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GOLD

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A REVIEW OF SOUTH AFRICA'S

GOLD SECTOR

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

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LIST OF ABBREVIATIONS AND ACRONYMS

AISC	all-in sustaining cost
AMCU	Association of Mineworkers and Construction Union
capex	capital expenditure
DFS	definitive feasibility study
DRP	Damang Reinvestment Project
ETF	exchange-traded fund
ETRP	Elikhulu tailings retreatment plant
JV	joint venture
M&A	merger and acquisition
MWS	Mine Waste Solutions
Nersa	National Energy Regulator of South Africa
NUM	National Union of Mineworkers
PGM	platinum-group metals
RWI	Real Win Investments
SOFS	Southern Orange Free State
SSC	Siyakhula Sonke Empowerment Corporation
TCC	total cash cost
VMR	Village Main Reef
WGC	World Gold Council

KEY DEVELOPMENTS

August 2018: Gold major Gold Fields announces the restructuring of its South Deep operation, in Gauteng, aimed at consolidating mining activity to increase focus and match the cost structure to the level of the asset's performance. It is envisaged that about 1 100 permanent employees could be affected by the proposed restructuring.

August 2018: Midtier miner Pan African Resources celebrates the inaugural gold pour at the Elikhulu gold tailings retreatment project, in Mpumalanga.

August 2018: Srinivasan "Venkat" Venkatakrishnan resigns as CEO of South Africa-headquartered miner AngloGold Ashanti. He is succeeded by Barrick Gold executive Kelvin Dushniksy.

September 2018: Mineral Resources Minister Gwede Mantashe gazettes a new version of the Mining Charter, referred to as Mining Charter III.

October 2018: South Africa-based AngloGold Ashanti signs a $375-million, five-year underground mining contract for its Obuasi mine, in Ghana, with a joint venture between Australia's African Underground Mining Services and Accra-based Rocksure International.

November 2018: South Africa-based AngloGold Ashanti announces a process to dispose of its interest in the Sadiola gold mine, in Mali.

November 2018: The National Union of Mineworkers embarks on a protected strike at Gold Fields' South Deep mine, in Gauteng, to protest planned retrenchments at the mine. The strike stops all production at the lossmaking mine.

November 2018: Members of the Association of Mineworkers and Construction Union down tools at Sibanye-Stillwater's mines during negotiations over wages.

December 2019: Gold miner Gold Fields reaches an agreement with the National Union of Mineworkers to end a six-week strike at its South Deep mine, in Gauteng. In terms of the agreement, the retrenchment of 1 082 employees and 420 contractors goes ahead.

January 2019: The redevelopment of South Africa-based miner AngloGold Ashanti's Obuasi mine, in Ghana, begins. The project, estimated to cost between $495-million and $545-million, aims to recapitalise the orebody to bring it back into production as a modern, mechanised operation.

February 2019: Precious metals miner Sibanye-Stillwater starts a Section 189 process regarding the restructuring of its South African gold operations to address the financial losses that had been experienced at the Beatrix 1 shaft, in the Free State, and Driefontein 2, 6, 7 and 8 shafts, in Gauteng, since 2017. About 3 450 employees and 550 contractors are affected.

March 2019: Mining Charter III comes into effect, after almost three years of deliberations. The revised charter brings a degree of regulatory certainty to the gold sector and mining industry more broadly. Although considered a material improvement on previous iterations, there is still concern that it contains ambiguous provisions and risks that could create unreasonable expectations from communities and other near-mine stakeholders.

April 2019: JSE- and NYSE-listed Sibanye-Stillwater places 108.93-million new ordinary shares at R15.50 apiece with existing and new institutional investors, raising gross proceeds of about R1.70-billion, or $120-million.

April 2019: Surface miner DRDGold achieves commercial production at its Far West Gold Recoveries project, on the West Rand of Gauteng.

May 2019: Iconic South African gold mining company AngloGold Ashanti embarks on a process to review divestment options for its remaining South African assets – the underground Mponeng gold mine, in Gauteng, and surface rock-dump processing business and mine waste retreatment operation, Mine Waste Solutions, in the North West.

May 2019: The board of midtier miner Pan African Resources approves the R70-million Evander 8 Shaft Pillar project, in Mpumalanga, which is expected to contribute between 20 000 oz/y and 30 000 oz/y to production.

July 2019: The Johannesburg High Court approves the R5.20-billion settlement of the silicosis and tuberculosis class action suit between the Occupational Lung Disease Working Group – representing Gold Fields, African Rainbow Minerals, Anglo American, AngloGold Ashanti, Harmony Gold and Sibanye-Stillwater – and lawyers representing affected mineworkers.

August 2019: Spot gold hits $1 535.11/oz – the highest since 2013.

August 2019: South Africa's biggest gold producer Sibanye-Stillwater achieves a historical milestone at its gold operations, where it has managed to operate for a full year (365 days) without any fatalities. A record seven-million shifts were worked without any fatalities.

September 2019: Sello Moloko resigns as chairperson of Sibanye-Stillwater and is succeeded by academic and former chairperson of global mining giant BHP, Vincent Maphai.

Picture by Creamer Media

GLOBAL MARKET OVERVIEW

Gold's value as a safe-haven is shining amid mounting global uncertainty about the trade war between the US and China, coupled with slowing global economic growth and worldwide recession fears. In the beginning of the second half of 2019, the price of the yellow metal, which is found in nearly every continent, surged to the highest in more than six years with prices expected to continue to escalate into 2020.

The gold rally has boosted market sentiment, lifted the share prices of gold mining companies worldwide and pushed gold miners' margins higher, placing the industry in a reasonably healthy position.

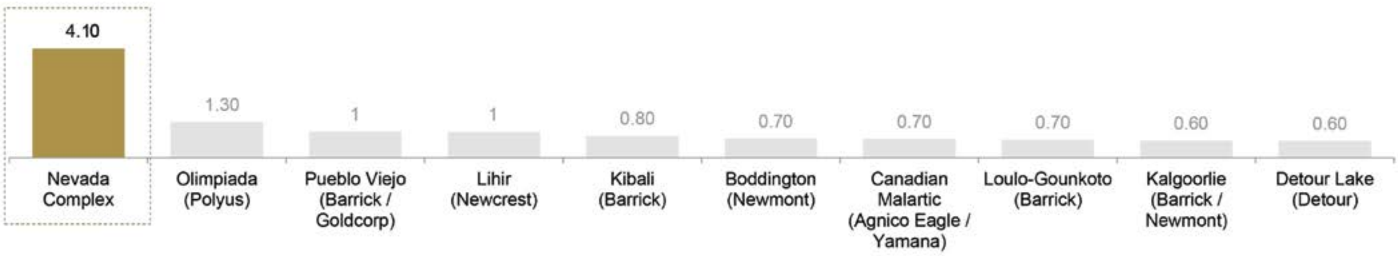
The improved sentiment in the gold industry is also generating more deal activity.

The world's biggest gold companies engaged in mergers and acquisitions (M&A) in the first half of 2019, with Canada's Barrick Gold buying Africa-focused Randgold Resources in January and US major Newmont Mining acquiring Canada's Goldcorp in April. Barrick and Newmont have also combined their operations in Nevada, in the US, in a joint venture (JV).

The megadeals have put several assets on the market, with Newmont Goldcorp having indicated that it intends to divest up to $1.50-billion in assets to take advantage of the higher gold prices. Barrick is also planning to offload assets following its Randgold acquisition, with at least two mines in Africa – the Tongon mine, in Côte d'Ivoire, and the Lumwana copper mine, in Zambia, said to be up for sale.

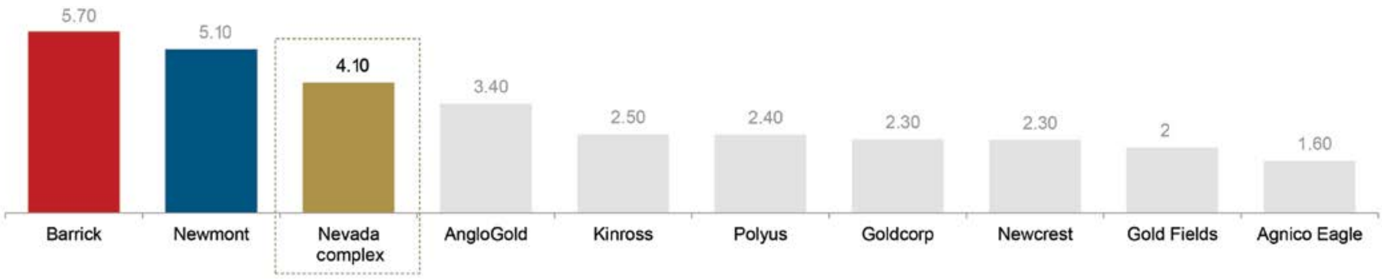
Barrick has also brought Africa-focused Acacia Mining back into its fold by buying out minority shareholders in a deal valuing the London-listed company at £343-million. Acacia was established in 2010, when Barrick spun out its African operations into a separate entity, then called African Barrick Gold (ABG). Barrick retained a 64% interest in ABG, which, in 2014, changed its name to Acacia Mining. Acacia had been in a protracted dispute with Tanzanian authorities about its gold operations in that country, but Barrick is optimistic that it can address the issues and repair relationships with government and other stakeholders.

Gold mines ranked by 2018 gold production



Source: Barrick Gold

Gold companies ranked by 2018 gold production



Source: Barrick Gold

In October 2019, Barrick formed a new partnership with the Tanzania government, setting the company on track to resume concentrate exports from the mines formerly operated by Acacia Mining.

The group agreed to a $300-million payment to settle outstanding tax and other disputes and to share future economic benefits from the Bulyanhulu, North Mara and Buzwagi mines on a 50:50 basis.

The mines will be managed by a new operating company called Twiga Minerals, in which government will have a free-carried shareholding of 16% in each of the mines and receive half the economic benefits from taxes, royalties, clearing fees and participation in all cash distributions.

The agreement marked the end of a long impasse between Tanzania and Acacia, which had led to, among other things, the closure of North Mara and the freezing of export concentrate from the two other operations.

Barrick took over the management of the mines after its buy-out of the Acacia minority shareholders in September 2019. Since then it has negotiated the reopening of North Mara and is engaging with the mines' host communities to restore their social licence.

Barrick Gold CEO Mark Bristow has said that Tanzanian nationals are already being employed and trained to replace expatriate staff as has been done successfully at Barrick's other African operations.

The parties have also established an Africa-focused international dispute resolution framework.

Following the megadeals, Newmont Goldcorp is now the world's biggest producer, with a 2018 output of 7.40-million ounces, followed by Barrick at 5.70-million ounces. South Africa's AngloGold Ashanti remains in third position, but at a more distant 3.40-million ounces, while fellow Johannesburg-headquartered Gold Fields is in seventh place with two-million ounces.

The gold mining industry remains fragmented, however, with the four largest producers, Newmont Goldcorp, Barrick, AngloGold Ashanti and Kinross Gold accounting for only one-fifth of global output and the rest comprising midtier and junior production.

Consolidation among smaller miners could help companies to capitalise on higher prices for the precious metal. Australia-based Resolute Mining CEO John Welborn believes that there are plenty of opportunities for consolidation in the Africa gold sector, particularly in projects near its assets in West Africa.

He says that many midtier miners are hoarding their ounces instead of considering the best ways of creating shareholder value at a time of elevated prices.

However, mining companies are cautious not to repeat the mistakes that were made at the beginning of the decade, when gold traded at historic highs of more than $1 900/oz.

At the time, miners went on a shopping spree, often overpaying for risky assets that destroyed shareholder value.

Gold mine production by country

Source: Metals Focus, World Gold Council

Hedge fund manager John Paulson estimates that past deals resulted in about $85-billion in write-downs.

At the August 2019 Diggers and Dealers conference, in Australia, midtier miner Evolution Mining CEO Jake Klein said to Creamer Media's *Mining Weekly* that gold miners should approach M&A activity with caution, considering the cyclical nature of the industry.

Unlike acquisitions of the past, which were often motivated by the potential of increased gold production or diversification, M&A deals now focus more on capital efficiency and operational excellence. Canada's Kingsdale Advisors states in its 'An Activist Gold Rush?' released in June 2019 that the management teams of the assets are also being closely scrutinised. There has also been a shift away from a size-for-size's-sake mindset to owning and focusing only on the best assets. A by-product likely to follow will be more noncore asset sales or increased JV or partnering arrangements.

Miners are also exercising caution when it comes to ramping up production. Gold mining executives attending the Denver Gold Forum, in the US, in September 2019, emphasised that they were making business decisions based on a gold price of $1 200/oz, even if the metal, at the time, traded above $1 500/oz.

As the CEO of Canada's Agnico Eagle Mines, Sean Boyd, said: "The message to the mines isn't 'it's open season now' for ramping up output at all cost'."

When the gold price surged in 2011, mining companies started ramping up production, at times taking on high-capital projects. The subsequent price slump dismayed investors.

SUPPLY

Mine production accounts for the biggest part of gold supply – about 75% a year. Since demand requires more than what newly mined production provides, the shortfall is typically made up from recycling.

According to information provided by the World Gold Council (WGC), total gold supply increased by 1% in 2018 to 4 490.20 t (2017: 4 447.20 t), supported by increases in mine production and recycled gold.

Mine production increased marginally to 3 346.90 t in 2018 – the tenth consecutive year of yearly growth. Although 2018's production was the highest level of mine output on record, growth is continuing to slow.

Top ten gold-producing countries in 2018

	Country	Tonnes
1	China	404.10
2	Australia	314.90
3	Russian Federation	297.30
4	United States	221.70
5	Canada	189.00
6	Peru	158.40
7	Indonesia	136.90
8	Ghana	130.50
9	South Africa	129.80
10	Mexico	115.40

Source: World Gold Council

Gold mining operations have become increasingly geographically diverse, when compared with operations of about 40 years ago, when the vast majority of the world's gold was sourced from South Africa. Many countries produce gold and the world's top six gold-producing nations account for only about 45% of global production.

In 2018, China was the biggest producer in the world and accounted for about 12% of global mine production, despite recent environmental regulations denting production levels over the past two years.

China's gold mining output has been on an upward trend for decades, with somewhat of an acceleration since liberalisation of the gold market began in about 2001.

Nonetheless, China reported lower production in 2018, where output decreased by 9%, owing to stricter environmental regulations relating to cyanide in tailings, and South Africa, where production decreased by 18%, owing to the closure of some lossmaking projects and industrial action at large mines. Peru's production decreased by 9%, as local opposition to mining took its toll on investor confidence.

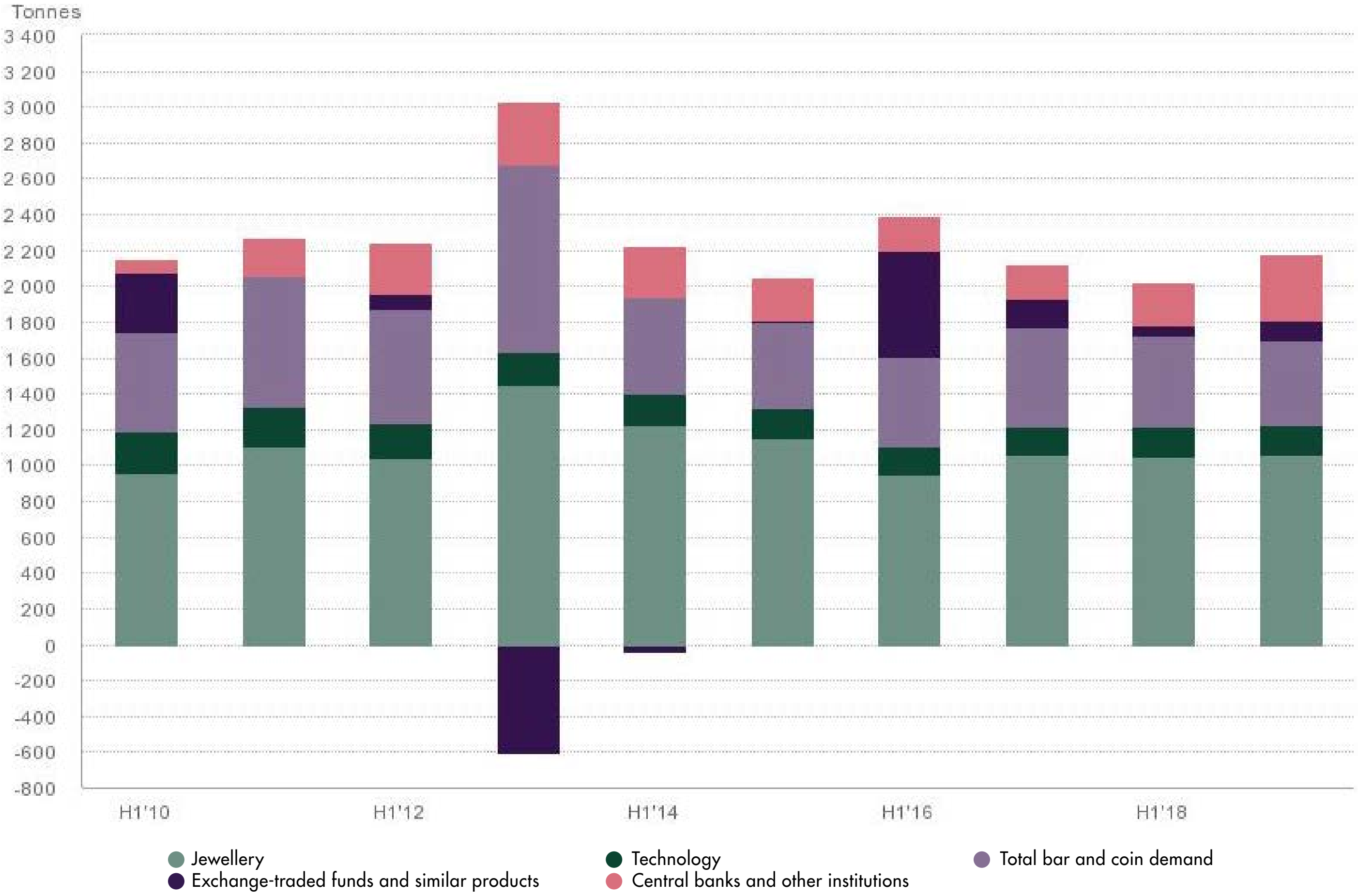
The nations that boosted output in 2018 include Australia, where record gold prices in Australian dollar terms supported growth in mine production, which rose by 4%. Russia's production

Gold supply

Tonnes	2017	2018	YoY
Total supply	4 447.20	4 490.20	1%
Mine production	3 318.90	3 346.90	1%
Net producer hedging	–27.90	–29.40	–
Recycled gold	1 156.10	1 172.60	1%

Source: World Gold Council

Gold demand trends 2010 to 2018



Source: World Gold Council
H1 – first half

increased by 10%, while Papua New Guinea's output increased by 23% year-on-year. Canada's production increased by 9%, helped by the ramp-up of greenfield projects.

Global mine production had a strong start to 2019, with the first six months' output 1.10% higher than that of the first half of 2018, at 1 730.20 t. Mine production increased to 847.50 t in the first quarter of 2019 and to 882.60 t in the second quarter.

Recycled gold is an important part of the gold supply chain and accounts for about 30% of total supply over the past two decades. The majority of recycled gold comes from jewellery.

In 2018, 1 172.60 t of gold was recycled, which is broadly in line with what was recycled in the previous year. Propelled by a strong price performance, gold recycling accelerated in the first half of 2019, with 602 t having been recycled – about 7% more than in the same period of 2018 and the highest half-year performance since 2016.

Stronger local gold prices prompted some miners to hedge, with Australian producers being the most active.

At the end of 2018, the global hedge book was estimated at 195 t, down 13% on 2017. When gold breached A$2 000/oz in the first half of 2019, Australian miners were adding fresh positions. Australia's Resolute Mining, for example, added 30 000 oz to its existing hedgebook in the second quarter of 2019.

DEMAND

Gold is bought by a diverse set of clients and investors, with the main demand stemming from jewellery, investment, central bank buying and technology. China is the world's biggest importer of gold, and according to customs data reported by newswire Reuters, it imported about 1 500 t of the metal, worth about $60-billion in 2018 – the equivalent to about one-third of the world's total supply.

Chinese demand for gold jewellery, investment bars and coins trebled in the past two decades as the country became wealthier. Reuters reports that China's official gold reserves rose fivefold to nearly 2 000 t during that time.

Although jewellery is globally the biggest demand sector, central banks were the main reason for the increase in gold demand in 2018. The WGC reports that global demand reached 4 345.10 t in 2018, up 4% from 4 159.9 t in 2017, and in line with the five-year average demand of 4 347.50 t.

Worried about global economic and political trends, central banks worldwide are on a gold buying spree, seeking safety in the precious metal in the face of many looming risks. The unprecedented demand from central banks and growing investor appetite for safe-haven assets pushed physical gold demand to its highest level in three years during the second quarter of 2019.

According to the WGC, central banks added 651.50 t to official gold reserves in 2018, up 74% from 374.80 t in 2017 and the second-highest yearly total on record. In the first half of 2019, net acquisitions totalled 374.10 t – the highest level since becoming net buyers in 2010, with nine banks having acquired gold.

"Buying momentum has continued strongly from last year – 2018 saw the highest level of annual purchases in 50 years – and it is a clear indication of the central banking community's mindset towards gold," states the WGC in its 'Gold Demand Trends' report for the second quarter of 2019.

The Chinese central bank has been buying gold on a monthly basis since December 2018 and had total gold reserves worth $88.90-billion at the end of July 2019. Citing data from the People's Bank of China, online news agency Kitco News reports that the bank bought 10 t of gold in July. The move is considered to be a way for China to diversify away from the US dollar.

Financial market data provider Refinitv states in its GFMS Gold Survey 2019 that central banks are expected to continue to build their gold holdings at a robust pace in 2019 to diversify their assets.

With the US Treasury market signalling that a recession may be on the horizon, investors have also been swarming into bullion-backed exchange-traded funds (ETFs), with total holdings reaching a six-year high in July 2019.

Market pundits believe inflows in gold-supported ETFs will continue, as financial market uncertainty has become a structural issue, and that conditions could easily get worse before they improve. WGC director of market intelligence Alistair Hewitt has said to Kitco News that negative bond yields are not going to fade "any time soon" and that they have been underpinning inflows in ETFs for some time.

Jewellery remains the biggest demand sector for gold, but in the main Western markets, gold is less popular than it was 20 or 30 years ago.

"[In terms of the] demographics, a smaller proportion of young people, the big increase in the gold price and fashion trends towards experience over possessions have all played a role in this secular decline," states WGC chief strategist and research head John Reade.

There has been cyclical growth in some Western markets, like the US, for example, over the past few years. Jewellery fabricators and retailers have also worked to modernise their product lines and the way that they market jewellery, which has helped.

China and India are the biggest markets for gold jewellery. Figures by the WGC indicate that gold demand from the sector was 2 200 t in 2018. Year-on-year demand was stable, with gains in China, the US and Russia broadly offsetting sharp losses in the Middle East. In the first half of 2019, jewellery demand was marginally firmer at 1 061.90 t – a four-year high. However, the price rally late in the first half of 2019 and into the second half has likely curtailed jewellery demand across many markets.

Jewellers in India have had a difficult year in 2019. Prices rose sharply in the second half of the year, and government

Digital currencies and gold demand

The increasing role of digital currencies, such as Bitcoin, has spurred a debate in the precious metals market about their intrinsic worth and whether their rising popularity will detract from traditional haven, gold.

For veteran investor Mark Mobius, who in an August 2019 interview with Bloomberg News gave a blanket endorsement for buying gold, the advent of crypto currencies will actually boost bullion consumption.

"You have all these currencies, new currencies coming into play," he said. "I call them 'psycho currencies,' because it's a matter of faith whether you believe in Bitcoin or in any of the other cybercurrencies. I think with the rise of that, there's going to be a demand for real, hard assets, and that includes gold."

Source: Bloomberg News

in July increased taxes on the precious metal, which pushed domestic prices to an all-time high of Rs38 666 (about $541) per 10 g. The higher gold price also coincides with slower growth in India, further dampening demand.

PRICE

Gold is traditionally viewed as a safe-haven investment in times of economic and political uncertainty. Despite the increased prevalence of cryptocurrencies and other alternative investments, gold seems to have retained its appeal.

Prices have rallied in 2019, as investors seek protection from slowing global growth, the incessant trade war between the US and China, and turmoil in the bond market that suggests the US may be headed for a recession. A decision by the US Federal Reserve in July 2019 to cut rates was also a driver of the gold price rally, while stock market volatility is regarded as a key gold-price support.

In August 2019, the metal reached new all-time highs in multiple currencies, as well as fresh six-year highs in US dollars. Prices reached $1 555.07/oz on August 26, which, at the time of writing the report, was the highest level since 2013.

Canada's Kinross Gold, which is proceeding with an expansion at its Tasiast mine, in Mauritania, believes that gold prices have established a new floor at $1 500/oz.

South African miner Pan African CEO Cobus Loots says that gold mining is an industry with "long cold winters and short but very beautiful summers". The gold price at $1 500/oz is attractive for the Mpumalanga-focused miner and at R700 000/kg even more so.

Analysts are also bullish and forecast that gold will trade higher in 2019 and 2020. French international banking group BNP Paribas expects gold to soar above $1 600/oz in 2020, if the US Federal Reserve continues to lower interest rates.

BNP's forecast for gold is to average at $1 400/oz in 2019 and at $1 560/oz in 2020. The latest forecast, published in September 2019, is an increase of $60/oz and $130/oz respectively on BNP's previous forecast.

Mounting concern about growth prompted Goldman Sachs to predict in August 2019 that prices would climb to more than $1 600/oz in the next six months. Citigroup has also forecast that level rising in six to 12 months.

Goldman Sachs has a six-month gold forecast of $1 600/oz, and Citi has said it will rise to that level in six to 12 months.

Bank of America Merrill Lynch anticipates prices climbing to $2 000/oz within two years, topping the all-time record of $1 921.17/oz reached in the spot market in 2011.

Investment manager US Global Investors CEO Frank Holmes believes that the price could reach $10 000/oz over the long term, citing a steady demand for gold from China, India and South-East Asia, while the supply of gold will eventually slow down as peak gold approaches.

The price of gold is expected to breach $1 600/oz over the next six to 12 months

Picture by Creamer Media

THE SOUTH AFRICAN MARKET

South Africa has led global gold production for more than a century and although the country has the second-biggest proven gold reserves in the world, its production has been shrinking.

Nick Holland, CEO of the world's seventh-biggest gold producer, Gold Fields, says that although there is a lot of gold in the Witwatersrand basin, it is considered to lie very deep. "We are down to 4 km to 5 km, and the problem is that you have exponential geotechnical risks, exponential virgin rock temperatures, and higher costs to extract the gold and get it to surface."

Not only is the industry facing geological challenges with deep-level mining, but the past year-and-a-half has also been fraught with disruptive labour action, the near-collapse of State-owned power utility Eskom and a loss of investor confidence.

Statistics South Africa reports that, in the past 20 years, local gold miners have had only two years of positive yearly growth – 2002 and 2013. No new deep-level gold mines have been built in South Africa in 16 years, leaving many commentators to warn that gold mining is a sunset industry, with production in terminal decline.

Iconic South African gold miners AngloGold Ashanti and Gold Fields each have only one underground mine left in the country and derive most of their revenue from international operations. The shrinking local industry is thus anchored by Harmony Gold, Sibanye-Stillwater, DRDGold and Pan African Resources.

AngloGold is considering exiting the South African industry and has put its South African assets up for sale, which includes Mponeng – the world's deepest mine – and its surface operations. The most likely companies interested in buying the assets will be Harmony, Sibanye and Chinese-supported Heaven-Sent SA Sunshine Investment. In 2018, AngloGold sold its Moab Khotsong mine, in the North West, to Harmony and its Kopanang mine, in Gauteng, to Heaven-Sent SA Sunshine.

Sibanye, led by dealmaker Neal Froneman, has indicated that it will engage with AngloGold on the sale of its South African assets and so has Harmony, which is led by Peter Steenkamp.

AngloGold touts its South African assets as a "premium package", but market commentators have said that digging 4 km underground could be daunting to investors.

South Africa's global production ranking has been dropping for a number of years and the country has now also lost its status as continent leader to rival Ghana.

The West African nation produced 130.50 t of gold in 2018, compared with South Africa's 129.80 t, as reported by the World Gold Council (WGC).

Significant opportunities are emerging in West Africa, where mines are shallower, have lower costs and operate in an environment that is considered more investor friendly.

Public Investment Corporation mining research analyst Lebohang Sekhokoane says that low-cost gold deposits in Mali, Burkina Faso, Guinea and Côte d'Ivoire offer the long-term investment potential that the State-owned pension fund prefers, rather than the five- to ten-year life span on mining projects in South Africa.

Top gold-producing countries in Africa in 2018		
	Country	**Tonnes**
1	Ghana	130.50
2	South Africa	129.80
3	Sudan	76.60
4	Mali	61.20
5	Burkina Faso	59.30
6	Tanzania	47.70
7	Democratic Republic of Congo	44.90
8	Zimbabwe	42.20
9	Côte d'Ivoire	40.90
10	Guinea	27.30
11	Senegal	17.50
12	Egypt	14.70
13	Nigeria	14.00
14	Ethiopia	11.00

Source: Compiled from World Gold Council information

Holland shares this view, as he regards West Africa as a growth region for the company. He says Ghana has a more stable regulatory environment than South Africa.

Gold Fields owns two mines in Ghana and also has a 45% share in a joint venture with Canadian miner Asanko Gold, while AngloGold Ashanti also has two wholly owned and managed operations in the West African nation.

Nigeria, on the western tip of the continent, is also being touted as a new frontier as gold miners face a dearth of new discoveries.

The country is on the cusp of getting its first industrial-scale gold mine from Thor Explorations, which is developing a project capable of producing 80 000 oz/y in the south-west of the country and aiming to start operations in early 2021.

Africa Finance Corporation is also investing in the Thor project through a $78-million debt-equity financing package.

Successive governments have pledged to expand mining's role in the economy since Nigeria returned to democracy in 1999, and legislation to enable the sector was passed 12 years ago.

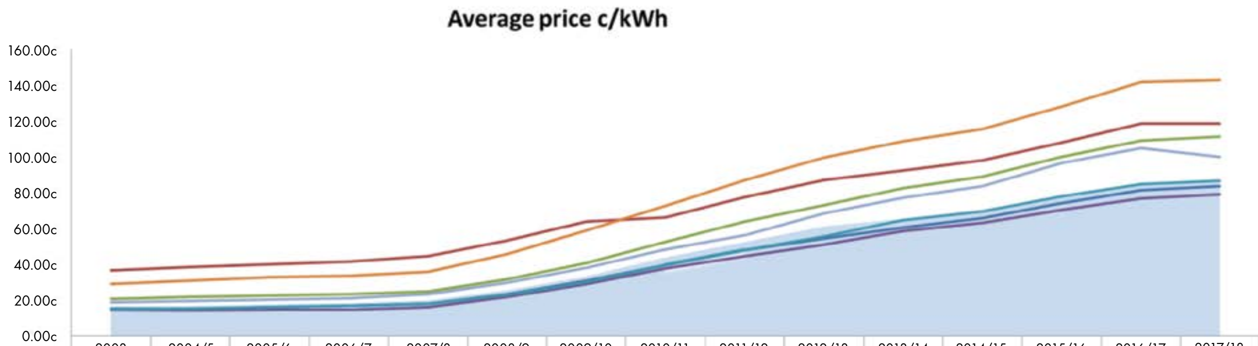
However, the country's reputation poses a major obstacle for traditional mining financiers, according to Thor CEO Segun Lawson. "When I present this project, it's very difficult to even get meetings with investors, let alone convince them to put money in . . . Nigeria is not a known mining jurisdiction."

COST PRESSURES

The average cost of mining gold in South Africa is about 60% higher than that of the global average, while the rate at which production costs are increasing is among the world's fastest, placing local producers at a disadvantage to lower-cost jurisdictions.

According to the GFMS Gold Survey 2019, published by global market data provider Refinitiv, the total cash cost (TCC) and all-in sustaining cost (AISC) of South African mines rose by 10% and 12% respectively, to "near subeconomic values" in 2018.

Eskom's yearly power increases from 2003 to 2018



	2003	2004/5	2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Average standard tariff price (excl NPA and Int'l)	16.68c	16.82c	17.69c	18.38c	19.89c	25.65c	33.39c	43.94c	52.50c	61.25c	65.48c	70.10c	78.30c	84.70c	86.07c
Local authorities	15.25c	15.19c	16.13c	16.88c	18.21c	23.29c	30.84c	39.53c	48.03c	54.59c	60.67c	65.92c	74.11c	81.38c	83.71c
Residential	36.58c	38.70c	40.08c	41.74c	44.56c	53.43c	63.98c	66.45c	77.50c	87.05c	92.41c	98.06c	108.11c	118.60c	118.56c
Commercial	20.62c	21.88c	22.69c	23.50c	24.85c	31.61c	40.97c	52.63c	63.92c	73.24c	82.67c	89.16c	100.07c	109.09c	111.25c
Industrial (excl NPA)	14.73c	14.42c	14.65c	14.76c	16.30c	21.94c	29.24c	37.64c	44.44c	51.09c	58.72c	63.26c	70.52c	76.87c	79.08c
Mining	15.07c	15.36c	16.19c	16.90c	17.99c	23.12c	30.25c	39.78c	48.10c	55.74c	64.66c	69.52c	78.01c	84.80c	86.91c
Agriculture	29.14c	30.83c	32.86c	33.69c	35.91c	45.78c	58.96c	72.72c	87.22c	99.75c	108.75c	115.66c	128.19c	141.70c	142.78c
Traction	18.98c	19.37c	20.25c	21.05c	23.31c	29.78c	38.23c	48.55c	56.24c	68.66c	77.34c	83.63c	96.60c	104.95c	100.10c

Source: Pan African Resources

The average TCC of South African producers is $1 107/oz and the AISC is $1 335/oz, compared with a global average of $696/oz and $897/oz respectively.

Production costs are higher than the global average, as the country's mines access ore at greater depths, while input costs continue to escalate. About 50% of intermediary input costs are influenced by administered prices and provided by State-owned enterprises; this excludes 35% in labour costs.

Unlike other productive sectors, mineral commodity prices are determined by the global market and cost increases cannot be transferred to the final price of the product.

The rising cost threatens marginal and lossmaking operations. At the end of 2018, 71% of gold mining operations in South Africa, representing 60% of gold production, were either marginal or lossmaking. At these operations, about 58 000 jobs are at risk.

The cost of electricity constitutes a significant component of total input costs in mining, particularly in the gold and platinum sectors.

Large increases in electricity tariffs have had a detrimental impact on the overall inflation profile of the mining sector, which had to deal with input cost inflation of about 6% in 2018.

From 2006 to 2017, South Africa's electricity tariffs increased by 488% across all categories and industries. Over the same period, the mining industry had to deal with the highest increases – 523% – by any sector.

The average tariff increase of 15.50% a year from 2006 to 2017 reduced fixed investment in gold mines by R16.06-billion.

On March 7, 2019, the National Energy Regulator of South Africa (Nersa) granted tariff increases of 9.41% for 2019/20, 8.10% for 2020/21 and 5.22% for 2021/22.

In addition, a further 4.40% increase was approved in terms of a regulatory clearing account mechanism, which pushed up the yearly electricity tariff increase for 2019/20 to 13.87%.

On an aggregated basis, the gold mining industry's production costs will increase by 29% over the three-year period, according to Minerals Council South Africa.

Although the approved tariff increases are 12% lower over the three-year period than what State-owned power utility Eskom applied for, the council states that the relief this brings to the gold industry is inconsequential when the marginal and lossmaking metrics of the industry are taken into account.

Electricity tariff increase impact on sustainability of gold operations

	End-2018	Year 1 2019/20	Year 2 2020/21	Year 3 2021/22
Inflation	–	10.95%	7.32%	8.33%
Number of marginal/ lossmaking companies	15	19	19	20
Percentage of marginal/ lossmaking operations	71.40%	90.50%	90.50%	95.20%
Kilograms produced	61 361 kg	104 479 kg	104 479 kg	105 156 kg
Percentage of marginal/ lossmaking production	56.90%	96.80%	96.80%	97.50%
Estimated employment losses based on approved tariff increases	57 482	95 107	95 107	95 723

Source: Minerals Council South Africa

It notes that, in relation to 2018's gold price, almost all gold operations will be lossmaking or marginal by the end of the three years of electricity price increases.

Mineral Resources and Energy Minister Gwede Mantashe has conceded that electricity pricing is constraining mining activities and investment. He said in September 2019 that potential commodity-price linked electricity pricing was under consideration.

Another new cost increase for the industry is the June 2019 introduction of the long-delayed carbon tax. The tax of R120/t of carbon-dioxide equivalent means a blanket increase in costs for mining companies and the Minerals Council has warned that it will push unsustainable gold operations deeper into the negative or reduce the profitability of those producing sustainably.

Meanwhile, the gold industry has warned that it cannot absorb any more electricity increases, and mining companies are increasingly studying self-generation alternatives to reduce their reliance on Eskom. Generating renewable energy for operations will take companies down the cost curve and provide crucial energy security.

Prospects for self-generation received a boost when Nersa was given Ministerial approval in May 2019 to license projects that have a combined capacity of 500 MW.

Harmony has said that it is interested in self-generation options and is considering a 30 MW solar plant in Welkom, in the Free State. The company expects solar will come in at below Eskom prices. "We haven't received the go-ahead yet, but we would certainly like to put a few of the plants and some of the mines on solar – especially those that will run for a long period . . . " CEO Peter Steenkamp has said.

Sibanye has, since 2014, also been considering the feasibility of a 150 MW solar plant on the West Rand of Gauteng, but it has been delayed by red tape.

Pan African Resources is completing a feasibility study into the construction of a 10 MVA solar power plant at the Elikhulu tailings retreatment plant in Evander, Mpumalanga. The envisaged solar plant could completely fulfill the electricity needs of the tailings operation.

Allowing the private sector to arrange its own sources of lower-cost power could strengthen the South African mining industry's investment case. However, to take mining companies completely off the grid will require substantial investments that will take several decades to come to fruition. It will also severely affect Eskom's revenue, accelerating the utility's so-called death spiral.

LABOUR RELATIONS

Employment in the gold sector has continued to decline since the 1980s, with about 101 000 workers currently employed amid declining productivity and increasing wages. Despite this, gold mining activities remain a mainstay of employment in many communities, and every employee in the gold sector supports between five and ten dependants.

The National Union of Mineworkers (NUM) is the major union in the gold sector, followed by the Association of Mineworkers and Construction Union (AMCU), UASA and Solidarity.

Every three years, AngloGold Ashanti, Harmony Gold, Sibanye-Stillwater and Village Main Reef meet with the four representative unions under the auspices of the Minerals Council to agree on new wages and conditions of employment.

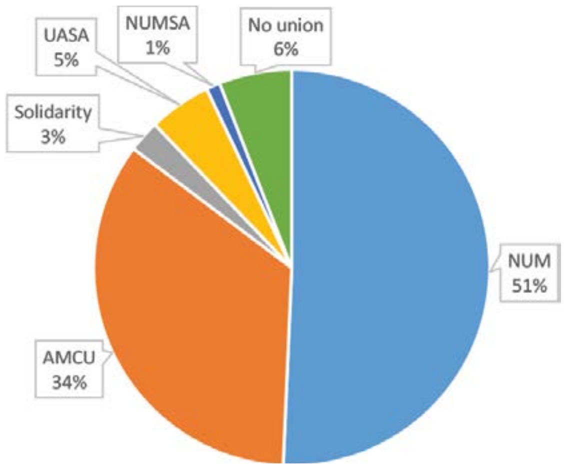
Wage demands at the 2018 negotiations were for double-digit increases that were also significantly above inflation, but three of the four companies – AngloGold, Harmony and Village – managed to secure a wage deal without strike action.

Gold industry union representation (August 2018)

	NUM	AMCU	Solidarity	UASA	NUMSA	No union	Total
AngloGold Ashanti	2 613	3 864	292	741	4	404	7 918
Sibanye-Stillwater	14 295	14 135	759	1 158	0	1 892	32 239
Harmony	18 758	7 683	820	1 929	882	1 852	31 924
Village Main Reef	4 148	1 473	165	169	0	511	6 466
Total	**39 814**	**27 155**	**2 036**	**3 997**	**886**	**4 659**	**78 547**

Source: Minerals Council South Africa

Gold mining union representation



Source: Minerals Council South Africa

The agreement affords increases ranging from 6.60% to 9.10% for the lower-skilled categories for Year 1 of the three-year accord.

Negotiations for AngloGold, Harmony and Village were finalised by early October 2018, while Sibanye reached an agreement with NUM, Solidarity and UASA by mid-November. AMCU, however, did not accept the agreement and went on strike on November 21, 2018. The strike ended on April 17, 2019, without any improved offer for the union.

At the end of February 2019, AMCU gave notice of its intention to embark on secondary strike action at a number of Minerals Council member companies across the mining sector to exert pressure on Sibanye to accede to its demands.

The union withdrew strike notices at five companies after receiving legal advice. The remaining companies approached the Labour Court for urgent relief in the form of an interdict to prevent AMCU members from striking at their operations. On March 15, 2019, Judge Connie Prinsloo found in favour of the mining companies and ruled such action to be unprotected on the basis that AMCU's secondary strike would be neither reasonable nor proportional as per the requirements outlined in the Labour Relations Act 66 of 1995.

Sibanye chairperson Sello Moloko has lamented the strained relations that the company has had with organised labour. He states in Sibanye's 2018 annual report that the triple developmental challenges of unemployment, inequality and poverty pose a significant threat to social stability in South Africa, and directly threaten the sustainability of the mining industry.

"The mining industry's ability to continue to shoulder an ever-increasing responsibility to deliver services and infrastructure to communities is limited and uncompetitive, and needs to be addressed with some urgency."

Moloko also says that while the AMCU-led strike at Sibanye's operations was ostensibly related to the wage negotiations, the five-month industrial action was destructive and workers were the worst affected. "Employees seldom, if ever, recover wages lost during strikes and it is unfortunate that their interests are not always taken into account by parties who are meant to represent them."

In 2018, legislation was introduced that requires unions to amend their constitutions to ensure that secret ballots are conducted to obtain a mandate from their members to proceed with a strike. Previously, union leaders received mandates at mass meetings, where peer pressure and intimidation were often rife.

Further, the Department of Labour registrar has also threatened to deregister AMCU for not complying with labour laws. The militant union, led by Joseph Mathunjwa, has been accused of failing to hold an elective conference since 2013, in violation of labour legislation that requires a trade union leadership vote every five years.

The government halted the deregistration process to enable AMCU time to meet requirements and in September 2019, an elective conference was held and Mathunjwa was re-elected.

SILICOSIS

In July 2019, the Johannesburg High Court approved a historic R5.20-billion settlement agreement in the lengthy silicosis and tuberculosis class action suit. The legal process involving mineworkers who have been affected by lung diseases has stretched over several years and has been described as one of the "most complex multiparty class action settlements ever concluded".

The agreement, on behalf of thousands of mineworkers and their dependants, affects people who contracted silicosis or pulmonary tuberculosis during or after being employed as gold mineworkers from March 1965.

The six mining companies paying out the collective R5.20-billion formed the Occupational Lung Disease working group, which represents African Rainbow Minerals, Anglo American South Africa, AngloGold Ashanti, Gold Fields, Harmony and Sibanye-Stillwater. The mining companies admitted that they had failed to take necessary precautions to protect their employees from the silica dust at gold mines.

Mineworkers and the dependants of deceased mineworkers were represented by various lawyers, including Richard Spoor and the Legal Resources Centre.

In a May 2016 High Court judgment, the case was certified as a class-action suit and in December 2018, the court declared four classes of claimants:

- People who contracted silicosis or were exposed to silica dust.
- The dependants of deceased mineworkers who fell ill with silicosis.
- People suffering from tuberculosis.
- The dependants of deceased mineworkers who contracted tuberculosis.

The claimants will be paid out between R70 000 and R500 000, depending under which category they have been classified.

The benefits will be paid through the Tshiamiso Trust, established specifically for this purpose. The trust will receive R845-million to identify and locate eligible mineworkers and dependants, and will assess, process and pay their claims.

Minerals Council South Africa CEO Roger Baxter has described the settlement as an "historic outcome". Parliament also welcomed the settlement as an "example for future claims to be expedited".

Prior to the establishment of the Tshiamiso Trust, the Q(h)ubeka Trust was formed in March 2016 in a legal settlement between attorneys representing former mineworkers, and Anglo American South Africa and AngloGold Ashanti.

Although dealing with similar issues, the Q(h)ubeka Trust should not be confused with the Tshiamiso Trust.

The Q(h)ubeka Trust provides compensation for qualifying claimants and dependant claimants in respect of silica-related diseases. The March 2016 settlement covers 4 365 named ex-mineworkers, or claimants, who reside mainly in the Eastern Cape, Free State, Gauteng, and in the neighbouring countries of Lesotho and eSwatini.

Of the closed list of named claimants, about 3 500 have been referred for medical assessments and of those, more than half have been determined to be suffering from silicosis and its effects.

The Q(h)ubeka Trust has, thus far, paid out R166-million to 1 626 qualifying beneficiaries and dependants.

Q(h)ubeka chairperson Dr Sophia Kisting-Cairncross has said that processing claims of deceased claimants, which represent about 20% of all claimants, continues to be a challenge because of the lack of medical records. The Q(h)ubeka Trust is working with specialists to develop an instrument that can determine whether, in the absence of medical records, a claimant who died may have had silicosis.

The medical process is also more complex than initially envisaged. Tuberculosis scarring often hides the presence of silicosis, making diagnosis difficult, time-consuming and costly, especially in instances where computerised tomography scans became necessary.

CRIMINAL ACTIVITY

Despite being on the radar for many years, illegal mining, crime and theft of precious metals and security at mines remain major concerns for the gold mining industry.

It is estimated that about 30 000 illegal mineworkers, the so-called zama-zamas, work in and around many of the 6 000 disused and ownerless mines across South Africa. Citing illicit artisanal mining specialist, independent investigative researcher and technical adviser Alan Martin, *Mining Weekly* reports that the infiltration of zama-zamas also extends to currently active commercial mines.

Unique to South Africa is that illegal mineworkers mostly target underground industrial shafts, as opposed to openpits, as is normally the case, and this occurs within large-scale mines.

Organised by criminal syndicates, illegal mining is responsible for billions of rands in lost tax revenue, and threatens not only physical infrastructure and public safety but also causes major security problems for established, publicly listed companies.

A 2015 report estimated that about 10% of South Africa's gold production – worth about R8-billion – is stolen and smuggled out of the country. The Global Initiative against Transnational Organised Crime believes that lost gold production far exceeds R14-billion a year, while Minerals Council South Africa, in a document submitted to Parliament in March 2017, estimates the lost sales, taxes and royalties at R21-billion a year.

A policy brief from Enact, a project of the Institute for Security Studies, Interpol and the Global Initiative against Transnational Organised Crime, states that one mining house surveyed has, since 2013, spent about R366-million on upgrading its security infrastructure and protocols to make it more difficult for zama-zamas to penetrate the mining precinct and its shafts.

An emerging gold mining company, Blyvoor Gold, which is targeting a resumption of mining at the old Blyvooruitzicht gold mine, west of Johannesburg, has also taken substantial measures to ensure the safety of its people and assets. The company has built a six-metre-high reinforced concrete wall around the mine complex, with facilities for security guards on the inside of the upper level of the wall, which is bulletproof. Ahead of the wall is a six-metre-high razor-wire fence and ahead of that, a 4 m moat to thwart illegal mining.

The dangers posed by illegal mining include the uncontrolled use of explosives, which compromises support pillars in decommissioned mines. This has resulted in tremors and places the structural integrity of roads and adjacent residential communities and businesses at risk. It also poses a significant public safety threat, as some of the blasting has taken place close to pipelines carrying gas and fuel.

Other risks include the temporary closure of commercial mines and the death of or injuries to illegal mineworkers, as well as their being trapped underground.

Zama-zamas also face a plethora of dangers, such as extortion, murder, forced migration, money laundering, corruption, racketeering, drugs and prostitution within a market constituting a five-tier system.

Illegal miners constitute the first tier and are responsible for physically mining the minerals underground, while the second tier comprises the buyers, who also organise the first-tier illegal miners and support them with food, protection and equipment. The third tier comprises the regional bulk buyers, many of whom have permits issued in terms of the Precious Metals Act to trade in precious metal, while the fourth tier contains national or international distributors using front companies or legitimate exporters. Within the fifth tier are the top international receivers and distributors that work through international refineries and intermediary companies.

The five-tier system shows that the underground workers take the most risks for the least amount of reward. Hundreds of illegal mineworkers die in mining accidents that are not reported or from which the bodies are never recovered, or during below-ground shootouts with mine security or competing syndicates. While no official record of zama-zama deaths exists, some estimations place fatalities at well over 300 from 2012 to 2015. About 67% are the result of turf wars, mostly in Gauteng, with the violence in affected areas equated to that of chaotic and conflict-ridden illegal artisanal mine sites in active war zones.

Martin further explains that zama-zamas are emblematic of a changing South African mining landscape and are a direct by-product of socioeconomic inequalities. Since 1995, employment within the gold mining sector plunged from about 380 000 to about 119 000 in 2014, with Minerals Council figures showing

Picture by Bloomberg

An abandoned mine shaft used by illegal miners stands near Brakpan, in Gauteng

further declines to 101 085 in 2018. This has had social ramifications beyond South Africa's borders, as remittances from mining jobs have sustained local economies in countries such as Lesotho and Mozambique. This social crisis means that unemployed men with mining experience are willing to take their chances as zama-zamas to earn a living.

While government takes the hardline stance of intermittently using police to subdue and criminalise artisanal miners, Martin believes that this fails to address the underlying socioeconomic factors or the role played by criminal networks in orchestrating and benefiting from illegal mining. It also fails to acknowledge the economic potential of the zama-zamas and the contribution they make to local economies and those of their home countries.

The extent of the violence and criminality requires the South African gold industry to urgently apply a stricter and more robust risk assessment to its supply chain and overhaul legislation to find ways of harnessing the mineworkers' economic potential, besides others.

Two South African diamond operations took an unprecedented step in 2018 by allowing zama-zamas to mine tailings on their properties through a cooperation agreement, creating a possible model for other operations to follow.

While this model is not deemed a feasible option for active gold mines, which have invested heavily in infrastructure, this could be a game changer for South Africa's disused gold mines and could be considered for similar above-ground mining operations that have been affected by illegal mining. Such arrangements allow for artisanal and small-scale mining within an industrial concession, but set parameters on how artisanal mineworkers work and sell their production.

Mineral Resources and Energy Minister Gwede Mantashe reported in July 2019 that South Africa, and other countries, had tabled a draft resolution to the United Nations Commission on Crime Prevention and Criminal Justice. The resolution is about combating transnational, organised crime and its links to illicit trafficking in precious metals and illegal mining. The resolution also includes enhancing the security of supply chains of precious metals.

The Minister said that a national strategy would be drawn up to eliminate the illicit mining and trade of precious metals and diamonds.

Gold industry reels under attacks by armed gangs

South Africa's gold industry is reeling under an increased number of attacks by heavily armed gunmen at their processing plants, looking for easy and lucrative access to the metal that is selling for more than R700 000/kg.

The industry has for years struggled with illegal miners, but according to an article in financial daily newspaper Business Day, the narrative over the past year has taken on a new and more sinister tone, with gangs armed with AK-47s and other automatic rifles to attack plants to steal concentrate or smelted gold.

In a recent attack on gold recovery specialist DRDGold in October 2019, a gang of about 16 to 20 men armed with automatic rifles took 11 company employees hostage at the Ergo operation near Brakpan, east of Johannesburg, to gain access to the gold plant. DRDGold chief security officer Bart Coetzee was shot dead, and the gang escaped with 17 kg of gold in concentrate worth about R12-million.

International precious metals mining company Sibanye-Stillwater was also raided over the past year by a gang that was driven away by security after a fierce gun battle, the newspaper has quoted spokesperson James Wellsted as saying.

Gold One, which is Chinese owned and a 20% shareholder in Sibanye, was attacked by a gang of 20 in May 2019. A wall of the smelter house was destroyed with mine equipment and gold worth R25-million stolen.

"These guys are highly organised, and it's relatively easy to get high-grade gold-bearing material compared to digging out little bits in dangerous underground conditions for months on end. They can make millions in a single hit. They are very well armed and they're extremely brazen," Wellsted said.

A senior executive at another gold company has said that there have been about a dozen such attacks so far in 2019, and the industry is demanding a more focused response from the police, with specialist reaction teams deployed by helicopters to intervene when these raids happened.

Source: Business Day


Picture by Creamer Media

GOLD MINING COMPANIES

ANGLOGOLD ASHANTI

AngloGold Ashanti is a global gold mining company with a diverse portfolio of mines and projects. Measured by production, the group is the third-biggest gold mining company in the world. AngloGold maintains a primary listing on the JSE and also has listings on the NYSE, the ASX and the Ghana Stock Exchange.

The organisation describes its portfolio of 14 operations in nine countries as long-life, relatively low-cost operating assets with differing orebody types, located in key gold-producing regions. These operating assets are supported by three greenfield projects in a tenth country and a focused global exploration programme. The operations are based in Argentina, Brazil, Guinea, Mali, Ghana, Democratic Republic of Congo, Tanzania, South Africa and Australia. The greenfield discoveries are located in Colombia.

CEO Kelvin Dushnisky has described a portfolio of 14 assets as "somewhat heavy". "Given the growing complexity of operating large, commercial-scale operations anywhere in the world, my preference is for more focused management oversight of operating hubs," he states in AngloGold's 2018 annual report.

To streamline its business, AngloGold has started two separate processes for the disposal of its holdings in Cerro Vanguardia, in Argentina, and Sadiola, in Mali.

CEO Kelvin Dushnisky/Chairperson Sipho Pityana				
	Interim period June 2019	**Year ended December 2018**	**Year ended December 2017**	**2019 guidance**
Gold income	$1.79-billion	$3.81-billion	$4.36-billion	–
Profit/(loss)	$114-million	$133-million	($191-million)	–
Headline earnings	$120-million	$220-million	$27-million	–
Gold production (group total)	1.55-million ounces	3.35-million ounces	3.76-million ounces	3.25-million to 3.45-million ounces
Gold production (South Africa)	193 000 oz	487 000 oz	903 000 oz	–
All-in sustaining cost (group total)	$1 002/oz	$976/oz	$1 054/oz	$935/oz to $995/oz
All-in sustaining cost (South Africa)	$1 169/oz	$1 178/oz	$1 245/oz	–
Mineral reserves	–	44.10-million ounces	49.50-million ounces	–
Fatalities	0	3 (one in South Africa)	1	-

Source:

A process is also under way to sell its remaining South African assets – the underground Mponeng mine, on the border of Gauteng and the North West, and its Surface Operations business. Surface Operations encompasses surface facilities in the West Wits area and in the former Vaal River area, which extract gold from marginal ore dumps and tailings storage facilities. The business also includes Mine Waste Solutions (MWS), which operates independently, processing slurry material reclaimed hydraulically from various tailings storage facilities.

In 2018, AngloGold concluded the R3.574-billion sale of its Moab Khotsong gold mine, in the North West, and related assets and liabilities, to gold mining company Harmony Gold; and the sale of its Kopanang gold mine, in Gauteng, as well as related assets and liabilities, to Chinese-supported investment company Heaven-Sent SA Sunshine.

Mponeng is ramping up production from the 'Below 120 Level' project, which gives it a life span of about eight years. To extend that further, the mine will require additional capital investment, which VP Mike Erickson says will likely run into the "hundreds of millions" of dollars, and analysts at financial services firm JPMorgan Chase & Co estimate it will be about $1-billion. Nevertheless, the Mponeng Phase 2 project, which involves deepening the secondary shaft, will have to compete for capital with a host of other projects in the portfolio, which are considered more attractive, given higher returns and quicker payback periods. Dushnisky said in March 2019 that a decision about extending Mponeng had to be made "inside of 18 months".

"Mponeng is a great asset and it's just a matter of our having other priorities in the portfolio. We feel that the asset could represent greater value in the hands of another company," Dushnisky commented to *Mining Weekly*.

Picture by

Mponeng mine

The data room for the South African asset disposal process was opened in July 2019 and, by August 2019, the group reported that it had received interest from "very strong and credible parties" for the assets. AngloGold expects to agree to a sale of its South African assets in the first half of 2020. If an adequate bid does not materialise, AngloGold has said it will keep Mponeng.

Mponeng has a reserve of 2.80-million ounces and an investment in the mine should open an area with higher grades. The grade of Mponeng's 11.60-million-ounce reserve is about 9.90 g/t, with an additional 20-year life-of-mine. The current mine lease extends to 2037. The complementary MWS has a reserve of 5.20-million ounces.

The mining company does not have a firm timeframe for its exit from South Africa, but executives told *Mining Weekly* at a conference in Australia in August 2019 that the move was expected "sooner, rather than later".

It has been speculated that exiting its South African operations could be a precursor to AngloGold moving its listings to London or Toronto, but Dushnisky has said that the company plans to remain on the JSE, although it could move its primary listing elsewhere.

Operating and financial performance

Following the sale of Moab Khotsong and Kopanang in 2018, AngloGold restructured its remaining South Africa assets and turned those cash positive. The restructuring, sale and closing of the TauTona mine initially led AngloGold to expect about 2 000 job losses, but forced retrenchments have been limited to 72. This was achieved by offering voluntary severance packages, and preserving jobs when selling some of the mines and the noncore assets, such as healthcare facilities and rail networks, in the Vaal River area.

AngloGold's South African operations produced 487 000 oz at a total cash cost (TCC) of $1 033/oz in 2018, compared with 903 000 oz at a TCC of $1 085/oz in the previous year.

The decrease in production reflects the reduction in the number of mines in the country, with Kopanang and Moab Khotsong contributing for only two months of the year, following their sales on February 28, 2018. Further, following TauTona (including Savuka) being placed on orderly closure, there was no production from that mine in 2018.

Production from retained operations, excluding those assets sold and undergoing orderly closure, was 436 000 oz, which was up 2% year-on-year.

At MWS, 2018 production was 103 000 oz at a TCC of $812/oz. Following a change in processing strategy in 2018, MWS will focus solely on gold recovery in future. The uranium plant has ceased operating.

Overall, the group's production for 2018 was at the top end of its guidance at 3.35-million ounces. Compared with 2017, production was lower, but that was mainly owing to the sale and closure of assets in South Africa.

The group's TCC was $765/oz in 2018, compared with $738/oz in 2017. The AISC for the retained operations were $968/oz, compared with $1 017/oz in 2017.

In the first half of 2019, AngloGold's South Africa operations produced 193 000 oz at a TCC of $1 021/oz, compared with 257 000 oz at a TCC of $1 152/oz in the first half of 2018. The AISC for the South Africa operations fell to $1 169/oz in the interim period, from $1 308/oz in the same period of 2018.

Mponeng produced 114 000 oz at a TCC of $1 018/oz, compared with 119 000 oz at a TCC of $1 147/oz in the first half of 2017. Production at surface operations and MWS was negatively impacted on by intermittent power availability and inclement weather.

Total group production for the six months decreased by 5% year-on-year to 1.55-million ounces, at a TCC of $792/oz and an AISC of $1 002/oz.

AngloGold's free cash flow for 2018 was $217-million, compared with $125-million in 2017. Headline earnings for 2018 were $220-million, or 53c a share, compared with $27-million, or 6c a share, in 2017. Net debt was $1.66-billion at December 31, 2018.

Projects

AngloGold invested $721-million in capital expenditure (capex) in 2018, which is 24% less than that of 2017 and at the bottom end of its guidance of between $800-million to $920-million. Of the capex for 2018, $148-million was invested in growth projects at the Obuasi and Siguiri mines, in Ghana, and at the Kibali joint venture (JV) with Barrick Gold in the Democratic Republic of Congo.

Group capex is guided to be between $850-million and $920-million in 2019.

The Obuasi redevelopment project is the current strategic priority. The mine was placed on care and maintenance in 2016, pending the start of the redevelopment project. The orebody has 5.80-million ounces of ore reserves and 34-million ounces of mineral resources.

The Ghana Parliament ratified an agreement between the company and government in June 2018, paving the way for development work to start in January 2019. The first blast took place in February 2019.

The project is being implemented in two phases, with Phase 1

Executive portfolio changes

Barrick Gold executive Kelvin Dushnisky succeeded Srinivasan "Venkat" Venkatakrishnan as CEO of AngloGold Ashanti in August 2018.

In addition, the group has announced several organisational and management changes, which have taken place primarily from the talent pool within the organisation.

These appointments were implemented in parallel with the planned retirements of COO for South Africa, Chris Sheppard, executive VP for sustainable development David Noko, and executive VP for strategy and business development Charles Carter.

The global operating base will remain in two regions, each overseen by a COO.

The Africa portfolio, which will now include the rationalised South Africa footprint, will be overseen by Sicelo Ntuli, formerly senior VP for Continental Africa. AngloGold reports that Sicelo has done excellent work in driving the turnaround of the Iduapriem mine, in Ghana, and for the past two years under Ludwig Eybers' guidance, has had line responsibility for the Continental Africa region.

Moses Madondo, who worked as senior VP for the Vaal River region before the sale of those assets in 2018, has assumed responsibility for the South Africa portfolio, as senior VP: South Africa.

Eybers will remain COO: International, with greater focus on advancing the Colombia options up the value curve, unlocking the potential that exists within the Brazil and Australia assets, and ensuring AngloGold's global exploration programme continues to deliver strong outcomes.

Pierre Chenard, formerly senior VP of business development of Rio Tinto Alcan, and also its general counsel, has been named executive VP for business development and strategy.

Stewart Bailey, formerly senior VP of investor relations and group communications, has been named executive VP of corporate affairs.

Source: AngloGold Ashanti

comprising project establishment, mine rehabilitation and development, as well as plant and infrastructure refurbishment, to allow for production at 2 000 t/d for the first operating year.

Phase 2 will include refurbishment of the underground materials handling system, shafts and ventilation, as well as construction of the primary crusher, the semiautogenous grinding/ball circuit, carbon regeneration, a new gold room and tailings storage facility. This is expected to take a further 12 months and enable the operation to expand to 4 000 t/d by the end of 2020. The operation is then expected to ramp up to 5 000 t/d over the following three years.

Mine production in the first ten years will focus on the upper orebodies and is expected to average 350 000 oz/y to 450 000 oz/y at an average head grade of 8.10 g/t. In the following ten years, average production of 400 000 oz/y to 450 000 oz/y is forecast. TCCs are expected to average between $590/oz and $680/oz and AISC between $750/oz and $850/oz.

AngloGold has awarded a $375-million, five-year underground mining contract to Underground Mining Alliance – a JV between Australia's African Underground Mining Services and Ghana-based Rocksure International.

The Obuasi redevelopment project's latest capex guidance is $495-million to $545-million. The range increased from a previously guided $450-million to $500-million, following a decision in November 2018 to buy the mining fleet for the project for $46-million. The acquisition will reduce the contract rates over the period of the mining contract and should improve AISC by $25/oz. The mine will produce its first gold by the end of 2019.

Other international projects include the Boston Shaker underground development project, which will enable the Tropicana mine, in Australia, to maintain production at between 450 000 oz/y and 500 000 oz/y over the next five years. The first blast took place in May 2019 and the project should deliver its first gold in the second half of 2020.

GOLD FIELDS

Gold Fields is the world's seventh-biggest gold mining firm. Headquartered in Johannesburg, the company is listed on the JSE and NYSE. Following the unbundling of most of its South African gold mines in 2012 into what is now Sibanye-Stillwater, Gold Fields owns the South Deep mine, west of Johannesburg, in Gauteng.

Gold Fields' total gold-equivalent mineral reserve comprised 50.30-million ounces in December 2018, of which 41% is outside South Africa.

In Ghana, Gold Fields owns a 90% interest in the Tarkwa and Damang mines, as well as a 45% interest in the Asanko mine. Its Australia operations include the St Ives, Agnew/Lawlers and Granny Smith mines, as well as a JV in the Gruyere project. The company also owns the Cerro Corona mine, in Peru.

South Deep has faced operational obstacles in a tough geological setting – 3 km below the surface – and has lost R4-billion in the five years to 2018.

CEO Nick Holland/Chairperson Cheryl Carolus				
	Interim period June 2019	Year ended December 2018	Year ended December 2017	2019 guidance
Revenue	$1.38-billion	$2.58-billion	$2.76-billion	–
Profit/(loss)	$70.50-million	($344.80-million)	($20.80-million)	–
Gold production (group total)	1.08-million ounces	2.04-million ounces	2.23-million ounces	2.13-million to 2.18-million ounces
Gold production (South Africa)	91 700 oz	157 100 oz	281 300 oz	193 000 oz
All-in sustaining cost (group total)	$910/oz	$981/oz	$955/oz	$980/oz to $995/oz
All-in sustaining cost (South Africa)	$1 529/oz	$1 207/oz		–
All-in cost (group total)	$1 132/oz	$1 173/oz	$1 088/oz	–
All-in cost (South Africa)	$1 529/oz	$2 012/oz	$1 400/oz	$1 394/oz
Mineral reserves (gold equivalent)	–	50.30-million ounces	50.80-million ounces	–
Fatalities	1	1	3	–

Source: Gold Fields


Picture by Creamer Media

South Deep mine

Since Gold Fields bought the South Deep mine in 2006, it has spent about R32-billion in addition to the R22-billion acquisition cost to transition the mine to a modern, mechanised operation. Despite a restructuring process in late 2017 and early 2018, during which time various measures were implemented to turn South Deep into a profitable operation, the mine continued to lose about R100-million a month.

A new restructuring process was announced in August 2018, which was aimed at bringing costs in line with the mine's performance.

The Section 189 notice, in terms of the Labour Relations Act, prompted a protected strike by the dominant union, the National Union of Mineworkers (NUM). Its members downed tools for six weeks in November. Gold Fields and the NUM signed an agreement ending the strike in December, but the retrenchment of 1 082 employees and 420 contractors still went ahead.

The South Deep workforce was reduced by 38% from 3 983 to 2 460 and the number of contractors from 2 294 to 1 725. Gold Fields maintains that the restructuring was a necessary basis for securing the future of the mine and the remaining 3 500 jobs, although Mineral Resources and Energy Minister Gwede Mantashe has blamed the job cuts on "poor management".

The strike had a major impact on South Deep, which experienced a cash burn of about R6-million a day. Production was suspended for 41 days, with a preceding "go slow" and acts of sabotage being reported. It took a further eight days to start up operations, after operations had resumed on December 15.

Operating and financial performance

Having spent $502-million in project capital over the past two years, primarily on Damang and Gruyere, Gold Fields is now on track to ensure that its international operations will produce more than two-million ounces a year for the next decade. This milestone is expected to be reached for the first time in 2019.

The group produced 2.04-million ounces in 2018 (2017: 2.16-million ounces) and is forecasting a 4% to 7% increase in 2019.

At the Ghana operations, gold production increased by 6% to 750 200 oz in 2018 (2017: 710 000 oz), owing to higher production at Damang and the inclusion of 44 500 oz from Asanko for the five months ended December 2018. The group's continuing operations in Australia reported production of 886 400 oz in 2018 (2017: 895 400 oz).

At South Deep, production decreased by 44% to 157 100 oz (2017: 281 300 oz), owing to lower volumes and grades. Lower production was attributed mainly to the extended strike that the NUM called to protest against retrenchments, the restructuring process and a fatal accident.

In the first half of 2019, attributable gold production increased by 9% year-on-year to 1.08-million ounces (six months to June 30, 2018: 994 000 oz). Although production at South Deep decreased by 5% in the interim period to 91 700 oz (six months to June 30, 2018: 96 500 oz), the resources deployed reduced in a larger ratio, improving the unit cost and profitability of the mine.

Gold Fields CEO Nick Holland said in August 2019 that the "very painful and time-consuming restructuring process", which removed more than R800-million from South Deep's cost base, had yielded positive results. He explained that the mine had to be recalibrated after the strike.

New mine development was suspended at the bottom of the South Deep mine shaft and the south shaft was essentially turned into a services shaft, not a fully fledged operating shaft. By the second quarter of 2019, South Deep was in a better position than before, with production up almost 70% on that of the first quarter. Costs also decreased to about R590 000/kg and the mine made a cash flow contribution of R71-million for the quarter.

Headline earnings for 2018 were $61-million (2017: $210-million), or $0.07 a share. Net loss for the year was $348-million (2017: $19-million), or $0.42 a share. The group reported headline earnings of $39.90-million in the first half of 2019 (six months to June 30, 2018: $66.70-million).

AISC and all-in costs (AIC) were $981/oz (2017: $955/oz) and $1 173/oz (2017: $1 088/oz) respectively, both below the lower end of the company's guidance range. All operations, besides South Deep, exceeded the guidance for the year. Gold Fields' AISC for the interim period was $910/oz (six months to June 30, 2018: $871/oz).

With a two-year investment period having concluded, Gold Fields turned cash flow positive in the first half of 2019. Its cash flow improved to $49-million in the six-month period, from an outflow position of $79-million in the half-year ended June 2018. Gold Fields expects its cash-generating ability to increase in the second half of 2019 and into 2020, as the project capex reduces and contributions from its new projects increase.

Gold Fields spent $814-million in 2018 (2017: $834-million) and has budgeted $633-million in capex for 2019.

About $58-million (R770-million) of the total 2018 capex was spent at South Deep, with $40-million going to growth capex and the balance to sustaining capex. In 2019, Gold Fields will invest $36-million at South Deep, but none of it will be in growth capex.

Projects

With only one asset remaining in South Africa, Gold Fields' main project focus in recent years has been on international projects.

In Australia, the company and its 50% JV partner Gold Road attained commercial production at the A$621-million Gruyere gold mine, east of Laverton, Western Australia, at end of September 2019. The mine poured its first gold at the start of July 2019 and the project is ramping up to nameplate capacity. The project is forecast to produce between 75 000 oz and 100 000 oz in 2019. Its life-of-mine average production is forecast to be 300 000 oz at an AISC of A$1 025/oz over 12 years.

In Ghana, Gold Fields' focus has been on the Damang Reinvestment Project (DRP), which cost it $320-million, compared with an original guidance of $275-million. At the end of the June 2019 quarter, and 30 months into the DRP, total material mined amounted to 103-million tonnes, which was 19% ahead of the project schedule. The DRP is aimed at providing the necessary operational flexibility, mining efficiencies and head grades capable of returning Damang to a financially sustainable, long-life operation.

Salares Norte, in Chile, is in the Gold Fields project pipeline. The group has a maiden reserve for the project of 21.10-million tonnes, grading 5.13 g/t gold and 57.94 g/t silver, for 3.48-million ounces of gold and four-million ounces of gold equivalent. It also announced in April 2019 the results of a definitive feasibility study (DFS) for the project, which estimated an initial 11.5-year mine life, with production of 450 000 oz/y for the first seven years, at an AISC of $465/oz. Over the mine life, the AIC of the project, which includes the upfront capital, will be $785/oz of gold equivalent. At peak, the project will produce 550 000 oz/y of gold.

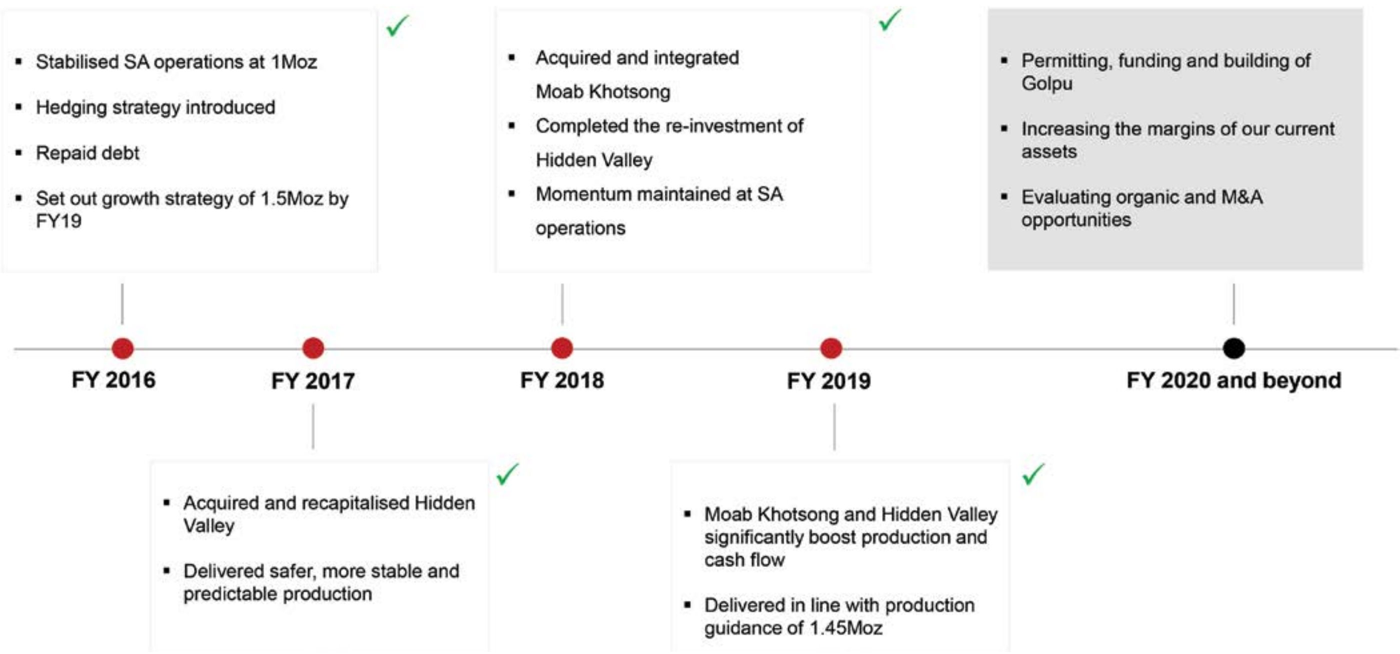
The project has an internal rate of return of 25%, with an estimated 2.2-year payback period. The capital cost estimate is $834-million. Holland has said that there is an appetite from the South American market to invest in a project like this.

HARMONY GOLD MINING COMPANY

Harmony, listed on the JSE and NYSE, operates in South Africa and in Papua New Guinea. Following the acquisition of Moab Khotsong, in the Free State, from AngloGold Ashanti in March 2018, the company has nine underground mining operations, one openpit mine and several surface operations in South Africa. The mines are located in the Witwatersrand basin – one in the Klerksdorp goldfield, two in the West Rand and six in the Free State, in the southern portion of the basin.

CEO Peter Steenkamp/Chairperson Patrice Motsepe			
	Year ended June 2019	**Year ended June 2018**	**2019 guidance**
Revenue	R26.91-billion	R20.45-billion	–
Profit/(loss)	(R2.61-billion)	(R4.47-billion)	–
Headline earnings	R1.07-billion	R763-million	–
Gold production (group total)	1.44-million ounces 44 734 kg	1.23-million ounces 38 193 kg	1.46-million ounces
All-in sustaining cost (group total)	$1 207/oz R550 005/kg	$1 231/oz R508 970/kg	R579 000/kg
Mineral reserves (group total)	36.50-million ounces	36.80-million ounces	–
Fatalities	11	13	–

Harmony's journey to increasing margins



Source: Harmony
FY – financial year
M&A – merger and acquisition
Moz – million ounces
SA – South African

In Papua New Guinea, it has Hidden Valley, an openpit gold and silver mine, and a 50% interest in the Morobe Mining JV, which includes the Wafi-Golpu project and extensive exploration tenements. Outside the JV, Harmony also has its own exploration portfolio in that country.

The South African operations represent 47% of the group's gold reserve ounces of 36.50-million ounces and for about 90% of the group's total gold production.

Harmony is considering adding to its portfolio and CEO Peter Steenkamp has confirmed that AngloGold's remaining mine in South Africa – Mponeng – is of interest to the company. He has also said that Harmony will operate in South Africa for "a very long time" and that it will continue investing in the country, provided that potential investments match its criteria.

The company's criteria include assets that produce more than 100 000 oz/y at an average cost of $950/oz. Although Mponeng meets the production criteria, it falls short on costs, with its average cost of $1 233/oz reported in the first half of 2019. Harmony has indicated, however, that it will consider what costs could be under its management, rather than the prevailing performance.

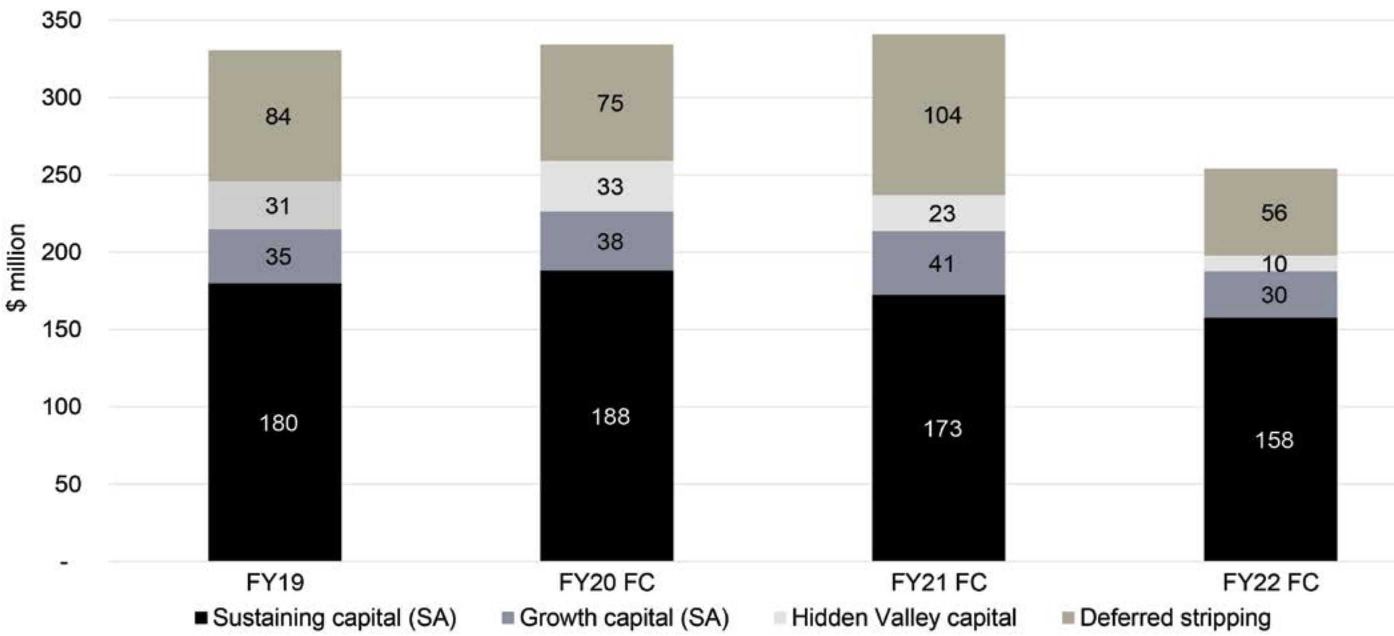
As a highly geared gold share, Harmony believes it is positioned to benefit from the uplift in gold prices. "Not only do we have a tier-one project, such as Wafi-Golpu, in our portfolio, but we also have a pipeline of organic projects to consider," the miner states in its 2019 financial results announcement.

Harmony production profile

Operation	2019 production (oz)	2020 guidance (oz)	Life-of-mine (years)
Tshepong	256 146	290 000	19
Moab Khotsong	254 891	246 000	9
Bambanani	80 860	77 000	4
Target 1	85 296	84 000	7
Doornkop	105 229	113 000	17
Joel	50 379	61 000	10
Kusasalethu	160 400	169 000	5
Masimong	74 237	69 000	1
Unisel	38 966	32 000	1
Underground operations	**1 106 404**	**1 141 000**	
SA surface	91 629	87 000	14+
Kalgold	40 156	42 000	12
Hidden Valley	200 042	190 000	4
Total	**1 438 231**	**1 460 000**	

Source: Harmony

Harmony capital guidance* (dollars)



Source: Harmony
*Excluding Golpu (subject to granting of SML and board approval)
The exchange rate used for the $ conversion for FY20 to FY22 is $ = R14.11
Hidden Valley capital expenditure guidance based on: exchange rate for FY20FC onwards: 1PGK = R4.2263 or $ = R14.11
FY – financial year
FC – forecast
SA – South Africa

Operating and financial performance

Harmony achieved its gold production target of 1.44-million ounces for the financial year ended June 30, 2019 (2018: 1.23-million ounces).

The performance was boosted by buying the Moab Khotsong mine and the reopening of the Hidden Valley mine. These two mines contributed towards a 49% improvement in Harmony's production and generated R1.35-billion of the group's R1.73-billion in operating cashflows.

Harmony's underground recovered grade was 2% higher at 5.59 g/t gold, compared with 5.48 g/t achieved in the prior financial year. This was the seventh consecutive year that the company achieved an increase in underground recovered grade.

AISC, at between R550 000/kg and R555 000/kg, was higher than the guided R540 000/kg, mainly owing to inflationary increases and lower production at the Tshepong mine, in the Free State. On a year-on-year basis, AISC increased by 8% in rand terms. In US dollar terms, AISC decreased by 2% to $1 207/oz, as a result of the 10% weakening of the average rand exchange rate to the dollar in the 12-month period.

About 16% of Harmony's total operational costs relate to electricity and the group is working on reducing its consumption to a minimum. Hoisting and milling are scheduled in operations where there is redundancy.

The company also reduces its consumption load where catch-up is possible later, and has put technologies in place to enable it to deliver ventilation, refrigeration and water services on demand and not around the clock, as old mine designs allowed.

Harmony is further advancing plans to self-generate its own power supply. It is working on a 30 MW solar project, in the Free State, which will provide electricity for its long-life assets, predominantly the Phakisa gold mine, as well as some of its pumping shafts.

In the next financial year, Harmony plans to produce about 1.46-million ounces at an AISC of R579 000/kg.

Harmony reported a full-year loss of R2.61-billion, which it partially attributed to the introduction of a carbon tax in South Africa.

The group reported an impairment of R3.90-billion against its South African mines, as the carbon tax offset forecast improvements in the price of gold.

Headline earnings, however, increased sharply from R763-million in 2018, to R1.07-billion in 2019. Revenue jumped from R20.45-billion to R26.91-billion in the period.

Projects

Harmony's major project is located in Papua New Guinea, where the company and its partner, Australia's Newcrest Mining, are aiming to build a mine that will produce 266 000 oz/y of gold and 161 000 t/y of copper. The capex to commercial production is estimated at $2.83-billion.

Following a change in political leadership in Papua New Guinea, the project is facing delays. Harmony has also come under criticism from analysts, who argue that the company, which has a market capitalisation of about R30-billion, cannot afford its $1.42-billion (R21-billion) share to build the mine. Steenkamp said at the group's August 2019 financial results presentation that he could not provide clarity on how Wafi-Golpu would be financed because "the permitting will determine the fiscal regime" and would set out how much of an equity stake the State required.

The Commerce Minister has said that Papua New Guinea would like to keep 40% of the gold produced from Wafi-Golpu, leaving Harmony and Newcrest with 60% of production. "If they don't like it, we'll mine it ourselves – we own the resource," Wera Mori said to newswire Reuters in September 2019.

In South Africa, Harmony is proceeding with the Great Noligwa Pillar Extraction project at a cost of R410-million.

The project is regarded as an incremental project to the Moab Khotsong life-of-mine plan and will extend the mine life to 2028. Since Harmony took over Moab Khotsong in 2018, it has extended its life by two years through isolated block mining and shaft extraction.

The Great Noligwa Pillar Extraction project is expected to have a recovery grade of 6.80 g/t to produce about 267 000 oz of gold at an AISC of less than $950/oz. At a gold price of R585 000/kg, the project has an internal rate of return of 28% and its payback period is 6.4 years.

Steenkamp has said that he had spent most of his career extracting pillars and that the team had the necessary experience to do so safely. Other organic prospects include the Mispah Tailings Reclamation project, which was acquired from AngloGold Ashanti as part of the Moab Khotsong transaction, and the Central Plant Reclamation project, also a surface tailings retreatment prospect. The former is still in prefeasibility stage while the latter's feasibility study is nearing completion.

A prefeasibility study is under way for the Kalgold expansion, in the North West. Electromagnetic surveys and initial drill results at Kalgold have demonstrated some "very good grades", and the Kalgold operation could be much larger in the future.

The Zaaiplaats extension – which forms the lowest block of the Moab Khotsong mine ranging between 2 m and 3 m deep – is also in the prefeasibility stage. Steenkamp has said that while Zaaiplaats will eventually be a deeper mine, it will also be "very high-grade". Should the company proceed with the project, the mine will not be highly mechanised.

Although the company has long-life South African assets in the form of Joel and Tshepong, in the Free State, and Doornkop, in Gauteng, with Moab Khotsong also adding the potential brownfield Zaaiplaats mine-life-extension option, a more sustainable prospect will be needed to keep the company away from the local 'cliff' it is facing.

A local mine-building opportunity is at Target North, in the Free State, where exploration drilling ceased in 2007, but is being resuscitated, with the company obtaining the prospecting right as part of the Target mining right, in the Free State.

As Anglovaal Mining, the previous Target owner, discovered several years ago, the Target area mine design is required to differ markedly from traditional South African narrow-reef gold mines. Anglovaal found thick zones in the Bothaville Gap area that could be mined using mechanised methods. If Target North does eventuate as a mine, it will typically require a top cut to destress the locality's twin massives of what would be a deep-level mine.

Other opportunities include Harmony's continuing with extending the lives of the mines that it acquires by developing declines. A typical life-extension example is Tshepong-Phakisa, where ongoing decline development has opened up additional ore reserves.

SIBANYE-STILLWATER

Carved out of operations spun out by Gold Fields in 2013, followed by a merger-and-acquisition spree, Sibanye-Stillwater is a global precious metals mining company with a portfolio of platinum group metal (PGM) operations in the US and Southern Africa, as well as gold operations and projects in South Africa.

The company was initially only a gold producer with operations in South Africa, but has added PGM assets through the acquisition of US-based Stillwater Mining and Southern

CEO Neal Froneman/Chairperson Vincent Maphai				
	Interim June 2019	**Year ended Dec 2018**	**Year ended Dec 2017**	**2019 guidance**
Revenue	R23.54-billion	R50.66-billion	R45.91-billion	–
Profit/(loss)	(R181-million)	(R2.52-billion)	(R4.43-billion)	–
Headline earnings/(loss)	(R1.26-million)	(R16.60-million)	(R223.90-million)	–
Gold production	344 752 oz 20 723 kg	1.18-million ounces 36 600 kg	1.40-million ounces 43 634 kg	772 000 oz to 804 000 oz 24 000 kg to 25 000 kg
Gold all-in sustaining cost	1 904/oz 869 141/kg	$1 309/oz R557 530/kg	$1 128/oz R482 693/kg	$1 640/oz to $1 725/oz R715 000/kg to R750 000/kg
Mineral reserves	–	16.60-million ounces	25.70-million ounces	–
Fatalities	–	21	9	–

Africa-focused Lonmin. The Lonmin takeover, initially opposed by unions, was concluded in April 2019, which transformed Sibanye into the world's biggest primary producer of platinum and the second-biggest primary producer of palladium.

Although the gold assets Sibanye inherited from Gold Fields – Beatrix, in the Free State, and Driefontein and Kloof, in western Gauteng – are now smaller contributors to the group's overall yearly earnings than PGMs, they have created value for stakeholders since the unbundling in 2013. When Sibanye Gold listed, reserves were stated as 13.50-million ounces, with an operating life of about eight to ten years. Since then, the gold operations have produced about 8.60-million ounces, about 64% of the initial reserves, and enabled Sibanye to build a substantial, long-life PGM business while returning more than R4.10-billion in dividends to shareholders.

Further, after producing 8.60-million ounces of gold in the past six years, gold reserves of 16.60-million ounces at the end of 2018 are still 23% higher than they were when Sibanye Gold was constituted.

The company acquired a 38.05% interest in DRDGold in August 2018, which operates surface tailings retreatment facilities on the West Rand through its Ergo Mining subsidiary and the Far West gold recoveries project. The acquisition is key to Sibanye's surface operations strategy in South Africa, which involves exploiting the low risk and relatively high-margin characteristics of West Rand surface resources. Sibanye exchanged certain tailings facilities for its 38.05% interest and has an option to increase its equity ownership to 50.10% before August 2020.

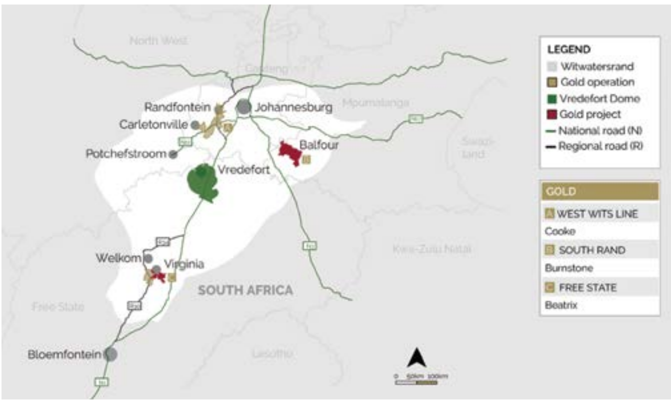
Sibanye has confirmed that it is in negotiations with AngloGold Ashanti to potentially buy the Mponeng mine. CEO Neal Froneman has said that although Sibanye is not "panting after more deep-level gold mines", there could be significant synergies between Mponeng and Driefontein. The company's primary listing is on the JSE and it has a secondary listing of American Depositary Receipts on the NYSE.

Operating and financial performance

Sibanye's operating and financial performance was severely affected by safety incidents at its gold operations in the early part of 2018 (21 mineworkers died) and by a bruising five-month strike at these operations towards the end of that year.

The strike was called by the Association of Mineworkers and Construction Union (AMCU) in November 2018, after refusing to join a wage agreement that Sibanye reached with other unions. AMCU ended its strike in April 2019, after settling for a little more than three other unions had agreed to months earlier. The three-year pact of a 5.50% increase equates to a R700-a-month increase in the first year. In the second and third years, miners will get a 5.50% increment or an increase that matches the inflation rate, should that be higher.

Sibanye-Stillwater's South African gold operations



Source: Sibanye

The individual operations were affected to varying degrees by the strike, with differences in operational performance a function of union membership. AMCU has a 67% membership at Driefontein, 34% at Kloof and 37% at Beatrix.

The impact of the strike was most evident in the first half of 2019. The true cost of the industrial action was laid bare in the March 2019 quarter results, when the cost of production was nearly double that of the price the miner received. Although the implementation of a "no work no pay principle" during the strike reduced operating costs in absolute terms, unit costs were affected by production volumes plunging 63% year-on-year. The AISC of R1 002 350/kg ($2 225/oz) in the March 2019 quarter compares with R550 000/kg at normal production levels.

The strike also precipitated restructuring in the gold division. Certain shafts at the Beatrix and Driefontein mines have been lossmaking for some time, prompting Sibanye to start a restructuring process in February 2019. Initially, up to 5 870 employees and 800 contractors were expected to be affected by the scaling down and closing of certain shafts, but when the consultation process was concluded in May 2019, Sibanye lowered the job losses to about 3 450 employees. Voluntary separation, early retirement and natural attrition accounted for the bulk of the affected jobs, with forced retrenchments limited to about 800 employees and 550 contract workers.

One of the shafts initially earmarked for closure, Driefontein 8, was kept open, on provision that it makes profit, on average, over any continuous period of three months. This provided extended employment for about 970 employees and contractors.

Beatrix 1 and Driefontein 2 shafts were placed on care and maintenance, while Driefontein 6 and 7 shafts, as well as Beatrix 2 plant were closed.

The AMCU strike, the closing of lossmaking shafts and an underground fire and seismicity at Kloof contributed to a 56% year-on-year decrease to 262 928 oz in the first half of 2019. With production having normalised from August 2019, a turnaround in the financial performance of the gold operations is expected in the second half of the year, which Sibayne believes will enhance its financial performance.

Sibanye is forecasting second-half production of between 498 000 z and 530 000 oz. Its guidance for 2019 is to produce between 772 000 oz and 804 000 oz at an AISC $1 640 oz to $1 725/oz. This compares with production of 1.18-million ounces in 2018.

Strong growth in the group's PGM operations has been offsetting the weak performance of the South African gold operations. Group revenue for 2018 of R50.66-million was 10% higher than in 2017, with a 73% increase in revenue from the US PGM operations and a 14% increase in revenue from the South African PGM operations. The gold operations suffered a 16% decline in revenue in 2018.

In the first half of 2019, group revenue decreased marginally to R23.54-million, although the gold operations' revenue, excluding DRDGold, reduced by 53% to R4.51-million in the half-year.

Sibanye posted a loss of R2.52-billion (2017: R4.43-billion) and reported adjusted earnings before interest, tax, depreciation and amortisation (Ebitda) of R8.37-billion, to which US and South African PGM operations contributed 84% and gold contributed 16%. The group's headline loss came to R1.26-billion in the first half of 2019 and its adjusted Ebitda was R2.07-million.

Capex for the South Africa gold operations for 2019 is forecast at about R2.35-billion, which includes about R220-million of project capital. About R1.90-billion of the capex has been scheduled for the second half of 2019.

Projects

Sibanye's most advanced gold project is Burnstone, in Mpumalanga, and it is also studying the Southern Orange Free State (SOFS) project.

Burnstone is a shallow to intermediate-depth gold mining project that Sibanye bought in 2014. The board approved the development of the R1.85-billion project in 2015 and development work started in November that year.

However, owing to a capital preservation exercise, the project was placed on care and maintenance in May 2018, by which time 12 368 m of development had been completed, including seven reef raises that are production-ready.

With mine development idled, Sibanye is focusing on establishing underground engineering infrastructure in preparation for mining production in 2021, with R125-million having been allocated in 2019 to complete the required engineering infrastructure.

Burnstone is expected to yield 1.90-million ounces of gold production from a feasibility resource of 5.70-million ounces.

Sibanye acquired the SOFS project, including the Bloemhoek and De Bron Merriespruit projects, near Virginia, in 2014, through the acquisition of Witwatersrand Consolidated Gold Resources.

The De Bron Merriespruit project is at feasibility stage and the Bloemhoek feasibility study is expected to be finalised in 2019. If the project is approved, the development is expected to enter the Bloemhoek project area from Beatrix 3 shaft in 2021.

The Bloemhoek and De Bron Merriespruit projects envisage using existing Beatrix support infrastructure to limit the amount of capital funding required to reach production phase.

The SOFS has a valid mining right until 2040.

The Kloof Optimisation project involves the extension of the Kloof Shaft 4 to access the area between 45 and 47 levels. In 2018, Sibanye progressed to a point just below 46 level. In addition, the Kloof 8 shaft expansion project, designed to increase current production levels at the shaft, was approved in 2018 and will be fully operational by 2020.

The Kloof integration project, designed to optimise operating shafts and close redundant infrastructure, also began in 2018. This project will significantly decrease operating costs.

DRDGOLD

DRDGold is a New York- and Johannesburg-listed gold producer and specialist in the recovery of metal from the retreatment of surface tailings.

With plants and tailings spanning over 163 km, from the east to the west of Johannesburg, the midtier miner has proven technology to extract miniscule amounts of gold locked up in millions of tons of tailings.

CEO Niël Pretorius likens DRDGold's flagship Ergo tailings operations to a process of selecting only 190 people out of Africa's population of one-billion.

Picture by Sibanye-Stillwater

DRDGold tailings

In the financial year ended June 2019, the company produced 4 977 kg (2018: 4 653 kg). Production from the Ergo operation, on the East Rand, fell by 4%, but the reduction was offset by the inclusion of production from the Far West Gold Recoveries (FWGR) project.

DRDGold acquired the FWGR from gold and platinum major Sibanye-Stillwater in July 2018, boosting its gold reserves by about 83% from 3.28-million ounces, to six-million ounces.

Sibanye traded some of its surface assets on the West Rand for 38.05% of DRDGold's shares. Sibanye 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.

Pretorius supports Sibanye's exercising this option and said in

CEO Niël Pretorius/Chairperson Geoffrey Campbell			
	Year ended June 2019	**Year ended June 2018**	**2019 guidance**
Revenue	R2.76-billion	R2.49-billion	–
Profit/(loss)	R78.50-million	R6.50-million	–
Headline earnings	R72.70-million	R7-million	–
Gold production	158 632 oz 4 934 kg	149 604 oz 4 653 kg	175 000 oz to 190 000 oz
All-in sustaining cost	1 151/oz 524 713/kg	1 258/oz 505 622/kg	–
Mineral reserves	6-million ounces	3.28-million ounces	–
Fatalities	0	0	–

September 2019 that DRDGold was "fairly certain" that the major would take control of the company, as it made "financial sense".

Should Sibanye decide to exercise its option to acquire control of DRDGold, it would be to DRDGold's advantage, considering that an additional 12% stake for Sibanye would translate into about R1-billion additional capital for the tailings retreatment specialist.

DRDGold is rolling out FWGR in a phased approach. The first phase, which is operational, involved upgrading the Driefontein 2 and 3 plants to process tailings from the Driefontein 5 dump at between 400 000 t a month and 600 000 t a month, depositing the residue on the Driefontein 4 tailings dam.

Phase 2 envisages the construction of a high-volume central processing plant capable of processing 1.20-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.

PAN AFRICAN RESOURCES

London- and Johannesburg-listed Pan African is a midtier miner that produces gold from underground operations and surface tailings in Mpumalanga.

The mining company achieved its guided production of 170 000 oz in the year ended June 2019, and is targeting 185 000 oz in 2020.

Pan African produced 172 442 oz in 2019 (2018: 160 444 oz). Its flagship operation is Barberton Mines, which comprises the Fairview, New Consort and Sheba mines. Production from the Barberton complex increased by 9.60% to 99 363 oz in 2019 (2018: 90 629 oz), underground and surface mining increased by 3.10% to 75 356 oz (2018: 73 125 oz) and production from the Barberton tailings retreatment plant increased by 37.20% to 24 007 oz (2018: 17 504 oz).

The Elikhulu tailings retreatment plant (ETRP), which was commissioned at the end of August 2018, processed 10.85-million tonnes from September 2018 to June 2019, achieving a recovered grade of 0.133 g/t and producing 46 201 oz.

The production figures include 200 000 t a month throughput from the Evander tailings plant, which was incorporated into Elikhulu with effect from January, increasing its processing capacity to 1.20-million tonnes a month.

Evander Mines, where unprofitable large-scale underground operations were closed in May 2018, contributed 26 878 oz from remnant mining and surface sources in 2019.

The curtailment of expensive and difficult large-scale underground operations at Evander Mines' 8 Shaft, the commissioning of Elikhulu and increased production from Barberton Mines resulted in Pan African's AISC reducing materially to $988/oz in 2019 (2018: $1 358/oz). The group's combined underground and tailings operations are internationally cost competitive and it ranks among South Africa's lowest-cost gold producers.

With the R1.74-billion ETRP project completed and in production, Pan African's project focus has turned to other opportunities.

CEO Cobus Loots/Chairperson Keith Spencer			
	Year ended June 2019	**Year ended June 2018**	**2020 guidance**
Revenue	$217.37-million R3.08-billion	$145.83-million R1.87-billion	–
Profit/(loss)	$38.04-million R537.80-million	($122.82-million) (R1.56-billion)	–
Headline earnings	$22.90-million	$17.90-million	–
Gold production	172 442 oz	160 444 oz	185 000 oz
All-in sustaining cost	$988/oz R450 564/kg	$1 358/oz R561 468/kg	–
Mineral reserves	10.92-million ounces	11.22-million ounces	–
Fatalities	0	0	–

New Pan African board appointments

Midtier miner Pan African appointed Yvonne Themba and Charles Needham as independent nonexecutive directors to the board of directors with effect from July 17, 2019.

Themba (aged 54) has more than 30 years' experience as an executive within the insurance, mining, telecommunication and investment industries.

Needham (aged 65) is a mining executive with about 40 years' experience in the mining industry. He is the chairperson of tin developer Alphamin Resources and was the Metorex Mining CEO before the company was bought out by Jinchuan Group of China.

Source: Pan African

The company initially put emphasis on a low-cost opencast mine project at Royal Sheba, near its Barberton underground mines, but after completing a feasibility study decided not to pursue the project on a standalone basis. The study found that an opencast mining method would be too costly, owing to the challenging topography of the Sheba valley.

The company is further investigating Project Dibanisa, which would link the Sheba mine to Fairview Mines' infrastructure, saving costs and freeing up the Sheba mine infrastructure for the Royal Sheba project.

Pan African will also return to limited underground mining at Evander and announced in May 2019 that its board had approved the mining of the Evander 8 Shaft Pillar and high-grade areas in proximity to the pillar. The Evander 8 Shaft Pillar will replace the current remnant underground mining and vamping production and is expected to contribute 20 000 oz/y to 30 000 oz/y for three years.

Highlights from the Evander 8 Shaft Pillar mining feasibility include:

- an average AISC of about $900/oz, over the life of the project.
- using the existing Kinross processing plant and Evander's 7 Shaft infrastructure to treat and hoist the mined ore from the Evander 8 Shaft Pillar.
- incurring capex of about R70-million over the life of the project, of which R40-million is to be incurred upfront. All capital for the Evander 8 Shaft Pillar's development is to be funded from existing group facilities.
- a forecast payback period on the initial capital investment of less than one year from the start of mining, and a net present value of R369-million at a 10% real discount rate and an assumed gold price of $1 305/oz.

Pan African is also assessing the merits of the Egoli project to further extend the life of the Evander mine.

In the financial year ended June 30, 2019, Pan African reported revenue in dollar terms of $217.37-million (2018: $145.83-million), or in rand terms R3.08-billion (2018: R1.87-billion).

The group's profit for the year improved to $38.42-million [2018: ($122.82-million)]. Pan African's headline earnings were $22.90-million (2018: $17.90-million).

PAST-PRODUCING MINES REOPENING

Blyvooruitzicht mine

Emerging gold mining company Blyvoor Gold, run by executive chairperson and seasoned campaigner Peter Skeat, and deputy chairperson and fundraiser Richard Floyd, is targeting a resumption of mining at the old Blyvooruitzicht gold mine, near Carletonville, on the West Rand, before the end of 2019.

Skeat is spending as much as $100-million rebuilding Blyvooruitzicht. While the mine was once among the world's top producers, its recent history has been tumultuous. The site was overrun by illegal mineworkers and equipment looted after it had been abandoned by the previous owners in 2013.

The mine belonged to DRDGold, who sold it to Bernard Swanepoel's Village Main Reef (VMR) in 2011, but VMR stopped operations and put Blyvooruitzicht into provisional liquidation in July 2013, resulting in 1 700 workers losing their jobs.

The illegal mining is not discouraging Skeat, with the company having built a six-metre-high bullet-resistant security wall around the reopening shaft and new gold plant.

Skeat says that there are still 27-million ounces of gold resources to be extracted, including about one-million contained in massive pillars left behind to support shafts during the mine's early development. Those alone could be mined at low cost for a decade.

At an average of about 13 g/t of gold, about three times higher than a typical South African gold mine, Blyvoor Gold will aim to produce 100 000 oz/y from the pillars at an AISC of $600/oz.

Blyvoor Gold will implement a new mining method at Blyvooruitzicht. A key part of the mining method is to use a

120% charge to electronically blast waste burden into the stope as backfill, and conduct a second blast three seconds later, which leaves a high-grade stockpile in the area cleared by the first blast.

Blyvoor Gold executives described the grade as a "very conservative" 20 g/t and they calculate mining costs at 4 g/t and overheads of 1 g/t to yield a very healthy margin of 15 g/t. The span is never greater than 4 m, which lowers rockburst risk.

As Blyvoor Gold CEO Alan Smith explained to *Mining Weekly* in July 2019, the innovative mining method will take the operation to a new high, with blasting ensuring that waste provides support in the stopes as backfill. Employees will have the benefit of being able to stand up in the stope, with better lighting and surface-to-underground communication. Overall, the steps taken will slash the cutoff grade to less than 4 g/t. Large blocks of ore, with grades of 20 g/t, 15 g/t and 10 g/t, are available to be mined, reflecting the high historical cutoff grades of the past. While the carbon leader reef will be mined, 75% of the shallower Middelvlei reef remains available for mining.

Whereas the air was previously pumped into an open stope and diluted, the backfill keeps it in a 4 m gap. In this way, the air velocity rises and the amount of air needed is reduced, resulting in cooler and cleaner air and lower electricity costs.

The mine's initial 15-year life-of-mine plan is deceiving. A 50-year life-of-mine plan could already be drawn up and a 100-year add-up is a likely horizon.

The once liquidated mine has won overwhelming support from former employees and members of the nearby mine community. Blyvoor Gold, which will potentially employ 2 000 mineworkers, has turned former employees into enthusiastic, black economically empowered shareholders, who own 26% of the company.

Blyvoor Gold is offering a monthly dividend-linked remuneration programme that does not stop at a 9-m-monthly face advance, but continues uncapped. The deal being offered to employees will enable them to double their R10 000 a month basic salary simply by achieving a face advance of 9 m a month, which is considered conservative, given the mine's history of monthly face advances of double that length.

Galaxy mine

Now owned by Canadian junior Galane Gold, the Galaxy mine is a century-old operation in Mpumalanga that is being brought back into operation.

Skeat bought the mothballed Agnes mine, near Barberton, in 2008 and set about developing it as Galaxy Gold. A planned JSE listing fell through and it was sold to Galane in April 2015.

The Canadian junior has subsequently invested substantial amounts in refurbishing the existing 15 000 t/m crush mill and float plant and plans to upgrade it to 30 000 t/m. Galane reported in August 2019 that the Galaxy project was in steady-state production on the existing refurbished plant, but that it had not yet reached commercial production.

Galaxy will produce 25 000 oz/y at a cash cost of $800/oz.

Lily and Barbrook mines

Australia-listed Vantage Goldfields has accepted an offer from Real Win Investments (RWI) for its Lily and Barbrook mines, in Mpumalanga.

Both mines were under business rescue after tragedy struck Lily mine in 2016. In February 2016, a crown pillar collapsed because of a sinkhole, trapping dozens of workers underground. Eventually, 76 miners were rescued, but the bodies of three workers were never recovered.

The offer from RWI was signed in March 2019 and the new owner said in August 2019 that it would reopen the mines, without providing a timeframe for the reopening.

Vantage cancelled an agreement in March 2019 for the sale of the assets with Siyakhula Sonke Empowerment Corporation (SSC) subsidiary Flaming Silver, citing a lack of proof of funds to reopen the mines.

Flaming Silver applied to the Supreme Court of Appeal on August 2, 2019, to consider its leave to appeal a High Court judgment with regard to a dispute with gold miner Vantage.

This follows after the Mpumalanga High Court dismissed Flaming Silver's application for leave to appeal the judgment in favour of Vantage regarding a dispute over the Lily and Barbook mines.

In July, SSC entered into a partnership with Hong Kong-listed Taung Gold International and made an offer to acquire the mines, but Vantage and the business rescue practitioners of the mines had proceeded to progress an offer by RWI.

RWI CEO Zandile Mdanda said that RWI had identified the Lily and Barbrook mines as an "excellent investment opportunity", owing to the mines' significant ore reserves.

OUTLOOK

With the gold industry in a long-term decline, miners are considering technological solutions to prolong the 'golden hour' before the sun finally sets on the South African industry.

Modernisation could improve the productivity of the extreme deep-level mining that characterises the local gold industry. Modernising mines through mechanisation could extend production to beyond 2045, but a failure to move mines into the twenty-first century will result in gold mining in South Africa dying out completely by 2033, Minerals Council South Africa has warned.

The organisation estimates that mechanisation will allow for an additional 592 t of gold resources being mined – the equivalent of 11 large mines.

There is an estimated 160-million tons of high-grade ore locked in underground support pillars of South Africa's deep-level mines and these are accessible from current infrastructure. At least double that could be mined below infrastructure using appropriate techniques.

The country's 400-million tons of low-grade gold ore could also be amenable to profitable extraction using mechanised techniques.

A low-grade mine with a current conventionally mined life expectancy of about four years using semimechanised methods could extend operations to 15 years and, with full mechanisation and 24/7 operations, to as many as 25 years.

The short-term operationally focused first phase of the country's gold mining modernisation plan will shine the spotlight on improving the stop-start and cyclic mining method involving drilling, blasting and clearing. The second phase will search for ways of improving the mining methods by removing people from the working face and getting them into positions of operating customised equipment remotely.

The third, and longest, phase will be used for research into developing continuous mining systems that will reduce the impact of dilution and allow for mining to be conducted 24/7 at a higher mining grade.

The industry will adopt a people-centric approach to modernisation and has said that it is not about replacing workers with machines, but extending the life of the deep-level mines and, thereby, safeguarding jobs.

With new equipment, which allows for the conventional drill, blast and clean cycle, employees skilled in the use of remotely controlled equipment can fulfil the tasks 24/7 from safe, healthy sites. Considering that 40 people died in gold mines in 2018, modernisation could significantly improve mines' safety performance. Independent consultant Dr Paul Jourdan believes that South Africa should cease sending people down deep-level mines and introduce remote machinery at depth.

Meanwhile, 2019 looks set to be a better year for South African gold producers, as ever-increasing geopolitical risks are strengthening the metal's fundamentals, combined with rand weakness. A stronger rand reduces the rand revenue that South African producers earn for gold they sell at a price determined in US dollars on global markets.

For DRDGold, for instance, the higher gold price of about R754 000/kg in August 2019 would have meant revenue of R3.80-billion in its most recent financial year – about R1-billion more than what it reported.

Pan African CEO Cobus Loots has described the gold price at $1 500/oz as attractive and the gold price at R700 000/kg even more so. "We have a saying that, in general, gold mining is an industry with long cold winters and short but very beautiful summers."

However, while mining companies are benefiting from the higher gold-price environment, executives have emphasised that miners cannot rest on their laurels.

AngloGold Ashanti CEO Kelvin Dushnisky has said that the group will continue to focus on running its business as best it can.

"While we know we'll be a beneficiary of a higher gold price, we're not relying on it. We're going to maintain our discipline . . . what we really want to do is to be in a position to provide margin and that's the reason people invest in us. I do think there is strong potential for the gold price to stay at these levels for some period."

Research firm Fitch Solutions has said that although global gold companies have turned a financial corner, spending will not return to the heights of the past decade and that priority will be given to reinvestment in brownfield assets, rather than the development of greenfield projects.

"Rather than a massive shift to growth, we expect greater dividends and a more conservative executive remuneration as prices head higher in the coming years," the research firm said in an industry trend analysis on the gold mining industry, published in September 2019.

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