,679	5,915,090	93,630,482
2013	2,870,536	23,930,042	37,710,446	3,840,559	4,848,253	1,946,529	939,998	18,949,314	165,311	468,817	48,965	5,033,974	100,752,743
2014	3,663,455	23,383,408	35,652,303	4,046,774	5,691,818	2,302,129	1,037,945	20,594,652	151,974	509,250	54,797	5,057,915	102,146,421
2015	4,677,942	24,578,384	44,955,363	4,416,943	6,218,976	2,199,373	1,115,964	19,932,153	149,692	538,204	59,583	5,242,343	114,084,920
2016	5,073,211	28,758,156	45,913,336	4,214,813	5,886,297	2,118,225	1,175,077	21,108,109	140,672	590,795	69,977	5,401,448	120,450,115
2017	5,243,204	29,027,067	48,258,266	4,775,779	5,791,755	2,437,047	1,244,249	22,415,573	181,792	613,201	64,018	5,957,995	126,009,945

Source: Department of Mineral Resources

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

continued



**MINERALS COUNCIL**  
SOUTH AFRICA

## **SAFETY**

The Minerals Council and its member companies remain committed to the industry's goal of zero harm for all people working at our operations – employees and contractors. The Minerals Council continues to be actively involved in a number of initiatives and partnerships aimed at eliminating fatalities and injuries in the mining industry.

Our Safety and Sustainable Development Department plays an important facilitative and co-ordinating role in the implementation of the 2024 milestones for mine health and safety in a manner that accelerates the achievement of the industry's goal of zero harm. We achieve this through engagement with the Minerals Council's Occupational Health and Safety Policy Committee, the Mining Occupational Safety and Health (MOSH) Learning Hub and the CEO Zero Harm Forum. We also engage with regional associations, including the Association of Mine Managers of South Africa (AMMSA) and the South African Colliery Managers' Association (SACMA), the Department of Mineral Resources (DMR) and organised labour, through the Mine Health and Safety Council (MHSC), and with international industry bodies through the Minerals Council's membership of the International Council on Mining and Metals (ICMM).

## **SAFETY PERFORMANCE AND TARGETS**

During the 2014 MHSC Summit, all stakeholders agreed that we needed to accelerate the elimination of fatalities. The occupational safety milestone was therefore set to eliminate fatalities by December 2020 and to emphasise that every fatality was one too many.

A total of 88 fatalities were reported in 2017, compared with 73 fatalities recorded during the corresponding period in 2016. This marks a regression of 17% in fatalities, the first in 10 years. The regression in 2017 was compounded by multiple fatalities resulting from gravity and seismicity induced falls of ground.

The 2014 MHSC Summit occupational health milestone states that up to December 2016, there should be a 20% reduction in serious injuries every year, while from January 2017, there should be a 20% reduction in lost time injuries (LTIs). Up to 18 December 2017, the overall number of serious injuries reported was 2,534 compared with 2,785 during the same period in 2016. Although below the annual milestone reduction target of 20%,

this is an improvement of 9%, which marks a second consecutive reduction in the number of serious injuries.

Since the last quarter of 2017, the Minerals Council and its members have taken the



Glencore – Lydenburg Ferrochrome Smelter: Employees wearing proper safety gear

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY

continued



**MINERALS COUNCIL**  
SOUTH AFRICA

following steps in response to the regression in mine fatalities:

- On 20 September 2017, the MOSH Learning Hub facilitated a “day of learning” workshop on seismicity so that lessons could be shared and relevant research identified following recent seismic events. The participants (from the platinum and gold sectors) unanimously expressed the need for preconditioning research as mine depths continue to increase.
- On 3 November 2017, upon reflection on the year-to-date occupational health and safety performance, the CEO Zero Harm Forum sent a letter to the Acting Chief Inspector of Mines and organised labour, expressing disappointment at the regression and highlighting some of the steps being taken by the CEOs in 2017 to hasten the journey to zero harm.
- The Minerals Council issued a media statement expressing disappointment at the increase in the number of fatalities.
- On 7 November 2017, the Minerals Council CEO delegation met with the Deputy Minister of Mineral Resources to discuss the regression as well as a proposal to accelerate an improvement in the industry’s occupational health and safety performance.

- The Minerals Council supported the MHSC Tripartite Leadership event in December 2017 to identify initiatives that would lead to reductions in fatalities, and greater compliance and collaboration.
- The Minerals Council, the South African Mining Development Association (SAMDA), the DMR, organised labour and the MHSC issued a joint media statement expressing grave concern about the regression in the rate of fatalities, despite progress and successes achieved by the industry over the past 20 years, towards improving the industry’s occupational health and safety performance.

Industry, unions and government signalled their intent to achieve further progress at the 2016 biennial MHSC Summit on Mine Health and Safety when all tripartite stakeholders signed a declaration to improve mine health and safety performance, harness the achievement of 2024 occupational health milestones and accelerate the industry’s journey to zero harm. The declaration of actions focuses on building tripartite visible felt leadership, building trust among stakeholders at various levels, aligning communication on zero harm among stakeholders, empowering employees and supervisors, and hosting annual health and safety days tailored to the respective needs

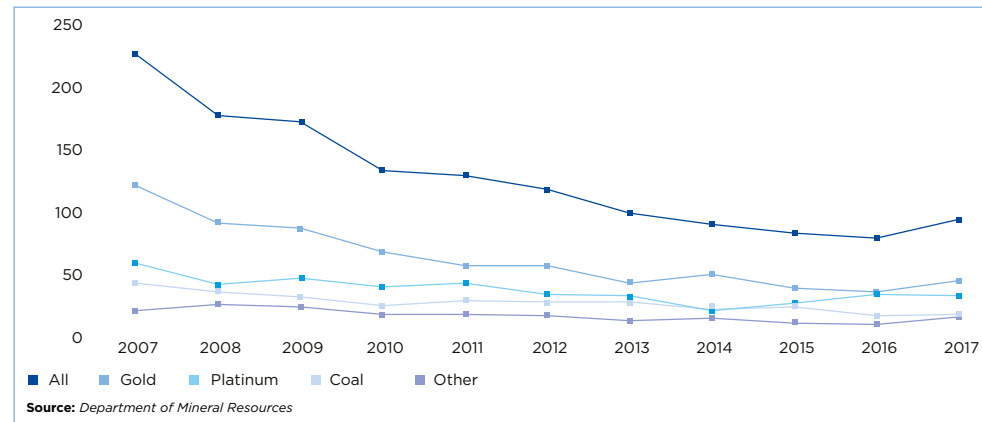
of companies as part of their health and safety campaigns. In November 2018, industry tripartite stakeholders will convene a biennial Mine Health and Safety Summit to review progress in the implementation of occupational health and safety milestones.



■ Impala Platinum – Rustenburg operations safety briefing

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued

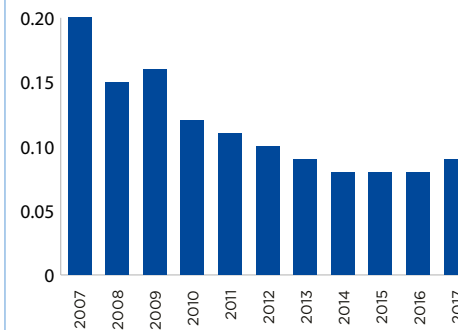
Number of fatalities by industry: 2007-2017



Year	All	Gold	Platinum	Coal	Other
2007	220	115	53	15	37
2008	171	85	36	20	30
2009	166	81	41	18	26
2010	127	62	34	12	19
2011	123	51	37	12	23
2012	112	51	28	11	22
2013	93	37	27	7	22
2014	84	44	15	9	16
2015	77	33	21	5	18
2016	73	30	28	4	11
2017	88	39	27	10	12

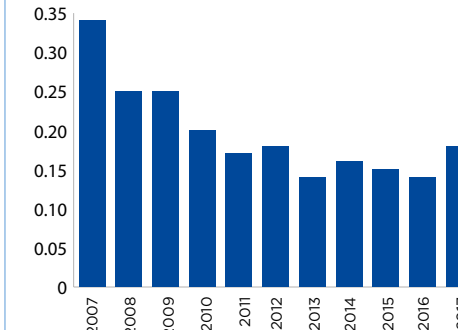
Source: Department of Mineral Resources

Industry fatality frequency rate (FFR) per million hours worked



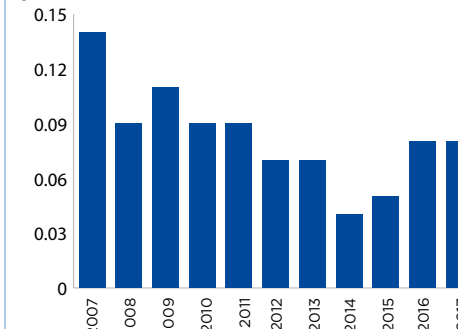
Source: Department of Mineral Resources

Gold fatality frequency rate (FFR) per million hours worked



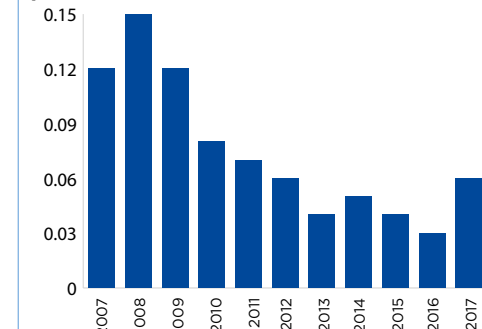
Source: Department of Mineral Resources

Platinum fatality frequency rate (FFR) per million hours worked

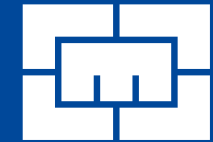


Source: Department of Mineral Resources

Coal fatality frequency rate (FFR) per million hours worked



Source: Department of Mineral Resources



**MINERALS COUNCIL**  
SOUTH AFRICA



# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



**MINERALS COUNCIL**  
SOUTH AFRICA

## HEALTH

The key health challenges in the mining industry are occupational lung diseases (silicosis, coal worker's pneumoconiosis, occupational TB, etc.) and noise-induced hearing loss (NIHL). The industry has set targets for the elimination of these, and monitors incidence of exposures and diseases.

The Minerals Council has an occupational health reporting system but data for the whole industry is collated by the DMR.

## HEALTH TARGETS AND PERFORMANCE

### Targets

The mining industry adopted the 2014 Occupational Health and Safety Summit milestones in November 2014. To review progress in achieving these targets, the next biennial summit of the MHSC has been scheduled for November 2018.

### Performance

The DMR publishes an annual report on occupational health statistics, including HIV/Aids, in October. The report includes data submitted to the DMR every year. Data from the Minerals Council and the DMR is used in

reporting on the health performance of the mining sector.

### Occupational hygiene

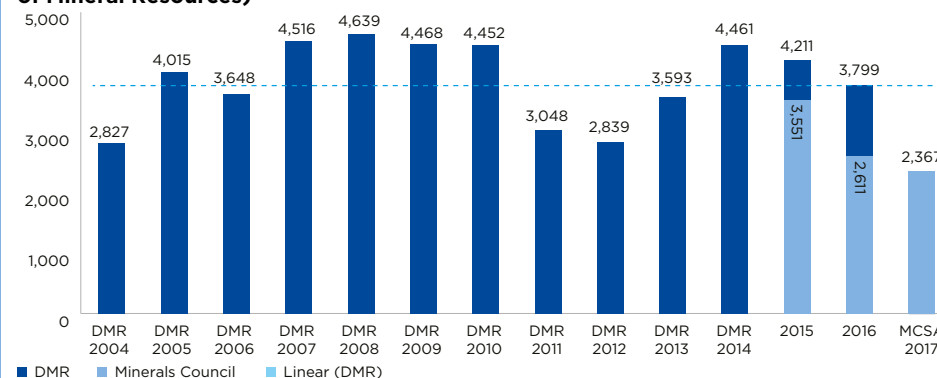
Occupational hygiene measurements and milestones are ideal in assessing performance as they are early indicators. According to the 2016 report submitted to the DMR, there was an overall reduction in over-exposure to occupational hygiene stressors.

The DMR does not report specifically on silica and coal dust exposure but the total airborne pollutants in a classification band ( $\geq$  occupational exposure limit). It decreased from 4.73% in 2015 to 3.66% in 2016. The percentage of employees exposed to excessive noise has reduced from 90.6% in 2006 to 68.4% in 2016. Further reductions are required to prevent NIHL.

Cases of TB declined by 9.8% from 2015 to 2016. DMR data shows that HIV counselling in the industry improved from 62.9% in 2015 to 65.7% in 2016 while screening for TB also increased from 88.7% in 2015 to 96% in 2016. Our data show HIV counselling rates of 78% and 87% screening for TB. The industry milestone is counselling 100% of employees, which has not yet been met.



**TB cases diagnosed in the industry: 2004-2017 (Minerals Council vs Department of Mineral Resources)\***



Source: Data as per DMR 164 Reports 2013-2015 and the then Chamber Reporting System 2015-2016

# OVERVIEW

# OF THE SOUTH AFRICAN

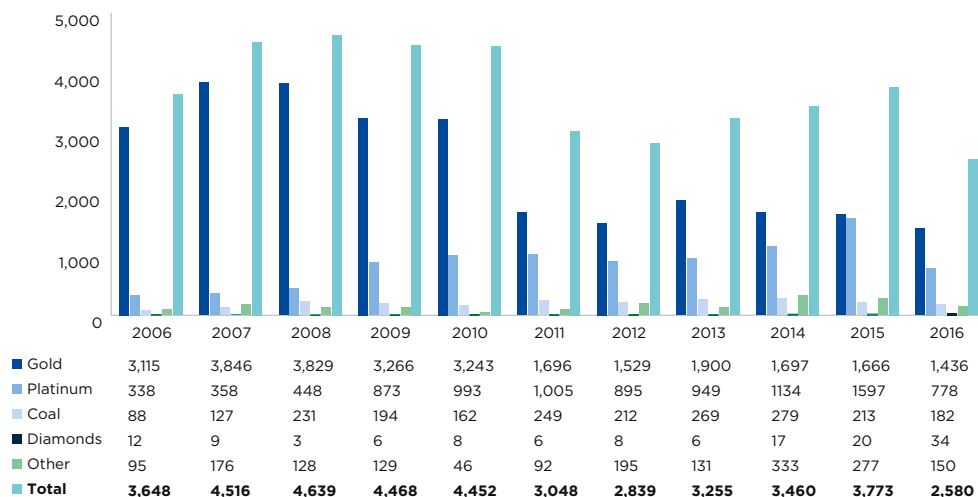
# MINING INDUSTRY

continued



**MINERALS COUNCIL**  
SOUTH AFRICA

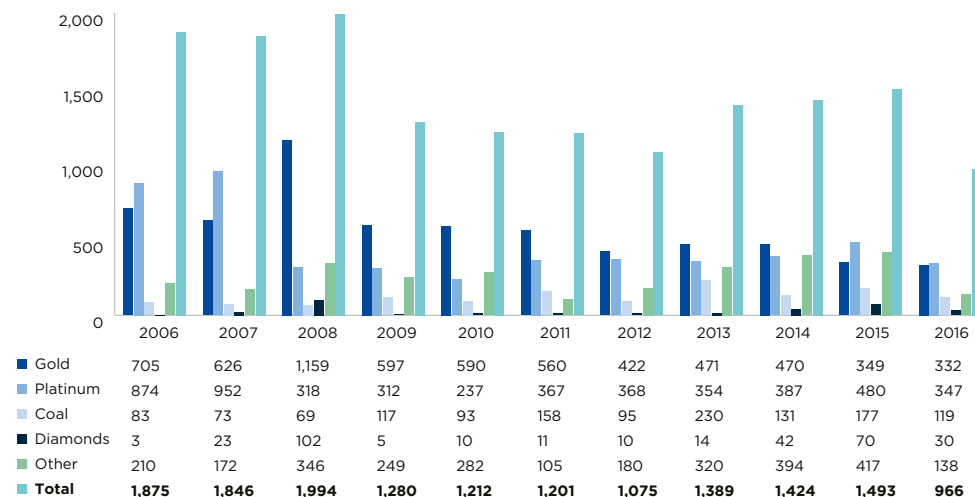
**Pulmonary tuberculosis: 2006-2016\***



\* 2017 figures are yet to be released

Source: Department of Mineral Resources

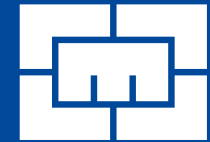
**NIHL: 2006-2016\***



\* 2017 figures are yet to be released

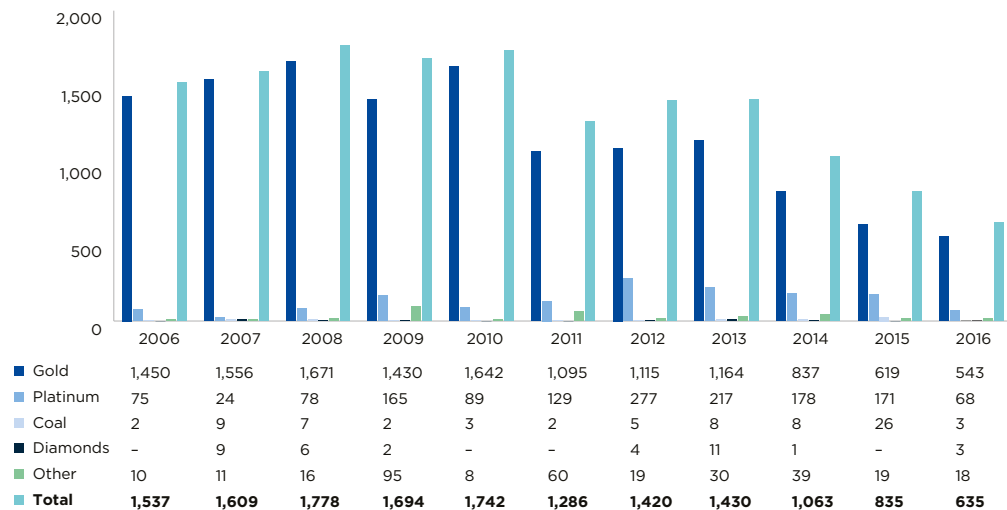
Source: Department of Mineral Resources

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



**MINERALS COUNCIL**  
SOUTH AFRICA

**Silicosis: 2006-2016\***



\* 2017 figures are yet to be released

Source: Department of Mineral Resources



■ Harmony - Target mine health hub

# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued

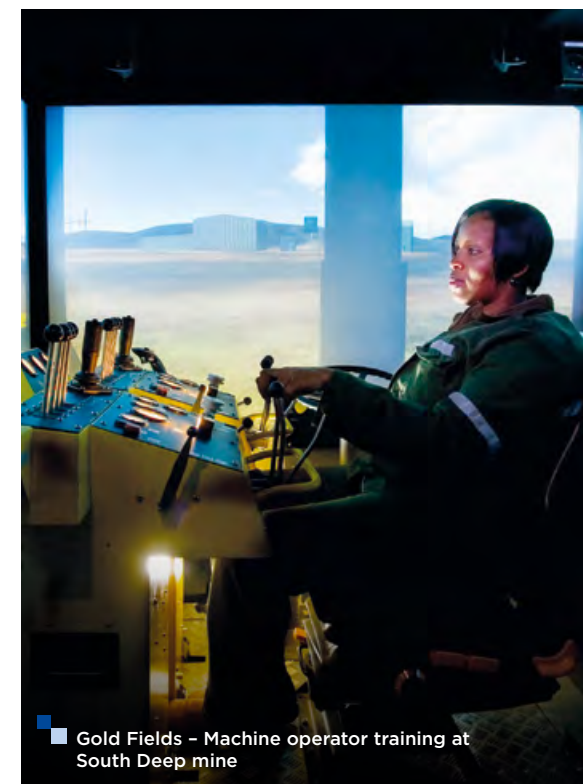
## MINING COST INFLATION

In 2017 the Minerals Council developed a composite mining input cost index. The objective of the index is to measure input cost inflation in the mining sector. Through this index, we can quantify the quantum movement of inputs costs, and when compared against the percentage movement in selling prices, we are able to make deductions about profitability in the sector.

Importantly, the index also has simulation properties, and has to date been successfully used in simulating the impact of the 19% electricity tariff by Eskom on the mining sector. The same has been done for the Regulatory Clearing Account (RCA) application by Eskom to the National Energy Regulator of South Africa (NERSA) and was also used during wage negotiations for simulating the impact of wage demand on the overall inflation curve.

The table alongside depicts the make up of the index, that is, the input components included in the index, as well as their respective shares to the total input costs.

Cost basket	Total mining	Coal	Gold and uranium ore	Other mining
<b>Intermediate cost basket</b>				
Mining and quarrying	1.22%	0.18%	0.39%	0.13%
Wood and wood products	1.52%	0.44%	8.37%	0.43%
Coke and refined petroleum	1.32%	1.54%	1.19%	1.28%
Basic chemicals	1.85%	1.03%	4.98%	1.45%
Other chemicals and man-made fibres	2.98%	3.20%	4.96%	2.52%
Rubber products	1.41%	2.46%	1.58%	1.08%
Metal products excluding machinery	1.85%	2.12%	3.92%	1.36%
Machinery and equipment	5.11%	5.86%	8.07%	4.30%
Electrical machinery and apparatus	0.93%	1.51%	1.59%	0.63%
Transport equipment	1.39%	1.47%	2.17%	1.20%
Electricity, gas and water	5.79%	3.00%	16.60%	4.37%
Wholesale and retail trade	4.93%	5.90%	7.38%	4.17%
Transport and storage	43.89%	43.04%	2.32%	52.49%
Finance, insurance, real estate and business services	4.69%	4.71%	10.14%	3.59%
Community, social and personal:				
Other producers	2.22%	2.22%	3.45%	1.97%
Imported Intermediate Inputs	18.92%	21%	22.66%	18.91%
<b>Total intermediate costs (excl labour)</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Intermediate costs	65%	69%	47%	69.5%
Compensation of employees	35%	31%	53%	30.5%
<b>Total input costs</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100.0%</b>
Import adjustment	0.8125	0.7946	0.7873	0.8221



Gold Fields - Machine operator training at South Deep mine

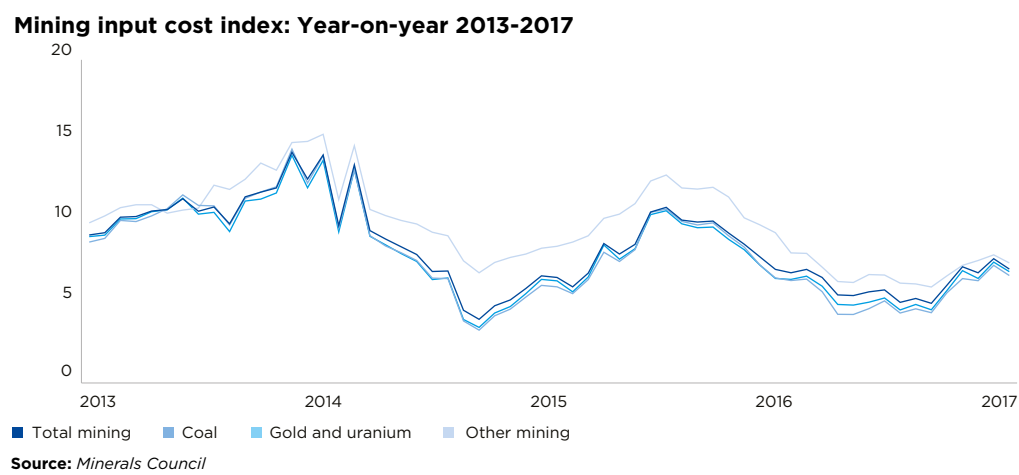


# OVERVIEW OF THE SOUTH AFRICAN MINING INDUSTRY continued



**MINERALS COUNCIL**  
SOUTH AFRICA

The graph and table on this page depict the patterns of the input cost index between 2013 and 2017. The table is particularly concerning in that it shows that input costs have persistently been increasing at a pace faster than selling prices, which is indicative of profit margin compression. This is consistent with the picture observed in the mining industry of the continued effort by mining companies to rationalise costs and down-sizing operations. This index is updated on a monthly basis.



## Mining input cost index: 2013-2017

Annual averages (year-on-year% movement) - total input cost (intermediate and labour)					Selling prices		
Year	Total mining	Coal	Gold and uranium	Other mining	Total mining	Coal (Rand)	Gold price (Rand)
2013	10.5	10.5	11.3	10.4	5.4	5.8	-1.2
2014	10.4	10.2	12.0	10.0	4.1	3.5	1.3
2015	3.6	3.4	4.6	3.6	-4.1	-3.6	7.6
2016	8.7	8.4	10.5	8.3	11.4	5.6	24.1
2017	11.0	9.6	13.7	10.5	10.0	10.9	-8.5
Average (2013-2017)	8.9	8.4	10.4	8.6	5.4	4.4	4.7

Source: Minerals Council



# GOLD



**MINERALS COUNCIL**  
SOUTH AFRICA

## KEY 2017 FEATURES

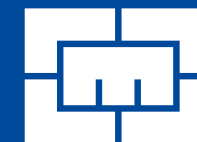
**R29.5 billion**  
total employee earnings

**112,200**  
employees

Total sales of  
**R82.7 billion**

Gold	33
Platinum group metals (PGMs)	38
Coal	42
Diamonds	44
Manganese	47
Iron ore	49
Copper	51
Chromite	53
Aggregate and sand	55
Silver	57
Uranium	59
Glossary	61

# GOLD



**MINERALS COUNCIL**  
SOUTH AFRICA

South Africa was responsible for 4.2% of global gold production in 2017. 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 R14.7 billion in 2007 to R29.5 billion in 2017.

Between 2016 and 2017, local sales (in volume) increased by 33% to 34 tonnes, and exports increased 19% to 119.6 tonnes, despite production having dropped 3.6% from 142 tonnes to 136 tonnes over the same period.

## TOTAL SALES OF GOLD AMOUNTED TO R82.7 BILLION IN 2017.

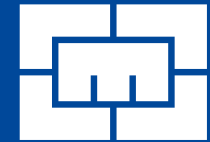
### South African gold production and sales

Year	Production	Local sales		Export sales		Total sales		World gold production	South African percentage of total
	tonnes	tonnes	R'000	tonnes	R'000	tonnes	R'000	tonnes	%
2007	252.6	13.0	419,621.7	229.7	36,002,847.7	242.7	36,422,469.4	2,497.8	10.1
2008	212.7	8.8	720,790.4	190.0	43,994,482.7	198.8	44,715,273.1	2,429.9	8.8
2009	197.7	6.6	2,052,119.1	180.6	46,994,168.8	187.2	49,046,288.0	2,612.0	7.6
2010	188.4	7.2	1,997,761.3	176.9	51,037,449.2	184.1	53,035,210.5	2,739.0	6.9
2011	180.2	10.2	1,701,333.9	175.5	65,258,301.7	185.7	66,959,635.6	2,838.1	6.3
2012	154.2	11.3	2,055,697.7	164.9	71,961,756.6	176.2	74,017,454.3	2,860.6	5.4
2013	159.7	7.5	3,633,111.1	123.3	53,845,892.7	130.8	57,479,003.8	3,042.0	5.3
2014	151.6	7.1	4,862,747.6	118.9	52,276,414.1	126.0	57,139,161.7	3,131.0	4.8
2015	144.5	15.9	3,312,817.7	118.1	55,314,074.8	133.9	58,626,892.5	3,208.6	4.5
2016	142.0	25.3	14,919,702.8	103.7	60,572,047.4	129.0	75,491,750.2	3,222.3	4.4
2017	136.8	33.9	17,681,881.0	119.6	65,102,402.1	153.5	82,784,283.1	3,247.0	4.2

Source: Department of Mineral Resources, Thomson Reuters and Minerals Council



# GOLD continued

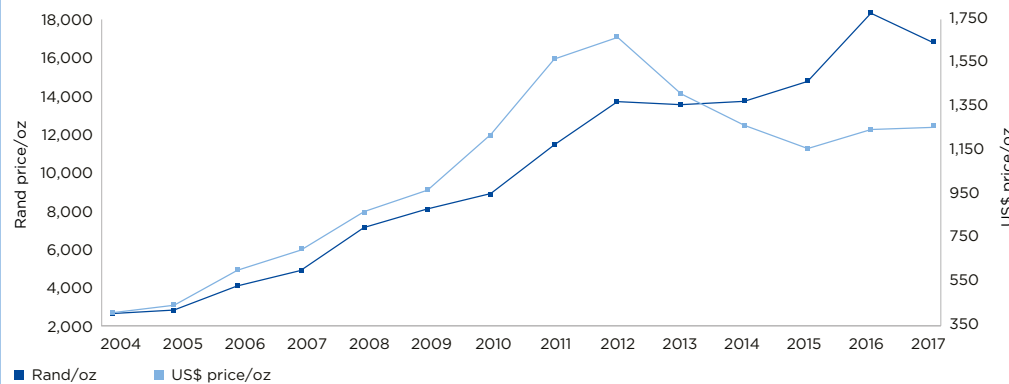


**MINERALS COUNCIL**  
SOUTH AFRICA

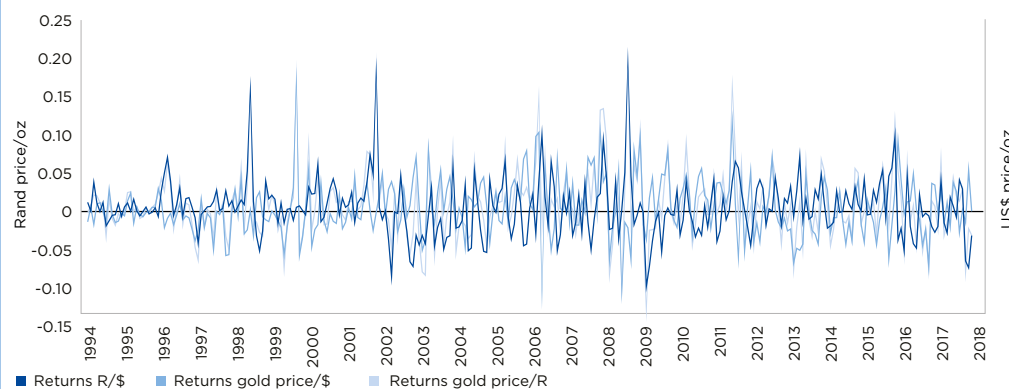
## SOUTH AFRICA ACCOUNTED FOR 4.2% OF GLOBAL GOLD PRODUCTION IN 2017.

The figure alongside shows that the rand gold price is more volatile than both the rand-dollar exchange rate and the dollar gold price. This presents a major challenge for South African gold producers as it impacts on their ability to plan.

**Average annual gold price: Rand and US\$**



**Volatility of the rand-dollar exchange rate and gold price (in US\$ and Rand)  
(Jan 1994-Feb 2018)**



■ Rand Refinery – Raw gold pellets



# GOLD continued

The table below depicts the mean and standard deviation of the actual values of the three series: rand/dollar exchange rate, gold price in dollars and the gold price in rands.

## Mean and standard deviation in actual values

	R/\$	Gold price in US\$/oz	Gold price in R/oz
Standard deviation (Jan 1994-Feb 2018)	2.94	471.29	5,648.99
Mean/average (Jan 1994-Feb 2018)	7.89	757.67	6,747.05
Standard deviation (Mar 2013-Feb 2018)	1.83	89.72	1,978.49
Mean/average (Mar 2013-Feb 2018)	12.36	1 258.01	15,470.82
Standard deviation (Mar 2008-Feb 2013)	0.88	331.53	2,700.97
Mean/average (Mar 2008-Feb 2013)	7.97	1 291.00	10,200.60
Standard deviation (Mar 2003-Feb 2008)	0.54	147.67	1,108.28
Mean/average (Mar 2003-Feb 2008)	6.80	532.54	3,637.66
Standard deviation (Mar 1999-Feb 2003)	1.78	25.29	625.04
Mean/average (Mar 1999-Feb 2003)	8.14	288.86	2,366.19

How to read the table:

- For the rand exchange rate against the dollar (R/\$), in the period Jan 1994 - Feb 2018 the average monthly rand/US dollar rate was 7.89 whilst the standard deviation was 2.94 i.e. the R/\$ could fluctuate an average of +-R2.94 in this period
- On the other hand, in the same period, the dollar gold price averaged \$757.67 with a standard deviation of +-\$471.29/oz

- In the same period, the average gold price was R6,747.05/oz with a standard deviation of +-R5,649/oz
- Why the rand exchange rate matters for the South African mining sector

Because of such volatility, gold producers spend huge amounts of money hedging against currency fluctuations. For example, in 2017, gold miners lost slightly over R1 billion as a result of hedging against currency and price fluctuations.

Over the period from January 1994 to February 2018, the gold price averaged R6,747/oz. The higher standard deviation in the rand price of gold is a cause for concern for gold producers because input costs (including value-added items) in the gold industry are denominated in the domestic currency.



■ DRDGOLD – Gold pour

# GOLD continued



**MINERALS COUNCIL**  
SOUTH AFRICA

## Employment and earnings: South African gold mines

Year	Gold mining employees	Earnings (R'000)
2007	166,064	14,506,401
2008	166,423	15,960,051
2009	159,926	17,371,250
2010	157,019	19,877,668
2011	144,799	20,840,802
2012	142,200	22,238,338
2013	131,738	23,930,042
2014	119,007	23,383,408
2015	115,055	24,582,438
2016	116,479	28,731,311
2017	112,200	29,027,067

Source: Department of Mineral Resources and Minerals Council



■ DRDGOLD – Rehabilitation efforts at the DRDGOLD Ergo operations

# PGMs



**MINERALS COUNCIL**  
SOUTH AFRICA

## KEY 2017 FEATURES

**R48.3 billion**  
total employee earnings

**172,171**  
employees

Total sales of  
**R97 billion**

Platinum group metals (PGMs)	<b>38</b>
Coal	<b>42</b>
Diamonds	<b>44</b>
Manganese	<b>47</b>
Iron ore	<b>49</b>
Copper	<b>51</b>
Chromite	<b>53</b>
Aggregate and sand	<b>55</b>
Silver	<b>57</b>
Uranium	<b>59</b>
Glossary	<b>61</b>



# PGMs

Some 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. Private individuals also use platinum, palladium and rhodium as a store of value, similar to gold.

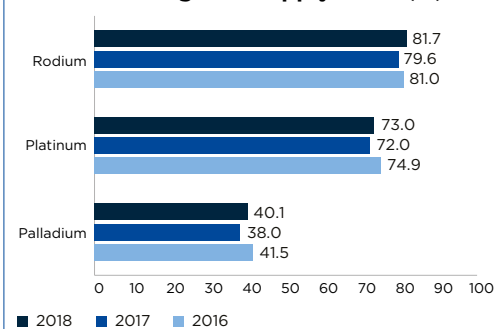
## South African PGM production and sales

Year	Production	Local sales		Export sales		Total sales	
	tonnes	tonnes	R'000	tonnes	R'000	tonnes	R'000
2007	304	-	12,350,290	258	66,064,133	262	78,414,423
2008	276	-	13,448,280	223	77,904,355	223	91,352,635
2009	271	-	4,322,869	251	53,459,307	251	57,782,176
2010	287	-	7,892,570	244	65,894,341	244	73,786,910
2011	289	-	10,619,219	244	73,234,047	244	83,853,266
2012	254	-	8,285,235	211	60,918,939	211	69,204,174
2013	264	28	8,886,103	239	75,348,535	266	84,234,637
2014	188	29	10,640,749	202	66,860,760	230	77,501,510
2015	276	32	11,149,886	254	82,988,098	287	94,137,984
2016	264	31	11,093,840	250	85,318,461	282	96,412,301
2017	260	31	11,971,452	251	85,069,237	282	97,040,689

Source: Department of Mineral Resources

**172,171 PEOPLE  
EMPLOYED IN 2017,  
A DROP OF 0.1%  
FROM 2016.**

South African global supply share (%)



Source: Department of Mineral Resources

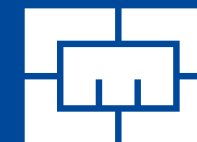


**MINERALS COUNCIL  
SOUTH AFRICA**



Northam Booyssendal - Chrome plant

# PGMs continued

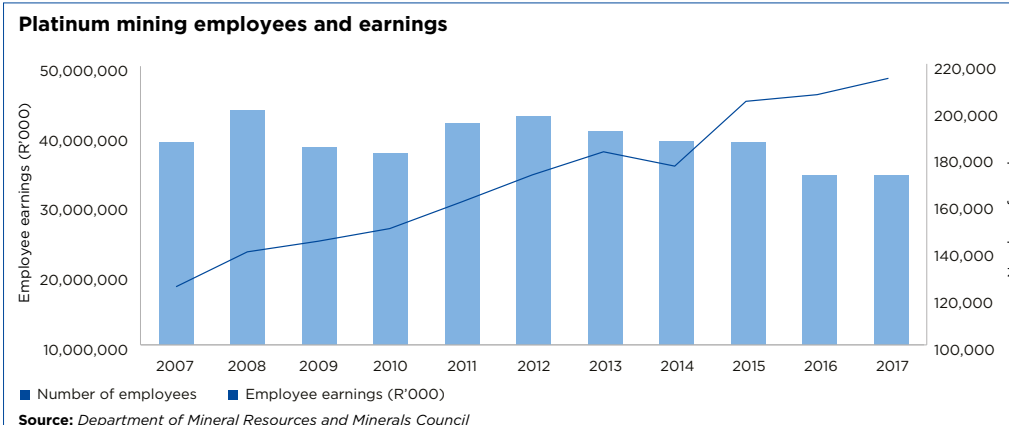


**MINERALS COUNCIL**  
SOUTH AFRICA

## Annual platinum demand, by application (tonnes)

		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Autocatalyst	gross	128.9	113.7	68.0	95.56	99.1	98.2	96.4	100.8	106.7	103.3	102.4
	recycling	(29.1)	(35.1)	(25.8)	(33.7)	(38.6)	(34.9)	(37.5)	(39.9)	(34.8)	(35.8)	(39.9)
Chemical		13.1	12.4	9.0	13.7	14.6	14.1	16.4	16.2	16.5	17.0	15.7
Electrical	gross	7.9	7.1	5.9	7.2	7.2	5.5	6.8	7.1	7.2	7.3	7.3
	recycling	-	(0.2)	(0.3)	(0.3)	(0.3)	(0.6)	(0.7)	(0.8)	(0.9)	(1.0)	(1.0)
Glass		14.6	9.8	0.3	12.0	16.0	4.7	2.9	6.6	6.9	7.5	11.3
Investment		5.3	17.3	20.5	20.4	14.3	13.9	27.2	8.6	14.1	19.3	11.1
Jewellery	gross	65.6	64.1	87.4	75.3	77.0	86.6	94.1	90.0	87.9	76.1	71.4
	recycling	(20.4)	(21.6)	(17.6)	(22.9)	(25.2)	(27.9)	(24.6)	(23.7)	(17.9)	(23.0)	(19.8)
Medical and biomedical		72	7.6	7.8	7.2	7.2	7.0	6.6	6.6	6.5	6.8	6.8
Petroleum		6.4	7.5	6.5	5.3	6.5	3.5	4.9	5.1	4.0	4.4	6.9
Other		8.2	9.0	5.9	9.3	10.0	12.3	13.0	13.1	13.3	14.4	14.8
<b>Total net demand</b>		<b>207.7</b>	<b>191.6</b>	<b>167.6</b>	<b>189.1</b>	<b>187.8</b>	<b>182.4</b>	<b>205.5</b>	<b>189.7</b>	<b>209.5</b>	<b>196.3</b>	<b>187.0</b>
<b>Movements in stocks</b>		<b>(2.5)</b>	<b>(6.8)</b>	<b>19.8</b>	<b>(0.8)</b>	<b>14.0</b>	<b>(5.7)</b>	<b>(24.6)</b>	<b>(30.8)</b>	<b>(20.6)</b>	<b>(10.4)</b>	<b>(0.2)</b>

Source: Department of Mineral Resources



## Employment and earnings: South African platinum mines

Year	Average number of employees in service	Earnings (R'000)
2007	186,411	18,341,043
2008	199,948	23,344,340
2009	184,163	24,879,139
2010	181,969	26,688,348
2011	194,745	30,481,697
2012	197,752	34,393,197
2013	191,261	37,710,446
2014	186,865	35,652,303
2015	186,465	44,955,363
2016	172,424	45,913,336
2017	172,171	48,258,266

Source: Department of Mineral Resources



# PGMs continued

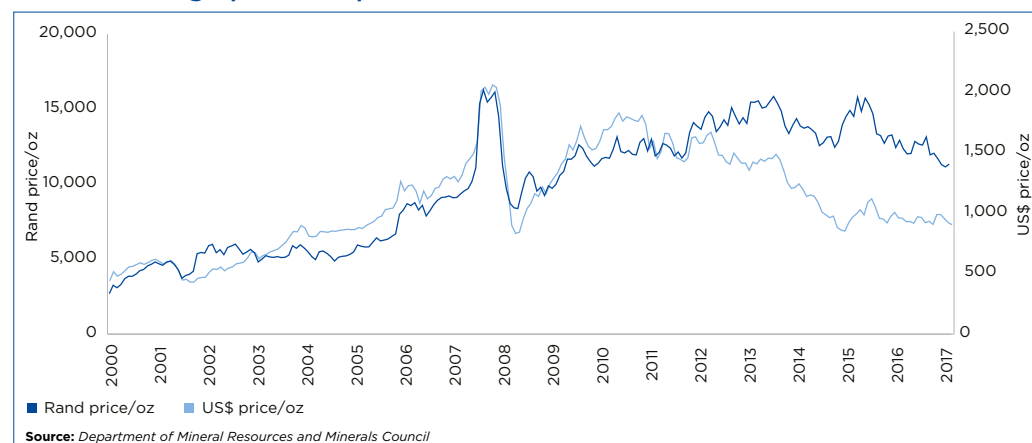


**MINERALS COUNCIL**  
SOUTH AFRICA

## Annual palladium demand, by application (tonnes)

Annual Platinum Demand, by application (metric tons)												
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Autocatalyst	gross	141.4	138.9	126.0	173.6	191.4	207.5	218.6	232.1	237.3	246.8	261.0
	recycling	(31.6)	(35.5)	(30.0)	(40.7)	(52.7)	(52.2)	(59.2)	(68.1)	(60.2)	(61.8)	(74.7)
Chemical		11.7	10.9	10.1	11.5	13.7	16.3	15.3	15.0	18.6	12.7	16.4
Dental		19.6	19.4	19.8	18.5	16.8	15.8	14.1	14.6	14.8	13.3	12.4
Electrical	gross	48.2	42.6	42.6	43.9	42.8	37.1	33.2	31.6	29.6	29.5	26.0
	recycling	(9.8)	(10.7)	(12.3)	(13.7)	(14.9)	(13.7)	(14.4)	(14.8)	(14.8)	(15.0)	(15.1)
Investment		1.6	8.1	13.1	19.4	(17.6)	14.6	(0.2)	29.3	(20.5)	(20.1)	(12.0)
Jewellery	gross	35.5	29.5	30.6	24.1	15.7	13.8	11.0	8.5	7.1	5.9	5.4
	recycling	(4.2)	(7.3)	(4.0)	(2.2)	(6.5)	(6.0)	(4.9)	(2.7)	(1.4)	(0.6)	(0.6)
Other		2.6	2.6	2.3	2.2	3.4	3.2	3.4	3.5	3.5	4.6	4.3
Total net demand		214.9	198.6	198.1	236.5	192.1	236.4	216.9	249.0	214.0	215.3	223.1
Movements in stocks		40.5	54.4	19.8	21.2	36.9	(34.7)	(18.1)	(59.6)	(14.0)	(26.5)	(24.4)

## Annual average platinum price



**EMPLOYEE EARNINGS  
INCREASED BY AN  
AVERAGE OF 13.5%  
BETWEEN 2005  
AND 2017.**



Ivanplats – Ivanhoe mines

# COAL



**MINERALS COUNCIL**  
SOUTH AFRICA

## KEY 2017 FEATURES

**252 million**  
tonnes produced

**82,248**  
employees

Total sales of  
**R130 billion**

Coal	42
Diamonds	44
Manganese	47
Iron ore	49
Copper	51
Chromite	53
Aggregate and sand	55
Silver	57
Uranium	59
Glossary	61

# COAL

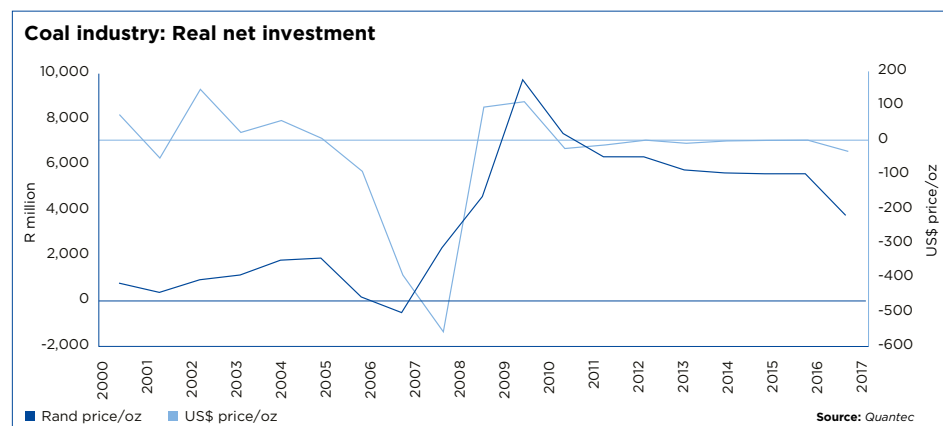
In 2017, coal sales totalled R130 billion from approximately R112 billion in 2016. Among the three leading industries in the sector, only the coal industry recorded growth in employment; gold and platinum shed jobs. The growth in sales earnings in the industry is not commensurate with real net investment. Since 2009, net investment in the coal industry has declined at a rate of 10% per year – from R7.3 billion to R3.8 billion in 2017. The lacklustre performance of investment in this industry could not be more telling of the toxic regulatory environment in recent years. For one, 70% of coal volume is consumed domestically and more than 70% of electricity demand is generated from coal power. Yet even with Eskom building two massive coal-fired power plants, Kusile and Medupi, investment has not responded accordingly.

In 2017, the coal industry employed 82,248 people, representing about 17% of total employment in the mining sector. In the same year the coal industry spent R61 billion procuring goods and services, most of it locally. This contributed to creating and maintaining jobs in other industries.

## South African coal production and sales

Year	Production	Local sales		Export sales		Total sales	
	tonnes '000	tonnes '000	R'000	tonnes '000	R'000	tonnes '000	R'000
2007	247,666	182,770	19,718,642	67,675	24,447,656	250,445	44,166,298
2008	252,699	197,033	30,104,161	60,631	44,706,204	257,664	74,810,365
2009	250,538	184,677	34,442,650	60,539	31,006,559	245,216	65,449,209
2010	257,206	186,366	33,702,229	66,770	37,477,184	253,136	71,179,413
2011	250,706	177,889	37,253,525	68,807	50,548,678	246,697	87,802,202
2012	259,012	185,548	44,091,664	76,009	52,226,904	261,556	96,318,568
2013	256,563	183,950	49,603,015	74,566	51,813,484	258,516	101,416,499
2014	261,949	184,416	55,255,702	75,823	51,452,471	260,239	106,708 172
2015	252,176	179,135	56,574,200	75,376	47,543,139	254,511	104,117,339
2016	250,566	181,271	61,445,037	68,905	50,465,927	250,176	111,910,965
2017	252,343	181,347	69,083,470	70,049	61,277,987	251,396	130,361,457

Source: Minerals Council



**82,248 PEOPLE  
EMPLOYED IN 2017  
(77,228 IN 2016).**

Employment and earnings:  
South African coal mines

	Average number of employees in service	Earnings (R'000)
2007	60,439	8,692,014
2008	65,484	11,020,687
2009	70,791	12,815,351
2010	74,025	14,186,482
2011	78,579	16,068,639
2012	83,244	17,445,779
2013	88,039	18,949,314
2014	86,106	20,594,652
2015	77,747	19,932,153
2016	77,228	21,108,109
2017	82,248	22,415,573

Source: Department of Mineral Resources



# DIAMONDS



**MINERALS COUNCIL**  
SOUTH AFRICA

## KEY 2017 FEATURES

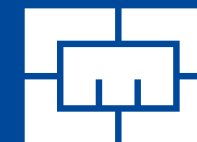
**9.7 million**  
carats produced

**17,991**  
employees

Total sales of  
**R18 billion**

Diamonds	44
Manganese	47
Iron ore	49
Copper	51
Chromite	53
Aggregate and sand	55
Silver	57
Uranium	59
Glossary	61

# DIAMONDS continued

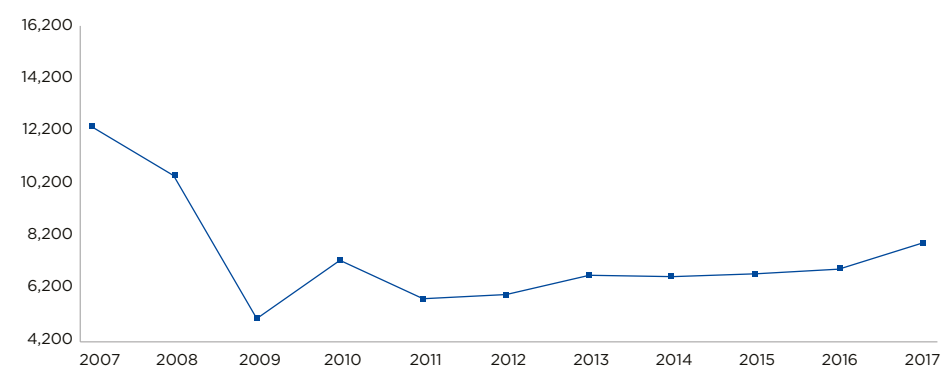


**MINERALS COUNCIL**  
SOUTH AFRICA

South Africa ranks among the top 10 diamond producers globally, producing 10% of the world's diamonds. In 2017 about 9.7 million carats of diamonds were produced locally. This marks a material 14.6% increase in production between 2016 and 2017. Total sales amounted to R18 billion.

The industry employed 17,991 people, who in turn earned R5.2 billion in 2017.

**South African diamond production (carats '000)**



Source: Department Mineral Resources and Minerals Council

## South African diamond production and sales

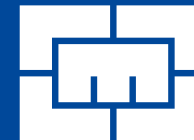
Year	Production	Local sales		Export sales		Total sales	
	Carats	Carats	Rand	Carats	Rand	Carats	Rand
2013	8,159,531	3,425,339	7,552,444,523	3,768,082	4,792,190,782	7,193,421	12,344,635,305
2014	8,095,037	3,168,609	8,800,677,674	5,619,831	7,730,528,817	8,788,440	16,531,206,491
2015	8,229,657	3,138,546	8,613,267,148	4,650,483	5,811,860,478	7,789,029	14,425,127,626
2016	8,302,110	1,609,160	8,325,337,788	9,002,389	12,435,825,243	10,611,549	20,761,163,031
2017	9,685,409	1,014,850	7,869,422,820	9,102,665	10,195,707,500	10,117,515	18,065,130,320

Source: Department of Mineral Resources and Minerals Council



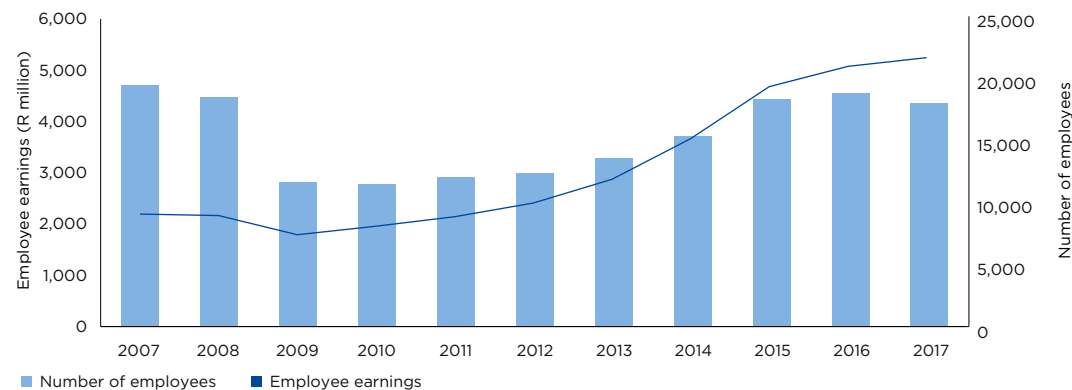


# DIAMONDS continued



MINERALS COUNCIL  
SOUTH AFRICA

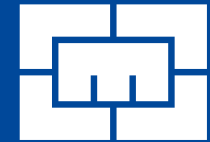
**Diamond industry employees and earnings**



Source: Department of Mineral Resources and Minerals Council



# MANGANESE



MINERALS COUNCIL  
SOUTH AFRICA

## KEY 2017 FEATURES

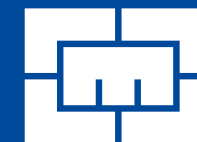
**14 million**  
tonnes produced

**7,981**  
employees

Total sales of  
**R32 billion**

Manganese	47
Iron ore	49
Copper	51
Chromite	53
Aggregate and sand	55
Silver	57
Uranium	59
Glossary	61

# MANGANESE



**MINERALS COUNCIL**  
SOUTH AFRICA

South Africa is the world's leading producer of manganese, producing more than 14.1 million tonnes in 2017, up from the 11.5 million tonnes produced in 2016. This marks a 22% increase in production between the years.

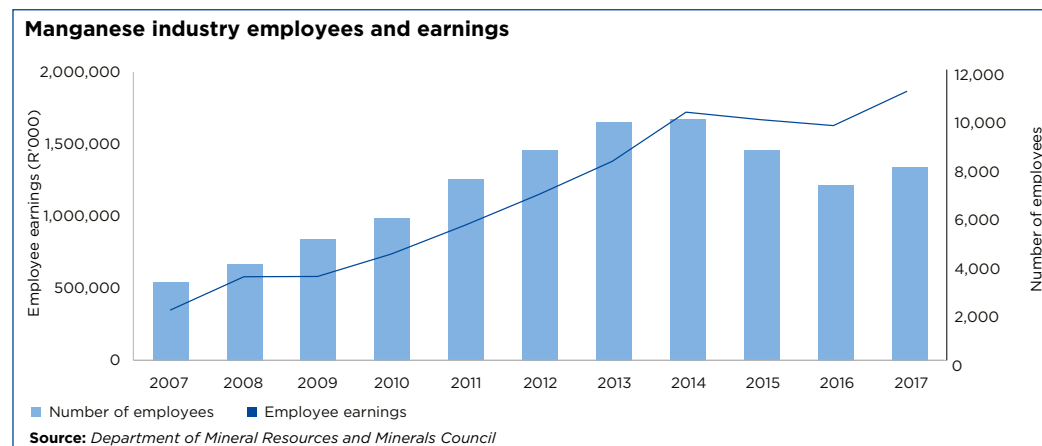
South Africa accounts for about 78% of the world's identified manganese resources, with Ukraine accounting for approximately 10% in second place. There are currently no satisfactory substitutes for manganese.

Exports account for 96% of total sales, with the balance sold locally.

## South African manganese production and sales

Year	Production	Local sales	Export sales	Total sales
	tonnes	R'000	R'000	R'000
2007	5,996,086	934,900	2,636,526	3,571,426
2008	6,807,059	1,761,848	15,581,559	17,343,408
2009	4,578,770	583,601	5,003,011	5,586,612
2010	7,171,745	1,320,564	9,340,025	10,660,590
2011	8,651,842	1,325,213	8,569,853	9,895,067
2012	8,943,415	1,134,842	9,685,811	10,820,653
2013	10,957,133	1,506,434	12,969,544	14,475,979
2014	14,051,244	1,641,633	14,734,415	16,376,048
2015	15,952,416	860,473	12,657,774	13,518,248
2016	11,527,524	896,946	18,860,230	19,757,177
2017	14,143,794	1,724,512	30,637,426	32,361,939

Source: Department of Mineral Resources and Minerals Council



**7,981 PEOPLE  
EMPLOYED IN 2017,  
WHICH IS A 10%  
INCREASE ON 2016.**

**IN 2017, EMPLOYEES  
EARNED R2.4 BILLION.**



# IRON ORE



MINERALS COUNCIL  
SOUTH AFRICA

## KEY FEATURES

**R5.8 billion**  
in employee earnings

**17,345**  
employees

Total sales of  
**R49.3 billion**

Iron ore	49
Copper	51
Chromite	53
Aggregate and sand	55
Silver	57
Uranium	59
Glossary	61

# IRON ORE



**MINERALS COUNCIL**  
SOUTH AFRICA

For the first time in recent history, in 2017, domestic and export iron ore prices equalised, averaging R728/tonne. Historically, export prices have been more attractive for producers than local prices, except in 2015 when domestic prices averaged R675/tonne compared to R536/tonne for exports. The R728/tonne recorded in 2017 was still 35% lower than the peak export price of R1,119/tonne realised in 2011.

Employment peaked at 23,380 in 2012, dropping to 17,345 in 2017 (16,490 in 2016). However, employee earnings increased from R4.7 billion in 2012 to R6.3 billion in 2015 (though declining to R5.8 billion in 2017 from R5.9 billion in 2016). Employment in the iron ore industry is sensitive to export prices - as prices increase employment follows suit, at a one-year lag.

## R5.8 BILLION IN EMPLOYEE EARNINGS.

### South African iron ore production and sales

Year	Production	Local sales		Export sales		Total sales	
	tonnes '000	tonnes '000	R'000	tonnes '000	R'000	tonnes '000	R'000
2007	42,083	12,407	1,749,498	30,767	12,006,062	43,174	13,755,560
2008	48,983	11,258	1,974,629	32,766	20,267,206	44,024	22,241,836
2009	55,313	8,369	1,888,801	44,550	25,242,934	52,919	27,131,735
2010	58,709	10,561	3,270,326	47,493	40,148,279	58,053	43,418,606
2011	58,057	9,844	4,207,746	51,763	57,945,618	61,607	62,153,365
2012	67,100	8,393	4,448,978	57,110	48,193,830	65,503	52,642,808
2013	71,645	9,295	5,727,006	58,180	57,360,500	67,476	63,087,506
2014	80,759	9,571	5,741,815	61,963	52,957,448	71,534	58,699,263
2015	72,806	7,513	5,071,073	64,176	34,394,014	71,689	39,465,086
2016	66,456	6,161	3,855,830	58,645	39,374,779	64,806	43,230,608
2017	74,643	7,073	5,137,619	60,678	44,188,638	67,752	49,326,257

Source: Department of Mineral Resources

### Employment and earnings: iron ore mines

Year	Average number of employees in service	Earnings (R'000)
2007	13,858	1,362,293
2008	13,256	1,667,837
2009	13,727	2,178,041
2010	18,216	3,037,418
2011	22,361	6,506,608
2012	23,380	4,690,573
2013	21,126	4,848,253
2014	21,794	5,691,818
2015	20,554	6,218,976
2016	16,601	5,886,297
2017	17,345	5,791,755

Source: Department of Mineral Resources



# COPPER



MINERALS COUNCIL  
SOUTH AFRICA

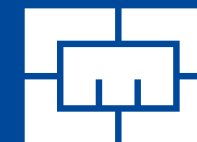
## KEY FEATURES

65,503 tonnes  
produced

Total sales of  
R4.3 billion

Copper	51
Chromite	53
Aggregate and sand	55
Silver	57
Uranium	59
Glossary	61

# COPPER



**MINERALS COUNCIL**  
SOUTH AFRICA

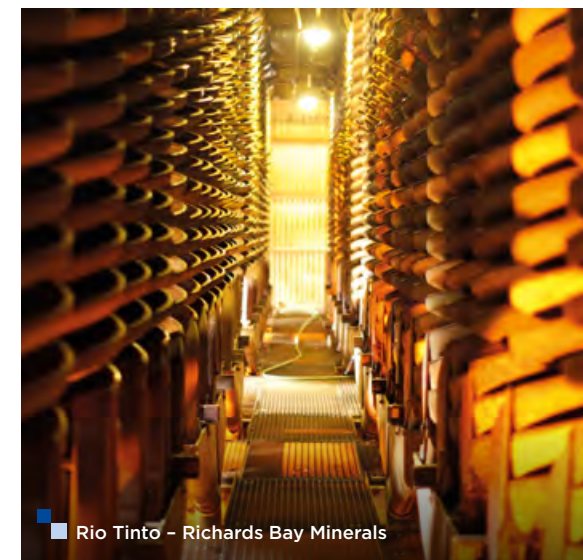
In 2017, the South Africa produced 65,503 tonnes of copper, of which sales were split 40/60 (local/export), in volumes.

Substitutes for copper include aluminum, which is used in power cables, electrical equipment, automobile radiators, and cooling and refrigeration tubing. Titanium and steel are also substitutes which are used in heat exchangers. Optical fibre substitutes for copper are used in telecommunications applications. Plastics substitutes for copper are used in water pipe, drain pipe, and plumbing fixtures.

## South African copper production and sales

Year	Production	Local sales		Export sales		Total sales	
	tonnes	tonnes '000	R'000	tonnes '000	R'000	tonnes '000	R'000
2007	116,973	76,2	4,020,296	37,2	1,813,662	113,4	5,833,958
2008	97,185	68,5	4,120,564	32,9	1,507,356	101,4	5,627,920
2009	92,850	68,0	2,835,737	26,8	1,022,782	94,8	3,858,519
2010	83,639	56,7	3,160,029	24,8	1,209,297	81,5	4,369,326
2011	89,297	60,4	3,937,749	25,5	1,495,100	85,9	5,432,849
2012	69,859	54,6	3,575,956	26,6	1,579,105	81,2	5,155,060
2013	80,821	56,0	4,056,792	26,2	1,760,781	82,3	5,817,573
2014	78,697	45,0	3,483,784	36,7	2,466,769	81,7	5,950,553
2015	77,360	37,0	2,703,423	37,6	2,497,528	74,6	5,200,950
2016	65,257	26,7	1,923,681	27,4	1,821,207	54,1	3,744,887
2017	65,503	25,7	2,120,088	29,9	2,207,458	55,6	4,327,545

Source: Department of Mineral Resources



■ Rio Tinto - Richards Bay Minerals



# CHROMITE



MINERALS COUNCIL  
SOUTH AFRICA

## KEY 2017 FEATURES

**R4.8 billion**  
in employee earnings

**17,154**  
employees

Total sales of  
**R23.4 billion**

Chromite	53
Aggregate and sand	55
Silver	57
Uranium	59
Glossary	61

# CHROMITE



**MINERALS COUNCIL**  
SOUTH AFRICA

South Africa is the world's leading producer of chromium, which is used in the manufacture of stainless steel.

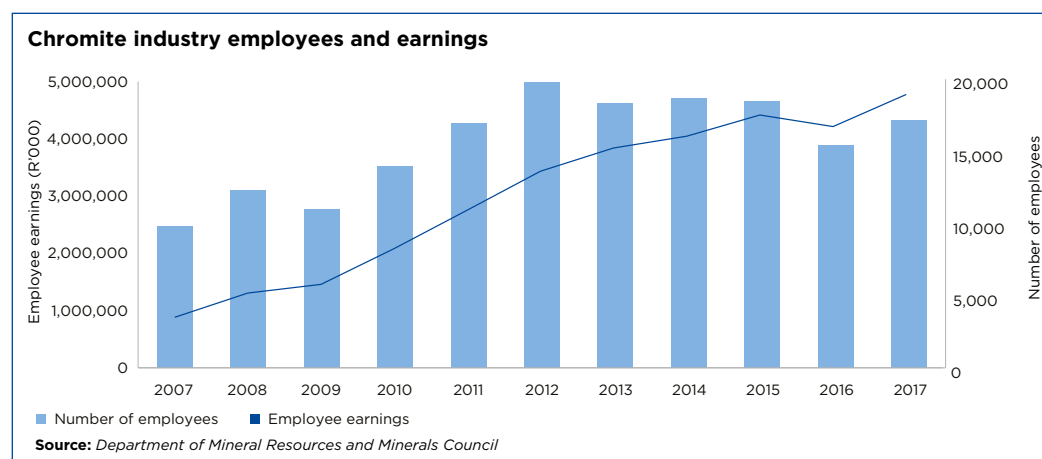
Ferrochromium production and beneficiation is an energy intensive process and, due to uncertainty of the availability and steeply rising cost of electricity, most processing of this metal has been moved offshore. Be that as it may, Eskom is currently producing surplus electricity and has made efforts to attract some mining beneficiation companies to invest in the country.

Employment figures for 2017 indicate that employment increased from 15,449 people in 2016 to 17,154. Employee earnings were R4.8 billion.

## South African chromite production and sales

Year	Production	Local sales		Export sales		Total sales	
	tonnes '000	tonnes '000	R'000	tonnes '000	R'000	tonnes '000	R'000
2007	9,665	7,389	2,346,982	893	659,467	8,282	3,006,448
2008	9,683	7,116	4,131,020	762	1,267,931	7,878	5,398,951
2009	7,561	4,880	2,081,058	1,709	1,571,311	6,589	3,652,368
2010	10,871	7,267	4,159,308	1,929	2,459,473	9,196	6,618,781
2011	11,865	7,202	5,227,339	2,152	3,649,136	9,354	8,876,475
2012	11,317	6,683	4,681,855	2,470	3,594,282	9,152	8,276,137
2013	13,690	8,483	5,870,717	4,168	5,891,833	12,651	11,762,549
2014	14,038	10,048	7,771,424	3,695	5,834,876	13,743	13,606,301
2015	15,656	9,833	8,093,409	4,821	8,104,128	4,654	16,197,537
2016	14,708	8,726	8,164,638	4,684	9,541,381	13,410	17,706,019
2017	16,587	8,876	10,819,578	4,717	12,586,563	13,593	23,406,141

Source: Department of Mineral Resources



**17,154 PEOPLE  
EMPLOYED IN 2017.**

## Employment and earnings: South African chromite mines

Year	Average number of employees in service	Earnings (R'000)
2007	9,796	881,651
2008	12,279	1,305,781
2009	10,966	1,457,366
2010	13,982	2,082,481
2011	16,911	2,754,694
2012	19,762	3,434,492
2013	18,359	3,840,559
2014	18,658	4,046,774
2015	18,449	4,416,943
2016	15,449	4,214,813
2017	17,154	4,775,779

Source: Department of Mineral Resources



# AGGREGATE AND SAND



MINERALS COUNCIL  
SOUTH AFRICA

## KEY 2017 FEATURES

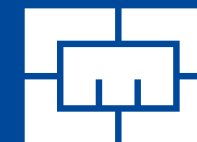
**7,696**  
employees

**66.2 million**  
tonnes produced

Total sales of  
**R7.2 billion**

Aggregate and sand	55
Silver	57
Uranium	59
Glossary	61

# AGGREGATE AND SAND



**MINERALS COUNCIL**  
SOUTH AFRICA

The aggregate and sand industry is closely linked to the construction sector, therefore deriving its performance from the overall fixed capital formation in the country. In 2017, the sector produced 66.2 million tonnes of output at a value of R7.2 billion. It is worth noting that in volume terms, production increased 2.3% on 2016.

The industry is the smallest contributor to mining sector employment, having recorded 7,696 employees in 2017, with a total earnings bill of R1 billion.

## Employment and earnings: South African aggregate and sand

	Average number of employees in service	Earnings (R'000)
2007	5,834	378,855
2008	6,427	453,210
2009	6,852	517,287
2010	7,009	574,669
2011	7,122	627,637
2012	7,719	753,758
2013	7,510	803,664
2014	7,421	872,786
2015	7,453	933,838
2016	7,578	974,477
2017	7,696	1,033,347

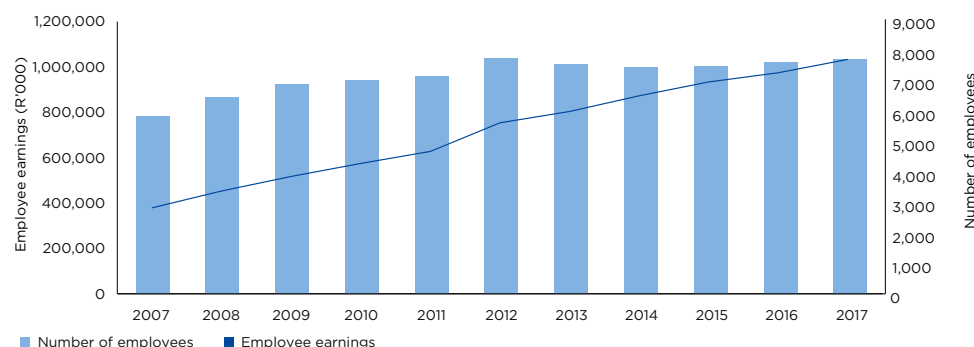
Source: Department of Mineral Resources

## South African aggregate and sand production and sales

Year	Production tonnes	Total sales R'000
2007	62,127,845	3,314,117
2008	60,996,383	3,757,580
2009	52,559,228	3,826,340
2010	51,803,437	3,809,924
2011	52,122,803	4,066,505
2012	53,373,625	4,476,359
2013	60,966,575	5,291,394
2014	62,972,237	5,967,061
2015	63,602,931	6,492,166
2016	64,741,418	7,008,880
2017	66,241,262	7,294,503

Source: Department of Mineral Resources

## Aggregate and sand industry employment and earnings



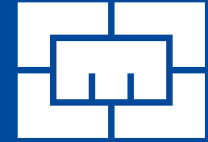
Source: Department of Mineral Resources and Minerals Council



PPC - Operations



# SILVER



MINERALS COUNCIL  
SOUTH AFRICA

## KEY 2017 FEATURES

**R396.4 million**  
total employee earnings

**62.5 tonnes**  
produced

Total sales of  
**R361.6 millions**

Silver	57
Uranium	59
Glossary	61

# SILVER

Silver production was 62.5 tonnes in 2017 compared to 52.1 tonnes in 2016.

Employee earnings increased from R250 million in 2006 to R611.9 million in 2011 and then declined to R396.4 million in 2017.

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.

## 62.5 TONNES PRODUCTION 2017.

### South African silver production and sales

Year	Production	Local sales		Export sales		Total sales	
	tonnes	tonnes	R'000	tonnes	R'000	tonnes	R'000
2007	69.8	3.7	10,895	76.9	224,146	80.6	235,041
2008	75.2	7.9	28,272	87.0	318,573	94.8	346,845
2009	77.8	8.1	30,906	70.1	256,198	78.2	287,103
2010	79.3	7.8	35,639	78.9	350,44	86.7	386,079
2011	73.2	10.0	80,001	71.3	531,932	81.2	611,933
2012	67.3	6.1	49,591	70.3	533,232	76.4	582,824
2013	68.8	6.0	43,179	61.6	409,672	67.6	452,851
2014	37.3	4.3	27,011	55.1	315,097	59.3	342,107
2015	48.0	3.4	21,717	56.4	343,179	59.8	364,896
2016	52.1	3.6	28,338	54.9	384,476	58.5	412,814
2017	62.5	2.9	21,788	53.2	339,889	56.1	361,677



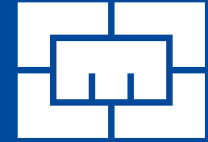
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SOUTH AFRICA



■ Rand Refinery – Silver shavings



# URANIUM



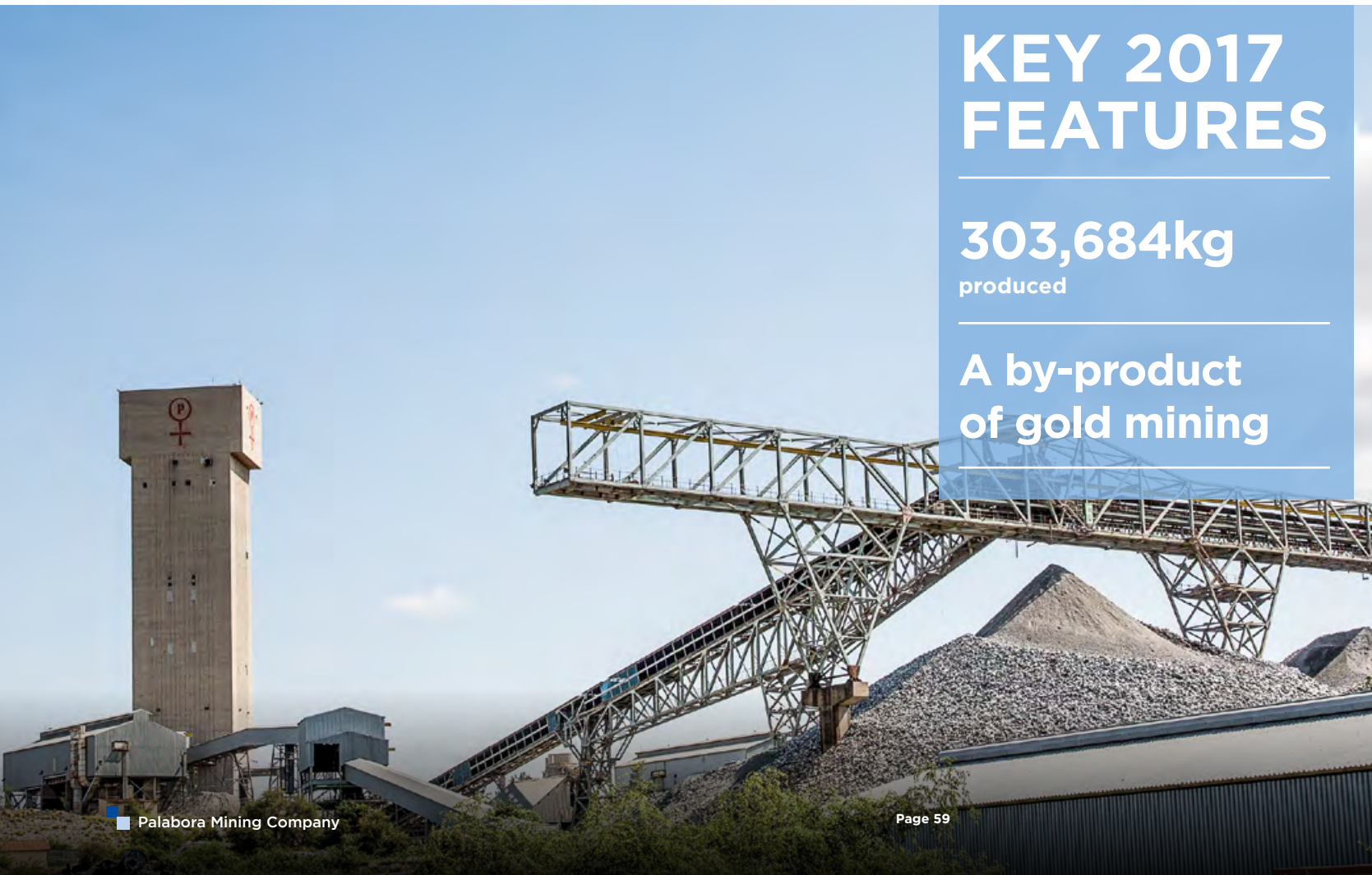
**MINERALS COUNCIL**  
SOUTH AFRICA

## KEY 2017 FEATURES

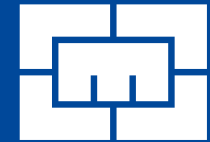
**303,684kg**  
produced

**A by-product  
of gold mining**

Uranium	59
Glossary	61



# URANIUM



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SOUTH AFRICA

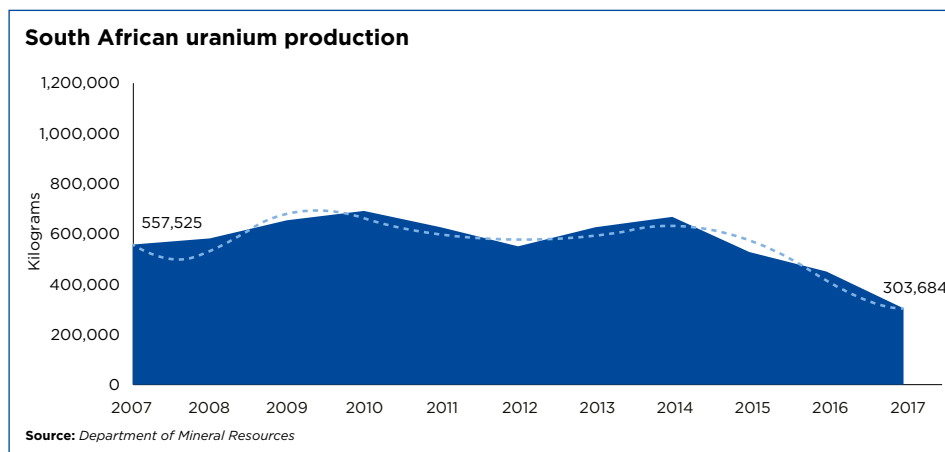
Uranium production, a by-product of gold mining, has been in decline in tandem with lower gold production for at least the past decade.

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

Year	Kilograms
2007	557,525
2008	582,001
2009	654,086
2010	691,359
2011	626,117
2012	550,458
2013	626,279
2014	667,697
2015	527,780
2016	450,110
2017	303,684

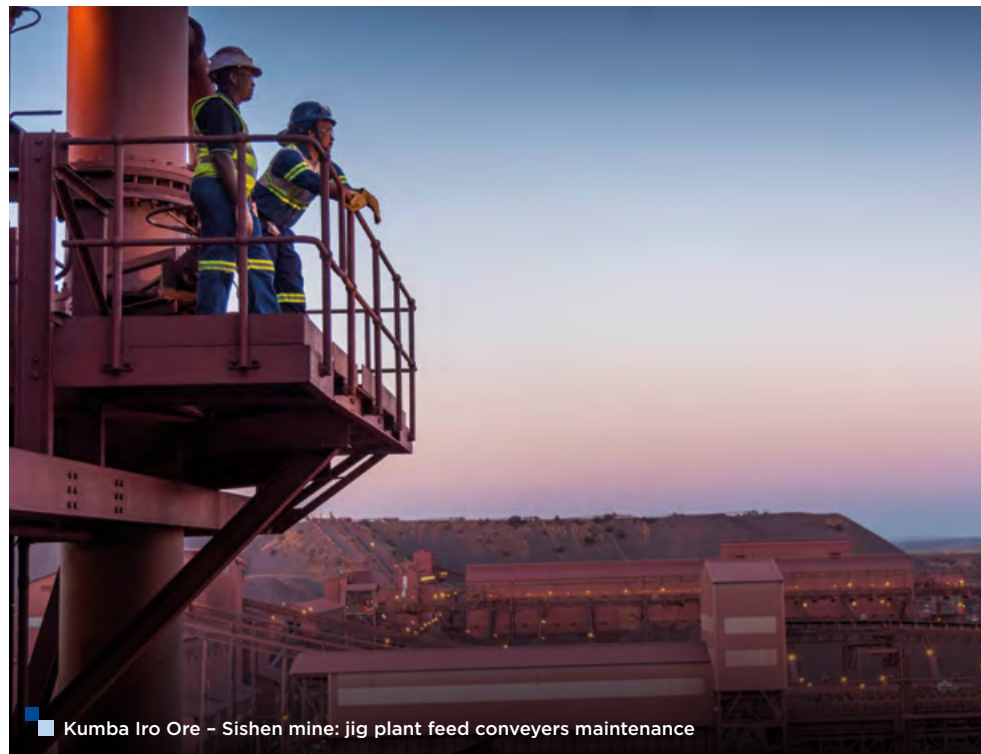
Source: Department of Mineral Resources



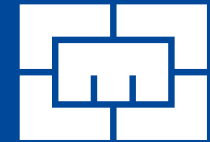
# GLOSSARY

Key words, terms and abbreviations used in this publication.

- PGMs** Platinum group metals
- oz** ounce (1 troy ounce = 31.1035 grams)
- GFCF** Gross fixed capital formation
- GDP** Gross domestic product



■ Kumba Iro Ore – Sishen mine: jig plant feed conveyers maintenance



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