



## 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. 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.

A 'Facts and Figures 2016' publication was published in June 2017 as an updated version of the 'Mine SA 2016' pocketbook and a more comprehensive statistical reference guide to the South African mining sector. These are both available on the Chamber website <http://www.chamberofmines.org.za/>.

This 'Mine SA 2017' pocketbook is an update of the 2016 publication.

The Chamber is a respected body of members who together:

	<b>REPRESENT ABOUT 90% OF SOUTH AFRICA'S MINERAL PRODUCTION</b>		<b>CONTRIBUTE R16.0bn IN TAXES TO SOUTH AFRICA</b>
	<b>EMPLOY 464,667 PEOPLE</b>		<b>CONTRIBUTE R126.0bn IN EMPLOYEE EARNINGS</b>

*Estimates based on latest statistics available*

The Chamber's vision is to reposition the mining industry as South Africa's foremost industrial sector.





**Roger Baxter**  
*Chief Executive Officer*

## MESSAGE FROM THE **CEO**

The Chamber of Mines of South Africa is a mining industry employers' organisation that supports and promotes the South African mining industry.

The Chamber serves its members and promotes their interests by providing strategic support and advisory input.

A key role of the organisation is to facilitate interaction among mining employers to examine policy issues and other matters of mutual concern to crystallise and define desirable industry standpoints. Consultation and collaboration are voluntary and never encroach on the autonomy of members.

The Chamber also acts as a principal advocate for mining in South Africa to government, communicating major policies endorsed by its members. A further vital function of the organisation is to represent some sectors in collective bargaining with organised labour.

Chamber members subscribe and adhere to a Membership Compact, a mandatory code of ethical business conduct.

“ We must overcome many challenges but, every day in South Africa, as we mine to new depths, we strive to reach new heights. Mining shapes the world around us, from the bridges we cross, to the way we communicate, from the air we breathe and the roads that connect us, to the innovations of tomorrow. If it's not grown, it's mined...”

**Roger Baxter**, *Chief Executive Officer*

Chamber of Mines  
February 2018

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# OUR MINERALS



Gold



Platinum



Diamonds



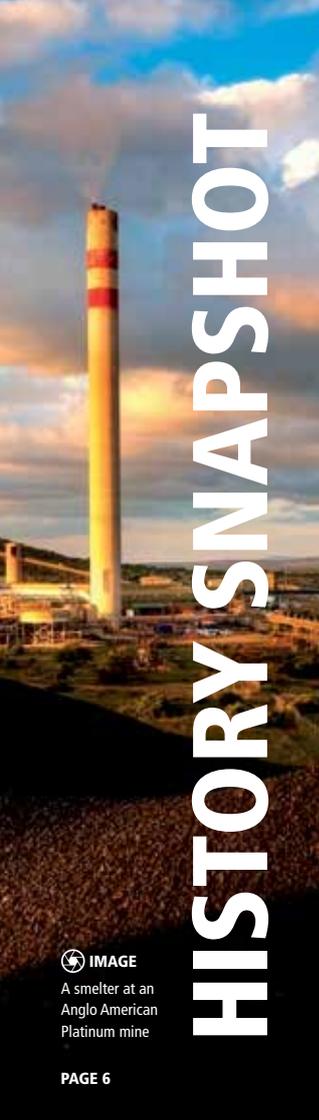
Coal



Chrome, iron ore,  
manganese, and other  
metals and minerals

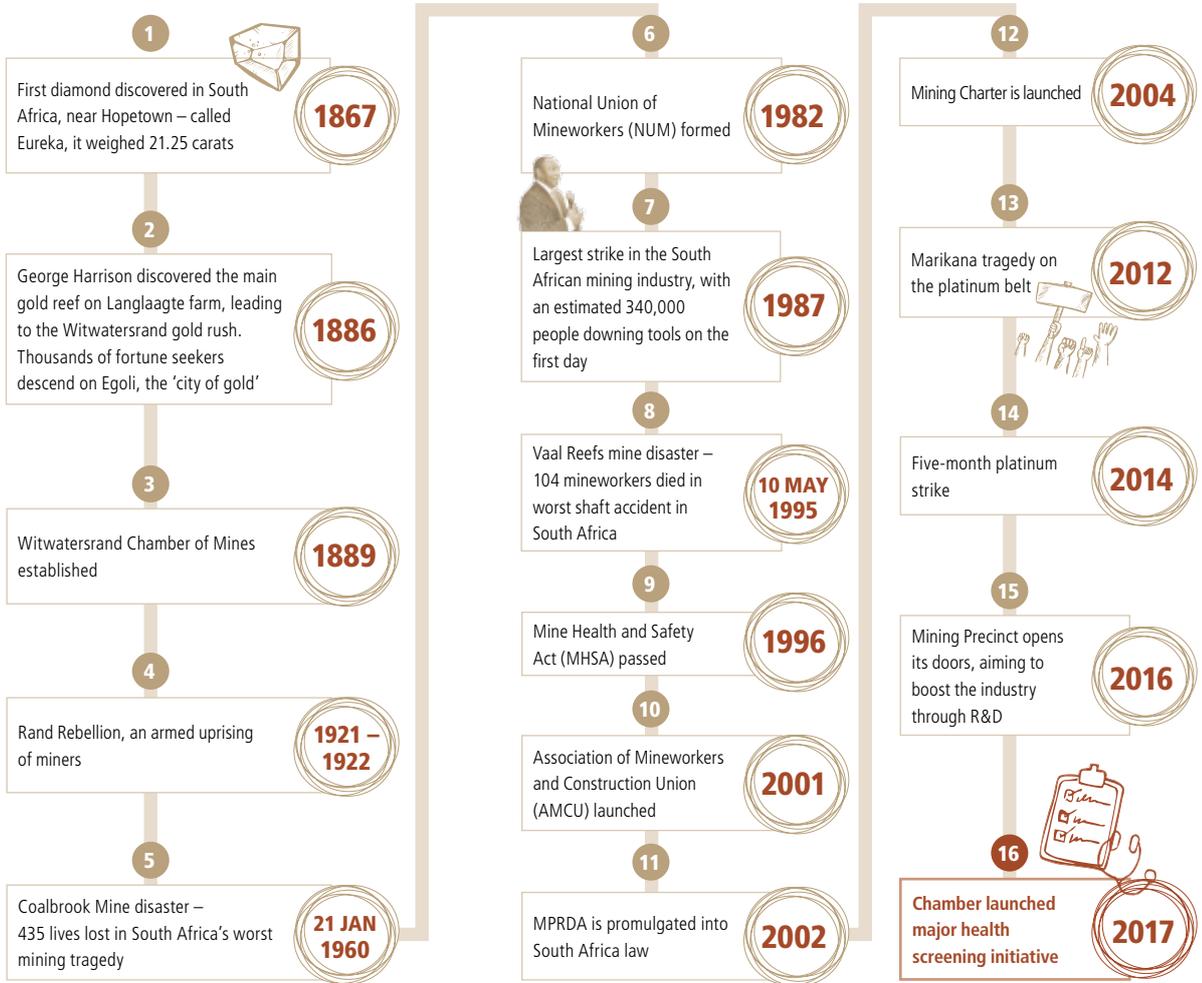


Gold product at the Rand Refinery



# HISTORY SNAPSHOT

 **IMAGE**  
A smelter at an  
Anglo American  
Platinum mine



## OUR METALS AND MINERALS

The mining industry is an important component of the South African economy, and has been for over 100 years. In 2017, our projected estimates indicate that the industry constituted 6.8% of the economy, marginally down from the 7% of overall gross domestic product (GDP) recorded a year earlier<sup>1</sup>. In real terms, the industry is estimated to have expanded by 3.7% in 2017, contributing R312 billion to GDP<sup>1</sup>.

Although the industry has lost almost 30,000 jobs since 2014, employment is estimated to have increased by 1.6% to 464,667 during 2017<sup>2</sup>, which can be attributed partially to the growth experienced in the industry. Among the major commodities, estimates point to the gold sector having shed about 4,000 jobs between 2016 and 2017; while sectors such as platinum group metals (PGMs), iron ore, diamonds, chrome and manganese employed more people between 2016 and 2017<sup>2</sup>. Mining employment represents 6.1% of private non-agricultural employment and 4.8% of total non-agricultural employment<sup>3</sup>.

The industry contributed R93 billion to fixed investment in 2017<sup>4</sup>, which constituted 18.2% of private sector fixed investment and 10.8% of the country's total fixed investment bill for the year. In the decade between 2007 and 2017 a downward trajectory is evident in the industry's fixed investment activity, which should be a cause for concern, particularly regarding the industry's prospects. Policy uncertainty is at the top of investors' concerns. There is optimism, however, that this might change after the recent election of a new head of the ruling party, and a noticeable intent to deal with corruption and state capture, to improve the governance of state-owned enterprises, and to increase regulatory certainty in the mining sector.

In 2017, the industry exported R307 billion worth of produce<sup>2</sup>, 27% of the country's R1.1 trillion export book<sup>5</sup>. The 10% strengthening of the rand against the US dollar in 2017 would have adversely affected the rand receipts of exports, which increased by 4.1%; however, on a US dollar equivalent basis, exports increased by 16.1%.

In the 2016/2017 fiscal year the industry paid R5.8 billion in royalties, representing a 56% increase on the prior year<sup>6</sup>. The industry paid R16 billion in taxes for the same period<sup>7</sup>.



## MINING CONTRIBUTION SUMMARY:

### In 2017\*

- **Direct contribution of mining to GDP: R312 billion**
- **Mining GDP growth rate: 3.7%**
- **Mining contribution as % of total GDP: 6.8%**
- **Direct contribution of mining to fixed investment: R93.4 billion**
- **Total primary mineral sales: R424 billion**
- **Royalties paid: R5.8 billion**
- **Taxes paid: R16 billion**

\* Estimates based on latest statistics available

<sup>1</sup> Statistics South Africa (P0441); Chamber of Mines calculation

<sup>2</sup> Department of Mineral Resources (DMR); Chamber of Mines calculation

<sup>3</sup> DMR; Statistics South Africa; Chamber of Mines calculation

<sup>4</sup> South African Reserve Bank; Chamber of Mines calculation

<sup>5</sup> South African Revenue Service Customs

<sup>6</sup> South African Revenue Services (Mineral and Petroleum Resources Royalty payments by commodity – 2016/2017)

<sup>7</sup> South African Revenue Services (Companies provisional tax payments – 2016/2017)



IMAGE

An employee at an Anglo American coal mine

# GOLD

## OUR METALS AND MINERALS

The Witwatersrand (Wits) Basin is one of the world's largest gold deposits – an elliptical basin that stretches over an arc of 400 kilometres through the Free State, North West and Gauteng provinces.

After 120 years of operations, gold mining has reached depths of up to 4,000 metres, making these among the deepest mines in the world. At this depth, rock temperatures reach about 50°C and vertical rock pressures around 100MPa.

The discovery of gold in South Africa in the late 19th century led to the development of the city of Johannesburg, Egoli (city of gold). For many years, South Africa was the world's primary gold producer with peak production of 1,000 tonnes in 1970.

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

 South Africa was the world's primary gold producer with peak production of 1,000 tonnes in 1970

### In 2017<sup>1</sup>

#### Direct employees



**112,200**  
people

#### Employee earnings



**R29.9bn**

#### Royalties paid



**R0.9bn**

#### Gold produced



**138t**

#### Total sales



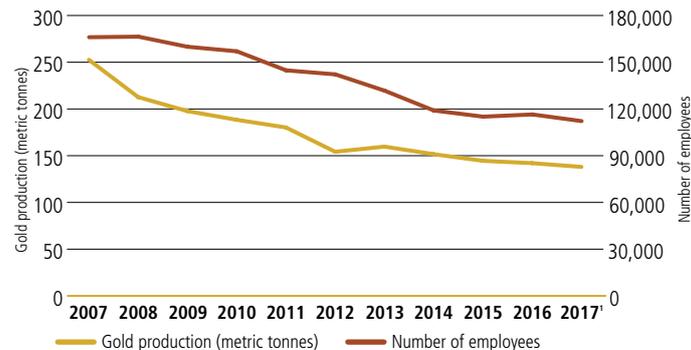
**R67.6bn**

#### Percentage of metals exported



**73%**

### Gold production and industry employment (2007 – 2017)



Source: DMR, Chamber of Mines

<sup>1</sup> Estimates based on latest statistics available

# PLATINUM

## OUR METALS AND MINERALS

The Bushveld Igneous Complex, formed some 2 billion years ago, is the world's largest layered intrusion, created when vast quantities of molten rock from the earth's mantle were brought to the surface through long vertical cracks.

In South Africa, the discovery of the first platinum nuggets dates back to 1924. Geologist Hans Merensky's follow-up work resulted in the discovery of the Bushveld Igneous Complex. This complex hosts more than half the world's PGMs and associated minerals, such as nickel, chromium, vanadium and refractory minerals. South Africa is host to around 80% of the world's known platinum reserves.

PGMs consist of six noble metals, all silvery-white in appearance – platinum, palladium, rhodium, ruthenium, osmium and iridium. Platinum, palladium and rhodium are the primary metals of significant economic value. They are used largely for jewellery and in the automotive industry for their excellent catalytic properties. Other uses include investment (coins and bars), fuel cells, and many other industrial purposes.

 South Africa is host to around 80% of the world's known platinum reserves

### In 2017<sup>1</sup>

#### Direct employees

 **175,770**  
people

#### Employee earnings

 **R48.0bn**

#### Royalties paid

 **R0.8bn**

#### Platinum produced

 **253t**

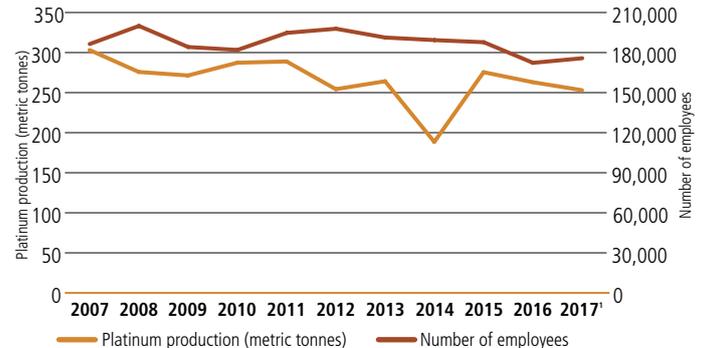
#### Total sales

 **R94.1bn**

#### Percentage of metals exported

 **87%**

### Platinum production and industry employment (2007 – 2017)



Source: DMR, Chamber of Mines

<sup>1</sup> Estimates based on latest statistics available

# DIAMONDS

## OUR METALS AND MINERALS

Diamonds, arguably the ultimate luxury mineral, comprise an intricate lattice of carbon atoms, a crystalline structure that makes them harder than any other form in nature. This characteristic makes diamonds not only popular in jewellery, but also desirable in high-tech cutting, grinding and polishing tools.

Diamond mining has taken place in South Africa for over a century, and is largely responsible for putting the African sub-continent 'on the map' as a minerals-rich region.

Natural diamonds were formed some 3.3 billion years ago in conditions of intense heat and pressure 150 kilometres below the earth's surface. The primary sources of all of South Africa's diamonds are kimberlites in ancient, vertically-dipping volcanic pipes, mostly in the vicinity of the city of Kimberley, and initially amenable to opencast mining. Early in the 20th century, the Premier mine's volcanic pipe was discovered near Pretoria with a number of further kimberlite pipes discovered in the Northern Cape and Limpopo since then. Alluvial diamonds and small diamondiferous fissures have been known and worked for many years along the southern banks of the Orange River, as well as along and offshore of South Africa's west coast.



Diamond mining has taken place in South Africa for over a century

### In 2017<sup>1</sup>

#### Direct employees

 **18,227**  
people

#### Employee earnings

 **R5.2bn**

#### Royalties paid

 **R0.3bn**

#### Diamonds produced

 **9.9m**  
carats

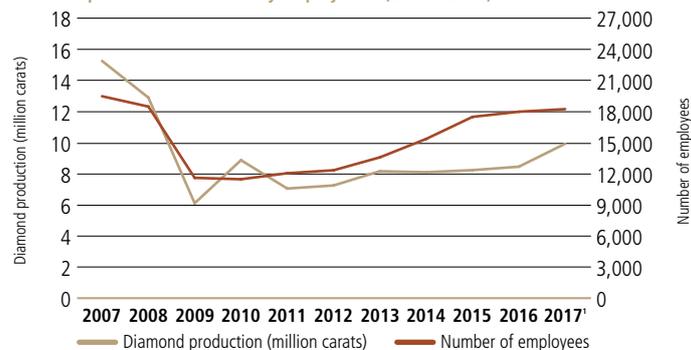
#### Total sales

 **R16.4bn**

#### Percentage of minerals exported

 **55%**

### Diamond production and industry employment (2007 – 2017)



Source: DMR, Chamber of Mines

<sup>1</sup> Estimates based on latest statistics available

# COAL

## OUR METALS AND MINERALS

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

Coal mining in South Africa can be traced to the start of gold mining in the late 19th century, with the first coal in appreciable tonnages being extracted on the highveld coal field close to the Witwatersrand gold mines. Demand grew exponentially as the country entered a period of industrialisation during and following World War II. This included a major programme of building power stations, particularly on the coal fields of Emalahleni (formerly Witbank) and Delmas. The development of the means to transform coal into fuel provided a further impetus for the coal sector.

South Africa's coal resources are contained in the Ecca deposits, a stratum of the Karoo Supergroup, and date from between 280 and 250 million years ago. Generally, South Africa's coal deposits are shallow, largely unfaulted and lightly inclined, making their exploitation suitable for opencast and shallow underground mining, with a high degree of mechanisation.

Coal is a key role player in South Africa's energy production, with 81% of energy produced by Eskom being generated using coal.

 Coal is a key role player in South Africa's energy production

### In 2017<sup>1</sup>

#### Direct employees

 **81,962**  
people

#### Employee earnings

 **R22.0bn**

#### Royalties paid

 **R1.1bn**

#### Coal produced

 **252.6mt**  
saleable

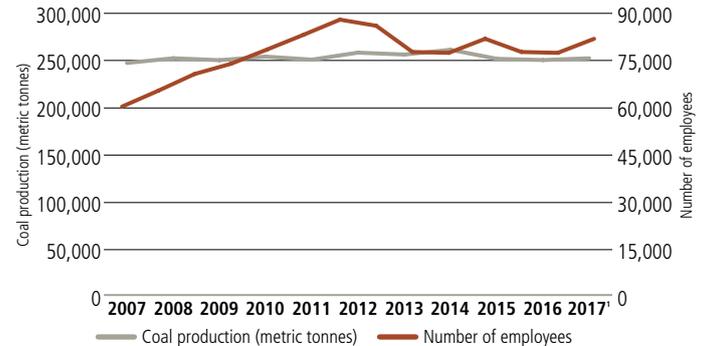
#### Total sales

 **R123.2bn**

#### Percentage of metals exported of total sales

 **45.2%**

### Coal production and industry employment (2007 – 2017)



Source: DMR, Chamber of Mines

<sup>1</sup> Estimates based on latest statistics available



Coal at Glencore's Tweefontein Colliery

# CHROME, IRON ORE AND MANGANESE



South Africa is the largest producer of both manganese and chrome globally

## OUR METALS AND MINERALS

Chrome is known for its high corrosion resistance and hardness. It is essential in the production of stainless steel, which accounts for 85% of its commercial use.

The main uses of manganese are in industrial and metallurgical applications, batteries and chemicals.

Iron is the most common element on earth, comprising most of the planet's inner and outer core. Iron has been used by humans since the ancient times to make tools. Most iron is used to manufacture steel, which is in turn used to manufacture machines, buildings and tools.

Around 80% of the world's manganese resources and 70% of the world's chrome resources can be found in South Africa. South Africa is also the largest producer of both manganese and chrome globally.

🗨️ Around 80% of the world's manganese resources and 70% of the world's chrome resources can be found in South Africa

### Base mineral employment 2017<sup>1</sup>

(number of people)



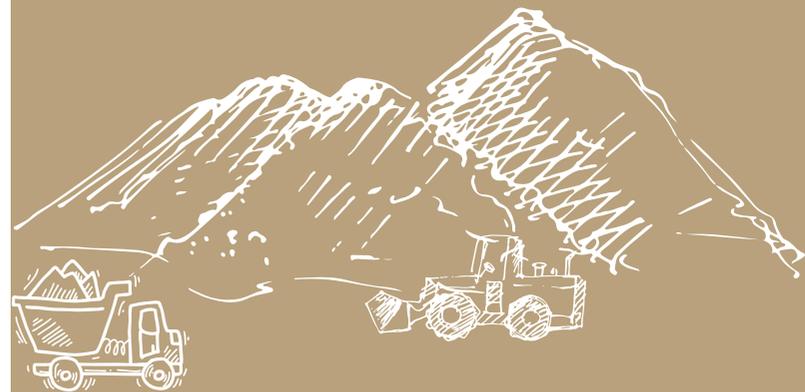
### Base mineral production 2017<sup>1</sup>

(metric tonnes)

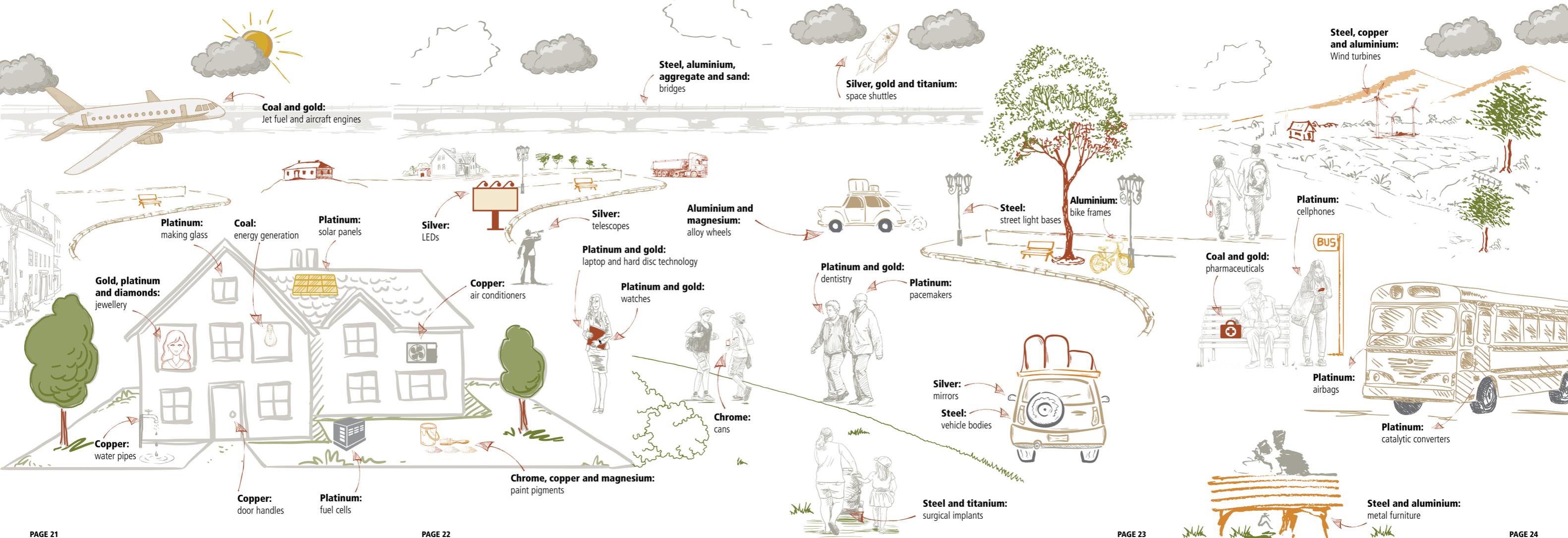


<sup>1</sup> Estimates based on latest statistics available

## MINING IN OUR LIVES



# IF IT'S NOT GROWN, IT'S MINED



**Coal and gold:**  
Jet fuel and aircraft engines

**Steel, aluminium, aggregate and sand:**  
bridges

**Silver, gold and titanium:**  
space shuttles

**Steel, copper and aluminium:**  
Wind turbines

**Platinum:**  
making glass

**Coal:**  
energy generation

**Platinum:**  
solar panels

**Silver:**  
LEDs

**Silver:**  
telescopes

**Aluminium and magnesium:**  
alloy wheels

**Steel:**  
street light bases

**Aluminium:**  
bike frames

**Platinum:**  
cellphones

**Gold, platinum and diamonds:**  
jewellery

**Copper:**  
air conditioners

**Platinum and gold:**  
laptop and hard disc technology

**Platinum and gold:**  
watches

**Platinum and gold:**  
dentistry

**Platinum:**  
pacemakers

**Coal and gold:**  
pharmaceuticals

**Platinum:**  
airbags

**Platinum:**  
catalytic converters

**Copper:**  
water pipes

**Copper:**  
door handles

**Platinum:**  
fuel cells

**Chrome, copper and magnesium:**  
paint pigments

**Chrome:**  
cans

**Silver:**  
mirrors

**Steel:**  
vehicle bodies

**Steel and titanium:**  
surgical implants

**Steel and aluminium:**  
metal furniture

Aggregate and sand,  
chrome, coal, diamonds,  
ferrous metals, gold,  
iron, limestone and lime,  
manganese, non-ferrous  
metals, platinum group  
metals, precious metals  
and minerals



## SAFETY AND HEALTH

Safety performance in the mining industry was disappointing in 2017.

For the first time in a decade, the industry reported a regression in the number of fatalities. Tragically, 86\* people lost their lives in mining-related accidents in 2017, compared with 73 lives lost in 2016.

This is particularly disappointing given the consistent improvement the industry has seen over the past two decades as a result of various tripartite health and safety initiatives adopted by the mining industry\*\*.

This improvement in safety performance over the past two decades illustrates that achieving the industry's ultimate goal of zero harm is possible if all stakeholders work together.

A particular concern during 2017 has been the number of accidents related to seismic activity and subsequent fall of ground incidents.

There has been a notable increase in the number of rockbursts, while the number of rockfalls, which is typically the main cause of falls of ground, decreased.

The industry has noted this development and has committed itself to understanding and addressing this issue. The Mining Industry Occupational Safety and Health Falls of Ground team has been established and is leading a task team which is developing leading practices on rockbursts in particular. The findings made by the task team will be shared across the industry.

South Africa's Mine Health and Safety Act (MHSA), introduced in 2006, made provision for a tripartite approach to safety and health, requiring

\* Based on available information. The final performance figures are still to be published by the DMR.

\*\* Between 1993 and 2016, the number of fatalities declined by around 88% while fatalities as a result of fall of ground incidents declined by 92% over the same period. Other safety indicators improved at similar rates.

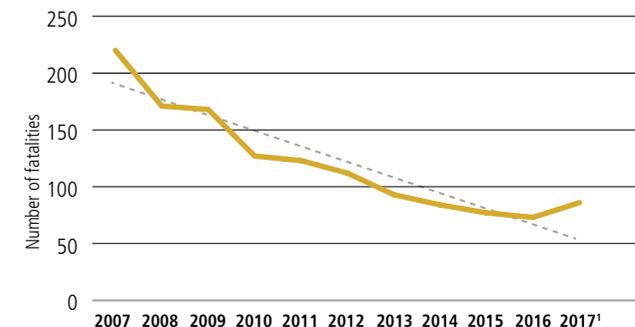
industry, the unions and government to act in concert in promoting a safe and healthy workplace.

As required by the MHSA, individual companies and mines have agreements in place that regulate many aspects of safety and health in the workplace, and that provide joint planning, decision-making, training and auditing.

To accelerate the journey to zero harm, the Chamber established the MOSH Learning Hub in 2008 to identify and promote adoption of leading practices through a people-centred contribution.

In 2012, the Chamber established the CEO Zero Harm Forum (formerly called the CEO Elimination of Fatalities Team) to visibly lead by example, to drive health and safety initiatives and to share experiences to help address key challenges in a manner that will enable the industry to achieve the 2024 milestones and accelerate the industry's journey to zero harm.

Mining industry fatalities (2007 – 2017)



Source: DMR, Chamber of Mines

<sup>1</sup> Estimates based on latest statistics available



## OUR PEOPLE

The mining sector remains a significant employer in South Africa.

The mining industry employed 464,667 people in 2017 (457,698 people in 2016).



**4.7%** increase in total wages in 2017 (10.3% increase in 2016)

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



**1.4m** indirect jobs created by industry in 2017 (1.4m in 2016)

The industry not only provides jobs but believes it is important to encourage and facilitate the development of its employees to ensure the sustainability of the industry. South African mining companies invest in employee training and development in many forms that include learnerships, bursaries, apprenticeships, internships and adult education.

The future success of the mining industry relies on the continuous development of technical innovation and the nurturing and retention of human capabilities. In addition to the skills development levy (1% of annual payroll), the Charter requires that the industry spend 5% of its annual payroll on human resources development (HRD). In 2016, the mining industry spent 5.5% of its annual payroll on HRD. The industry will continue to collaborate with key stakeholders including the Mining Qualifications Authority to ensure that HRD expenditure is aligned with the needs of the industry and the nation. This translates into HRD expenditure in 2016 of R7.74 billion, in addition to the skills development levy payment of R1.46 billion.

Artisans are a mainstay of the mining industry with an average of 2,000 artisans qualifying in the mining industry each year.



IMAGE  
A woman in mining  
at Sibanye Stillwater



Women represent:

- 15% of top management
- 16% of senior management
- 22% of professionally qualified employees
- 18% of employees in the skilled and technical area

## WOMEN IN MINING

Since the promulgation of the MPRDA in 2002 and the Mining Charter in 2004, the number of women in the industry has significantly increased.

Most mines meet or exceed the 10% women in mining target and numerous industry initiatives are underway to make a career in mining more welcoming to female employees and job seekers. Representation of women in mining increased from around 11,400 women in 2002 to around 53,000 women in 2015, increasing to 53,179 in 2017. Women represent 12% of the mining labour force.

	No of women employees	% of women employees
Gold	13,374	12
PGMs	19,340	11
Diamond	2,494	14
Coal	10,209	13
Chrome	2,751	16
Iron ore	2,384	14
Manganese	1,247	16
Cement, lime aggregates and sand	1,380	12

Current available DMR 2017 Q3 figures

### TRAINING AND DEVELOPMENT OF WOMEN IN MINING

As the industry seeks to encourage the participation of women at all levels, special focus is placed on their training and development.



# MINING TRANSFORMATION

The mining industry is committed to addressing legacies of the past and contributing meaningfully to policies, practices and outcomes that reflect the true demographics of the country, and to creating an environment that will build a sustainable and prosperous mining industry.

Until the late 1980s, skilled jobs were denied to black miners. It took 10 years for the proportion of skilled positions held by black miners to approach 20%. Since 2004, the percentage of historically disadvantaged South Africans (HDSAs) in skilled and management positions has risen to between 40% and 75% depending on the category.

The Chamber carried out a survey of mining industry transformation and community development performance among its members. There were 28 respondents and the results are reflected in the following sections.

## OWNERSHIP

In 2016, ownership of the industry by HDSAs was 39%, significantly above the Charter target of 26%. This assessment is based on the principle of recognition of continuing consequences of previous transactions. The Chamber has calculated that empowerment transactions between 2000 and 2014 have been valued at R205 billion and there has been a transfer of value of some R159 billion to HDSA entities (including black-owned companies, entrepreneurs, employee and

community trusts). This number continues to grow and in 2016 R2.2 billion flowed to HDSA entities in dividends from the surveyed companies.

This has been achieved notwithstanding the international financial crisis of 2008, the consequences of which continue to afflict commodity markets. This has also negatively affected mining company shareholders, including participants in black economic empowerment (BEE) transactions.

## PROCUREMENT

The proportion of procurement from HDSA entities continues to exceed targets in all three reporting categories:

- Capital goods: In 2016, companies reported 69% of expenditure on capital goods against the 2010 Charter target of 40%. In monetary terms, this translates into expenditure with HDSA companies for capital goods of R11.1 billion in 2016.
- Services: In 2016, 75% of expenditure on services was with HDSA suppliers, compared with the 2010 Charter target of 70%. In 2016, this amounted to expenditure of R61.0 billion.
- Consumables: In 2016, 68% of consumables was purchased from HDSA suppliers, at a cost of R40.7 billion. The 2010 Charter target was 50%.

## EMPLOYMENT EQUITY

Mining companies continue to focus on workplace transformation with appreciable improvements being achieved in two of the four categories. The 2010 Charter specified a target of 40% HDSAs in all reporting categories by 2014. In 2016:



**49.3%**  
of top management  
were HDSAs (50.4%  
in 2014)



**48.3%**  
of senior management  
were HDSAs (41.9%  
in 2014)



**49.8%**  
HDSAs made up 49.8%  
of middle management  
(50.9% in 2014)



**58%**  
HDSAs made up 58%  
of junior management  
(54% in 2014)



**84.4%**  
HDSAs filled 84.4% of  
core and critical skills  
positions (75.5% in 2014)

**IMAGE**  
An employee at Anglo American Platinum's Tumela mine



# MINING COMMUNITY DEVELOPMENT

Mining companies recognise that they need to earn and maintain their social licence to operate.

Companies understand that their role is not just one of neighbour to communities where they operate but also as partners in and catalysts for sustainable socio-economic development in those areas.

One of the most prominent features of the 2010 Charter relates to mining community development and its regulation through social and labour plans (SLPs). SLPs provide for strategic interventions which require the planning (mostly with local authorities) and implementation of programmes that focus on the promotion of socio-economic growth and sustainable development of host communities and significant labour-sending areas.

The 2010 Charter did not set universal spending targets in respect of mining community development; budgets were set through engagement with the DMR. Outcomes should in any event be measured against impact. However, locally and internationally, a target of 1% of net profit after tax (NPAT) is seen to be a reasonable target for community development spend.

Of the 28 companies surveyed in the Chamber's community development performance survey, 25 spent more than 1% of NPAT. Their total spending in 2016 amounted to R1.14 billion. The entire industry's NPAT for the period amounted to R34 billion, of which 1% is R339 million. Therefore, the 28 companies alone spent triple the total 1% of NPAT.

Notably, 16 of the 66 operations managed by the 28 companies reported financial losses in 2016, yet they collectively contributed more than R180 million to mining community development.

The Chamber of Mines believes that, while there remain a number of areas which can be improved over time, the industry's transformation performance is satisfactory and demonstrates commitment to continuous improvement.



## In the Chamber's community development performance survey:



**25 of 28 companies**

spent more than 1% of NPAT on community development



**R1.14 billion**  
was spent in total in 2016



**R34 billion**  
Industry's NPAT for the period, of which 1% is R339 million





# MODERNISATION

As mining depths increase and conditions become more challenging, there is an urgent need to modernise the industry. Mechanisation is one pillar of modernisation.

With conventional mining, the gold industry will see a sharp decline in production by 2019-20, with reserves exhausted by 2033. Through mechanisation and 24/7 operations, annual output could be sustained to at least 2025 and beyond.

Mechanisation would see 592 metric tonnes of additional gold resources being mined (equivalent to 11 large gold mines) as well as an additional 360 metric tonnes of platinum (equivalent to eight large platinum mines).

Mining companies have spent over R500 million annually over the past few years on innovation. In 2016, government committed R150 million towards this strategy.

BY  
2020

The Chamber has identified the products, technologies, people and infrastructure required to mechanise the stopping and development cycle with remotely operated equipment.

BY  
2045

Similar requirements have been developed for a 24/7 mechanised mining system that operates without explosives by 2045.

# WHAT DO WE MEAN BY MODERNISATION?

Modernisation is not simply mechanisation. It is a process of transition and transformation of the mining industry of yesteryear to that of tomorrow.



Modernisation will be driven by technological innovation, which in turn needs to be driven by research and development (R&D). To be successful, the approach to modernisation must be holistic, and be conducted in a systems and people-centric manner.

Modernisation could save around 200,000 jobs by 2030, affecting 2 million dependants.



The Chamber has conducted extensive research into mine modernisation and has developed a strategic framework to guide the mining sector in achieving its objectives. Three key enablers are:



### RESEARCH AND DEVELOPMENT

Massive investment is required, with initial focus on narrow-reef, hard-rock mining equipment and systems.



### MINING MANUFACTURE

A mining capital goods development programme is being developed to facilitate immediate manufacture of R&D equipment, industrialisation using local labour and reduced cost of ownership for mines and optimal mining production.



### SUSTAINABILITY

A transition road map for modernisation will include sustainability impact assessments of future mining scenarios and accelerated skills development of employees in local communities.



# ILLEGAL MINING

Illegal mining is on the rise in South Africa and presents challenges that need to be addressed from a range of perspectives. Illegal miners in South Africa are colloquially known as 'zama zamaz'.

- Many thousands of people are involved in illegal mining
- The annual value of illegal mining runs into billions of dollars
- Zama zamaz travel as far as four kilometres underground where they may live for several days at a time
- Illegal mining takes place at existing and abandoned mines
- Illegal miners openly flout personal health and safety to open cement-plugged shafts with explosives on abandoned mines, and without using necessary protective gear. In operating mines, zama zamaz pose severe risks to legitimate mine employees, to safety protocols, to shaft infrastructure and stability, to equipment, and ultimately, to the business



An increase in unemployment, poverty and the entry of large numbers of illegal immigrants into the country has contributed to an increase in illegal mining. Illegal mining was initially spurred on by the surge in the gold price during the bull market of the first decade of this century.



Despite the fall in the US\$ gold price around 2011, the rand gold price has held sufficiently steady to keep illegal mining profitable.



There are limited resources at the disposal of law enforcement agencies to stem illegal mining, such as police, immigration, border controls and prosecuting authorities.

No single stakeholder can address the challenge of illegal mining on its own – collaboration is key.

# CHAMBER MEMBERS



# 71 MEMBERS

<b>14</b> BASE MINERALS	<b>7</b> GOLD	<b>11</b> PLATINUM
<b>3</b> DIAMONDS	<b>20</b> COAL	<b>6</b> MINING CONTRACTORS
<b>3</b> MINING CORPORATES	<b>4</b> INVESTMENT COMPANIES	<b>3</b> ASSOCIATIONS

## A BRIEF HISTORY

