Published by:
Creamer Media's
RESEARCH CHANNEL
AFRICA

GOLD

SEPTEMBER 2018

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A review of South Africa's GOLD SECTOR

The material contained in this report was compiled by Samantha Herbst and the Research Unit of Creamer Media (Pty) Ltd, based in Johannesburg.

The information in this report is correct as of September 14, 2018.

Report edited by Sheila Barradas, David Shepherd and Ria Theron.

Ordering information

To subscribe to *Research Channel Africa* or purchase this report contact:
Creamer Media (Pty) Ltd
Tel +27 11 622 3744
Email subscriptions@creamermedia.co.za

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UNITS OF MEASUREMENT
The distinction between tonne (1 000 kg) and ton (1 016.047 kg) is maintained in this report according to the information that is reported in the public domain by each company.

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List of abbreviations and acronyms

AIC	all-in cost
AISC	all-in sustaining cost
AMCU	Association of Mineworkers and Construction Union
capex	capital expenditure
CRG	Central Rand Gold
DRC	Democratic Republic of Congo
ETF	exchange-traded fund
ETRP	Evander Tailings Retreatment Plant
FWGR	For West Gold Recoveries Proprietary Limited
HSC	Heaven-Sent SA Sunshine Investment Company
JV	joint venture
LoM	life-of-mine
MCSA	Minerals Council South Africa
NUM	National Union of Mineworkers
PGM	platinum-group metal
REQ	Resources & Energy Quarterly
RHCC	Roy Hill Control Centre
WGC	World Gold Council
WRE	White Rivers Exploration
WRTRP	West Rand Tailings Retreatment Project

Key developments

May 2017: Gold mining and exploration company Central Rand Gold reports that it is facing serious financial constraints – with significant debt and many creditors – and that it is considering selling its operating assets to a third party.

June 2017: Global gold mining firm AngloGold Ashanti embarks on a major restructuring operation, putting TauTona mine, located between Gauteng and North West, on care and maintenance and announces that its total retrenchments during this phase could tally up to 8 500 employees.

August 2018: Precious metals producer Sibanye, which began trading as Sibanye-Stillwater on August 30, says it could cut as many as 7 400 jobs in the restructuring of the Beatrix West gold operations, in the Free State, and the Cooke gold operations, in Gauteng.

October 2017: Central Rand Gold says it will need a cash injection of at least $20-million to remain a listed, operational mining group. Company directors do not believe this is feasible. Soon after this announcement, company CEO and director Lola Trollip resigns and the company cancels its Aim listing.

October 2017: AngloGold Ashanti announces the sale of its Moab Khotsong operation, in the Free State, and its Kopanang operation, on the Free State and North West border, to South Africa's third-biggest gold mining company Harmony Gold Mining Company and investment group Heaven-Sent SA Sunshine Investment Company respectively.

November 2017: JSE- and NYSE-listed Gold Fields announces a R6-million, three-year partnership with the University of the Witwatersrand to further academic knowledge in the field of mechanised mining and rock engineering in South Africa.

November 2017: Sibanye-Stillwater enters into various agreements with midtier gold producer DRDGold to create an industry-leading surface mining partnership. Sibanye-Stillwater will vend selected assets of the West Rand Tailings Retreatment Project into DRDGold for a 38% share of DRDGold.

November 2017: Empowerment company SSC Flaming Silver acquires a 74% shareholding in gold mining and exploration company Vantage Goldfields. Together with black empowerment partner Lomshiyo Investments, SSC now owns the Lily and Barbrook mines, as well as associated infrastructure near Barberton, in Mpumalanga.

December 2017: Sibanye-Stillwater moves to acquire Lonmin, one of the foremost platinum group metals producers in South Africa. This transaction should be finalised by the end of 2018.

February 2018: Former South African President Jacob Zuma steps down and Cyril Ramaphosa is elected president of the country. He appoints Gwede Mantashe the new Mineral Resources Minister.

February 2018: AngloGold Ashanti finalises the sale of its Moab Khotsong and Kopanang operations to Harmony Gold Mining Company and Heaven Sent SA Sunshine Investment Company. This transaction results in a fall in contribution from the company's South African mines, leaving AngloGold with only two local gold operations, Mponeng, in Gauteng, and the Mine Waste Solutions surface operation, in the North West.

February 2018: Sibanye-Stillwater says it arrested nearly 1 400 illegal miners at its South African gold shafts in 2017 as part of a companywide blitz to eradicate the practice at its mines. The miner's Gauteng-based Cooke operations, which were mothballed in October 2017, were considered the epicentre of illegal mining activity plaguing the company; almost 800 arrests were made at the operation in 2017.

February 2018: AngloGold Ashanti says it will spend up to $500-million to mechanise its Obuasi mine, in Ghana, which was invaded by thousands of illegal miners in 2017 and rendered worthless.

March 2018: Gold Fields enters into a 50:50 joint venture with Africa-focused gold producer Asanko Gold that will result in Gold Fields acquiring 45% of Asanko gold mine, in Ghana, for $195-million.

April 2018: AngloGold CEO Srinivasan Venkatakrishnan says he will step down as CEO of AngloGold Ashanti on August 31 to take up the CEO position at diversified miner Vedanta Resources.

April 2018: Vantage Goldfields secures R300-million from the Industrial Development Corporation and other unnamed investors to construct a new shaft meant to recover three mineworkers whose bodies remain trapped underground at the company's Lily mine, in Mpumalanga.

April 2018: Trade unions start submitting their wage demands to gold producers, with the previous gold-sector wage agreements expiring by the end of June 2018. The National Union of Mineworkers submits a document to the Minerals Council South Africa demanding a 37% wage hike from gold producers over two years, far exceeding the current inflation rate of 4.60%.

May 2018: South Africa's gold mining industry faces its eighth straight month of output decline.

May 2018: Seven miners die following three seismic events at Sibanye-Stillwater's Driefontein operation, in Gauteng. Thirteen mineworkers were trapped and only six survived. This contributed to an estimated 28% fall in the company's share price in June 2018.

May 2018: Pan African Resources confirms the closure of its Evander 8 underground mine, in Mpumalanga, compromising the jobs of about 1 700 employees. The closure was attributed to continued operational losses, as a result of the prevailing weak rand gold price.

May 2018: A settlement is reached in the class action lawsuit against South African gold producers on behalf of mineworkers who are suffering from or have died from silicosis or tuberculosis. The settlement is the first of its kind in South Africa and will result in compensation being paid by the various South African gold mining companies to eligible mineworkers and their families.

May 2018: Trade union Uasa tables its wage demand of a 10.50% increase, while the Association of Mineworkers and Construction Union (AMCU) demands a 12% increase for miners and artisans, as well as a basic entry-level salary of R12 500. Later in the month, Solidarity demands a 4% increase on the consumer price index, or a 10% increase, whichever is greater.

May 2018: AngloGold Ashanti says it plans to cut 2 000 jobs (out of 8 200) at its remaining domestic operations – Mponeng, in Gauteng, and a surface operation. The restructuring will affect employees across different categories and levels at the company, including the region's executive committee and senior management.

June 2018: US law firm Bernstein Liebhard files a class action lawsuit against Sibanye-Stillwater on behalf of shareholders to recover losses suffered after the spate of deaths at the company's mines in recent months.

June 2018: Mineral Resources Minister Gwede Mantashe issues a new draft Mining Charter for public comment. The public consultation process is extended until the end of August 2018.

July 2018: The latest gold wage negotiations get under way. Local gold producers respond to union demands on July 18, offering mineworkers a yealy wage increase of between 4.50% and 6% over three years, depending on the miners' level of experience. Solidarity and the National Union of Mineworkers reject the offer.

July 2018: South African President Cyril Ramaphosa says government will tighten its mine safety regulations to hold mine operators accountable for accidental deaths in the industry. Fifty-four miners had been killed in South Africa's mines in the year to July 1.

July 2018: Sibanye-Stillwater commits to improve safety at its operations, with the implementation of a 12-point plan to address safety concerns. The group lowers its production guidance for the year owing to production stoppages following a spate of mining-related deaths in the first six months of 2018.

July 2018: Harmony Gold exceeds production guidance for the year ended June 30, 2018, by 4%, producing just over 1.20-million ounces of gold for the full year.

August 2018: Sibanye-Stillwater concludes its transaction with DRDGold to exchange selected surface gold processing assets and tailings storage facilities for newly issued DRDGold shares. The precious metals producer now owns 38.05% of the issued share capital of DRDGold, which is currently worth R895.70-million.

September 2018: Trade union the Association of Mineworkers and Construction Union warns gold miners Sibanye-Stillwater, Harmony Gold and Village Main Reef of an imminent strike, should they fail to meet the demands of workers.

September 2018: AngloGold Ashanti concludes a wage agreement with unions – the Association of Mineworkers and Construction Union, Uasa and Solidarity – in regard to wages and conditions of service for the three-year period starting July 1 and ending June 20, 2021. The wage agreement allows for increases to the basic wage of category 4 to 8 employees of R700 in Year 1, R800 in Year 2 and R900 in Year 3.

Picture by Creamer Media

The South African market

SUPPLY

With 140 years of gold mining history, South Africa boasts one of the world's largest gold deposits – the Witwatersrand basin, which spans 400 km across three provinces. It also hosts the world's deepest gold mine – the 4-km-deep Mponeng operation, in Gauteng, which belongs to international gold major AngloGold Ashanti. However, with gold mining being undertaken at increasingly greater depths and mine sites becoming more remote, South Africa's gold production has slowed considerably over the years since reaching peak production of 1 000 t in 1970. The country's gold production has plummeted 85% over the past four decades, with South Africa now ranked as the world's eighth-biggest gold producer, according to information services firm Thomson Reuters' GFMS Gold Survey 2018.

The country's mined gold production dropped slightly in 2017 to 139.90 t, from 145.70 t in 2016, a decline that can be attributed to shrinking ore reserves, ageing infrastructure, increasing labour costs, industry strikes and frequent safety-related work stoppages. Further, while global gold production is expected to hit a record high in 2018, local production is expected to decline even further, owing to an expected decrease in output from AngloGold Ashanti, which made a " difficult decision" in May 2018 to restructure the company to support a smaller footprint in South Africa. The world's third-largest producer put TauTona mine, on the border between Gauteng and the North West, on care and maintenance in June 2017 and announced the sale of its Moab Khotsong mine, in the Free State, and Kopanang operations, on the Free State and North West border, in October 2017. This will result in a fall in contribution from its South African mines, ands leave AngloGold with only the Mponeng mine, and the Mine Waste Solutions surface operation. South African gold mines now represent only 13% of the AngloGold Ashanti portfolio.

Another challenge facing South Africa's gold mining industry is the exorbitant cost of production. South Africa is the most expensive country in the world in which to mine gold, with average production costs totalling more than $1 000/oz in 2017, compared with average global production costs of about $800/oz.

Nevertheless, the gold mining industry remains a key contributor to South Africa's economy, having contributed R43-billion towards the gross domestic product in 2016. According to the Minerals Council South Africa (MCSA), the industry employed just over 112 000 people in 2017, paying an estimated R30-billion in employee wages and benefits, and contributing R16-billion in taxes. Moreover, according to MCSA CEO Roger Baxter, for every one mineworker another two workers are employed in related industries. There is also a ten-to -one social multiplier of people who are dependent on each mineworker for their daily subsistence. The MCSA also reports that 73% of the yellow metal was exported in 2017, with sales totalling R67.60-billion, second only to the R94.10-billion earned by the platinum group metals sector.

Baxter further points out that, while South Africa is producing a fraction of what it produced 50 years ago at grades of 2 g/t, the industry faced a fixed gold price of only $35/oz in the 1970s, compared with the current four-digit fixed price, which means the high tonnage produced at a significant grade of 13.70 g/t was necessary in the 1970s for gold miners to break even.

It must be noted, however, that statistics provided by the MCSA have been brought into disrepute by local trade unions, with Solidarity stating in July 2018 that the MCSA has a "tendency to provide erratic statistics". According to the union's General Secretary Gideon du Plessis, differing statistics provided by the MCSA across different platforms have created distrust among unions about the integrity of its figures.

LABOUR CHALLENGES

South Africa's gold mining workforce is directly proportional to its production decline over the past few decades. The 112 000 gold mineworkers currently employed by the sector is significantly less than the 180 000-strong workforce of 2004, and pales in comparison to the 600 000-strong workforce of 1988.

According to the MCSA, the mining industry as a whole has lost almost 30 000 jobs since 2014, including 4 000 jobs lost in the gold sector between 2016 and 2017. This is despite an overall 1.60% increase in employment across the broader mining industry, which employed about 465 000 employees in 2017.

Over the past year, local gold miners have come under added pressure from the stronger rand, responding by closing shafts and cutting thousands of jobs in a labour-intensive industry.

Having embarked on a major restructuring operation in June 2017, which eventually resulted in the company whittling its local operations down to two, AngloGold Ashanti announced that its total retrenchments could tally up to 8 500 employees. At the time, AngloGold's South African business employed about 28 000 people, including contractors. Leading up to the closure of TauTona and the sale of the Moab Khotsong and Kopanang mines, which was concluded by the end of February 2018, the miner embarked on a consultation process with employees, in terms of Sections 189 and 189A of the Labour Relations Act, to return the local business toprofitability while mitigating job losses.

In May 2018 the gold major announced that it planned to cut 2 000 jobs (out of 8 200) at its remaining domestic operations – Mponeng, and a surface operation – and that the restructuring would affect employees across different categories and levels at the company, including the region's executive committee and senior management.

Meanwhile, fellow gold miner Sibanye-Stillwater, the country's fourth-largest gold producer, announced in August 2017 that it could cut as many as 7 400 jobs, as it progressed to restructure its Beatrix West, in the Free State, and Cooke gold operations, in Gauteng. It too entered into a consultation process with relevant stakeholders in terms of Section 189A of the Labour Relations Act, after several unsuccessful attempts to contain ongoing losses at the operations, which had been negatively affected by a three-week wildcat strike by employees in June 2017, among other production setbacks.

Further, gold mining group Pan African Resources confirmed the closure of its Evander 8 underground mine, in Mpumalanga, in May 2018, compromising the jobs of 1 700 employees. The company had initiated a Section 189 process following continued operational losses, which it attributed to the prevailing weak rand gold price.

These industrywide retrenchments did not fail to raise the ire of the National Union of Mineworkers (NUM), the majority union in South Africa's gold sector with 52%, according to data released by gold producers in 2015. The Association of Mineworkers and Construction Union (AMCU) is the second-largest union in the sector, with a 30% representation, while smaller unions Solidarity and Uasa represent 7% and 2% of gold sector employees respectively.

With the exception of Gold Fields, the second-largest gold producer in South Africa, the country's major gold producers usually engage with the unions in centralised wage negotiations, facilitated by the MCSA. Departing from tradition, Gold Fields conducted decentralised wage negotiations with the NUM and Uasa at its Gauteng-based South Deep mine in April 2015, while Harmony Gold Mining Company and AngloGold Ashanti concluded its three-year wage agreements with the NUM, Uasa and Solidarity later that year, resulting in basic wage hikes of between 10% and 13% a year. Sibanye also reached agreement with the unions, with the exception of AMCU, which did not agree to any wage offer.

With the previous gold-sector wage agreements expiring by the end of June 2018, unions started submitting their wage demands in April 2018, ahead of the latest wage negotiations, which got under way in July 2018

In April 2018, the NUM submitted a document to the MCSA demanding a 37% wage hike from gold producers over two years, far exceeding the current inflation rate of 4.60%. The NUM tabled a basic monthly pay for entry-level underground workers to increase to R10 500 over the next two years, which translates into yearly increases of between 15% and 18.50%, depending on the company. It also demanded a living out allowance of R3 000 and housing allowance of R5 000. However, with wages accounting for about half of the costs sustained by the local gold mining industry, the price of gold needs to increase considerably before double-digit, above-inflation pay hikes can be sustained.

In May 2018, Uasa tabled its wage demand of a 10.50% increase, while AMCU demanded a 12% increase for miners and artisans, as well as a basic entry-level salary of R12 500. Later that month Solidarity demanded a 4% increase on the consumer price index, or a 10% increase (whichever is greater).

Local gold producers responded on July 18, 2018, offering yearly wage increases that ranged from 5.50% to 6.50% for Category 4 underground employees, and 3% to 4.50% for miners and artisans. The companies believed that these were credible offers, especially when taking into consideration the current inflation rate (4.60%) and the state of the sector. However, daily news source Reuters reported the unions considered these offers to be "very low" and, subsequently, all four unions – AMCU, NUM, Solidarity and Uasa – rejected the offer.

This was despite the gold producers, through the MCSA, communicating to the unions days prior to the offer that 75% of gold mines in South Africa, once the world's top gold producer, are currently lossmaking or marginal.

On August 2, 2018, the gold producers increased their offer to between 6% and 7.20% for Category 4 underground employees, and 3.50% and 4.50% for miners, artisans and officials. This offer was, again, rejected by all four unions on August 15.

Negotiations continued on August 21, when companies tabled a three-year conditional offer that hinged on improving employee wages and benefits, but was conditional on the removal of several high-cost demands. The companies raised the yearly increase for Category 4 underground employees to between 6.20% and 8.20% and the increase for miners, artisans and officials to between 4% and 5%.

The NUM rejected the offer outright and declared a formal dispute. However, negotiations continued on August 22 with the remaining unions. The parties engaged in bilateral meetings with each union to discuss the process going forward.

AngloGold Ashanti concluded a wage agreement with unions, the Association of Mineworkers and Construction Union (AMCU), Uasa and Solidarity on September 18, 2018, in respect of wages and conditions of service for the three-year period starting July 1 and ending June 20, 2021.

The wage agreement allows for increases to the basic wage of category 4 to 8 employees of R700 in Year 1, R800 in Year 2 and R900 in Year 3.

Miners, artisans and officials will receive increases of 5.50% for each year of the agreement.

The three unions represent 62% of AngloGold's employees in the gold sector.

Additionally, there will also be revised shift arrangements at AngloGold Ashanti's operations.

The wage agreement makes provision for a shift arrangement increase of R300 in Year 1, R200 in Year 2 and R100 in Year 3 for category 4 to 8 employees and 1% each year for miners, artisans and officials.

The miner currently employees 7 918 people in the bargaining unit.

Talks with the National Union of Mineworkers, which represents 32.80% of AngloGold's employees, were continuing.

Wage negotiations in regard to Harmony Gold, Sibanye-Stillwater and Village Main Reef, with the unions were also continuing under the auspices of the Commission for Conciliation, Mediation and Arbitration.

AMCU and Solidarity stated that these companies would need to match AngloGold's offer for the parties to reach an agreement, otherwise strike action was imminent.

SILICOSIS

South African gold mining companies have, for several years, been embroiled in class action law suits, launched against them by the Legal Resources Centre (LRC), Abrahams Kiewitz Attorneys and Richard Spoor Attorneys, on behalf of about 100 000 current and former mineworkers who contracted silicosis – a form of occupational lung disease caused by the inhalation of silica dust from gold-bearing rock over a prolonged period.

Silicosis is incurable and causes shortness of breath, a persistent cough and chest pains. It also makes sufferers susceptible to tuberculosis, which is a common disease among mineworkers.

In May 2018, the litigants reached a settlement – the first of its kind in South Africa – that will result in compensation being paid by the various South African gold mining companies to eligible mineworkers suffering from the disease.

The class suits were initially certified by the South Gauteng High Court in May 2016, and involved compensation claims from South Africans as well as citizens of neighbouring countries dating as far back as 1965.

The settlement agreement follows three years of extensive negotiations between the representative attorneys and the Occupational Lung Disease Working Group, which represents African Rainbow Minerals, Anglo American South Africa, AngloGold Ashanti, Gold Fields, Harmony Gold and Sibanye-Stillwater.

Pan African Resources recently joined the litigation process, but is still considering the agreement.

The agreement is subject to certain conditions, including approval by the Johannesburg High Court, which should take place by the end of 2018. Compensation to the claimants will be administered by the Tshiamiso Trust, which will be established following court approval and will be responsible for distribution to the claimants.

Under current legislation – the Occupational Diseases in Mines and Works Act – the benefit for those suffering from first-degree silicosis is R63 100, while those suffering from second-degree silicosis are able to claim R140 506.

New mechanisms launched to help former mineworkers claim in landmark silicosis case

A new website and Facebook page were launched in June 2018 to assist former mineworkers and their dependants, who might be entitled to reparations, to claim compensation if they worked at one of the six gold mining companies, which have made provisions for a trust to pay mineworkers who contracted silicosis and/or tuberculosis at work.

The historic R5-billion settlement was reached in May after three years of extensive negotiations between African Rainbow Minerals, Anglo American SA, AngloGold Ashanti, Gold Fields, Harmony Gold Mining Company and Sibanye-Stillwater, and the claimants' attorneys – Richard Spoor, Abrahams Kiewitz and the Legal Resources Centre.

The settlement needs to be approved by the South Gauteng High Court, which could take several months. Until then, former mineworkers or their dependants may register their details on the mineworker database. The website – www.SilicosisSettlement.co.za – and Facebook page (www.facebook.com/silicosissettlement) will be updated regularly with relevant information.

Source: Silicosis Settlement

However, following the recent settlement, claimants will receive much more than these amounts, with the gold miners having set aside about R5.20-billion to be paid in compensation to the mineworkers through the trust. The miners have also agreed to contribute R845-million over the life of the trust for administration expenses.

This settlement is the second major occupational lung disease settlement in the South African gold mining industry in two years. In March 2016, Anglo American South Africa and AngloGold Ashanti reached a landmark settlement with 4 000 claimants who had contracted silicosis and silicotuberculosis and sued the mining majors accordingly. Anglo American South Africa and AngloGold Ashanti agreed to pay R454-million into another trust, the Qhubeka Trust, which would be distributed to qualifying claimants.

South Africa's high silicosis rate can be attributed to the historically labour-intensive mining methods prevalent in the gold mining industry. Owing to the extreme depths and narrowness of the country's gold-bearing reefs, it is difficult for gold producers to implement mechanised mining techniques.

As a result, mining houses are working diligently to implement dust-suppression techniques to minimise mineworkers' exposure to silica dust. These include the watering down of working spaces and using bonding agents, atomising sprays and haulage sprays that work to reduce the amount of dust generated underground.

This combined effort on the part of gold producers has resulted in a reduction in dust loads across the country's gold mines from 0.28 mg/m^3 to 0.10 g/m^3 since 2012, which is in line with the Mine Health and Safety Council's challenge to all gold mining companies to achieve a 95% exposure level target of 0.05 mg/m^3 for respirable crystalline silica by 2024.

ILLEGAL MINING

While illegal mining is a challenge that faces all sectors in South Africa's mining industry, including the chrome, diamond and coal sectors, the gold sector has been the most adversely impacted on by the problem. This can be attributed to the high value of gold, the prevalence of abandoned old gold mining areas in the country, and buyers who are willing to pay for illegally acquired gold.

According to professional services network PwC, illegal mining costs South Africa more than R7-billion a year, which is equal to the revenue generated from about 430 000 oz of gold. However, the scourge is prevalent not only in South Africa, but also across the rest of sub-Saharan Africa, with AngloGold Ashanti reporting that, out of all its Africa-based operations, the Obuasi mine, in Ghana, is most affected by illegal mining.

PwC attributes illegal mining to the poverty and unemployment plaguing the continent, with many retrenched mineworkers from South Africa and its neighbouring countries desperate to provide for their dependants. According to the MCSA, 70% of the illegal miners in South Africa, also known as 'zama-zamas', are undocumented foreign nationals.

To tackle the issue of illegal mining, the MCSA's Standing Committee on Security has emphasised the need for mining houses, the Department of Mineral Resources and the South African Police Service to work together to fight the scourge at every level – from the individuals operating underground to the syndicates that pay them.

PwC further points out that it is also not uncommon for illegal mining syndicates to pay employed mineworkers to transport food and other essentials underground, enabling zama-zamas to work for long periods underground without coming to the surface.

From a producer perspective, Sibanye-Stillwater said in February 2018 that it had arrested nearly 1 400 illegal miners at its South African gold shafts in 2017. It claims that the companywide blitz has almost eradicated the practice at its mines, with the help of the closure of the Gauteng-based Cooke operations in October 2017, which has been the epicentre of illegal mining activity plaguing the company and where almost 800 arrests were made in 2017. Sibanye-Stillwater CEO Neal Froneman launched the company's 'Zero Zama' initiative in 2017, vowing to clear illegal miners from Sibanye's shafts by January 2018. According to breaking news source Reuters, the gold miner spent about R300-million on biometric entry control systems at its gold mines in 2017 and will spend the same in 2018.

Meanwhile, AngloGold Ashanti also reported in February that it would spend up to $500-million to mechanise its Obuasi mine, in Ghana, which was invaded by thousands of illegal miners in 2017 and rendered worthless. The miners had to be removed by military force, prompting AngloGold to reopen the mine as an automated operation following a feasibility study.

As an alternative solution, analysts have suggested legalising artisanal gold mining in South Africa, as has been done for some illegal miners operating in the diamond industry. In June 2018, Deputy Mineral Resources Minister Godfrey Oliphant issued mining permits to hundreds of artisanal and illegal diamond miners. In announcing the department's decision to legitimise the former illegal miners, Oliphant pointed out that issuing mining permits to the 'zama-zamas' would enable them to trade diamonds in the formal market, translating into a many-fold increase in the prices they would fetch for their diamonds.

Addressing delegates during a mining seminar at Sustainability Week 2018 in June, mining analyst David van Wyk described artisanal miners as entrepreneurs, adding that their operations could be described as survivalist.

He pointed out that hundreds of thousands of South Africans depended on the work of artisanal miners and that the country needed to transition from large-scale industrial mining to small-scale mining that was "orderly, safe and sensible". He suggested that a central buying agency be established, enabling the small operations to sell gold at market value and assisting with the creation of a formal supply chain that involved near-mining communities, thereby creating a positive ripple effect in terms of small enterprise development at community level.

While Oliphant agreed that legalising artisanal mining was a serious alternative to illegal mining that was worthy of consideration, he pointed out in an address at the Junior Indaba, also held in June, that legitimising illegal mining in the gold industry – which involves deep, dangerous and often abandoned mines – would be a significant challenge and more complex than legitimising surface diamond miners in Kimberley.

SAFETY ISSUES

Fatal work-related incidents across South Africa's gold mines over the past year have become a major cause for concern, with South African President Cyril Ramaphosa declaring in July 2018 that the country would tighten its mine safety regulations to hold mine operators accountable for accidental deaths in the industry. According to Ramaphosa, by July 17, 2018, 54 miners had been killed in South Africa's mines. This follows a spike in mine deaths in 2017 to more than 80, from 73 in 2016, ending nine consecutive years of falling fatalities in the country.

While safety issues have been prevalent across all mining sectors, there has been a spate of deaths in recent months at the country's gold mines, in particular owing to the depths of these operations and their vulnerability to seismic events. Pressure from billions of tons of overlying rocks results in tremors as gold is extracted from narrow seams, putting the country's labour-intensive industry close to the limits of human endeavour, according to Gold Fields CEO Nick Holland. "This is not some earthquake that just happens, mining causes seismicity, so it's us," he has noted. With 21 people killed at Sibanye-Stillwater's gold mines in the first six months of 2018, the JSE- and NYSE-listed mining major accounts for nearly half of the fatalities that have occurred in the South African mining industry this year.

Taking responsibility for this, Sibanye-Stillwater CEO Neal Froneman announced in July that the company

Mine modernisation

Contrary to the expectation that it would move towards employing a higher number of skilled personnel to catalyse modernisation and mechanisation targets, the South African mining industry has backtracked, employing a significant number of unskilled personnel instead, according to a report compiled by Africa-focused research and analysis organisation In On Africa and human resource advisory firm Managing Transformation Solutions (MTS Holdings).

The 'Mining Trends Report 2018' was released in June 2018 to highlight the effectiveness of education and training in the local mining sector. The sample analysed comprises more than 12 000 people from more than 45 mining and core contractor companies.

A general decline in the local mining industry has been blamed on the slow adoption of mechanised mining methods and the reluctance to extensively modernise operations using technologies such as automation, artificial intelligence (AI) and remote control.

The move away from upskilling mining personnel and relying instead on a greater number of unskilled and low-skilled personnel contrasts with a global call for greater emphasis on upskilling workforces as the Fourth Industrial Revolution, or Industry 4.0, gains traction.

A major component of Industry 4.0 involves mechanisation, modernisation and digitalisation, with machines and AI the driving force behind highly efficient and safer methods for industry, mining, processing and manufacturing.

Any form of modernisation would require a larger number of mining personnel to be highly skilled to operate and maintain intelligent machinery, which, in turn, will likely be deployed in deeper, hotter and more unsafe depths to find previously unattainable orebodies.

With a paradigm shift in terms of how operations are conducted comes a shift in how personnel work and are trained. Minerals Council South Africa (MCSA) skills development head Mustak Ally points out that, previously, the basic requirements for entering the mining industry were "gross motor skills", but what is required currently is well developed fine motor skills.

However, he also points out that it might prove difficult to teach some of the older generation of miners fine motor skills, which could be done through, for instance, playing video games.

Many commentators in the mining industry have emphasised that it stands to benefit much from mechanisation and modernisation, with machines taking over dangerous tasks and removing people from labour-intensive and unsafe conditions. This would significantly improve safety for miners and mitigate the high number of injuries and workplace-induced illnesses.

The report states that a greater number of people who have a higher degree of knowledge and skills would need to enter the industry to catalyse a new wave of industrial growth, which would seemingly also require the mining industry to follow suit in terms of employing such people and upskilling existing personnel to ensure a new prosperous, more efficient and safer local mining industry.

Low-skills concentration

However, the report notes that, within its control group, a significantly greater number of unskilled or low-skilled people have been employed. This is evident through the number of general workers increasing from 7% in 2012 to 21% in 2017.

General workers also occupy the number one position in the top ten core mining positions at local mines, epitomising the greater employment of unskilled personnel. The other core mining positions in 2017 were winch drivers (18%), rigid dump truck operators (15%), dump truck operators (11%), team leaders (8%), process operators (8%), learners (6%), artisans (5%), boilermakers (4%) and drill rig operators (4%).

These positions also accounted for 40% of all mining staff in 2017, a vast increase from the 27% noted in 2012.

MTS Holdings CEO Maritha Erasmus describes the increase in the number of general workers as "completely unexpected" because the consensus would be that, as mines become more modernised, so would the employment of a more skilled workforce.

She also points out the relevance and importance of the mining sector in terms of being a key employer of vulnerable groups of people, and failure to upskill vulnerable people reflects poorly on expanding the country's skills set.

In 2012, the top core mining position was that of a rigid dump truck operator, with 22% representation, but this dropped to third place in 2017, with 15% representation.

continued on page 13

continued from page 12

The report also reveals that, during the 2012 to 2017 review period, representation of the top ten core mining positions has shown a significant increase from 18% in 2012 to 40% in 2017, suggesting that a concentration of skills in core mining positions has occurred.

In terms of education development, enrolment for general education and training (GET) for men decreased from 22% in 2012 to 14% in 2017, while enrolment for further education and training (FET) increased from 70% to 75% during the period. Higher education and training (HET) enrolment also increased from 8% to 11%.

For women, GET enrolment increased from 7% in 2012 to 9% in 2017, while FET enrolment shrank from 83% to 77% and HET enrolment expanded from 11% to 14%.

Women and youth representation

The number of women working at mines increased by 3% from 2012 to 20% overall in 2017.

In terms of women in the top ten core mining positions, there has been an increase of 3%, from 11% in 2012 to 14% in 2017.

However, when considering historical positions in which women were most likely to be employed, Erasmus says representation has actually decreased. In 2017, women were clustered into low-skilled positions such as general workers. Ninety-five per cent of all women in core positions were employed in the top ten core positions in 2017, with few women employed in higher-level, management-type positions.

In order of representation, the top ten core positions for women in the report sample are general workers (20%), learners (13%), winch drivers (12%), assistant drill rig operators (11%), blasting assistants (10%), process operators (9%), process attendants (8%), dump truck operators (7%), weigh bridge clerks (6%) and rigid dump truck operators (4%).

However, although women representation has increased, the volumes of younger people employed have declined, from 66% in 2012 to 60% in 2017.

The mining industry also needs to address what the report describes as the stagnation of progressing equal gender representation and distribution, as the promotion of women overall within the sample increased from 17% in 2012 to only 20% in 2017. Within the top ten core positions, women accounted for 11% of workers in 2012 and 14% in 2017. This trend needs to be addressed by increasing the appointment of women in other positions and their acquisition of more technical skills competences.

Going forward

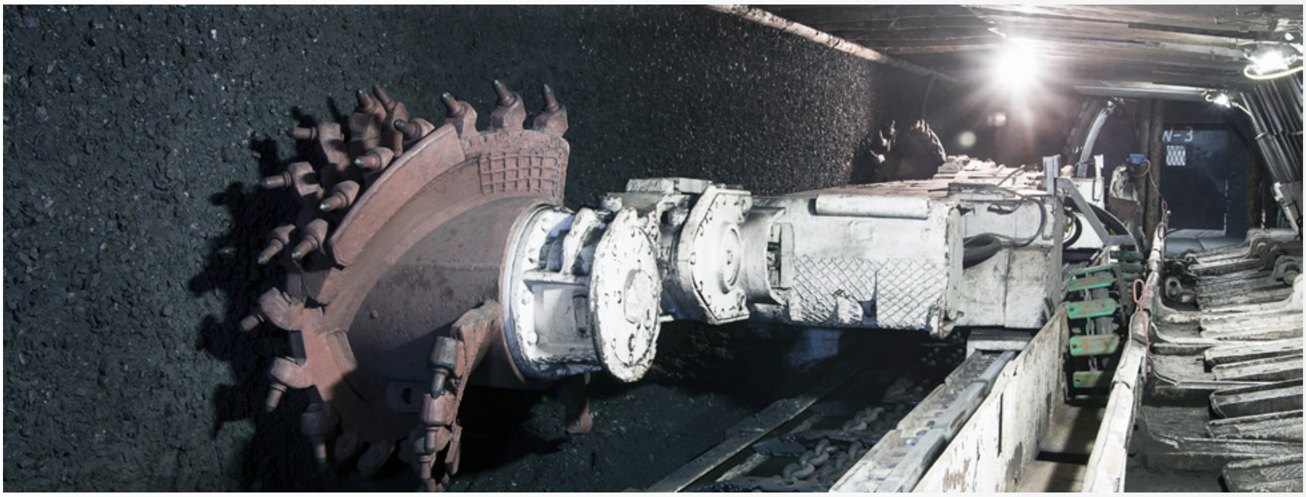
The report states that, for the mining industry to progress and modernise, it needs to employ more workers who have higher qualifications and more skills to enable the sector to transition away from its current labour-intensive operations.

Ally also points out that the MCSA is assessing employment equity data from recent years to gain a better understanding of which mining companies are modernising and how their workforce structures are evolving in line with new operating structures.

He explains that the council is also assessing the rate of change at the various job-category levels: "If we understand the rate of change in the specific job categories . . . we will then be able to determine which sectors are modernising faster than others and map what those organisational structures will look like."

This will, consequently, allow for a greater understanding of how such companies are evolving and in which Paterson levels of skills grading employment is taking place and where it is decreasing, he adds.

In this regard, more emphasis needs to be placed on upskilling existing employees, although the report also states that they should be employing people with higher levels of education and skills faster than the current rate.



Picture by Jes Studio

Source: *Mining Weekly*

had committed to improve the safety at its operations, with the implementation of a 12-point plan to address safety concerns.

As part of this plan, Sibanye-Stillwater hosted a multistakeholder summit late in May 2018 to address industrywide concerns about health and safety. Stakeholders at the summit, which included trade unions, the Department of Mineral Resources and senior management from Sibanye-Stillwater, agreed to a pledge, establishing the scope and spirit in which they would work further towards achieving zero harm at South Africa's gold mines.

The gold miner has also funded an independent study by a University of the Witwatersrand academic – which aims to develop practical recommendations for enhancing risk management effectiveness at Sibanye's operations – and has appointed mine safety expert, Dr Kobus de Jager corporate head of safety. He will review the company's safety management systems and processes.

With the company under additional pressure from unions, government and the media, Froneman pointed out soon after seven miners died at the company's Driefontein operation in May, that earthquakes and similar seismic events were impossible to predict and were "a fact of life" for deep-level operations.

Nevertheless, US law firm Bernstein Liebhard filed a class action lawsuit against Sibanye-Stillwater in June 2018 on behalf of shareholders to recover losses suffered after the spate of deaths at the company's mines. The seismic event at Driefontein contributed to an estimated 28% fall in the company's share price in June 2018.

In response, Sibanye-Stillwater noted that, if any claims were filed as part of the class action law suit, the company would "vigorously defend itself".

PROSPECTS

According to MCSA estimates, South Africa has 400-million tonnes of unmined, unrecovered gold ore, which is more gold in the ground than has been mined in the past 100 years. There are also an additional 160-million tonnes of high-grade gold ore locked in underground support systems, accessible from current infrastructure. At least double this amount could be mined with the appropriate technologies, providing the South African gold mining industry with an opportunity to modernise its operations. Without this shift in mining methods, the country's unrecovered gold would remain so, with research suggesting a loss of 200 000 jobs by 2025.

Addressing delegates at the 2018 Investing in African Mining Indaba, which took place in Cape Town in February, Sibanye-Stillwater CEO Neal Froneman warned that the gold industry would start dissipating if it did not take advantage of the opportunities that were presenting themselves to stakeholders.

New mining fund raising R750-million to co-finance ancillary mine projects

In an economic environment of tight capital allocation and bank pull back from mining finance, the new tax-incentivised CCP 12J Mining Fund is endeavouring to raise R750-million for co-investment in ancillary project opportunities on existing mine sites.

On the list of targeted project opportunities are tailings retreatment projects, mine dump retreatment projects and brownfield expansions, with mining companies standing to benefit from co-investment in sustaining capital projects.

The opportunity for investors is to write off 100% of their investment in the CCP 12J Fund and share in expected internal rates of return of 20% and more.

Investors will be investing alongside CCP 12J's technical partner DRA, a R150-million principal funder, and Stockdale Street, the private equity fund manager of Mary Oppenheimer's family interests.

The directors of CCP 12J are former BHP corporate finance head Michael Golding, DRA CFO Andrew Naude, former Aquarius Platinum CEO Jean Nel, BHP co-integrator Tom Borman, TWP Consulting co-founder Nigel Townshend and former Alexander Forbes, Liberty Life and Stanlib executive Mike Clare.

While the tax incentive enshrined in Section 12J of the Income Tax Act is significant, any fund needs the tax incentive to attract the retail investor, as well as a compelling investment case and CCP 12J has identified an investment gap that can work, even in mining's current negative regulatory environment.

Source: *Mining Weekly*

In the South African context, modernisation refers to the optimal extraction and beneficiation of the country's natural resources without causing harm topeople and planet. According to Froneman, modernising the gold industry would benefit not only mining houses, but also local communities and the national economy through local procurement. It would mean that gold mining houses would become preferred employers of highly skilled people and would create appropriate risk-adjusted returns for investors.

Moreover, modernisation could create significantly more sustainable jobs and would offset the output decline currently plaguing the industry, with research suggesting that mechanisation extends operations' life-of-mine (LoM), preserves mining equipment and improves health and safety, in addition to making it amenable for companies to mine lower-grade orebodies and deeper reserves and to implement round-the-clock operations.

Froneman said he remained "extremely optimistic" about the future of the gold industry in South Africa. "We as the collective custodians of the South African mining industry in business, government and labour have to choose and choose quickly on whether we want to see the South African gold industry thriving for another 50 years or are we content to let it peter out and die."

Also addressing delegates at the Mining Indaba in February, at a function that marked the thirtieth anniversary of the World Gold Council, DRDGold CEO Niël Pretorius noted that, for companies to succeed in South Africa's gold mining industry, they needed to accept that the industry was far less attractive now than it was three decades ago. He noted that companies with gold assets in South Africa needed to make peace with the stark realities facing the industry and that multinationals who were unhappy with their assets in South Africa should not be holding onto them. He added that retaining these assets was unfair to shareholders and to the people of South Africa and that the assets should be sold to companies that have a plan for them.

Meanwhile, Mineral Resources Minister Gwede Mantashe issued a new draft Mining Charter in June 2018 for public comment, after a version published in June 2017 by his predecessor, Mosebenzi Zwane, drew strong opposition and prompted the MCSA to initiate legislative contestation. The public consultation process was extended to the end of August 2018.

However, AngloGold Ashanti chairperson Sipho Pityana noted in an exclusive interview with daily news source Bloomberg in July that if the latest iteration of the Mining Charter was implemented, it would drive away new investment and cripple the country's mining sector. Pityana noted that the new Mining Charter was aimed at sharing the benefits of the country's mineral wealth more equally among South Africans, but did not provide solutions for the industry's challenges, making it difficult for companies to buy and sell assets. He added that, while mining companies supported government's wealth-distribution goals, the current proposals would deter investment.

These proposals include a requirement for holders of new mining rights to give their employees and communities free-carried interests of 5% each. South African producers also objected to a requirement that they should pay workers and communities 1% of the companies' earnings before interest, taxes, depreciation and amortisation in the years that a regular dividend is not declared.

Pityana told Bloomberg that Mantashe should not have used Zwane's version of the Mining Charter as a template for the new version and that he should have started afresh. Nevertheless, Pityana said the new version was still an improvement on the previous one and that he was certain a consensus would be reached on the final version of the new charter.

Law firm Hogan Lovells partner and mining head Warren Beech, meanwhile, is optimistic about the new Mining Charter, which should be finalised by September or October 2018. Beech joined industry stakeholders at the two-day Mining Summit in July – held at the request of Mantashe – which provided a platform for stakeholders, including mining companies, unions and community groups, to raise their concerns on all aspects of the revised charter.

Though there were concerns that the summit would simply be a talk shop, Beech has said that what resulted from it has rebuilt the relationship between government and industry in terms of the Mining Charter. "I think we're in a different scenario – one that is more positive," he said.

Meanwhile, the mining sector's quest for policy certainty will receive a huge boost, if Mantashe's proposal to withdraw the Mineral and Petroleum Resources Development Act (MPRDA) Amendment Bill is implemented.

Mantashe told Parliament's Mineral Resources Portfolio Committee in August 2018 that the MPRDA Amendment Bill, which has been stuck in the National Council of Provinces for months, should be withdrawn.

The Amendment Bill has created uncertainty in the mining sector since 2013, and its withdrawal, as well as the proposed finalisation of the Mining Charter before the end of the year, will remove a huge obstacle preventing growth in the sector.

The MCSA has said that the withdrawal of the Bill appears to be sensible, given the underlying reasons for the current delays in finalising the Bill.

Intensive and useful engagements involving the MCSA and others have been conducted over a number of years with successive Ministers towards achieving consensus on a range of issues covered in the Bill.

However, there are a number of constitutional concerns – substantive and procedural – that remain unresolved. In the absence of resolving these concerns, withdrawal of the Bill seems to be a more appropriate option the MCSA has said.

"The Minerals Council is hopeful that, should Minister Mantashe choose at some stage to introduce a new Amendment Bill, it will take proper account of the areas of consensus reached during the exhaustive discussions previously held," it notes.

Picture by Creamer Media

The global market

SUPPLY

According to Thomson Reuters' GFMS Gold Survey, published in May 2018, the total global supply of gold dropped slightly from 4 590 t in 2016 to 4 415 t in 2017, with mine production accounting for 3 251 t in 2016 and 3 247 t in 2017, inching lower year-on-year owing to environmental concerns in China and an offensive on illegal mining in Indonesia.

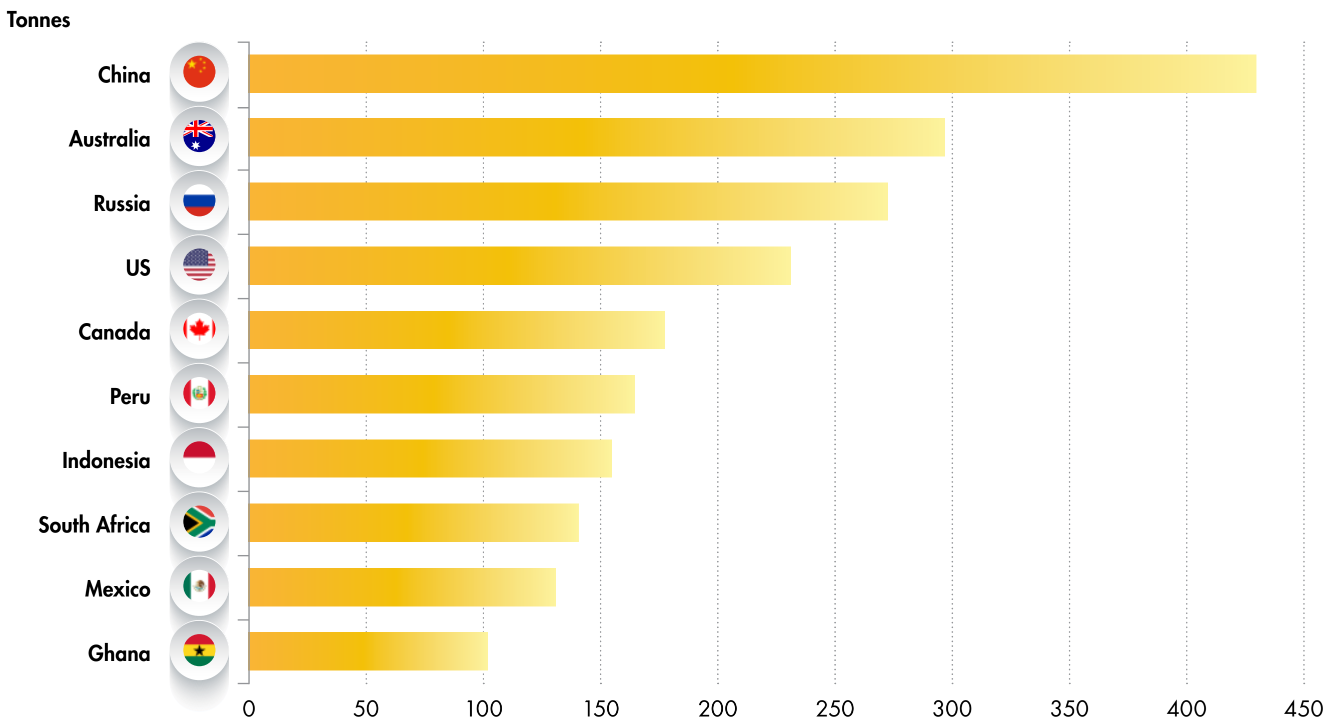
As a result, Asia's gold mining output declined by 49 t, while production in South America dropped by 15 t, owing to lower production volumes from Chile, Colombia and Peru. Russian production, however, showed the biggest increase, supported by a ramp-up at the country's Olimpiada mine, while gold output from North America increased by 19 t owing to new projects and higher grades.

The world's most prolific gold producer is China, which produced 426.1 t in 2017 (2016: 453.5 t). China is followed by Australia (2017: 295 t; 2016: 290.20), Russia (2017: 270.70 t; 2016: 253.60), the US (2017: 230 t; 2016: 222 t), Canada (2017: 175.80 t; 2016: 154 t), Peru (2017: 162.30 t; 2016: 174.90) and Indonesia (2017: 154.30 t; 2016: 174.90). South Africa ranks at number eight on the world's list of top gold producers (2017: 139.90 t; 2016: 145.70), and is followed by Mexico (2017: 130.50 t; 133.10 t) and Ghana (2017: 101.70 t; 2016: 94.10).

Gold mining costs increased by about 4% to $672/oz (2016: $649/oz), while all-in sustaining costs increased by about 5% to $878/oz (2016: $837/oz), driven higher by increased production costs in South Africa, where costs increased by 18% to an average of $1 010/oz (2016: $857/oz). Thomson Reuters has acknowledged that, while there have been some business improvements at certain South African operations, most local producers have faced significant headwinds – including higher fuel costs, lower grades and currency fluctuations – that have offset any cost-saving initiatives.

Meanwhile, the global producer hedge book contracted by an estimated 16% year-on-year to 211 t (2016: 252 t). Hedging enables miners to sell future output at fixed prices to secure loans and protect margins. It came under scrutiny in the first decade of this century when AngloGold and Ashanti Goldfields,

Top ten gold producing countries in 2017



Source: Forbes.com/Thomson Reuters GFMS 2017 Gold Survey (May 2018) which later merged to become AngloGold Ashanti, faced financial issues because of it. Russian gold producer Polyus is the world's largest hedgebook holder and exercised a total of 25 t of gold in barrier options in 2017.

The global scrap supply of gold declined by 7% in 2017 to 1 210 t (2016: 1 306 t), the first yearly decline since 2014. Decline was widespread in this sector owing to a stable dollar gold price and stronger domestic currencies, which contained gold prices.

While Asia dominates total gold scrap supply, with more than 55% of the world's total, there was a 12% drop in scrap supply in the region in 2017, owing to an acute decline in India. This was offset by Japan, however, which boosted unofficial scrap imports by 16% year-on-year. In Europe, scrap supply eased by 4%, as euro-dominated gold prices were unusually stable. This is with the exception of the UK, where scrap flows increased to a five-year high. In North America, however, scrap received declined by 4% to a 12-year low, owing to improvement in the region's economy.

2017 Top ten gold producers

Rank			Output (t)	
2017	2016		2016	2017
1	1	Barrick Gold	171.60	165.60
2	2	Newmont Mining[1]	163.30	163.80
3	3	AngloGold Ashanti	112.80	116.80
4	5	Kinross Gold[2]	84.20	81
5	4	Goldcorp	89.40	79.90
6	7	Navoi MMC[2]	75.50	77
7	6	Newcrest Mining	76.70	71.10
8	9	PJSC Polyus	61.20	67.20
9	8	Gold Fields[2]	63	62.60
10	10	Agnico Eagle	51.70	53.30

Source: Thomson Reuters GFMS 2017 Gold Survey (May 2018)
[1]Includes production from Duketon until March 10, 2016, and Batu Hijau until November 2, 2016
[2]Estimate

DEMAND

Thomson Reuters reports that physical global demand for gold rose by 9.64% from 3 630 t in 2016 to 3 988 t in 2017, with a physical surplus of 427 t. This was the first yearly increase since 2013, buoyed by a 13% increase in jewellery fabrication, the largest segment for gold demand, to 2 214 t (2016: 1 953.30 t). This followed a 15% drop in jewellery demand in 2016, which improved in 2017 owing to India's consumption surging 58% year-on-year from 454.40 t to 718.10 t, as a result of the market stocking inventory ahead of a new goods and services tax implemented midyear. Stabilisation in Chinese demand further contributed to the increase in physical gold demand in 2017, as demand in the Asian country decreased by 3% to 991 t – the smallest demand decrease since the market surged in 2013, and signalling that the market has now broadly stabilised.

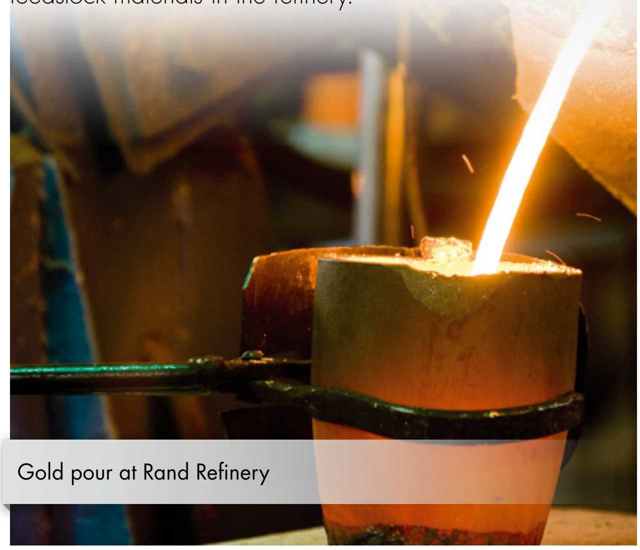
The Rand Refinery

Established by the Chamber of Mines of South Africa, now known as the Minerals Council South Africa, in 1920, the Rand Refinery is the largest integrated single-site precious metals refining and smelting complex in the world.

The refinery mints the iconic Krugerrand, which has made it into the world's most traded bullion coin of all time, surpassing its closest competitors, the Canadian Maple Leaf and the US Eagle.

Using the once-through Wohlwill electrolytic refining process the refinery achieves a 99.99% purity for gold and silver.

With the introduction of wet chemical processes, Rand Refinery has the capability to process a variety of complex and diverse feedstock materials in the refinery.

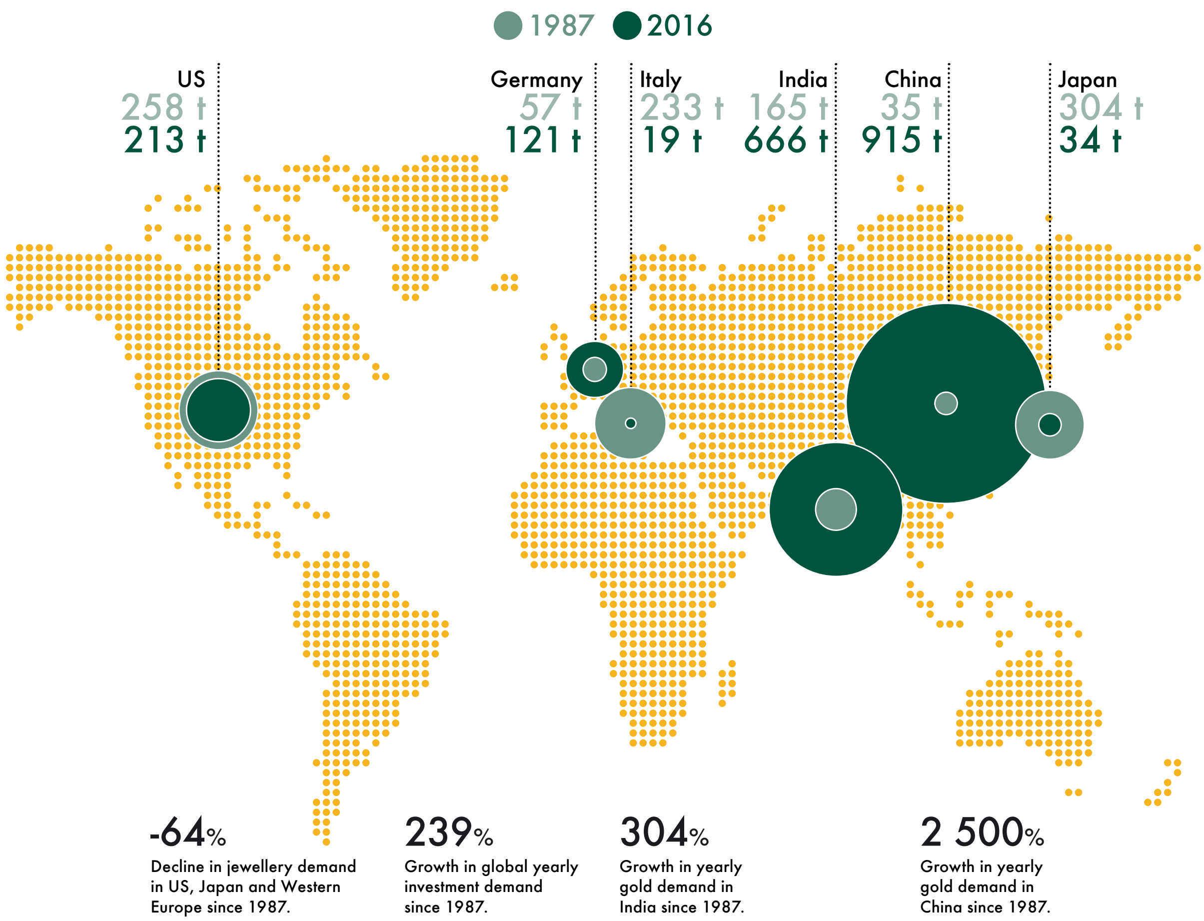


Gold pour at Rand Refinery

Picture by Creamer Media

Compiled from *Mining Weekly* and Rand Refinery

Geographic centres of demand: 1987 vs 2016 (t)



Source: WGC 2017 Annual Review (February 2017)

Fabrication demand was stronger across all regions in 2017, with the Middle East showing an increase of 4%, and Europe and North America showing a respective 2% and 1% increase year-on-year, though none could beat India's 58% surge, which boosted overall gold consumption for the year. This was positive after the previous year's decline, which came off the back of several regulatory issues. Nevertheless, demand from this sector remained at more than 500 t, or 18%, below 2013 levels, despite the healthy 13% increase. It was slightly offset by currency weakness, counteracted by a relatively stable average gold price and a more robust economic footing. While there was a 2% decline in East Asia – the fourth consecutive dip and the lowest level since 2012 – the 3% decline in Chinese fabrication demand was the primary culprit that drove down gold consumption.

Industrial demand also returned to growth, for the first time in seven years, increasing 4% to 380 t, owing to a stronger global economic environment. Total identifiable investment, however, which includes physical bar and coin investments as well as exchange-traded fund (ETF) movements, resulted in a 24% decrease year-on-year, reaching 1 205 t, as higher ETF flows – which saw a 9% year-on-year increase to 2 262 t – were offset by a fall in coin and bar investments, owing to a lacklustre demand for coins.

GOLD PRICE

The price of gold remained steady in 2017, averaging $1 257/oz, which was virtually unchanged from the average price a year earlier. According to Australia's

Office of the Chief Economist's first-quarter Resources & Energy Quarterly (REQ), published in March 2018, this could be attributed to the market demand for gold as a safe haven asset, as the market weathered three US Federal Reserve interest rate hikes in 2017, among other actions by the bank, which placed pressure on the gold price. In addition, geopolitical concerns about North Korea's Nuclear Missile programme, compounded by political developents in the US, prompted support for gold as a safe-haven asset.

However, leading up to the Federal Open Market Committee meeting in December, when the US Federal Reserve raised interest rates for the third time in a move widely anticipated by the markets, gold prices came under renewed pressure amid dollar strength, slipping to a near five-month low of $1 241/oz. Nevertheless, by the second half of December, the yellow metal had recovered most of its earlier losses, buoyed by a then weaker US dollar. Still, investors' interest in gold remained lacklustre in 2017, with Western investors reducing their gold ETF holdings by five tonnes in the fourth quarter. According to information services firm Thomson Reuters' GFMS Gold Survey 2018, this could be attributed to improved economic sentiment, sustained equity market strength and growing risk appetite.

However, Australia's Office of the Chief Economist reported in its second-quarter REQ, published in June 2018, that it expected gold to average $1 352/oz in 2018 – an 8% increase on the average gold price in 2017. The gold price should improve to an average $1 380/oz in 2019, although it has forecast that steadier US bond prices will push the price down again by 2020 to an average $1 320/oz.

The gold price rose steadily – by more than 4% – in the first half of 2018, supported by a weaker US dollar and mounting trade tensions between the US and China, as well as an increase in investor scepticism towards equities.

Nonetheless, prices fell by the same percentage towards the end of the half-year in June to below the $1 310/oz to $1 360/oz range, owing to constrained demand in strong economic growth regions and the continued preference for equities by some investors. Other factors included rising US Treasury ten-year bond yields and the easing of geopolitical tensions between the US and North Korea. The downward price trend continued into July as the price of gold dropped by almost an additional percentage point.

Gold ingots

Picture by Creamer Media

Even so, Australia's Office of the Chief Economist's second-quarter REQ expects gold to perform well in the second half of 2018 and over the next two years, with global political uncertainty – such as trade tensions between the US and China and geopolitical tensions in the Middle East – driving investment in bars and bullion-backed investment funds.

Moreover, sustained pressure in the US economy will likely lead to a rise in inflation and, subsequently, gold demand (with investors seeking an inflation hedge). Rising inflation is also likely to steer US Treasury bond prices down.

After an eventful first half of 2018, the World Gold Council (WGC) is also optimistic about the second half of 2018. It noted in its midyear outlook, published in July, that it expected positive, but uneven, global economic growth, compounded by the threat of trade wars and its impact on currency. Further impacting on gold's perfomance, the WGC highlighted rising inflation, coupled with an inverted yield curve.

Nevertheless, the council believes there are reasons to be optimistic about the gold price in the near term. This includes wealth and economic expansion across certain regions, which will support jewellery, technology and long-term savings, as well as market risk and uncertainty, which will boost investment demand for gold as a safe haven.

Major mining companies with operations in South Africa

ANGLOGOLD ASHANTI

CEO Kelvin Dushnisky/Chairperson Sipho Pityana			
	Six months ended June 2018	Year ended December 2017	Year ended December 2016
Gold income ($)	1.92-billion	4.36-billion	4.09-billion
Profit/(loss) for the year ($)	119-million	(171-million)	80-million
Gold production (oz)	1.63-million	3.76-million	3.63-million
All-in sustaining cost ($/oz)	1 020	1 054	986

Compiled from AngloGold Ashanti's Integrated Report 2017 (February 2018) and June 2018 interim report

Headquartered in Johannesburg, South Africa, AngloGold Ashanti is an international gold miner with a diverse, high-quality portfolio of operations and projects, including 14 mines and three exploration projects across South Africa, continental Africa, Australasia and the Americas. It also has a mineral resource base of 208.20-million ounces, as at December 2017 and an ore reserve of 49.50-million ounces, as at December 2017. Achieving production guidance for the fifth consecutive year, AngloGold produced 3.76-million ounces in 2017, a 4% increase on the 3.63-million ounces recorded in 2016.

The group's South African mines contributed 24%, or 903 000 oz (2016: 967 000 oz) of the company's overall production for the year, a 7% decrease year-on-year as tonnes mined were affected by a poor start-up to the year at all operations. The ounces of gold produced from operations in the rest of Africa amounted to 39% of overall production, or 1.45-million ounces (2016: 1.32-million ounces). The group's Australasian operations contributed 15%, or 559 000 oz (2016: 520 000 oz), while operations in the Americas contributed the remaining 22%, or 840 000 oz (2016: 820 000 oz).

The group's all-in sustaining costs (AISC) were at the bottom of the guidance range at $1 054/oz, a 7% increase year-on-year (2016: $986/oz), owing to higher planned sustaining capital expenditure (capex) and stronger local currencies. The AISC of AngloGold's South African operations increased by 15% from $1 081/oz in 2016 to $1 245/oz in 2017, making it uneconomical to continue mining at some of the group's local operations.

This, in the context of AngloGold's strategy over the past five years to manage costs and keep its balance sheet robust enough to handle any market environment, informed the company's decision, in June 2017, to restructure its South African operations.

Former AngloGold CEO Srinivasan Venkatakrishnan informed shareholders at the time that the company had entered into a consultation process with employees ahead of the restructure, which aimed to safely return the business to profitability while mitigating job loss.

Venkatakrishnan steps down as AngloGold CEO, Dushnisky steps in

Gold miner AngloGold Ashanti CEO Srinivasan Venkatakrishnan announced in April 2018 that he would step down as CEO of AngloGold Ashanti on August 31 to take up the CEO position at diversified miner Vedanta Resources.

In July the gold producer appointed outgoing Barrick Gold president Kelvin Dushnisky CEO and executive director, effective September 1.

Source: *Mining Weekly*

By the end of February 2018, AngloGold had concluded the sale of its Vaal River mining operations, including the Free State-based Moab Khotsong mine and the Gauteng-based Kopanang mine, which share a milling and treatment circuit. It had also closed TauTona gold mine, in Gauteng, incorporating Savuka mine, leaving the gold major with only two operations in South Africa, comprising 13% of AngloGold's portfolio – the Gauteng-based Mponeng mine, the deepest mine in the world, and the Mine Waste Solutions (MWS) surface operation.

AngloGold chairperson Sipho Pityana mentioned in the company's 2017 integrated results presentation in March 2018 that these restructuring steps were all difficult decisions, owing to the thousands of jobs that would be affected. However, it was critical to stop unsustainable losses and cash outflows, and, owing to the asset sales, job loss was thankfully minimal.

Restructuring process

The company announced the sale of its Vaal river operations in October 2017. Moab Khotsong, a single shaft system that mines to a depth of 3.10 km, together

AngloGold increases half-year earnings, cash flow

Solid production and cost performances helped gold mining company AngloGold Ashanti to deliver higher earnings and cash flow for the six months ended June 30, 2018.

The increase in headline earnings of $85-million, compared with a loss of $93-million in the first half of 2017 for the company, which is forecasting 2018 production at the top end of its guided range, and costs at the bottom end.

Total production for the group was 1.629-million ounces at a total cash cost of $823/oz. All-in sustaining costs (AISC) for this set of assets fell 5% to $1 020/oz, with international operations achieving a 4% year-on-year reduction in AISC to $948/oz during the first half of 2018, from $988/oz during the first half of 2017.

"We continued to improve our portfolio, strengthen our balance sheet and increase productivity, all of which are the cornerstones of our strategy to improve free cash flow and returns over the long term," outgoing AngloGold CEO Srinivasan Venkatakrishnan said.

On September 1, Kelvin Dushnisky, the current president of Barrick Gold Corporation, took over as CEO of AngloGold.

Positive free cash flow of $19-million was recorded during the second quarter of 2018, when the balance sheet also continued to improve, with debt down, liquidity up and near-dated bond maturities completely absent.

Net debt declined by 17% year-on-year to $1.786-billion from $2.151-billion at the same time last year. The ratio of net debt to earnings was 1.12 times, compared with 1.56 times, well below the covenant ratio of 3.5 times that applies under the revolving credit facilities.

Source: *Mining Weekly*

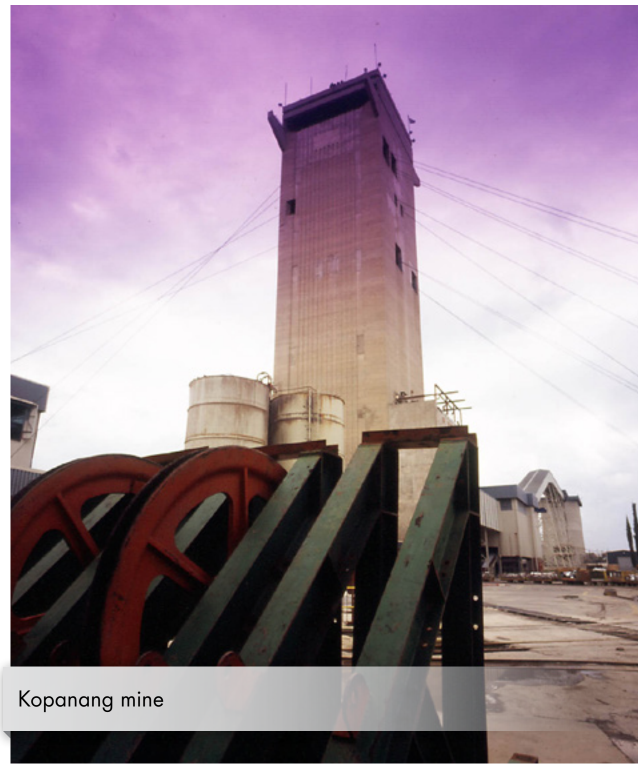
with related gold and uranium assets, were sold to Harmony Gold Mining Company for R300-million, saving the jobs of about 6 500 mineworkers. This transaction included the Great Noligwa mine, the company's interest in uranium calcining facility Nuclear Fuels Corporation of South Africa (or Nufcor) and the company's entire interest in the Margaret Water Company.

Venkat said at the time of the sale that the transaction was in line with the company's capital allocation strategy and its intention to improve its global portfolio "through projects that extend mine lives, enhance margins and provide quicker cash returns on investment". The company intends to use the proceeds of the sale to reduce debt and strengthen its balance sheet, allowing it the flexibility to fund other growth initiatives and development projects.

Meanwhile, AngloGold also sold Kopanang mine, together with the West Gold Plant and related infrastructure, to Hong Kong-headquartered Chinese capital management company Heaven-Sent SA Sunshine Investment Company (HSC) for R100-million, saving the jobs of about 3 500 mineworkers. The sale excluded the Kopanang gold plant and rock dump, which still belong to AngloGold. HSC is the majority shareholder (74%) of gold producer Village Main Reef, which operates the Tau Lekoa gold mine, in the Vaal river region.

Kopanang has a single-shaft system that reaches to a depth of 2.33 km. As the main exploiter of the Vaal reef, it produces gold as a primary product and uranium oxide as a by-product. The 36-year-old lossmaking mine was due to be placed on care and maintenance following AngloGold's June restructuring announcement, but remained operational owing to HSC's expression of interest.

Meanwhile, a Section 189 process for the closure of TauTona was completed by the beginning of 2018. The final blast at the mine took place in September 2017.



Kopanang mine

Operations

Compounded by a slow start to the year at all its South African operations, owing to safety related stoppages late in 2016, AngloGold's decision to cut production at the region's lossmaking operations in the third quarter of 2017 contributed to the 7% decrease in tonnes mined. Going forward, the company will be focused on driving productivity and other efficiency improvements at the remaining operations, the deep-level Mponeng, the world's deepest gold mine, and the Mine Waste Solutions (MWS) surface operation.

Mponeng is AngloGold's flagship operation. It exploits the Ventersdorp Contact Reef through a twin-shaft system at depths of between 2.80 km and 3.40 km below surface. Ore is treated and smelted at the mine's gold plant. MWS operates independently, processing slurry material reclaimed hydraulically from various tailings storage facilities.

Together with the mothballed TauTona mine, Mponeng comprises AngloGold's West Wits operations, which produced 315 000 oz (2016: 400 000 oz). Production at Mponeng decreased by 11.81% year-on-year from 254 000 oz in 2016 to 224 000 oz in 2017, mainly as a result of the planned mining of lower-grade areas, face-time constraints with mining occurring further away from shaft stations, and three separate seismicity-induced fatal accidents in the second half of 2017.

The mine's performance improved towards the end of the second quarter of the year and into the third quarter as a result of improved efficiencies. Mponeng's yield also improved in the fourth quarter of 2017, to an average of 8.54 g/t. Production was, however, offset by safety-related work stoppages following fatal accidents in late October and early November.

In the year, until orderly closure was implemented in September, TauTona's production totalled 91 000 oz (2016: 146 000 oz). The mine faced severe production challenges, including a depleted ore reserve and limited mining flexibility, compounded by operational inefficiencies and low productivity.

Production improved by 4% to 385 000 oz (2016: 280 000 oz) at the Vaal River operations – the sale of which was concluded on February 28, 2018. This was mostly owing to fewer safety-related disruptions and improved efficiencies at Moab Khotsong, which produced 294 000 oz (2016: 280 000 oz). There were, however, several safety-related stoppages at Kopanang, following fall-of-ground incidents in the fourth quarter of 2017. This impacted on production, which remained flat year-on-year at 91 000 oz (2016: 91 000 oz).

Production from AngloGold's surface operations in South Africa increased by 3% from 186 000 oz in 2016 to 192 000 oz in 2017, which could be attributed to an 18% production increase at MWS, which produced 109 000 oz in 2017.

Across the rest of the African continent, AngloGold Ashanti's mines include Kibali, in the Democratic Republic of Congo (DRC); Iduapriem and Obuasi, in Ghana; Siguiri, in Guinea; Morila and Sadiola, in Mali; and Geita mine, in Tanzania.

AngloGold owns 45% of Kibali with Randgold Resources (45%), which manages the mine, and DRC State-owned gold mining company Société Minière de Kilo-Moto (10%). Kibali is one of the largest mines of its kind in Africa and began underground mining in November 2017, resulting in a 1.50% increase in attributable production from 264 000 oz in 2016 to 268 000 oz in 2017.

Of the two Ghanaian mines, only Iduapriem contributed to overall production, producing 228 000 oz in 2017, a 6.50% increase year-on-year (2016: 214 000 oz).

Obuasi was placed on limited operations in 2014 and has been on care and maintenance since 2016, pending the start of the company's redevelopment project, for which a feasibility study has been completed. AngloGold envisages that the redevelopment project will transform Obuasi into a modern, mechanised underground mining operation. The company reported in February 2018 that it would spend up to $500-million to mechanise the mine, which was invaded by thousands of illegal miners in 2016 and 2017, rendering it worthless. The miners had to be removed by military force, prompting AngloGold to reopen the mine as an automated operation.

The company says redevelopment work is imminent as it has reached an agreement with the Ghana government about the project, which was ratified by Parliament in

July 2018. Later that month, AngloGold received environmental permits for the mine.

Meanwhile, attributable production from the 85%-owned Siguiri mine was 324 000 oz (2016: 259 000 oz), while the 40%-owned Morila mine produced 28 000 oz (2016: 22 000 oz) and 41%-owned Sadiola produced 63 000 oz (2016: 70 000 oz). The Guinea government owns the remaining 15% of Siguiri, while AngloGold owns Morila in partnership with Randgold Resources, which also owns 40%. The remaining 20% is owned by the government of Mali, which also owns 18% of Sadiola, a joint venture (JV) with Iamgold (41%).

Geita mine, one of AngloGold's flagship mines, produced 539 000 oz in 2017, a 10.22% increase on the 489 000 oz produced in 2016.

In Australia, the Tropicana and Sunrise Dam mines produced 321 000 oz (2016: 292 000 oz) and 238 000 oz (2016: 228 000 oz) respectively, while the Cerro Vanguardia mine, in Argentina, produced 283 000 oz (2016: 281 000 oz). The Mineração and Serra Grande mines, both in Brazil, produced 424 000 oz (2016: 407 000 oz) and 133 000 oz (2016: 132 000 oz) respectively.

Projects

AngloGold Ashanti remains focused on prioritising brownfield projects – and, to a lesser extent, greenfield projects – as opposed to expensive mergers and acquisitions. Consequently, the company has several projects in the pipeline to ensure that it continues to replenish and develop its resources, of which the largest and most visible project is the $500-million mechanisation of Obuasi.

In the South Africa region, AngloGold's capex dropped by 18% year-on-year from $182-million in 2016 to $150-million in 2017, owing to the suspension of unprofitable operations and the restructuring of the South African asset base. While sustaining capital was spent across all sites, the company's growth capital investment in the region was focused on Mponeng.

The company is investing $66-million in the flagship operation, of which $11-million is on extension project work and $55-million on nominal reserve development. Phase 1 of the extension, also known as Below 120 Level, aims to extend the life-of-mine (LoM) at Mponeng by providing access to deeper, higher-grade ore with the development of a decline access below the current secondary shaft. It will provide access to a substantial 12.50-million-ounce gold reserve within the already significant 50-million-ounce resource at Mponeng. AngloGold expects completion and full commissioning of Phase 1 by the end of 2018.

Access to deeper, higher-grade ore at Mponeng, which will help expand production by 10% in 2018, is scheduled to take place from midyear when the Below 120 Project first-phase decline system descends below the current secondary shaft.

Phase 2 of the extension, which is under evaluation, will involve deepening the secondary shaft to further extend the LoM beyond 2026. The feasibility study for this phase has resumed and is scheduled for completion by the end of 2018. It was interrupted at the end of May 2017 to allow for a geotechnical study to be completed, which would determine the most appropriate location of the relevant infrastructure.

In addition to Mponeng Phase 1, some of AngloGold's other short-term projects include the Siguiri hard rock project and a ramp-up at Kibali, which are also delivering production and margin growth, as well as mine life extension. In the medium term, the redevelopment of Obuasi will happen in addition to an openpit expansion at the Tropicana Long Island mine, which will deliver the next phase of improvements at the Australia-based operation.

In the long term, beyond 2020, AngloGold plans to deliver additional value from Columbia through a high-grade copper/gold development project with B2Gold at Quebradona; from Mali, through a sulphides project at Sadiola; and from South Africa, through the implementation of Phase 2 of the Mponeng expansion project.

AngloGold Ashanti's total capex in 2018 is forecast at between $800-million and $920-millon.

Exploration

AngloGold Ashanti aims to increase its 49.50-million-ounce ore reserve through active, well-defined brownfield and greenfield exploration programmes, in addition to geological modelling and mine planning, as well as continuously optimising its asset portfolio.

In 2017, the company undertook greenfield exploration in Australia, Brazil, Colombia and the US, and pursued brownfield opportunities, as aforementioned, to extend the LoM at several assets. In line with the company's capital discipline strategy, exploration and evaluation costs were down by 14%, from $133-million in 2016 to $114-million in 2017.

GOLD FIELDS

CEO Nick Holland/Chairperson Cheryl Carolus			
	Six months ended June 2018	Year ended December 2017	Year ended December 2016
Revenue ($)	1.35-billion	2.76-billion	2.67-billion
Profit/(loss) ($)	369.20-million	(20.80-million)	167.90-million
Attributable gold production (oz)	994 000	2.16-million	2.15-million
All-in sustaining costs ($/oz)	965	955	980

Compiled from Gold Fields unaudited results for the yeat ended December and six months ended June 30, 2018

Globally diversified gold producer Gold Fields has eight operating gold mines worldwide – three in Australia, three in Ghana, one in Peru and one in South Africa.

The Gauteng-based South Deep underground gold mine, in Gauteng, South Africa, which was acquired from Barrick Gold in 2006 for $1.53-billion, exploits one of the world's largest gold orebodies. In 2013, the company unbundled its legacy South African gold mines, KDC and Beatrix, which are now owned by gold and platinum producer Sibanye-Stillwater.

South Deep and the group's Australia-based mines – St Ives, Granny Smith and Agnew – are wholly owned. Tarkwa and Damang, in Ghana, are 10% owned by the Ghana government. Gold Fields has also acquired half of Canadian miner Asanko Gold's 90% stake in its namesake Asanko gold mine. The Ghana government also holds a 10% interest in this operation. The Peru-based Cerro Corona mine is 20%-owned by Sociedad Minera Corona, or SMC, a Peruvian family-owned business.

Gold Fields has attributable gold mineral resources of about 104-million ounces and gold reserves totalling

Fate of South African gold rests on one giant, loss-making mine

Three thousand meters below the plains south-west of Johannesburg, teams of miners are toiling to revive the gold industry that underpinned South Africa's economy for generations.

The South Deep mine was built to target the world's second-biggest known body of gold-bearing ore, a deposit that could produce for the next 70 years and slow the steady decline in the country's production. Unfortunately, the mine is not making any money for owner Gold Fields.

Grappling with the cost and technical challenges of working so far underground, Gold Fields has consistently missed production targets. The company has spent about R30-billion ($2.30-billion) on the mine.

CEO Nick Holland remains confident the mine can succeed.

"In South Deep, we have probably one of two remaining world large orebodies in the gold industry that are actually discovered and delineated," Holland said in an interview at Bloomberg's Johannesburg office. "We can be around here for a long time. We do have a vested interest to make this work."

For decades, South Africa's mining industry was able to rely on an army of cheap labour and productivity has lagged behind other parts of the world. Ore is often still extracted by individual miners wielding hand-held drills. Much of Gold Fields' spending is focused on mechanising the mine to increase output and productivity.

The company is intensifying workers' training in the use of modern equipment and technologies – bringing in instructors from Australia – and shifting to remotely controlled operations.

New target

The company has a new target of mining 500 000 oz/y of gold at South Deep by 2022. If progress to ward that goal falters the company may have to reassess its entire strategy for the mine, Holland said, but so far the plan seems to be on course.

"We are seeing some green shoots in a number of areas, better performance in a number of our operators," Holland said. "But we need to increase the volumes, if we increase the volumes the unit cost comes down because of the high fixed costs in the business."

Beyond the fortunes of Gold Fields, the success of South Deep is critical to the future of South Africa's gold mining industry.

Source: Bloomberg

49-million ounces. As a by-product of gold mining, the group also produces copper.

The group's attributable gold-equivalent production in 2017 totalled 2.16-million ounces (2016: 2.15-million ounces), beating a guidance of between 2.10-million ounces and 2.15-million ounces.

Gold Fields' AISC for 2017 were $955/oz, a 2.55% improvement on the previous year's $980/oz. Revenue for the year increased by 3.37% from $2.67-billion to $2.76-billion owing to a slightly higher average gold price of $1 255/oz (2016: $1 241/oz), with most of the group's mines reporting production in line with or ahead of guidance.

Gold Fields' AISC guidance for 2018 is $990/oz to $1 030/oz while its production guidance of between 2.08-million ounces and 2.10-million ounces is a little lower than production achieved in 2017, owing to lower output expected from Tarkwa and Cerro Corona.

In the six months to June 30, 2018, Gold Fields produced 994 000 oz of gold at an AISC of $965/oz, compared with 1.02-million ounces in the previous year's comparable half-year. The group announced attributable losses from continuing operations for the six-month period of $367-million, or $0.45 a share, though CEO Nick Holland maintains that the company remains in a strong financial position.

Operations

South Deep mine is in a ramp-up phase and contributes 12% to group production. It produced 281 000 oz in 2017, down 3.10% from the 290 000 oz produced in 2016 and 19 000 oz less than planned. This was attributed to five safety incidents (two fatal and three fall-of-ground) that impacted on production during the first quarter of the year. South Deep was unable to offset the shortfall in production, despite a strong recovery in the second half of the year. Consequently, the mine fell 11% short of guidance for the year (315 000 oz). Gold Fields has, however, set out to produce 500 000 oz/y of bullion at South Deep by 2022, abandoning an earlier forecast of 800 000 oz. It also downscaled production estimates for 2018 from 321 000 oz to 244 000 oz.

The mine's AISC increased by 1% to $1 340/oz (2016: 1 207/oz), driven by lower gold sold and higher cost of sales, partially offset by lower sustaining capex. South Deep recorded a positive net cash outflow of $60-million in 2017, in line with Gold Fields' R2.30-billion rebase plan, which was announced in February 2017. Over five years to 2022, the implementation of the plan will result in a ramp-up of steady-state production to 500 000 oz/y, all-in costs of below $900/oz, and a 70-year mine life.

Owing to the production setback in the beginning of the year, South Deep fell short of production and cost targets for the first year of the rebase plan, also impacting on the second year of the plan. Nevertheless, Gold Fields chairperson Cheryl Carolus said in her Integrated Annual Report address released in March 2018 that the integrity of the rebase plan was not in question and that the successful implementation of the plan was "a prerequisite for realising the mine's long-term value". CEO Nick Holland added in his year-end address that South Deep's long-term production and cost guidelines were "realistic and achievable".

Still, Carolus highlighted the Gold Fields' international mines and projects were "consistently meeting or exceeding" production and cost targets, with South Deep – a serial underperformer – remaining the only asset in the portfolio that did not contribute meaningfully to the company's success.

After a difficult first quarter, Gold Fields lowered production guidance at South Deep for 2018 from 321 000 oz to 244 000 oz. Holland attributed the mine's poor performance in the first quarter to a slow production build-up after seasonal holidays, two labour restructuring processes that took place at the end of 2017 and during the quarter, and a change in underground working shift arrangements, initially implemented to increase productivity.

Prior to its 45% acquisition of Asanko gold mine in July 2018, Gold Fields' Ghana operations – Tarkwa and Damang – contributed 32% to group production in 2017 and together produced 710 000 oz (2016: 716 000 oz). Tarkwa is Gold Fields' largest producing mine and one of the most consistent producers in the group, though production decreased marginally in 2017 to 566 000 oz (2016: 568 000 oz). However, this was on par with the operation's guidance of 565 000 oz. The mine's production guidance for 2018 is 520 000 oz at an all-in cost (AIC) of $970/oz. Damang's production

Investing in mechanised mining

In November 2017, Gold Fields announced a R6-million, three-year partnership with the University of the Witwatersrand (Wits) to further academic knowledge in the field of mechanised mining and rock engineering in South Africa.

Gold Fields CEO Nick Holland and Wits vice-chancellor and principal Professor Adam Habib signed the partnership agreement, which involves Wits' School of Mining Engineering, the Wits Mining Institute and Gold Fields.

The funding provided by Gold Fields, which operates South Africa's largest and deepest underground mechanised gold mine, South Deep, in Gauteng, is aimed at filling the gap in mechanised mining skills in South Africa.

Holland commented that, while the contribution was aimed at ensuring that the skills and expertise required to bring South Deep to full production would be developed, it was also meant to ensure that the industry was prepared for the next mining boom.

"The pace of change in mining, globally, is enormous," he said, citing a visit to the Roy Hill Control Centre (RHCC), in Perth, Australia, which is responsible for the operational planning, scheduling and execution of production activities for iron-ore mining operations in the Pilbara. The operation is run remotely, and the RHCC's scope will, in the next few months, include the management of 600 remotely operated trucks.

"We've recently taken delivery, in Ghana, of production drills that are going to be remote operated . . . we have to move with the times . . . and if we don't take the skills level with us, we're going to be left behind."

Holland added that Gold Fields was passionate about skills and investing in the future, which was why it was supporting Wits, which it believed was at the forefront of development in the field of mechanisation.

The funding will be used to further research in rock engineering, improving drill-and-blast activities, and multiple point statistics or simulation. "The leverage we'll get over other producers in this regard is enormous. Around the world, most of the easy stuff on the surface has been taken, which means that mining in the future will be much more focused on underground mines."

The ability to understand rock engineering constraints and how to maximise extraction will, therefore, be fundamental to future value creation in the industry.

Several projects have already been identified for funding by Gold Fields during the three-year period. Gold Fields' funding will also be used to cover the yearly costs of about four to six third- and fourth-year students' research work.

The postgraduate and undergraduate research projects will be in areas that are critical to South Deep as it ramps up to full production in 2022.

Habib conveyed his appreciation for the partnership, and suggested that it was only the beginning. He noted that mining was changing in fundamental ways, by using technology such as artificial intelligence, robotics and the Internet of Things. He has suggested a larger collaborative approach among universities and the industry as a whole.

"In the 1930s and 1940s, Wits partnered with the mining industry to pioneer a new way of mining . . . that period of mining is coming to an end . . . what we are saying to industry is let's sit down again. Let's enter into a 15-year partnership, that rethinks mining for the next 40 to 50 years . . . but this time we want to ensure that it has inclusive benefits for the wider economy," he has stated.

Source: *Mining Weekly*

of 144 000 oz was 3% lower than the 148 000 oz produced in 2016, in light of a reinvestment that is under way at the mine. However, this was still 20% higher than the guidance of 120 000 oz. Damang's production guidance for 2018 is 160 000 oz.

Tarkwa's AISC and AIC both decreased in 2017 to $940/oz (2016: $959/oz) and $1 027/oz (2016: $1 254/oz) respectively, comfortably below the respective guidances. At Damang, this was a result of strict cost controls and better-than-expected efficiencies from the contractors used to implement the reinvestment plan. Tonnes mined at Damang in 2017 totalled 40-million tonnes, compared with the original project schedule of 33-million tonnes, while gold produced amounted to 144 000 oz against a guidance of 120 000 oz. The mine's AISC of $1 027/oz and AIC of $1 827/oz also came in below guidance of $1 175/oz and $2 250/oz respectively. Production guidance for 2018 is 160 000 oz at an AIC of $1 520 and project capital of $105-million.

AISC guidance for 2018 at Tarkwa and Damang is $970/oz and $860/oz respectively.

Meanwhile, Gold Fields announced at the end of March 2018 that it had entered into a 50:50 JV with Asanko Gold and that it would acquire 45% of Asanko gold mine for $195-million – a transaction that was concluded in July 2018. Gold Fields also bought a 9.90% shareholding in Asanko Gold for $17.60-million. Asanko is forecast to produce about 253 000 oz between 2019 and 2023, at an AISC of $860/oz.

The transaction exceeds Gold Fields' requirement of a return of 15% at a gold price of $1 300/oz, with a payback period of five years out of a 15-year LoM. Holland said at the time of the acquisition that the transaction was "demonstrably accretive" to the company.

Accounting for 14% of group production, the Peru-based Cerro Corona mine had a successful year of production in 2017, increasing its gold equivalent production by 14% year-on-year to 307 000 oz (2016: 270 000 oz), as a result of the improved copper:gold price ratio, higher gold head grades treated and better gold recoveries. This was 6% higher than the operation's gold-equivalent production guidance for 2017 of 290 000 oz. The mine's production guidance for 2018 is 280 000 oz. The Americas region reported net cash inflow of $117-million in 2017.

The Australasia region contributes 42% to Gold Fields' overall production. It comprises the Agnew, Granny Smith and St Ives mines. These operations delivered a strong operational performance in 2017, with gold production totalling 935 000 oz at an AIC of $948/oz, which beat the region's full-year guidance of 910 000 oz at an AIC of $977/oz. This performance is despite the sale of Darlot in October 2017. Each of the Australia-based mines outperformed their individual production and cost guidance, while Darlot was on track to achieve guidance before it was sold to Australian mining group Red 5.

Despite losing fourth-quarter output from Darlot, the region's total production was only 1% lower than in 2016, when output was 942 000 oz. Gold Fields expects the Australia region to produce 865 000 oz in 2018, at an AIC of $1 010/oz.

In 2017, St Ives produced 364 000 oz at an AISC of $916/oz (2016: 363 000 oz); Agnew produced 241 000 oz of gold at an AISC of $977/oz (2016: 229 000 oz); Granny Smith produced 290 000 oz of gold at an AISC of $896/oz (2016: 284 000 oz); and Darlot produced 39 000 oz of gold at an AISC of $1 432/oz (2016: 66 000 oz).

Projects

Gold Fields declared 2017 the first year of its reinvestment programme, which is aimed at sustaining the group's current production base for the next decade. The group's total capex in 2017 increased to $840-million (2016: $650-million).

The group has budgeted $835-million in capex for 2018, during which time Gold Fields is targeting major projects at Damang, the Gruyere JV project, in Australia, and the Salares Norte project, in Chile. This in addition to the aforementioned rebase plan at South Deep mine.

The group is investing $341-million in the Damang mine to extend the LoM by eight years to 2025. Of this amount, $115-million was spent in 2017 against a budget of $120-million. According to Holland, this project, which got off to a strong start in December 2016, is ahead of its planned progress and in line with budget. This reinvestment project has enhanced the group's presence in Ghana and has resulted in significant social benefits for the country, including the creation and preservation of 1 850 direct and indirect jobs.

Gold Fields is also developing the Western Australia-based Gruyere gold project in a 50:50 JV with Australian exploration company Gold Road Resources (in which Gold Fields has a 9.90% stake). The project, for which Gold Fields is the operator, comprises the Gruyere gold deposit and several exploration tenements. Gruyere is one of Australia's largest undeveloped gold projects ,with a combined total mineral resource of 6.72-million ounces and a mineral reserve of 3.74-million ounces, 50% of which is attributable to Gold Fields.

Early work at Gruyere got under way in December 2016, but the project is behind schedule owing to abnormal weather events and is unlikely to deliver first gold by the original target date – the first quarter of 2019. The deposit is expected to produce 270 000 oz/y over a 13-year LoM.

Gold Fields spent $141-million on Gruyere in 2017, $81-million of which comprised project capital; the remainder comprised the deferred portion of Gold Fields' purchase price of its 50% stake in the project. The group initially budgeted $249-million of project capital for Gruyere for 2018, but adverse weather conditions are likely to increase the cost of the project and delay gold delivery.

In Chile, Gold Fields spent $53-million in 2017 on feasibility study work and drilling at its 100%-owned Salares Norte project, which progressed to interim feasibility status in late 2017. The group has budgeted an additional $83-million on the feasibility study for 2018, with completion expected in the second half of 2018. Holland announced in May 2018 that Gold Fields might seek out a junior partner to help finance the $850-million project.

Once operational, Gold Fields expects a yearly throughput of two-million tonnes a year at an AISC of $575/oz. Over its LoM, the $850-million operation is expected to deliver 3.50-million ounces of gold.

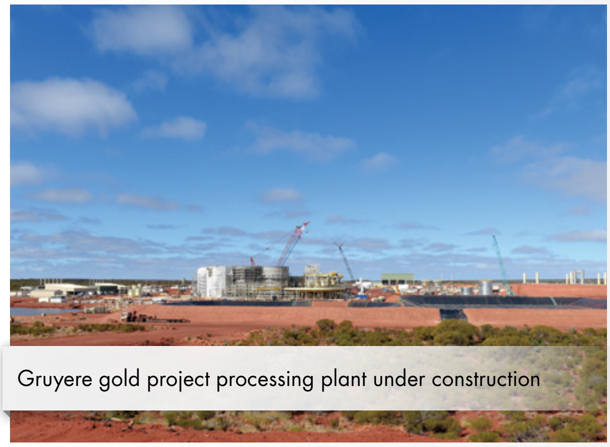
Meanwhile, after acquiring a 45% stake in Asanko gold mine, Gold Fields announced in May 2018 that it was setting aside its pursuit of new acquisitions for a year to focus on existing operations and nearby prospects.

Holland told delegates at the International Gold & Silver Symposium, which took place in Lima, Peru, in May 2018, that the company's finances were likely to be negative in 2018 before an expected improvement in 2019, when Gold Fields is expected to reap the rewards from two years of significant investment.

Gold Road–Gold Fields JV flags Gruyere delay, possible cost increases

The Gruyere gold project, in Western Australia, is likely to be late in delivering its first gold, project developers Gold Road Resources and Gold Fields have warned, with the companies also flagging possible cost increases. The joint venture (JV) partners said that the abnormal weather events during the March quarter had impacted on the project schedule and costs, with first gold likely to be poured only in the June quarter of 2019, rather than the March quarter of 2019, as previously forecast.

The project's capital cost estimates have also increased to the upper end of the forecast range of between A$506-million and A$585-million, compared with the previous budget of A$532-million.



Gruyere gold project processing plant under construction

Picture by Reuters

Source: *Mining Weekly*

Exploration

To extend the life of its portfolio of assets for long-term sustainability, Gold Fields conducts proactive near-mine exploration, as well as selected greenfield exploration in partnership with junior miners. Near-mine exploration plays a key role in the group's strategy as it offers lowest-cost opportunities to increase cash flow. The miner also has pre-existing knowledge of the orebodies, as well as the operational capabilities, the appropriate regional and operational infrastructure, and the appropriate management teams to exploit those orebodies.

Further, near-mine exploration extends the life of Gold Fields' existing mines and adds to the group's mineral resources and reserves base, ensures that each region can continue to leverage established infrastructure and provides a platform for continued regional growth. In 2017, the group spent $87-million on near-mine exploration (2016: $80-million), which supported about 755 000 m of near-mine drilling (2016: about 695 000 m).

Of the group's total exploration spend, $75-million was spent on the group's Australian mines, while $11-million was spent in Ghana. This was significantly higher than the $3-million spent in West Africa in 2016, owing to a renewed focus on extending the LoM at Tarkwa and Damang.

While near-mine exploration at Cerro Corona has been limited by the mining lease area, Gold Fields has said that it will continue to engage with mine-adjacent communities about the potential for future exploration in those areas.

The group has budgeted $87-million for near-mine exploration in 2017, of which $65-million will be spent on the Australia operations. The LoM of these operations have been successfully extended through Gold Fields' consistent investment in brownfield exploration.

Meanwhile, Gold Fields made a return to greenfield exploration in 2017, with a $21-million investment for a 19.80% stake in ASX-listed Cardinal Resources, which has several exploration projects in Ghana. Holland has noted in the group's integrated annual report that Gold Fields is considering accelerating its investment in greenfield exploration in the long term, though this will be limited to the countries in which the company currently operates.

Gold Fields' 9.90% stake in Gold Road Resources will also lead to additional exploration opportunities, as Gold Road holds exploration licences in other areas of the Yamarna goldfields, in Ghana.

HARMONY GOLD MINING COMPANY

CEO Peter William Steenkamp/Chairperson Patrice Motsepe		
	Year to June 2018	**Year to June 2017**
Revenue (R)	20.36-billion	19.26-billion
Profit/(loss) (R)	(4.47-million)	362-million
Gold production (oz)	1.23-million	1.09-million
All-in sustaining cost ($/oz)	1 231	1 182

Compiled from Harmony Gold's results for six months and year ended June 30, 2018 and June 30, 2017, and results for the six months ended December 31, 2017.

South Africa's third-largest gold producer, Harmony Gold Mining Company, is a mining and exploration company headquartered in Randfontein, South Africa. The JSE- and NYSE-listed company has nine underground operations and two surface operations in South Africa.

Harmony also owns an openpit mine in Papua New Guinea, which produced 92 015 oz in the 2018 financial year (2017: 95 327).

By the end of 2018, Harmony Gold's total gold mineral resources totalled 117.80-million ounces (2017: 104.30-million ounces) while total gold mineral reserves amounted to 36.80-million ounces (2017: 36.70-million ounces).

$519 000 of metal stolen from Harmony mine

Thieves broke into Harmony Gold Mining Company's Kalgold mine in April 2018 and stole 12 kg (386 oz) of the precious metal, according to spokesperson Lauren Fourie.

The robbers accessed "heavily guarded" gold storage facilities in a significant security breach at the mine, situated in South Africa's North West province.

"The gold was stored at the mine under heavy security," Fourie said. "It was a brazen attack, luckily nobody was hurt."

At current prices the stolen gold was worth about $519 000.

Source: Bloomberg

Harmony's growth aspiration to produce 1.50-million ounces and improve the quality of its asset portfolio in 2018 was realised with the re-investment in Hidden Valley and acquisition of AngloGold Ashanti's Moab Khotsong mine complex in March 2018. These operations will increase production by 450 000 oz/y to 500 000 oz/y at an average LoM AISC of $950/oz.

In the year to June 2018, Harmony achieved and surpassed production guidance – the third consecutive year. It produced 1.23-million ounces (2017: 1.09-million ounces), compared with with the production guidance set for 2018 of 1.18-million ounces at an AISC of $1 231/oz (2017: $1 182/oz).

The company's successful hedging strategy also resulted in cash flow of $276-million since implementation, securing cash flow margins and enabling Harmony to repay debt and fund its growth strategy.

Meanwhile, owing to an increase in fall-of-ground-related accidents across the mining industry, Harmony has prioritised modernisation and is investigating new practices pertaining to ledging and drilling and blasting to improve safety at its operations. Modernisation is also being advanced through the implementation of employee tracking and tracing technologies.

Operations

Harmony's nine underground operations in South Africa are on the world-renowned Witwatersrand basin. Two of the mines – Doornkop and Kusasalethu – are located on Gauteng's West Rand and seven of the mines – Bambanani, Joel, Masimong, Target 1, Phakisa, Tshepong and Unisel, are located in the Free State, in the southern part of the basin. The group also has an openpit mine on the Kraaipan greenstone belt, Kalgold, as well as several surface operations, including Phoenix, which are located in the Free State.

Kusasalethu mine

Picture by Creamer Media

The Masimong mine, which of all Harmony's operations has the shortest mine life based on current reserves, produced 84 332 oz in the 2018 financial year, up from 81 599 oz in the previous financial year.

Kusasalethu and Bambanani, produced 142 395 oz (2017: 141 270 oz) and 90 698 oz (2017: 88 415 oz) respectively during the same period. Bambanani is in the final stages of its mine life and mining is confined to the extraction of the shaft pillar.

The Unisel mine's production decreased to 41 152 oz in the 2018 financial year, from 51 280 oz in 2017. The decrease in production was a result of a 16% decrease in recovered grade and tonnes milled.

Target 1, produced 91 758 oz (2017: 85 809 oz), while the Joel mine, contributed 52 566 oz (2017: 72 211 oz) to Harmony's total production in 2018. Doornkop, produced 110 245 oz in the 2018 financial year, up from 85 939 oz in the 2017 financial year, owing to an increase in recovered grade and tonnes milled. The Tshepong operations delivered a 2018 output of 302 026 oz (2017: 283 287 oz). Tshepong and Phakisa, previously two separate segments, were integrated into one operation from July 2017. The shafts have been integrated to take advantage of their close proximity, which allows for existing infrastructure to be optimised.

Of Harmony's South African surface operations, Kalgold produced 40 189 oz in 2018 (2017: 38 742 oz) and has an LoM of 21 years, while Phoenix produced 23 695 oz (2017: 29 515 oz) and has an LoM of 12 years.

Meanwhile, Kusasalethu improved gold production by 1% to 141 395 oz (2017: 141 270 oz) as a result of the 10% increase in tonnes milled, offsetting the 9% decrease in recovered grade to 6.61 g/t. Encouraging development grades indicate that recovery grades are expected to improve in the 2019 financial year.

Harmony announced in October 2017 that it would acquire AngloGold Ashanti's Vaal River-based Moab Khotsong mine – one of South Africa's newest deep-level mines, with an LoM grade forecast at 8.20 g/t – for $272-million. It also acquired the Great Noligwa mine – a high-grade opportunity for Harmony to extend Moab Khotsong's LoM by more than 15 years – also known as Project Zaaiplats, which is at prefeasibility stage. Both sales were concluded in March 2018.

Harmony Gold production guidance per operation – 2019

Operation	FY18 production (oz)	FY19 guidance (oz)	Life-of-mine (years)
Tshepong operations	302 026	287 000	17
Moab Khotsong	105 969	248 000	7
Bambanani	90 698	82 000	5
Target 1	91 758	86 500	7
Doornkop	110 245	106 500	16
Joel	52 566	50 000	9
Kusasalethu	142 395	155 500	5
Masimong	84 332	72 500	3
Unisel	41 152	32 000	2
Underground operations	**1 021 141**	**1 120 000**	**–**
SA surface (tailings and waste rock dumps)	74 589	84 500	14+
Kalgold	40 189	39 000	15
Hidden Valley	92 015	201 500	5
Total	**1 227 934**	**~1 450 000**	

Source: Harmony results presentation for the year ended June 20, 2018
FY – financial year

In PNG, Harmony is the 100% owner and operator of the Hidden Valley openpit gold and silver mine, having acquired Newcrest Mining's 50% stake in the mine in October 2016. It also owns 100% of the Kili Teke prospect in the country's Western Highlands, as well as a 50% stake in the Wafi Golpu project in Morobe province, a 50:50 joint venture (JV) with Newcrest Mining.

In the 12 months to June 30, 2018, Hidden Valley mine produced 92 015 oz, compared with 95 327 oz in 2018. The mine is expected to produce 180 000 oz of gold and three-million ounces of silver a year by the 2019 financial year.

The Moab Khotsong and the Hidden Valley operations are expected to increase Harmony's production by 450 000 oz/y and 500 000 oz/y at an average LoM AISC unit cost of $950/oz.

Projects

Harmony's capex increased by 16% in the 2018 financial to $332.82-million, of which $121-million was spent at Hidden Valley. Its planned capex for the 2018 financial year is $319-million, $122-million of which has been set aside for Hidden Valley.

At its South African operations, the group increased capital spend in the 12 months to June 30, 2018, by 16%, or $38-million, mainly for the ongoing development of the Phakisa and Tshepong mines, which were merged in 2017, to improve ventilation and environmental conditions, as well as increase ongoing development expenditure.

With Tshepong's underutilised infrastructure, and Phakisa's fully utilised infrastructure, the group decided to exploit the synergies between the two operations by combining them, which required R700-million in capex. Harmony CEO Peter Steenkamp told *Mining Weekly* in August 2017 that the combination of the two mines would result in more reef being directed towards Tshepong's decline conveyor system, which will be extended deeper into high-grade areas, requiring costly additional refrigeration.

Other projects under way at Harmony's South African operations include the Joel decline project, the retreatment of additional tailings in the Free State (also known as the Saints project), reclaiming material from the central plant tailings facility at 300 000 t/y, as well as possibly opening parts of Target 3 shaft, which was placed on care and maintenance in 2015.

In PNG, Harmony's investment in the Hidden Valley stage 5 and 6 cutbacks, and related plant and processing upgrades was delivered on schedule and below budget, about $175-million (net) was spent, compared with the planned investment of $180-million. Commercial levels of production were achieved in June 2018. Stripping of the cutbacks will continue for the next three years to deliver an average LoM AISC of below $950/oz.

Meanwhile, Harmony and Wafi-Golpu JV (WGJV) partner Newcrest Mining continues to engage the PNG government on the application for a special mining lease for the Wafi-Golpu project.

An updated feasibility study was released in March 2018, proposing a larger mine and increased production profile. The proposal was submitted to the PNG government on March 20, 2018.

In June 2018, the WGJV submitted an environmental-impact statement for the project to the relevant PNG regulatory authority. Permitting of the Wafi-Golpu project will continue to be a key focus area in the 2019 financial year.

Exploration

Harmony plans to pursue brownfield exploration targets close to existing infrastructure. This will drive short- to medium-term organic ore reserve replacement and growth to support its current strategy of increasing quality ounces and to mitigate the risk of a depleting ore reserve base.

Key work streams underpinning the 2018 financial year exploration programme include brownfield exploration at Hidden Valley and Kalgold to optimise existing openpit operations and extend mine life; and brownfield exploration at Harmony's underground operations in South Africa, including at Tshepong, Phakisa, Doornkop, Kalgold and Target North.

SIBANYE-STILLWATER

CEO Neal Froneman/Chairperson Sello Moloko			
SA Gold operations	**Six months to June 2018**	**Year ended December 2017**	**Year ended December 2016**
Revenue ($)	786.30-million	45.91-billion	31.24-billion
Profit/(loss) ($)	(17.70-million)	(4.43-billion)	3.04-billion
Gold production (oz)	598 517	1.40-million	1.51-million
All-in sustaining cost	1 315	1 128	954

Compiled from Sibanye-Stillwater's operating and financial results for the six months ended June 30, 2018, and the six months and year ended December 31, 2017

Established in 2013 following the unbundling of Gold Fields' Kloof, Driefontein and Beatrix mines in November 2012, Sibanye-Stillwater – formerly known as Sibanye Gold – is an international precious metals miner. It is South Africa's largest gold producer, the world's fourth-largest gold producer and the third-largest platinum and palladium producer in the world.

The group initiated its acquisitions strategy in August 2013 when it announced that it would be acquiring Gold One International's Cooke operations, west of Johannesburg. In November 2013 it moved to acquire Witwatersrand Consolidated Gold, which owned various exploration projects in South Africa.

In 2015, Sibanye-Stillwater proposed the acquisition of Anglo American Platinum's Rustenburg mining and processing operations, and made a cash offer for Aquarius Platinum's entire issued share capital. These transactions were concluded in 2016 and, in December that year, the company proposed the acquisition of Stillwater Mining Company, in the US. With the formal acquisition of Stillwater in May 2017, Sibanye Gold was officially rebranded as Sibanye-Stillwater and restructured itself by region – Southern Africa and the US.

The group's growth momentum continued in 2017 with the December announcement that it planned to acquire Lonmin – one of the foremost platinum group metals (PGMs) producers in South Africa. This transaction should be finalised by the end of 2018. The company also entered into various agreements with DRDGold in November 2017, concluded in August 2018, which aim to create an industry-leading surface mining partnership.

Sibanye-Stillwater made two attempts to enter into the coal sector, though these were unsuccessful. The first involved an attempt to acquire a 51% shareholding in Waterberg Coal, which has assets in South Africa's Limpopo-based Waterberg region, but the deal fell through as the companies could not agree on revised terms following the completion of a due diligence assessment. The second failed attempt would have resulted in Sibanye acquiring Resource Generation, which is developing the six-million-tonne-a-year Boikarabelo mine, also in Limpopo.

As at December 31, 2017, Sibanye-Stillwater had gold resources of 91.40-million ounces and gold reserves of 25.70-million ounces, as well as uranium resources of 123.10-million pounds and uranium reserves of 96.10-million pounds. Its PGM mineral resources totalled 206.50-million ounces while PGM reserves totalled 44.30-million ounces.

In the 12 months to December 31, 2017, the company produced 1.40-million ounces of gold at an AISC of $1 128/oz, down 7% from the 1.51-million ounces produced in 2016 at a lower AISC of $954/oz, causing a 46% decline in earnings before interest, taxes, depreciation and amortisation (or Ebitda) to R5.30-billion (2016: R9.92-billion). The decline in production can be attributed to the cessation of underground operations at Cooke 1, 2 and 3 shafts, which were placed on care and maintenance in October 2017.

Reflecting the company's growth into a precious metals company over the past two years, Sibanye's revenue increased by 47% in 2017 to $46-billion (2016: $31-billion).

In the six months to June 2018, Stillwater reported revenue of $786.13-million from its gold operations. Revenue was impacted on by the 13% decline in gold produced, primarily owing to the closure of the Cooke operations and operational disruptions at Driefontein. This was compounded by a 1% decline in the gold price received.

The company lowered its production guidance for 2018 in July, from between 1.24-million ounces and 1.29-million ounces to between 1.17-million ounces and 1.21-million ounces. Sibanye expects to produce 6% less gold than anticipated owing to production stoppages following a spate of mining-related deaths in the first six months of the year. AISC is expected to increase from a guidance of between $ 1 130/oz and $1 180/oz to between $1 227/oz and $1 263/oz.

The safety-related incidents causing operational disruptions took place at the company's Kloof and Driefontein operations, compounded by a power disruption earlier in the year at Beatrix.

Operations

Sibanye's South Africa-based gold operations include Driefontein, Kloof and Cooke in the West Witwatersrand basin, and Beatrix mine in the Free State.

Driefontein is an established shallow to ultradeep-level gold mine with gold reserves and resources of 7-million ounces and 18.40-million ounces respectively, and an LoM that extends to 2039. In 2017, underground production at Driefontein was 426 400 oz, 5% lower year-on-year (2016: 447 600 oz) owing to an 8% decline in yield, partially offset by a 5% throughput increase. Underground production for the six months ended June 30, 2018, totalled 171 974 oz and surface production 14 178 oz.

Kloof, also a shallow to ultradeep-level gold, is a mature high-yield operation with an LoM extending to 2035. It has gold reserves of 6.40-million ounces and gold resources of 30.10-million ounces. In 2017, Kloof's underground operations increased production by 8% to 476 700 oz (2016: 440 600 oz), while its surface operations increased production by 7% to 51 600 oz (2016: 48 400 oz). In the six months to June underground output amounted to 217 821 oz, while surface output totalled 36 330 oz.

Cooke mine is an established shallow to intermediate-level gold mine with 600 000 oz in gold reserves and 4-million ounces in gold resources. Its underground operations have, however, been placed on care and maintenance after being declared "uneconomical for exploitation" in August 2016 (Cooke 4 SV Shaft) and October 2017 (Cooke 1, 2 and 3 Shafts). This resulted in underground production from the Cooke operations decreasing by 52% in 2017 to 75 200 oz from 156 000 oz in 2016. Six-month production to June 2018 totalled 193 oz for underground operations and 17 201 oz for surface operations.

Beatrix is a shallow to intermediate-level gold mine with gold reserves and resources of 2.10-million ounces and 8.30-million ounces respectively, and an estimated LoM to 2029. Beatrix's underground gold production decreased by 8% in 2017 to 284 000 oz (2016: 308 700 oz), which could be attributed to replanning at the Beatrix West shaft. Moreover, Section 189 consultations at Beatrix impacted on the remaining shafts' labour complements and, consequently, on production. Beatrix's surface production decreased by 47% to 7 500 oz (2016: 14 100 oz) owing to a similar decline in throughput. In the six months to June 2018, Beatrix produced 137 444 oz and 3 376 oz from underground and surface operations respectively.

Altogether, Sibanye-Stillwater's South African gold operations produced 1.40-million ounces in 2017 at an AISC of $1 126/oz – the lowest of the South African gold mining companies. About 598 517 oz was produced in the six months to June 2018.

Projects

Sibanye-Stillwater spent R1.48-billion on organic growth projects during 2017, up significantly from its 2016 spend of R51-million. Of this spend, $256-million was set aside for South African operations, compared with $261-million in 2016. About $216-million was allocated to growth projects in the six months to June 2018.

Sibanye-Stillwater acquired the Burnstone assets in 2014. The Mpumalanga-based project, located near the to wn of Balfour, comprises two shaft complexes and a 125 000 t/m gold processing plant, as well as a tailings storage facility and surface infrastructure to support a producing operation.

Following board approval of the project feasibility study in November 2015, the project, which is estimated to cost R1.85-billion, got under way, with a planned six-year build up to steady-state production by 2022. It is expected to average 125 000 oz/y for seven years, until the end of 2028, after which it will decrease production over seven years, supporting an initial 20-year LoM. Burnstone is expected to yield 1.90-million ounces of gold production from a feasibility resource of 5.70-million ounces.

In 2017, Burnstone's mineral reserves and resources were re-evaluated and, as at December 31, 2017, were 1.93-million ounces and 9.02-million ounces respectively.

Other projects under way at Sibanye's South African gold operations include the R904-million Kloof decline project, through which the company aims to increase Kloof mine's yield by 570 000 oz and to extend its operating life to 2034. Further, a 2015 feasibility study on the R1.13-million Driefontein decline project confirmed that mining below Driefontein's current infrastructure has the potential to extend the mine's operating life from 2028 to 2042, producing an additional 2.10-million ounces of gold. The board was expected to make a decision on project approval in August 2018.

Meanwhile, Sibanye's West Rand Tailings Retreatment Project, now known as the Far West Gold Recoveries Proprietary Limited (FWGR) is a large-scale long-life surface tailings retreatment project with combined reserves of 677.30-million tonnes of the Driefontein,

Driefontein mine

Picture by Creamer Media

Class action lawsuit filed against South Africa's Sibanye-Stillwater following fatalities

A US law firm has filed a class action lawsuit against South African miner Sibanye-Stillwater on behalf of shareholders to recover losses suffered after a spate of deaths at its mines triggered a sharp fall in its share price.

Investor rights law firm Bernstein Liebhard said in a statement in June 2018, the suit would deal with "misleading statements" made by the precious metals producer, which has had 21 fatalities on its operations so far in 2018.

JSE- and NYSE-listed Sibanye it had taken note of the possible lawsuit against the company.

"If any claims are ultimately filed, the company intends to vigorously defend itself. We will continue to monitor developments closely," the precious metals miner has stated.

Source: Reuters (with additional reporting by *Mining Weekly*)

Kloof and Cooke tailings storage facilities, containing estimated gold and uranium mineral reserves of 6.20-million ounces and 97.20-million pounds respectively.

The project will recover 11-million ounces of gold and 170-million pounds of uranium, as well as sulphuric acid. Its last-stated LoM was 35 years.

In November 2017, Sibanye-Stillwater announced that it would vend selected assets of the FWGR into DRDGold for a 38% share of DRDGold. The proposed transaction, which was concluded in August 2018, lifted Sibanye's share price at the time by 3.65% to a 59c-higher R18.73 a share by early afternoon.

In addition, a detailed feasibility study for Sibanye's Southern Free State Projects will be completed by the end of 2018. These projects include the company's Wits Gold mining right and prospecting right holdings in the Free State goldfields of the Witwatersrand basin.

Executed in June 2017 and approved for 23 years, the Wits Gold mining right will consolidate four projects – De Bron Merriespruit, Bloemhoek, Hakkies and Robijn – into one mining right. This mining right is contiguous with the north-east of the Beatrix mining right.

Exploration

While Sibanye-Stillwater has been focused on mergers and acquisitions since its inception, it entered into a strategic partnership with TSX-listed Regulus Resources in June 2018 and its newly formed subsidiary Alebaran Resources to unlock value at the Altar copper/gold project in San Juan province, Argentina.

Under the terms of the agreement, Sibanye's wholly owned subsidiary, Stillwater Canada, will enter into an option and JV agreement with Aldebaran, whereby the latter will have the option to earn a maximum 80% interest in a wholly owned subsidiary of Stillwater Canada – Peregrine Metals – which owns the Altar project.

Concurrently, Regulus will also spin out its Rio Grande copper/gold project and other early-stage mining assets in Argentina to Aldebaran, including the drill-ready Aguas Calientes gold/silver project.

According to Sibanye, the new partnership creates a "new, well-capitalised, Argentinean-focused exploration company".

CEO Neal Froneman commented at the time that the transaction was consistent with the company's strategy of focusing on core mining operations.

Smaller companies with operations in South Africa

CENTRAL RAND GOLD

Executive director: William (Weifan) Zhuang/ Chairperson: Li Pin Wang			
	Six months to June 30, 2017	Six months to June 30, 2016	Year ended June 2016
Revenue ($)	2.65-billion	1.77-billion	4.83-billion
Net profit/(loss)($)	3.42-million	2.37-million	4.48-million

Gold exploration and production company Central Rand Gold (CRG) has a range of assets in various stages of development in the Johannesburg-based Central Rand goldfield, which was intensively mined between 1886 and the early 1970s, during which time it produced an estimated 250-million ounces of gold.

Owing to depressed gold prices, ageing infrastructure, deepening mine shafts and the reduced availability of high-grade reefs, among other factors, the area was considered depleted at the time. However, many lower-grade areas were not mined during this time, consequently the Central Rand goldfield still contains substantial volumes of gold-bearing ore, which is now the focus of CRG's exploration and mining activities.

CRG is an Aim- and AltX-listed company with a mining right for its main assets – the Consolidated Main Reef West and East operation and the Crown Mines development – as well as seven new-order prospecting rights, awarded in August 2008, that span 280 km² and contain about 37-million ounces of gold in the inferred and indicated categories. The prospecting rights include Langlaagte, Crown Mines, Village Main, Robinson Deep, City Deep, Simmer and Jack, and Southern Deep, which will extend the Central Rand project by a further 13 km to the south if the right application is granted.

After comprehensive geological research, coupled with tested mining methodologies, the company has devised a strategy to extract commercially viable gold deposits from its assets in the basin.

In October 2014, CRG suspended underground operations following the flooding of the Central basin, leaving the company to focus on its surface mining and openpit operations until the water table in the basin reduced considerably. However, in May 2016, CRG stopped its openpit operations owing to grade variability. The company is therefore focused, in the short term, on the rehabilitation of opened-up areas. It is also processing a minimum of 18 000 t/m of gold-bearing material under a binding tolling agreement, which was signed in July 2016.

Under the terms of the tolling agreement, a third-party ore supplier will source and deliver gold-bearing material to CRG's metallurgical plant for processing. CRG will, in turn, receive a fee for processing the material.

The company announced in May 2017, and then again in September 2017, that it was facing serious financial constraints – with significant debt and many creditors – and that it was considering selling its operating assets to a third party, among other possible options, as it tried to secure financing solutions amid a challenging cash position. On October 5, 2017, CRG announced that it would need a cash injection of at least $20-million to remain a listed, operational mining group. At the time, the company's directors believed that this type of investment was unlikely to be forthcoming in the near future, or at all. One day later, on October 6, 2017, CRG CEO and director Lola Trollip resigned.

After cancelling its Aim listing in November 2017, CRG advised shareholders in May 2018 that, while the company would be retaining its AltX listing on the JSE for the time being, this was being evaluated by the company's board of directors in light of the company's financial condition and the costs associated with maintaining its listing on the JSE.

Meanwhile, following CRG's announcement in October 2016 that it had entered into an agreement to acquire mine waste dumps about 10 km from its plant, the company ordered a 60 000 t/m concentrator circuit to upgrade the gold grade of the mine waste dumps before metallurgical processing. The concentrator, which arrived in South Africa in September 2017 after some delays, comprises centrifugal concentrators, a scrubber, dewatering screens, water and slurry pumps and ancillary equipment. It was due to be fully on line by December 2017.

To procure, ship, install and commission the concentrator circuit, CRG concluded a $1-million loan agreement with Chinese investor Jia Bang Wang. The first $250 000 tranche was paid in June 2017.

Under Phase 1 of the mine waste dumps project, CRG envisages retreating 2.30-million tonnes of gold-bearing material grading at an average of 0.70 g/t gold.

DRDGOLD

CEO: Niël Pretorius/Chairperson: Geoffrey Campbell		
	Year ended June 2018	**Year ended June 2017**
Revenue (R)	2.49-billion	2.34-billion
Net profit/(loss)	6.50-million	13.70-million
Gold production (oz)	150 423	137 114
All-in sustaining cost ($/oz)	1 258	1 216

Compiled from DRDGold condensed consolidated provisional results for the year ended June 30, 2018, and integrated report 2017

Midtier unhedged gold producer DRDGold is the world's largest producer of gold from surface tailings retreatment. Its assets include the flagship Ergo metallurgical plant, in Brakpan, on Gauteng's East Rand, as well as the Knights plant, in Germiston, also on the East Rand. Together, these facilities comprise what is arguably the world's largest gold surface tailings retreatment facility, which processes between 2-million tonnes and 2.10-million tonnes of gold-bearing material a month.

The Ergo plant treats material from a variety of sources, including the Elsburg tailings complex, which comprises 186-million tonnes of tailings material and contains an estimated 1.70-million ounces of gold. The satellite Knights plant processes material from various sites, including the Crown Mines and City Deep pumpstations, which feed 600 000 t/m through a bespoke 50 km pipeline constructed to link the assets. These pumpstations were former plants that have been decommissioned and engineered and are currently operating as pump and milling stations.

Gold production in the 12 months to June 30, 2018, was significantly higher, with particularly stronger average yield making the largest contribution to DRDGold's performance. The company produced 150 423 oz of gold at an AISC of $1 258/oz, compared with the previous year's output of 137 114 oz at an AISC of $1 216/oz. According to the company, while throughput was 3% lower at 24.28-million tonnes (2017: 25-million tonnes), the average yield increased by 13% to 0.193 g/t (2017: 0.17 g/t), which resulted in a 10% increase in gold production.

Revenue increased by 6% to R2.49-billion in the year to June 30, 2018 (2017: R2.34-billion). Consequently, profit for the year dropped from R13.70-million in 2017 to R6.50-million in 2018. Nevertheless, DRDGold was able to declare dividends for the tenth year in a row.

In November 2017, the surface tailings producer announced that it had signed an industry-leading surface mining partnership with Sibanye-Stillwater. In August 2018, DRDGold confirmed that its acquisition of Sibanye's West Rand Tailings Retreatment Project, now known as the Far West Gold Recoveries Proprietary Limited (FWGR) assets, had been finalised.

Following the successful implementation of the transaction between the two companies, Sibanye-Stillwater now owns 38.05% of the issued share capital of DRDGold.

Under the terms of the transaction, entered into in November 2017, Sibanye agreed to exchange selected surface gold processing assets and tailing storage facilities (TSFs) for shares in DRDGold.

Sibanye also has an option to subscribe for further shares in DRDGold, enabling it to potentially hold up to 50.10% of DRDGold, within 24 months, at a 10% discount.

The transaction is expected to increase DRDGold's reserves by about 82% to six-million ounces, and reduce the company's overhead costs through increased production. It also ends the threat of DRDGold's single-asset operating risk.

The FWGR, on which DRDGold has already started construction, will be rolled out in phases.

Phase 1 involves upgrading the Driefontein 2 plant to process tailings from the Driefontein 5 dump at between 400 000 t/m and 600 000 t/m and depositing the residue on the Driefontein 4 tailings dam. First production is expected in the first quarter of 2019.

CEO Niël Pretorius explained at the company's half-year results in February 2018 that the first phase of the project would be a testing phase for DRDGold, paving the way for Phase 2.

Phase 2 envisages the construction of a high-volume central processing plant capable of processing at least one-million tonnes a month and the development of a new regional tailings storage facility. In this phase, reclamation will initially be from the Driefontein 3, Libanon and Kloof 1 dumps, and then from the Ventersdorp North and South dumps. The scale of the infrastructure established in this phase will allow for reclamation from other sources in the region.

As an alternative to Phase 2, or if Phase 2 is delayed, Phase 1 can be extended by blending in material from the Driefontein 3 dump. Envisaged is the treatment of 77.70-million tonnes from the Driefontein 3 and 5 dumps, and a further upgrade of the Driefontein 4 tailings dam.

Three major projects at Ergo – part of an ongoing drive to keep the cost line below the revenue line – were completed by the 2018 financial year, namely

DRDGold uses AMD to recover gold from dumps

Acid mine drainage (AMD), which is water that has been polluted as a result of mining activity, is being used to relieve the cost burden of the large volume of water needed to recover gold from mine dump material, as well as lower the demand placed on scarce drinking water.

Surface mining company DRDGold revealed in September 2017 that it was receiving 8 Mℓ/d of treated AMD water a day from government water organisation Trans-Caledon Tunnel Authority (TCTA), which is about the same quantity of treated sewage water that it receives daily from the sewage treatment plant operated by the East Rand Water Care Company.

The Johannesburg- and New York-listed DRDGold requires large quantities of water to mine, pump and process tailings.

Its agreement with the TCTA allows for the sourcing of up to 30 Mℓ/d of treated AMD from the statutory water authority, which has built an AMD treatment facility on the site of the south-west vertical shaft of DRDGold's defunct East Rand Proprietary Mine, in Germiston, where lime and limestone are used to neutralise the acidic water and precipitate the heavy metals in it.

By using treated AMD, sewage water and water harvested in terms of water usage licences, the company has succeeded in significantly limiting its use of potable water, which is part of a strategic intent articulated several years ago.

Source: *Mining Weekly*

Ergo dispute

DRDGold subsidiary Ergo will pay R126-million to the Ekurhuleni metropolitan municipality to ensure the continued supply of electricity to the Ergo plant. Ergo has been engaged in a legal dispute with the municipality since December 2014 regarding the payment of surcharges on the supply of electricity. Ergo argues that its electricity supply comes directly from State-owned power utility Eskom and is therefore liable to pay only Eskom rates. However, in May 2016, the municipality threatened to cut off Ergo's electricity supply unless it paid what was in arrears.

Ergo was then granted an interdict by the High Court, preventing the municipality from enforcing payment pending the court's ruling on the dispute. The R126-million paid by Ergo has been held in an attorneys trust account, pending resolution, and will be paid following a Constitutional Court ruling. The case between the two parties is scheduled to be heard in the High Court on December 5, 2018.

Ergo metallurgical plant

Picture by Creamer Media

Source: *Mining Weekly*

the ramp-up of reclamation from the 4L50 slimes dam, which is the southern portion of the Elsburg Tailings Complex, bordering Boksburg and Germiston; the conversion of the Ergo plant's electrowinning circuit to zinc precipitation; and the installation of two ball mills at Ergo, reclaimed from the company's Crown plant to process higher- grade sand at better margins.

The 4L50 slimes dam contains about 20.50-million tonnes of material, with an average grade of 0.256 g/t. Reclamation and retreatment at an estimated 450 000 t/m over the next four years is expected to result in greater plant stability and efficiency.

Cost savings of between R2-million and R2.50-million a month are expected to result from zinc precipitation, owing mainly to a major reduction in the time to complete the final stage of gold recovery – to about three hours from about 18 hours for electrowinning – and from significant cuts in the consumption of caustic soda and cyanide.

The two 60 000 t/m ball mills from Crown have been moved to the Ergo plant and refurbished at a cost of around R41-million. An estimated 12-million to 15-million tonnes of sand is recoverable from the Benoni cluster. Over the next five years, 7.30-million tonnes will be targeted for reclamation.

Gold production of between 148 000 oz and 154 000 oz is planned for Ergo in the 2019 financial year, at a cash operating cost of around R490 000/kg.

PAN AFRICAN RESOURCES

CEO: Cobus Loots/Chairperson: Keith Spencer		
	Year ended June 2018	Year ended June 2017
Revenue (R)	1.87-billion	2.16-billion
Profit/(loss) after taxation (R)	R202-million	R700.60 million
Gold sold (oz)	160 444	173 285
All-in sustaining cost ($/oz)	1 358	1 177

Compiled from Pan African Resources' provisional audited results for the year ended June 30, 2018, and the year ended June 30, 2017

Midtier precious metal producer Pan African Resources has repositioned itself as a lower-cost, longer-life gold mining company that is guiding production of 170 000 oz of gold in the 12 months to June 30, 2018, which it says it is on track to achieving. In the year to June 2018, the company produced 160 444 oz.

The company reported total mineral reserves of 11.20-million ounces grading 1.46 g/t gold for the year, as well as mineral resources of 33.30-million ounces grading 3.13 g/t gold.

Pan African produces gold from underground and surface tailings operations in Southern Africa. Its flagship gold project, Barberton, which has an life-of-mine (LoM) of 22 years, is located in South Africa's Mpumalanga province and comprises the New Consort, Sheba and Fairview mines where the Barberton Tailings Retreatment Plant (BTRP) is based. The project is also the birthplace of the company's BIOX process – an environment-friendly procedure that allows for the release of gold from

Pan African completes BEE restructure

Pan African Resources has completed the restructuring of its black economic-empowerment (BEE) ownership structures.

The company has replaced the current BEE equity shareholdings in the company, held through interests in PAR Gold, with BEE shareholdings in Emerald Panther Investments.

SA Holdco will house all Pan African's South African mining operations following implementation of the transaction, the company said in an update to shareholders in December 2017.

Pan African's BEE ownership is calculated at 26%, comprising 21% in SA Holdco and 5% from its on-mine employee ownership schemes.

Further, while the prior BEE ownership structure terminates during December 2018, the new BEE structure will terminate only on December 31, 2021, equating to a three-year extension.

Pan African has established a new BEE entity, Concrete Rose, which will house the interests to be acquired in SA Holdco, with Mabindu holding 24.75%; Pan African Resources Management Trust 10.50%; Pan African Resources Education Trust 4.95%; and Alpha Investment 9.90%.

The remaining shares in Concrete Rose are held by Fund Co with 49.90%.

Concrete Rose will subscribe for 22.11% of SA Holdco's shares for notional value through a notional vendor financed transaction.

Source: *Mining Weekly*)

surrounding sulphides, using organisms that perform this process naturally. Barberton is the training facility for all BIOX plants globally.

Barberton Mine's gold production decreased from 98 508 oz in 2017 to 90 629 oz in 2018. This was as a result of a fall in production from the BTRP from 26 745 oz to 17 504 oz, owing to the remining operation advancing to the lower-grade Harper dump following the depletion of the Bramber dump. Production was also negatively affected by operational disruptions from pressure groups, community unrest and unprotected strike action, which resulted in 58 lost production days.

The mine's underground production, meanwhile, increased from 71 763 oz to 73 125 oz. Underground operations are forecast to produce about 80 000 oz during the 2019 financial year and together with the new subvertical shaft, which is under construction, this will facilitate improved access to additional high-grade Fairview 11-block mining platforms. These initiatives will assist in maintaining and increasing future gold production from this long-life asset.

Pan African also owns the Evander Gold Mines, which has a LoM of 16 years. The company acquired the operation from Harmony Gold Mining Company in 2013. This asset base comprises a gold mine, the Evander Tailings Retreatment Plant (ETRP), as well as several brownfield projects. Large-scale underground mining at the mine's operations, which includes the 8 and 7 shafts, as well as the run-of-mine circuit in the Kinross metallurgical plant, was discontinued in May 2018. As a result, 1 635 employees were retrenched at a cost of R161-million. According to an internal and external review of the operation, it was unsustainable to continue operations at the mine in the current weak rand gold price environment.

Further, in November 2017, Pan African Resources finalised the sale of its Phoenix Platinum Mining operation to Sylvania Platinum for R89-million.

On the project front, the promising Elikhulu tailings plant project, which has an expected LoM of 13 years, held its inaugural gold pour on August 16, 2018, and was fully commissioned during September 2018.

Inaugural gold pour atthe Elikhulu tailings plant on August 16, 2018

Picture by Creamer Media Chief Photographer Dylan Slater

Employment opportunities for retrenched mineworkers

In May 2018, Pan African Resources concluded the Section 189 process in terms of the South African Labour Relations Act, and signed a retrenchment agreement with the recognised unions of Evander Mines.

The retrenched employees will be provided with opportunities for reskilling, with Pan African in the process of identifying employment opportunities for retrenched employees, internally and with potential external employers.

Additionally, Pan African is at an advanced stage of reviewing the technical and commercial merits of mining the remainder of Evander's 8 shaft pillar, which may extend the final closure date of the shaft and generate positive cash flows.

This could also, potentially, assist with further employment opportunities for those affected by the Section 189 process, the gold miner has said.

Source: *Mining Weekly*)

The Elikhulu tailings plant project entails establishing facilities and infrastructure at Evander Mines to retreat gold plant tailings at one-million tonnes a month. This is in addition to the existing production from the ETRP, which will be incorporated into the Elikhulu plant from December 2018 and will increase Elikhulu processing capacity to 1.20-million tonnes. Construction of the enlarged Kinross tailings facility is continuing.

Pan African's existing portfolio also presents attractive opportunities to further the group's profitable production path. The Royal Sheba project at Barberton mines, for which an LoM technical feasibility study in under way, has the potential access low-cost near surface mineable ounces in the short- to medium-term.

In September 2018, Pan African announced a 150% increase in mineral resources to 899 000 oz. The company is continuing with an exploration drilling programme at the orebody, the results of which Pan African has said are exceeding the company's expectations

The near surface resource of Royal Sheba is estimated at 347 000 oz, while the underground resource is delineated at 552 000 oz. The surface drilling programme, comprising 1 645 m of drilling in phases 1 and 2, has confirmed robust mineralisation extending from the surface along an 850 m strike and 150 m down dip of the Royal Sheba deposit. The company has stated that the mineralisation ranges in width from 5 m to 25 m, with *in situ* gold grades of between 0.50 g/t to 174 g/t and averaging 3.27 g/t. Further, Phase 3 of the drilling at the Royal Sheba deposit has begun testing a 600 m strike length, which is within the Sheba mine's mining right.

Pan African considers Royal Sheba's opencast orebody as a potential way to increase production from the company's flagship Barberton operations at a very competitive cost, aligned with its strategic positioning as a low-cost gold producer.

The results of a definitive feasibility study will be published in February 2019, with the outlook of starting project development in the near term.

Pan African has also embarked on an extended exploration programme within Barberton mine's mining right at the Sheba and New Consort mines around historic workings and for potential new satellite deposits.

The Egoli project at Evander Mines also remains an attractive opportunity as a standalone project, following the necessary decision to cease large-scale underground mining activities at 8 Shaft. Shareholders were informed in February 2018 of the updated resources statement of the project, and in March 2018 that the group would reassess the viability of developing Egoli as a standalone operation. The project has more than one-million ounces of contained gold in the measured and indicated resources categories.

In the year to June 30, 2018, Pan African's revenue fell from R2.16-billion to R1.87-billion, as a result of a decrease in the average rand gold price achieved and gold ounces sold. Consequently, profit for the year after taxation dropped significantly from R707.60-million to R202-million. Pan African's board therefore elected not to recommend a final dividend for the 2018 financial year; however, the company remains confident that at prevailing rand gold prices, and as a result of the remedial measures implemented, it will be able to resume its attractive dividends in the near future.

VANTAGE GOLDFIELDS

ASX-listed Vantage Goldfields owns two mines – Lily and Barbrook – in South Africa's Barberton greenstone belt in South Africa's Mpumalanga provinceboth of which are under business rescue after tragedy struck Lily mine in 2016.

In February that year, a crown pillar collapsed as a result of a sinkhole, trapping dozens of workers underground. Eventually, 76 miners were rescued. However, the bodies of three workers who were working in a lamp-room container at the time of the collapse, remain trapped underground. Vantage Goldfields immediately mothballed Lily mine and rescue operations were launched soon after the collapse in an attempt to recover the bodies of the workers, though these were later aborted as the mine was declared unsafe.

The company then started the search for an investor that could inject funds to construct a new shaft, so that the container and the bodies of the mineworkers could be retrieved and operations could resume. After several failed attempts over two years, R300-million in funding was confirmed in April 2018. Vantage Goldfields had secured R110-million from unnamed new investors, as well as R190-million from the Industrial Development Corporation, which was secured by empowerment company SSC Flaming Silver to help take the Lily and Barbrook mines out of business rescue.

The company had entered into a definitive agreement with SSC Flaming Silver in November 2017 that resulted in SSC acquiring a 74% shareholding in Vantage Goldfields, which, together with Lomshiyo Investments, a black economic-empowerment partner, now owns the Lily and Barbrook mines and associated infrastructure near Barberton.

Business rescue practitioner at Lily mine Rob Devereaux reported in April 2018 that the funding would be released in once certain conditions were met. This would reportedly happen in July 2018, after which the company would reopen Lily mine and start development of the new shaft, which would help retrieve the container and the bodies of the three mineworkers.

Rescue operations were initially supposed to resume in September 2017 after Lily mine secured about R196-million in funding, in June 2017, from Canadian mining company Galane Gold. However, the binding acquisition agreement between Galane Gold and Vantage Goldfields was terminated in August as Vantage failed to meet the conditions set out in the initial letter of intent. With Vantage not in a position to sign the acquisition agreement, Galane, which had provided an extension five times, decided not to offer another extension.

With Vantage Goldfields still facing serious financial difficulty, the Lily and Barbrook mines remain under business rescue. As a result, a number of mineworkers have taken voluntary severance packages and left the company.

Picture by Creamer Media

Outlook

South Africa's gold mining industry – once one of the largest in the world – has been hard-hit in recent years and, in May 2018, faced its eighth straight month of output decline. The country face a further decline in July 2018, with Statistics South Africa reporting a decrease in gold products in September. The country's gold mines are the deepest in the world and their depleting orebodies are becoming increasingly difficult to extract. Coupled with deteriorating safety standards owing to the depth and complexity of these mines, and compounded by regulatory issues in South Africa, the volatile rand is creating significant headwinds for all the country's gold producers.

In an attempt to face some of these headwinds, local gold producers have been restrategising through the implementation of new technologies, while others downsize, cut lossmaking operations and/or strategise through acquisitions to cut costs and improve productivity.

Looking at the country's mining industry holistically, the 2017 Fraser Institute Annual Survey of Mining Companies – an important indicator of industry health – placed South Africa at number 48 out of 91 surveyed jurisdictions for "mining investment attractiveness" up from number 74 out of 2014 in 2016.

Still, according to the South African Institute of International Affairs' Ross Harvey, the country needs to come to terms with the reality of the country's poor investment attractiveness, which is evident in the local economy's recent credit ratings downgrades. He adds, however, that South Africa's newly elected President, Cyril Ramaphosa, who came to power in February 2018, brings with him a "fresh wind of optimism", as well as a narrow window of opportunity to reverse the negative trends plaguing South Africa's mining industry.

Part of this opportunity is leveraging renewed political stability in the country to sustain the strengthening currency, which is important for growth in the country. However, the appreciation of the rand is a double-edged sword, as it impacts negatively on the gold sector, and means lower export revenues for struggling miners. The high marginal costs of gold production in South Africa makes these sectors dependent on a weak rand to ensure viability. Therefore, ironically, as Ramaphosa and Mineral Resources Minister Gwede Mantashe aim to ensure stability in the sector, the rand is likely to continue on its upward trajectory, which means gold miners' revenues are likely to take a dip in the coming years – though this could be mitigated by the aforementioned production optimisation and cost-cutting measures.

The World Gold Council remains optimistic about the future of gold

Pictures by Creamer Media

Picture by Creamer Media

Globally, the World Gold Council (WGC) remains optimistic about the future of the yellow metal, despite the challenges facing the market. The council's Gold 2048 report, published in July 2018, considers how the industry will develop over the next 30 years. In it, the council concludes that the industry should still be thriving by 2048.

"Gold supply is likely to be somewhat smaller, while jewellery and technology demand will probably have grown in a richer, more middle-class, connected world. Investment demand will see peaks and troughs, but there is enough potential economic risk to keep investors attracted to the merits of gold, following a 5 000-year-old tradition."

Listing the key takeaways from the report, WGC CEO Aram Shishmanian notes that demand for gold will undoubtedly increase owing to middle class expansion in China and India, among other countries. The report also highlights technology as an increasingly important sector for gold, as the world sees digital growth and becomes more connected.

According to Shishmanian, the industry will be hard-pressed to produce as much gold in the next 30 years as it has done in recent years and, as a result miners' production methods and stakeholder relations will need to evolve if the gold industry is to make a meaningful contribution over the next three decades.

In the near term, world gold consumption is expected to increase at an average yearly growth rate of 2% from 2018 to 2020, reaching 4 369 t in 2020, driven by an increase in jewellery consumption from China and India, according to Australia's Office of the Chief Economist's second-quarter Resources & Energy Quarterly (REQ), published in June 2018.

World gold production is forecast to increase at an average yearly growth rate of 2.10% in 2018 and 2019, reaching 4 631 t in 2019, before declining in 2020 to 4 530 t. REQ expects supply growth in 2018 and 2019 to be driven by stronger scrap supply.

Global mine production, meanwhile, is forecast to increase slightly in 2018, up 0.80% from 2017, with increased output from Canada, Indonesia and Russia to be offset by decreased output elsewhere. Mine production is forecast to peak at 3 409 t in 2019, after which a slight decline is expected in 2020, to 2 397 t.

Main sources

African News Agency. NUM to march against AngloGold Ashanti's planned retrenchments (August 4, 2017).
African News Agency. Lily mine secures R300m, search for 3 trapped miners to resume (April 24, 2018).
African News Agency. Ramaphosa mourns mining disaster deaths at Sibanye-Stillwater's Driefontein operations (May 5, 2018).
African News Agency. Kimberley's illegal miners to get mining permits (June 7, 2018).
African News Agency. New mechanisms launched to help former mineworkers claim in landmark silicosis case (June 20, 2018).
African News Agency. Minerals Council says gold sector is facing serious challenges (July 18, 2018).

AngloGold Ashanti. AngloGold posts strong full-year operating result and improved guidance for 2018 (February 20, 2018).
AngloGold Ashanti. Results for the half-year and year ended December 2017 (February 20, 2018).

Australian Government. Department of Industry, Innovation and Science. Office of the Chief Economist. Resources and Energy Quarterly: Gold (March 2018).
Australian Government. Department of Industry, Innovation and Science. Office of the Chief Economist. Resources and Energy Quarterly: Gold (June 2018).

Bloomberg. AngloGold, Harmony deal is said to stall on Mining Charter (August 3, 2017).
Bloomberg. Mine fatalities in South Africa rise first time in decade (December 8, 2017).
Bloomberg. Harmony gold says $519 000 of metal stolen from South African mine (April 11, 2018).
Bloomberg. AMCU seeks R12 500 minimum for gold miners (June 11, 2018).
Bloomberg. AngloGold chairperson warns South Africa on reckless mining rules (July 20, 2018).
Bloomberg. AngloGold says there's no escaping demise of South African gold (July 23, 2018).
Bloomberg. Fate of South African gold rests on one giant loss-making mine (July 30, 2018).
Bloomberg. Gold may hit $1 300 by end of year, ICBC says (August 6, 2018).
Bloomberg. 'Will I come back dead? Human costs of South African Gold (September 10, 2018).

Business Day. Under pressure gold miner Pan African to retrench 1 700 (February 26, 2018).

Central Rand Gold. Interim results for the six months ended 30 June 2017 (October 2017).

DRDGold. Integrated annual report 2017 (October 21, 2017).
DRDGold. Results for the six months ended 31 December 2017 (February 15, 2018).
DRDGold. Condensed consolidated provisional results for the year ended June 30, 2018 (September 5, 2018).

Financial Times. South Africa gold mining companies face silicosis lawsuit (September 13, 2017).

Forbes.com. Top 10 gold-producing countries (June 13, 2018).

Gold Fields. Integrated annual report 2017 (March 28, 2018).

Harmony Gold Mining Company. Results for the year ended 30 June, 2017 (August 17, 2017).
Harmony Gold Mining Company. Interim results for the six months ended December 31, 2017 (February 13, 2018).
Harmony Gold Mining Company. Results for the year ended 30 June, 2018 (August 21, 2018).

Minerals Council South Africa. Facts and figures 2017 (February 2018).

Miningmx. SA moves up in Fraser study but policy perception still weak (February 26, 2018).
Miningmx. AngloGold to restructure TauTona, Kopanang affecting 8 500 jobs (June 28, 2017).

Mining Weekly. CRG considering asset sale; reaches agreement with workers to end strike (May 17, 2017).
Mining Weekly. Gold Fields takes a stake in JV partner (May 19, 2017).
Mining Weekly. AngloGold to restructure South African operations to ensure viability (June 28, 2017).
Mining Weekly. Gold Fields sells Australian gold mine (August 3, 2017).
Mining Weekly. Sibanye may cut up to 7 400 jobs in proposed restructure of Beatrix West, Cooke operations (August 3, 2018).
Mining Weekly. Major setback for Lily mineworkers after another takeover deal fails (August 14, 2017).
Mining Weekly. Harmony ups S African capex to R27bn, pays 70% higher dividend (August 17, 2017).
Mining Weekly. Vibrant future planned for remaining South African mines – AngloGold (August 22, 2017).
Mining Weekly. Acid mine water used to recover gold from dumps – DRDGold (September 6, 2017).
Mining Weekly. Central Rand Gold again warns of its 'serious' financial position (September 13, 2017).
Mining Weekly. AngloGold announces potential disposal of lossmaking Kopanang (September 15, 2017).
Mining Weekly. South African mining industry must modernise – Chamber of Mines (October 18, 2017).
Mining Weekly. AngloGold Ashanti sells Moab Khotsong to Harmony; Kopanang to Heaven-Sent (October 19, 2017).
Mining Weekly. AngloGold achieves strong Q3 performance, on track to meet FY guidance (November 6, 2017).
Mining Weekly. Harmony ups output, cuts costs, improves margins (November 7, 2017).
Mining Weekly. Gold Fields invests R6m to boost mechanised mining skills in South Africa (November 22, 2017).
Mining Weekly. Sibanye share price rises on gold tailings deal with DRDGold (November 22, 2017).
Mining Weekly. Lower-than-guidance 2018 output expected at South Deep (November 24, 2017).
Mining Weekly. Harmony's Hidden Valley expansion progressing ahead of schedule (November 30, 2017).
Mining Weekly. Harmony Gold spells out value of Moab investment (December 6, 2017).
Mining Weekly. Silicosis trust has awarded quarter of R400m settlement to qualifying former mineworkers (January 10, 2018).
Mining Weekly. AngloGold output up but loss looms on impairment, retrenchment, silicosis costs (January 31, 2018).
Mining Weekly. Harmony gets shareholder go-ahead for Moab Khotsong acquisition (February 1, 2018).
Mining Weekly. Acceptance of realities prerequisite for gold mining success – DRDGold (February 5, 2018).
Mining Weekly. Unmined gold offers exciting new opportunity – Froneman (February 6, 2018).
Mining Weekly. Ergo's R126m payment to municipality to reduce DRDGold's cash (February 12, 2018).
Mining Weekly. Harmony's headline earnings soar, eight die, Moab transferred (February 13, 2018).
Mining Weekly. Gold Fields going all out topush South Deep gold mine into the black (February 14, 2018).
Mining Weekly. Gold Fields pays dividend on net loss, flat production, two fatalities (February 14, 2018).
Mining Weekly. Pretorius sees WRTRP transaction as an investment (February 15, 2018).
Mining Weekly. Moab Khotsong deal concluded (February 20, 2018).
Mining Weekly. South Africa falls to small percentage of AngloGold output (February 20, 2018).
Mining Weekly. Froneman calls for collective action towards zero harm in fatality-plagued mining business (February 22, 2018).
Mining Weekly. Moab Khotsong, Kopanang sales concluded – AngloGold (March 2, 2018).
Mining Weekly. Concerted effort needed to combat South Africa's illegal mining scourge (March 23, 2018).
Mining Weekly. Gold Fields buys stake in Asanko gold mine in Ghana (March 29, 2018).
Mining Weekly. SSC Flaming secures R190m IDC loan to revive Lily, Barbrook mines (April 3, 2018).
Mining Weekly. Sub-Saharan African mining sector to continue facing illegal mining challenges, regulatory risks (April 3, 2018).
Mining Weekly. AngloGold's Venkat resigns to take top job at Vedanta Resources (April 16, 2018).
Mining Weekly. Gold Fields lowers South Deep's FY guidance after below-expectation Q1 performance (April 25, 2018).
Mining Weekly. Harmony on track to deliver FY18 guidance (May 2, 2018).
Mining Weekly. Pan African closes Evander 8 underground mine (May 2, 2018).
Mining Weekly. South African gold miners agree to landmark silicosis, TB settlement (May 3, 2018).
Mining Weekly. Gold Road-Goldfields JV flags Gruyere delay, possible cost increases (May 4, 2018).
Mining Weekly. Mantashe urges Sibanye-Stillwater toprioritise health, safety (May 4, 2018).

Mining Weekly. South African output rises as AngloGold delivers at lower cost (May 8, 2018).
Mining Weekly. Harmony Gold poised to hit 15m oz target – CEO (May 22, 2018).
Mining Weekly. Pan African completes commissioning of Barberton regrind mill, Elikhulu topour first gold in August (May 24, 2018).
Mining Weekly. Mining industry stakeholders pledge to do more to achieve zero harm (June 4, 2018).
Mining Weekly. Positive drill results at Harmony's Kalgold underpin resource growth (June 5, 2018).
Mining Weekly. Artisanal mining should be legalised – analyst (June 7, 2018).
Mining Weekly. Illegal mining worth R7bn a year – PWC (June 14, 2018).
Mining Weekly. Sibanye-Stillwater appoints safety exec, to fund study to enhance risk management (June 20, 2018).
Mining Weekly. Ghana approves Gold Fields, Asanko JV (June 22, 2018).
Mining Weekly. AngloGold gets environmental go-ahead for Obuasi redevelopment (June 27, 2018).
Mining Weekly. Sibanye-Stillwater cuts gold production guidance, CEO outlines safety plan (July 2, 2018).
Mining Weekly. Fatality-free Pan African sparkles on lower-cost, longer-life prospects (July 12, 2018).
Mining Weekly. SA mines relying heavily on unskilled workers despite Industry 4.0 gaining traction (July 13, 2018).
Mining Weekly. New mining fund raising R750m to co-finance ancillary mine projects (July 16, 2018).
Mining Weekly. Lawyer not 'distressed' by possibility of Mining Charter being finalised in October (July 20, 2018).
Mining Weekly. Dushnisky resigns as Barrick president to take over the reins at AngloGold (July 23, 2018).
Mining Weekly. Harmony exceeds annual production guidance (July 23, 2018).
Mining Weekly. Minerals Council grilled over gold mining stats, low wage increase offer (July 25, 2018).
Mining Weekly. DRDGold expects first tailings production from WRTRP assets in Q1 2019 (August 1, 2018).
Mining Weekly. South African mining sees considerable decline of 5.20% in July – Stats SA (September 13, 2018).
Mining Weekly. AngloGold reaches three-year wage deal with AMCU, Uasa, Solidarity (September 18, 2018).

News24Wire. Development programme to equip Welkom residents with mining skills (October 16, 2017).

Pan African Resources. Integrated annual report 2017 (October 30, 2017).
Pan African Resources. Interim unaudited results for the six months ended December 31, 2017 (February 13, 2018).
Pan African Resources. Provision audited results for the year ended June 30, 2018 (September 19, 2018).

PwC. SA Mine. 9th edition (September 2017).

Reuters. Sibanye says clears most illegal miners from gold shafts (February 26, 2018).
Reuters. South Africa gold miners' silicosis lawsuit settlement expected within six weeks (March 11, 2018).
Reuters. NUM seeks 37% pay hike from gold miners over two years (May 9, 2018).
Reuters. Solidarity seeks at least 10% wage hikes in gold sector (May 11, 2018).
Reuters. AngloGold says plans 2 000 job cuts in South Africa (May 23, 2018).
Reuters. Gold Fields to set aside acquisitions, sees industry costs rising – CEO (May 30, 2018).
Reuters. Sibanye CEO says seismic events a fact of life for South African mines (June 7, 2018).
Reuters. Three miners killed in accident at Sibanye gold mine in SA (June 12, 2018).
Reuters. Class action lawsuit filed against South Africa's Sibanye-Stillwater following fatalities (June 28, 2018).
Reuters. South Africa's Ramaphosa talks tough on mine safety, says to engage tribal chiefs on land (July 17, 2018).
Reuters. South Africa gold producers offer single-digit hikes (July 18, 2018).

Sibanye-Stillwater. Operating and financial results for the six months and financial year ended 31 December 2017 (March 2018).
Sibanye-Stillwater. Operating and financial results for the six months ended June 30, 2018 (August 23, 2018).

South African Institute of International Affairs. Outlook for the South African Mining Industry (February 8, 2018).

The Citizen. Illegal gold, chrome mining milking the economy – expert (June 12, 2018).

Thomson Reuters. GFMS Gold Survey 2018 (May 8, 2018).

World Gold Council. Annual Review 2017 (February 27, 2018).
World Gold Council. Gold 2048 (May 17, 2018).
World Gold Council. Mid-year outlook 2018: Global economic trends and their impact on gold (July 19, 2018).

www.anglogoldashanti.com
www.centralrandgold.com
www.drdg.co.za
www.goldfields.co.za
www.goldwagenegotiations.co.za
www.harmony.co.za
www.mineralscouncil.org.za
www.panafricanresources.com
www.sibanyegold.co.za
www.vantagegoldfields.com

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