Published by:
Creamer Media's
RESEARCH CHANNEL
AFRICA

DIAMONDS

NOVEMBER 2018

Picture by Bloomberg

A review of the DIAMOND SECTOR

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The information in this report is correct as of October 29, 2018.

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

Picture by AdobeStock

List of abbreviations and acronyms

ASM	artisanal and small-scale
BEE	black economic empowerment
capex	capital expenditure
cpht	carats per hundred tonnes
DBCM	De Beers Consolidated Mines
DMR	Department of Mineral Resources
DMS	dense-media separation
DTP	Diamond Technology Park
EU	European Union
FTC	Federal Trade Commission
GIA	Gemological Institute of America
KEM JV	Kimberley Ekapa Mining Joint Venture
KP	Kimberley Process
KPCS	Kimberley Process Certification Scheme
LDD	large diamond drilling
LoM	life-of-mine
LOR	Lower Orange River
MCB	Makanwu Civil Blasting
PEA	preliminary economic assessment
PLs	provisional liquidators
PSJV	pooling-and-sharing joint venture
RoM	run-of-mine
SLC	sublevel cave
SoEs	State-owned entities
SoW	System of Warranties
UAE	United Arab Emirates
WDC	World Diamond Council
ZCDC	Zimbabwe Consolidated Diamond Company

Key developments

October 2017: ASX-listed Lucapa Diamond Company announces a new mine development plan for the Mothae project, in Lesotho, aimed at bringing the start of commercial production forward to the second half of 2018.

October 2017: TSX-listed Africa-focused Tango Mining enters into a contract mining agreement with Bluedust 7 over the Oena diamond mine, in the Northern Cape.

November 2017: Production at Tango Mining's Oena mine, in the Northern Cape, restarts.

November 2017: A preliminary economic assessment of a proposed underground development at TSX-listed Lucara Diamond Corp's Karowe mine, in Botswana, shows the project is economically viable.

November 2017: Diamond mining company De Beers Consolidated Mines decides to sell its Voorspoed mine, in South Africa's Free State province.

November 2017: Debmarine Namibia, a subsidiary of De Beers' 50%-owned Namdeb Holdings, says it plans to add a sixth diamond mining vessel to its fleet.

December 2017: Aim-listed Firestone Diamonds announces a revised mine plan for the Liqhobong mine, in Lesotho.

December 2017: Debswana, a joint venture between De Beers and the Botswana government, resumes operations at the Damtshaa mine, in Botswana, which had been placed on care and maintenance in 2016.

January 2018: LSE-listed Gem Diamonds recovers a 910 ct diamond at its Letšeng mine, in Lesotho. The diamond, named the Lesotho Legend, is the largest diamond ever recovered at the mine.

February 2018: Aim-listed Botswana Diamonds starts a scoping study on its Thorny River project, in Limpopo, South Africa.

February 2018: Lucara Diamond Corp buys Clara Diamond Solutions Corp – a company that uses analytics, and cloud and blockchain technologies to modernise the diamond supply chain.

March 2018: Gem Diamonds asks the Lesotho government to extend the mining lease of its Letšeng mine to 2034.

April 2018: The government of Lesotho agrees to extend Gem Diamonds' Letšeng mining lease by ten years.

April 2018: De Beers Group launches the GemFair pilot programme, which will track ethically sourced diamonds throughout the diamond value chain, in Sierra Leone.

April 2018: JSE-listed diamond company Trans Hex agrees to sell its Lower Orange River operations to a black woman-owned company.

April 2018: Debswana reveals plans to further deepen the Jwaneng mine, in Botswana, to 850 m.

May 2018: Stuart Brown resigns as CEO of Firestone Diamonds.

May 2018: Botswana Diamonds and Aim-listed mining resources and development company Vast Resources sign a memorandum of understanding aimed at developing diamond resources in Zimbabwe.

May 2018: LSE-listed Petra Diamonds announces plans to raise $178-million in a rights offer.

May 2018: De Beers Group says it has successfully traced the first 100 high-value diamonds using its Tracr Blockchain technology.

June 2018: De Beers Consolidated Mines concludes an employee transport contract of up to R700-million with six black economic-empowerment partners.

July 2018: Petra Diamonds says it will sell its majority interest in the Kimberley Ekapa Mining Joint Venture to partner Ekapa Mining for R300-million.

July 2018: De Beers Canada, a subsidiary of the De Beers Group, enters into an agreement to acquire TSX-listed Peregrine Diamonds, which holds the Chidliak resource, for C$107-million.

July 2018: De Beers Consolidated Mines says it will close its Voorspoed mine by the end of 2018.

July 2018: The US Federal Trade Commission releases its updated Jewelry Guides, which suggests the industry refer to mined diamonds rather than natural diamonds, among other changes.

August 2018: Lucara Diamond Corp and surface mining contractor Aveng Moolmans agree to terminate the mining contract for the Karowe mine, with new mining contractor Trollope Mining to take over from January 2019.

September 2018: De Beers concludes the C$107-million acquisition of Peregrine Diamonds.

September 2018: De Beers highlights the importance of the Millennial and Gen Z generations as drivers of diamond demand.

September 2018: Mineral Resources Minister Gwede Mantashe confirms the long-awaited gazetting of Mining Charter 3, which many in the mining industry believe provides much-needed policy certainty.

October 2018: South Africa's Industrial Development Corporation provides Lucapa Mining with a R100-million development facility for its Mothae project, in Lesotho.

Market overview

Following the diamond industry's recovery in 2016 after difficult trading conditions in 2015, the industry achieved a strong performance in the first half of 2017, with rising rough diamond demand. Diamond analyst Paul Zimnisky notes, however, that the second half of the year was less positive for the industry, as additional polished diamonds entered the already overstocked global polished diamond market.

Nevertheless, the US economy remains relatively strong, which should bode well for diamond demand growth going forward, given that the US remains the largest diamond consumer. Demand in other large diamond consuming countries, including China and India, will also remain strong.

Financial services provider ABN Amro, meanwhile, says the diamond industry has progressed from a stable to a highly dynamic and uncertain environment in recent years, with rough diamond prices performing better than that of polished diamonds, putting the profit margins of rough diamond buyers under pressure.

Diamond financing

In August 2018, Union Bank of India became the latest lender to pull out of Antwerp – the global diamond hub – with Bloomberg quoting the bank as stating that the city had not generated the amount of business from the diamond sector that had been expected. Antwerp Diamond Bank and Standard Chartered have already exited the Antwerp market. Bloomberg reports that diamond financing is in crisis, faced with bad loans and high-risk bets. According to the report, lending in the diamond midstream had decreased from about $16-billion in 2013 to about $13-billion in 2017. Lending is expected to decrease further in years to come.

De Beers notes in its 'Diamond Insight Report 2018', however, that new lenders, including ABSA and Standard Bank, in South Africa, and National Bank of Fujairah, in Dubai, are entering the global midstream financing market.

In Botswana, Stanbic Bank Botswana signed a $125-million guaranty with US development finance institute, the Overseas Private Investment Corporation, and Botswana Finance in September 2018. The loan guaranty will be used by Stanbic Bank to support diamond beneficiation companies in Botswana.

Source: Bloomberg, De Beers' Diamond Insight Report 2018 and *Mining Weekly*

ABN Amro explains that these buyers have realised that they need to reduce their dependence on diamond miners for diamond supply and on banks for financing, as current diamond buying models are no longer profitable. Simultaneously, banks are often no longer willing to fund buyers' full rough diamond purchases, leaving a financing gap that has to be met by the buyers, either from their own equity or through alternative financing options.

It further notes that diamond miners are also having to find ways of securing their future amid the potential threat from a growing lab-grown diamond supply.

ROUGH DIAMOND PRODUCTION

Top diamond producing countries 2017

Country ranking by volume			Country ranking by value		
Rank	Country	Volume (ct)	Rank	Country	Value ($)
1	Russia	42.61-million	1	Russia	4.11-billion
2	Canada	23.23-million	2	Botswana	3.33-billion
3	Botswana	22.96-million	3	South Africa	3.09-billion
4	Democratic Republic of Congo	18.90-million	4	Canada	2.06-billion
5	Australia	17.13-million	5	Angola	1.10-billion
6	South Africa	9.68-million	6	Namibia	1.01-billion
7	Angola	9.44-million	7	Lesotho	342.66-million
8	Zimbabwe	2.51-million	8	Australia	199.70-million
9	Namibia	1.95-million	9	Zimbabwe	175.38-million
10	Lesotho	1.13-million	10	Democratic Republic of Congo	157.27-million

Source: Kimberley Process Certification Scheme
ct – carat

Data published by the Kimberley Process Certification Scheme (KPCS) shows that global diamond production reached 150.86-million carats, valued at about $15.87-billion in 2017. Although higher than the 126.38-million carats of diamonds valued at about $12.27-billion, produced in 2016, production remains below the record 176.70-million carats produced in 2005.

Russia, Canada, Botswana, the Democratic Republic of Congo (DRC) and Australia were the world's biggest producers of diamonds by volume in 2017, while Russia, Botswana, South Africa, Canada and Angola were the biggest producers of diamonds by value.

Russia's production by volume increased by 4.56% to 42.61-million carats (2016: 40.32-million carats), while its production by value increased by 14.80% to $4.11-billion (2016: $3.58-billion).

Canada's production by volume increased by 78% to 23.23-million carats (2016: 13.04-million carats), while its production by value increased by 47% to $2.06-billion (2016: $1.40-billion).

Botswana's production by volume increased by 12% to 22.96-million carats (2016: 20.50-million carats), while its production by value increased by 16.84% to $3.33-billion (2016: $2.85-billion).

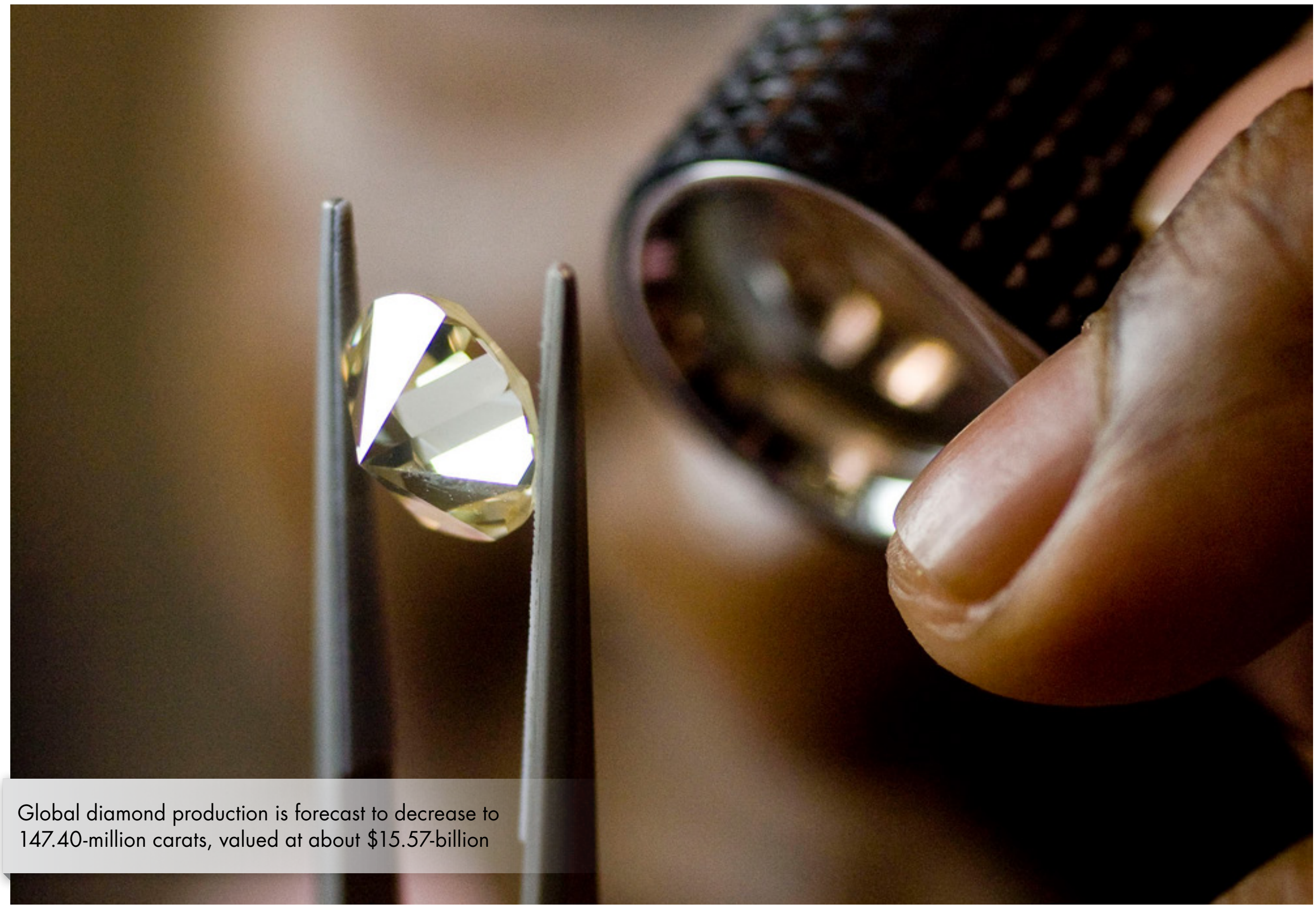
Production by volume in the DRC increased by 21.15% to 18.90-million carats (2016: 15.56-million carats) while the country's production by value increased by 16.31% to $157.27-million (2016: $135.22-million).

Australia, meanwhile, produced 17.13-million carats of diamonds in 2017 (2016: 13.96-million carats), valued at about $199.70-million (2016: $216.34-million).

South Africa contributed 9.68-million carats to global diamond production in 2017, a 16.49% increase on the 8.31-million carats produced in 2016. The country's production by value increased by 147.20% to $3.09-billion in 2017, compared with $1.25-billion in 2016.

Another significant African diamond producer, Angola, increased its diamond production by volume by 4.66% to 9.44-million carats (2016: 9.02-million carats) and its diamond production by value by nearly 2% to $1.10-billion (2016: $1.08-billion).

Other African countries that made notable contri-butions to global production in 2017 were Lesotho,



Global diamond production is forecast to decrease to 147.40-million carats, valued at about $15.57-billion

Picture by De Beers Limited

Namibia and Zimbabwe. Lesotho's production increased to 1.13-million carats in 2017, compared with 342 014 ct in 2016; however production by value decreased to $342.66-million, compared with $364.55-million.

Namibia produced about 1.95-million carats (2016: 1.72-million carats), valued at about $1.010-billion (2016: $914.83-million) in 2017, while Zimbabwe's production increased to 2.51-million carats (2016: 2.10-million carats), valued at about $175.38-million (2016: $105.14-million).

Diamond market analyst Paul Zimnisky estimates that global diamond production will decrease to 147.40-million carats, valued at about $15.57-billion, in 2018, as only one of the top three diamonds miners by volume – De Beers, Alrosa and Rio Tinto – is expected to increase its output for 2018.

De Beers' higher production is expected to be more than offset by lower production by Alrosa and Rio Tinto, Zimnisky reported in a May 2018 post on his website. He pointed out that De Beers' production was likely to increase by about 1.20-million carats year-on-year in 2018, mainly as a result of the Jwaneng mine, in Botswana, which is expected to produce about 13.50-million carats of diamonds in 2018. De Beers had completed the $2.20-billion Cut-8 expansion project at Jwaneng during 2017 and has started planning a further expansion of the mine.

Zimnisky also pointed out that De Beers was likely to produce at about 95% of its production capacity in 2018, compared with 91% in 2017 and 80% in 2016.

In the longer term, De Beers is also expanding its Venetia mine, in South Africa, and is increasing its operational footprint in Canada, most recently through an agreement to acquire Peregrine Diamonds, which owns a diamond resource containing 74 kimberlite pipes in the Nunavut Territory.

Alrosa, meanwhile, is expected to produce about 36.60-million carats of diamonds in 2018, according to Zimnisky. While the Russian diamond miner will remain the world's largest diamond producing company by volume, its production will be lower than the 39.50-million carats produced in 2017. Zimnisky attributed the lower production mainly to lower output from the Mir mine, as a result of a flooding incident late in 2017, and lower output at Alrosa's Jubilee mine as a result of normal resource depletion.

Zimnisky points out that Alrosa does not expect any production from the Mir mine until 2020, while output at the Jubilee mine is expected to decrease to 8.20-million carats for 2018, compared with 10.10-million carats in 2017. Production at Jubilee is expected to decrease further to 5.90-million carats in 2019. Alrosa is, however, also expected to start commissioning its Verkhne-Munskoe mine later this year, which will ramp up to producing about 1.80-million carats a year of diamonds by 2020.

Expansion into Africa, particularly into Angola, is a strategic focus of Alrosa. Alrosa's 41%-held Catoca joint venture mine, in Angola, is expected to produce seven-million carats of diamonds this year, while a new development project, the Luele pipe, in the Luaxe concession, also in Angola, is expected to become one of the biggest mines by production volume after 2022. Catoca is held in a JV with Angolan State-owned miner Endiama and two other partners, while Alrosa and Endiama each own an 8% interest in Luaxe, which has about 350-million carats of reserves.

Rio Tinto, which operates the Argyle mine, in Australia, and the Diavik mine, in Canada, has seen its production decrease steadily since the 1980s as a result of normal depletion, says Zimnisky. He notes that the Argyle mine, which is underpinned by the high premiums

Probe into Zimbabwe's alleged lost diamond revenues

The Zimbabwean Parliament dropped plans in June 2018 to question that country's former President Robert Mugabe about allegations that $15-billion in diamond revenues had "disappeared" under this administration. This followed after the former President twice failed to attend hearings by the Parliamentary Portfolio Committee on Mines and Energy.

The Zimbabwean Parliament was seeking to determine whether $15-billion of diamond revenues had gone missing, Fin24 reported in June 2018. According to the news report, Mugabe had previously denied that the country's diamond mining industry had even earned as much as $15-billion.

Source: Fin24.

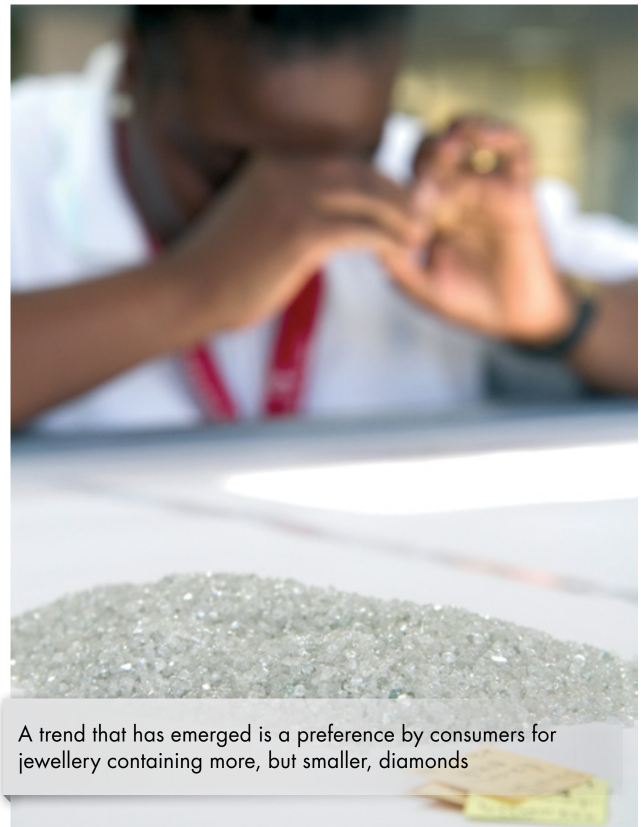
earned for its fancy pink diamonds rather than the small white diamonds it produces, produced about 40-million carats a year of diamonds during the 1980s, but production has since decreased to about 14-million to 17-million carats a year. The mine is expected to deliver about 14-million carats in 2018. Zimnisky further reports that Rio has reduced the Argyle mine's recoverable diamond reserve estimate to about 39-million carats, leaving the mine with a life-of-mine of less than three years.

The Diavik mine, in Canada's Northwest Territories, is a 60:40 partnership between Rio Tinto subsidiary Diavik Diamond Mines and Dominion Diamond Mines. The underground mine started operations in 2003 and produces about six-million to seven-million carats of large, white gem-quality diamonds a year.

Rio Tinto opened a fourth diamond pipe – the A21 openpit pipe – in August 2018 at Diavik. The pipe cost $350-million to develop over a four-year construction period. The pipe is expected to be an important source of supply to sustain production levels at Diavik over the next four years.

Meanwhile, Zimbabwe's diamond industry is also expected to start contributing more to global diamond production. The country's diamond output had been negatively impacted on in recent years by the State's decision to merge certain diamond mining companies to form the Zimbabwe Consolidated Diamond Company (ZCDC) – a diamond company wholly owned by the government of Zimbabwe – leading to legal battles that dented output. However, the Diamond Loupe reported in January 2018 that ZCDC had since increased its production to 1.80-milion carats for 2017, compared with the 961 000 ct produced in 2016. The publication further reported that the ZCDC, as an alluvial mining operation only, is also considering conglomerate diamond mining, which will require mechanised machinery to extract this deeper resource.

Zimbabwean publication the Sunday Mail reported in July 2018 that the ZCDC had produced 1.56-million carats of diamonds in the first six months of 2018, putting it on track to produce three-million carats of diamonds for the full year. The increase was partly the result of investment in the hard-rock mining of the conglomerate ore, as well as the installation of a new $25-million 450 t/h processing plant, which features X-ray recovery technology and a megadiamond-recovery section. The



A trend that has emerged is a preference by consumers for jewellery containing more, but smaller, diamonds

Picture by Creamer Media

Sunday Mail reported that the ZCDC plans to invest a further $400-million to lift its output to 11-million carats by 2025.

SUPPLY AND DEMAND

Zimnisky, meanwhile, noted in an August 2018 post on his website that diamond miners were finding it difficult to replenish their depleting diamond resources. He stated that most of the high-economic diamond deposits in the world had been put into production or had even been depleted. Therefore, mining companies will either choose to expand their existing mines, which will impact on the economics of those mines, or acquire greenfield projects to maintain production.

He further stated that large-scale greenfield projects were a rare find.

In addition, only two diamond development projects with a production capacity higher than one-million carats – Luaxe, in Angola, and Verkhne-Munskoe, in Russia – are under way. There are also not many large, commercial scale predevelopment stage projects in the pipeline, meaning that diamond supply will soon be under pressure.

Zimnisky also pointed to supply pressures in May 2018, stating at the time that there was a pending supply gap, as a result of production at the Argyle mine coming to an end in 2020, while the Luaxe project would start producing diamonds only in about 2022.

Diamonds.net, meanwhile, reported in August 2018 that diamond production was expected to peak in 2019, before starting a steady decline of about 1% to 2% a year until 2030. The article stated that while diamond miners would seek new resources in countries that were relatively underexplored, this would not be an easy task because of the challenging geographical locations of such deposits and political instability in certain regions.

Origin of blue diamonds uncovered

Researchers have determined how blue diamonds are formed and have uncovered some interesting details about these diamonds.

A study published in the journal Nature in August 2018 reveals that these diamonds, also called Type IIb diamonds, are a rare variety of diamond that features boron within its crystal structure, giving it its blue colour. Gemological Institute of America (GIA) research scientist Evan Smith, who is the lead author of the article, noted in an abstract of the article, published on the GIA's website, that researchers have determined that Type IIb diamonds crystallised much deeper in the earth than other gem diamonds and that they may have derived from ancient oceans.

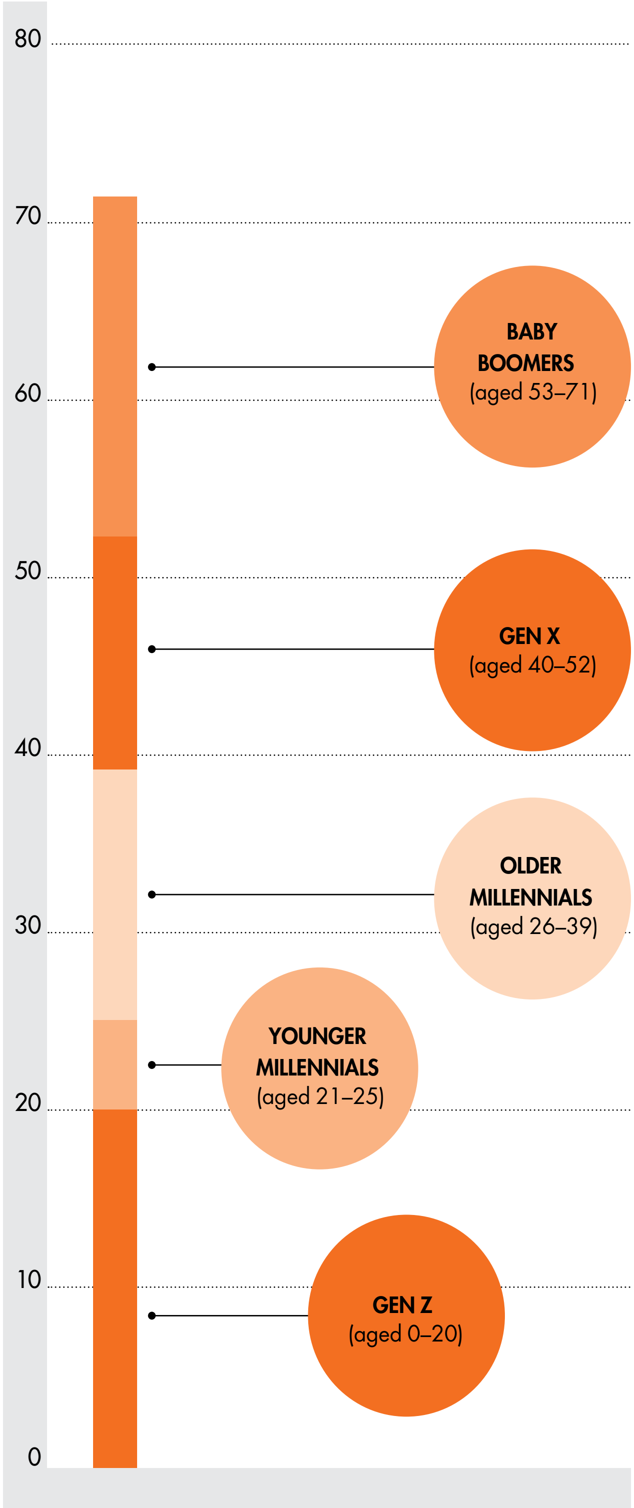
The researchers now believe Type IIb diamonds formed between 410 km and 660 km below the earth's surface, which is four times deeper than most other types of diamonds that formed at between 150 km and 200 km below surface.

Smith points out that, until recently, researchers believed that "superdeep" diamonds, those formed at depths of between 410 km and 660 km below surface, were small and not gem-quality diamonds. This latest research disproves that, while other studies have also shown that relatively large and pure diamonds have formed at "superdeep" depths.

Professor Stephen Richardson from the University of Cape Town's geological sciences department was a co-author of the study.

Source: Gemological Institute of America

Generations
(Age in years)



Source: De Beers Group, The Diamond Insight Report 2018

Bain & Company estimates in its 'The Global Diamond Industry 2017: The enduring story in a changing world' report, published in December 2017, that global rough diamond supply will expand by 0% to 1% a year from 2017 to 2030. It further notes that several diamond mines that produce a collective 29-million carats a year are likely to be depleted by 2030, while new projects in the pipeline will possibly add about 26-million carats a year to global rough diamond supply by 2030.

Global rough diamond demand, meanwhile, is expected to grow at an average rate of about 1% to 4% a year from 2017 to 2030, says Bain & Company. It notes that the US, China and India are likely to remain the biggest diamond jewellery markets for the foreseeable future.

It further notes that India could be one of the fastest-growing diamond jewellery markets to 2030, as a growing middle class and growing demand for bridal jewellery are boosting demand.

Meanwhile, De Beers Group reported in May 2018 that global consumer demand for diamond jewellery had reached a new record of $82-billion in 2017, a 2% increase on the $80-billion recorded in 2016. De Beers said the US had been the biggest driver of this growth for the fourth consecutive year, as a result of positive macroeconomics and strong consumer confidence. The US accounted for $43-billion of the overall global total.

Consumer demand for diamond jewellery in China increased by 3% year-on-year to $10-billion in 2017, with De Beers attributing the growth to strengthening macroeconomics.

The diamond miner expects demand growth to remain positive in most of the large diamond jewellery consuming markets during 2018, driven by positive global economic prospects, positive consumer sentiment and continued investment in marketing by the diamond industry.

Millennials' buying habits remain of interest to the diamond industry. Research conducted by the Diamond Producers Association (DPA) shows that Millennials are more likely to buy diamonds or diamond jewellery than other generations, but traditional diamond advertising is ineffective because they want to know where the products they buy are sourced. Women are also increasingly buying diamonds or diamond jewellery for themselves, with the DPA pointing out that Millennial women value their independence and feel more positive about diamonds or diamond jewellery they have bought for themselves.

Another trend that has emerged, according to a February 2018 news report by Bloomberg, is a preference by consumers for jewellery containing more, but smaller, diamonds, rather than jewellery containing one large diamond. This has resulted in the diamond content in jewellery shrinking and, in turn, impacting on the amount of money spent on diamonds. The industry is responding to this challenge by increasing its diamond marketing efforts, Bloomberg reports.

Meanwhile, De Beers points out in its 'Diamond Insight Report 2018', published in September 2018, that Generation Z, or Gen Z, is also on the industry's radar as a potential source of growth in diamond demand.

"Millennials and Gen Z are the most populous generations in the world today. Since their spending power is rising, they are important drivers of growth in the luxury sector and account for a considerable share of global diamond jewellery demand.

"While Gen Z are still too young to match Millennials' spending power, they are tomorrow's consumers and will increasingly affect the way marketers have to communicate with and engage their customers," the report states.

De Beers indicates that, of the total global population of about 7.39-billion people, Gen Z accounts for about 2.60-billion people, Millennials for about 2.14-billion people and older generations for about 2.65-billion people.

The report further emphasises that while Millennials and Gen Z are both important, they must be regarded as two distinct groups, as Millennials had grown up during an economic boom, resulting in a sense of expectation, while Gen Z experienced the financial crisis at an earlier age, making them more competitive. Despite their differences, however, Millennials and Gen Z also share some similarities, says De Beers, including that they are digital natives; value authenticity, individuality and self-expression; are engaged with social issues; and that love is meaningful to them.

Millennials' spending power is expected to overtake that of Gen X from 2020, with the World Bank forecasting their collective yearly income will exceed $4-trillion by 2030. Millennials currently account for about 60% of diamond jewellery demand in the US and about 80% in China.

Gen Z, meanwhile, is larger than the Millennial generation and will present significant growth opportunities in future. De Beers states in its Insight Report that Gen Z in the US already have $200-billion in direct buying power and $1-trillion in direct spending power, while only a small proportion of this generation is currently old enough to be independent consumers.

Meanwhile, with global supply under strain, Zimnisky expects diamond prices to benefit. He stated in May 2018 that diamond prices could rise by about 10% cumulatively from 2018 to 2021, taking prices back up to levels last seen in 2014 and about 8% above the diamond price in early 2018.

IMPORTS AND EXPORTS

According to data published by the KPCS, rough diamond exports, by value, increased to $49.94-billion in 2017 (2016: $48.70-billion), while exports, by volume, increased to 453.62-million carats (2016: 282.58-million carats). Rough diamond imports, by value, increased to $49.85-billion in 2017 (2016: 48.61-billion), while imports, by volumes, increased to 489.92-million carats (2016: 382.12-million carats).

The European Union (EU) exported $12.68-billion of diamonds (2016: $13.01-billion) and 129.16-million carats in 2017 (2016: 101.42-million carats), accounting for 25.38% of global diamond exports, by value, and 28.47% of global diamond exports, by volume, respectively.

The United Arab Emirates (UAE) was, again, the second-largest exporter of diamonds in 2017. It exported $9.76-billion of diamonds in 2017 (2016: $8.58-billion), accounting for 19.54% of global exports by value and 88.38-million carats (2016: 68.68-million carats), representing 19.48% of global exports by volume.

The Russian Federation was the third-largest diamond exporter by volume and the fourth-largest by value in 2017. It exported about 45.95-million carats of diamonds (2016: 42.72-million carats), accounting for 10.13% of global diamond exports by volume and $4.43-billion of diamonds (2016: $4.39-billion), accounting for 8.87% of diamonds by value.

Botswana, meanwhile, was the third-largest diamond exporter by value, accounting for 11.11% of diamond exports by value, and the fifth-largest by volume, accounting for 7.35% of global diamond exports, in 2017. It exported 33.32-million carats of diamonds (2016: 31.77-million carats) valued at $5.55-billion (2016: $5.84-billion) in 2017.

Israel was the fourth-largest diamond exporter by value in 2017. It exported $3.01-million carats of diamonds (2016: $3.22-billion), representing 6.03% of global diamond exports by value.

India exported about 45.61-million carats of diamonds (2016: 38.49-million carats), or about 10.05% of global diamond exports by volume, in 2017, making it the fourth-largest diamond exporter by volume.

In terms of imports, India was the biggest importer of diamonds by value and volume in 2017, followed by the EU and the UAE. India imported about 195-million carats of diamonds (2016: 149.32-million carats), valued at about $18.98-billion (2016: $16.67-billion) in 2017, accounting for about 39.80% and 38.07% of global imports by volume and value respectively.

The EU imported about 159.80-million carats of diamonds (2016: 113.54-million carats), valued at about $12.18-billion (2016: $13.20-billion), accounting for 32.62% and 24.44% of global imports by volume and value respectively.

The UAE imported about 86.90-million carats (2016: 69.96-million carats), representing 17.74% of global diamond imports by volume. Its diamond imports were valued at about $6.93-billion (2016: $6.35-billion), about 13.89% of global imports by value.

Israel was the fourth-largest diamond importer by value in 2017, with $3.66-billion of diamond imports (2016: $3.70-billion), representing about 7.34% of global diamond imports by value. China, meanwhile, imported about 14.70-million carats of diamonds in 2017 (2016: 13.58-million carats), making it the fourth-largest diamond importer by volume.

Botswana rounded out the top five diamond importers by volume and value in 2017, with 10.71-million carats (2016: 7.94-million carats), valued at about $1.98-billion (2016: $1.75-billion).

SYNTHETIC DIAMONDS

There is much interest regarding the potential impact of synthetic, or lab-grown, diamonds. These diamonds have the same chemical properties as mined diamonds and technological advances have resulted in the creation of lab-grown diamonds that are almost indistinguishable from mined diamonds. The former are, however, becoming cheaper to manufacture, says diamond analyst Paul Zimnisky, noting in a March 2018 article that the discount of gem-quality lab-grown diamonds had increased from 11% to 20% in early 2017 to about 28% to 40%.

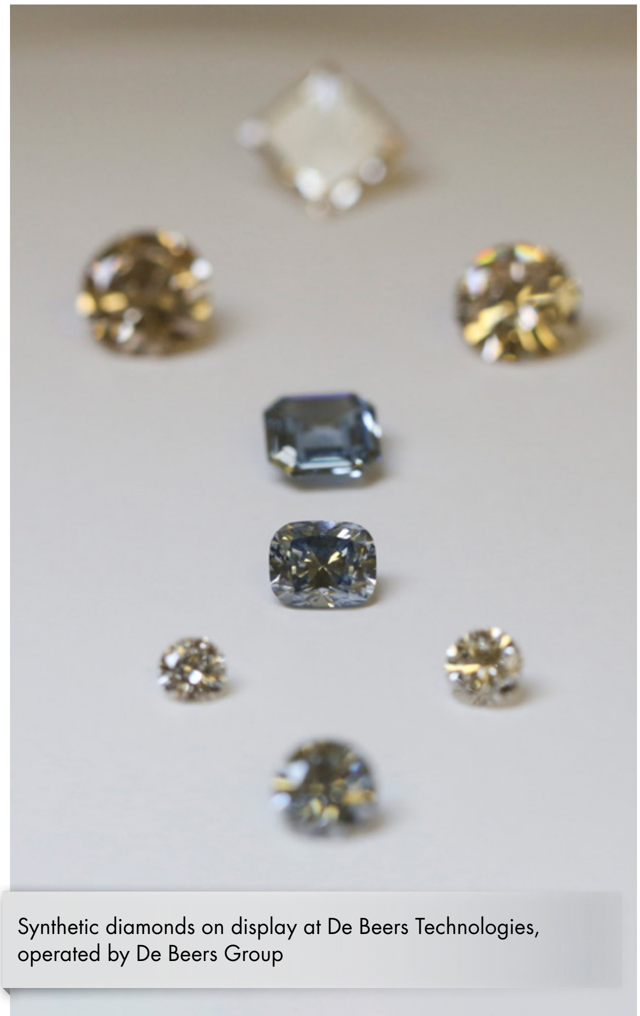
He further points out that, although technology now allows for more gem-quality lab-grown diamonds to be produced, this still totals less than five-million carats a year, compared with about 60-million carats of gem-quality diamonds mined a year. Gem-quality diamonds account for about 40% of overall mined diamond production.

Mining Weekly quoted Zimnisky in September 2018 as stating that lab-grown diamonds contributed only about 2% of the overall $87-billion global diamond market. This is expected to increase to about only 4% of the global diamond market by 2035.

Financial services provider ABN Amro, meanwhile, notes in its 'Diamond Sector Watch' report that the profit earned on selling gem-quality lab-grown diamonds is more attractive to producers than the profit earned on industrial lab-grown diamonds, which may prompt producers to increasingly focus on the gem-quality segment of the market. It also suggests that, if the production of gem-quality lab-grown diamonds continues to increase, this could possibly eventually outstrip mined diamond supply, which will have a significant impact on the mined diamond industry.

It further states that lab-grown diamond producers have strongly marketed their product, particularly targeting Millennials, with the promise that such diamonds are more environment-friendly than mined diamonds and are not conflict diamonds. US company Diamond Foundry has also attracted the support of celebrities, including actor Leonardo DiCaprio, who invested in the firm in 2015. Diamond Foundry, which plans to build a megacarat diamond factory to produce up to one-million carats a year of lab-grown diamonds, also claims to be the world's first carbon neutral diamond producer.

Mined diamond producers have, thus far, said they are not opposed to the sale of lab-grown gem-quality diamonds, provided that these are clearly marketed as such by the



Synthetic diamonds on display at De Beers Technologies, operated by De Beers Group

Picture by Bloomberg

Security

University of Oxford spinout company Opsydia has been selected by De Beers to add laser markings of less than one fiftieth of the size of a human hair to its lab-grown diamonds that will be used in its Lightbox jewellery. Opsydia noted in May 2018 that the laser markings will ensure that the diamonds cannot be passed off as being mined diamonds, while also ensuring the provenance of the diamonds. The company states that its technology enables it to insert the marks within the diamond, ensuring it cannot be polished off economically. Opsydia believes that its technology can potentially benefit the entire diamond industry.

Source: www.opsydia.com

producers. The industry has, in recent years, also invested in creating technology for the screening and testing of diamonds to ensure that lab-grown diamonds are not sold as mined diamonds.

The Diamond Producers Association (DPA), which represents the world's largest diamond mining companies, has, meanwhile, increased its marketing budget for 2017 and 2018 to ensure it can compete with the marketing campaigns of lab-grown diamond producers. The DPA had a $57-million marketing budget for 2017, with one of the key marketing campaigns being the 'Real is Rare' campaign. The association has a marketing budget of $70-million for 2018.

As part of its marketing campaigns, the DPA in 2018 surveyed US consumers to gauge their opinion on lab-grown diamonds. It announced in May 2018 that the survey had found that only 16% of respondents considered lab-grown diamonds to be "real" diamonds.

Meanwhile, changes recently announced by the US Federal Trade Commission (FTC) to its jewellery guidelines are likely to impact on how lab-grown diamond producers and diamond miners market their products. After six years of consultation with the diamond industry, the FTC released its updated Jewelery Guides, which sets out norms and standards for the industry to market its products, in July 2018.

Diamonds.net reported at the time that, under the guidelines, lab-grown diamond producers are still obligated to market their products as lab-grown diamonds to ensure that consumers are informed that the diamonds have not come from a mine. The FTC, however, discourages using the term "cultured diamonds".

The FTC guidelines further suggest that mined diamonds no longer be referred to as natural diamonds, with terms, such as "real" and "genuine", to be used only in the marketing of mined diamonds and not lab-grown diamonds.

The new guidelines have redefined the word synthetic diamond to include synthetic, man-made, non-natural, artificial and imitation diamonds. Rapaport Group chairperson Martin Rapaport has noted, however, that the FTC's decision is based only on diamonds' physical properties, which does not include their scarcity and valuation differentiation.

The DPA, however, expressed concern about using the term mined diamond instead of natural diamond, which it said was a term promoted by lab-grown diamond producers and an incorrect qualification.

To further clarify diamond industry terms for consumers, nine diamond industry organisations launched a Diamond Terminology Guideline, in the UK, in June 2018. They believe that the guideline will provide clear definitions of diamonds, synthetic diamonds and imitation diamonds. The organisations are the Antwerp World Diamond Centre, the World Jewellery Confederation, the DPA, the Gem Jewellery Export Promotion Council, the Israeli Diamond Industry, the International Diamond Manufacturers Association, the US Jewelry Council, the World Diamond Council and the World Federation of Diamond Bourses.

DPA CEO Jean-Marc Lieberherr told the publication the Professional Jeweller in a June 2018 interview that there is "great demand for standardised terminology", as consumers are confused about what they are buying, which negatively impacts on their confidence in buying diamonds and diamond jewellery.

De Beers Group, meanwhile, has also decided to start selling lab-grown diamond jewellery. It announced the launch of its Lightbox Jewelry brand in May 2018, which has been on offer in the US from September 2018. The brand will sell high-quality, fashion jewellery featuring lab-grown diamonds. Research done by De Beers has shown that there is an interest from consumers in buying low-cost, lab-grown diamond jewellery. De Beers will invest $94-million over four years in a new production facility, in Oregon, in the US, to produce about 500 000 ct/y of these diamonds.

ABN Amro commented in June 2018 that De Beers' move to enter the lab-grown diamond market was aimed at creating a clear segmentation between such diamonds and mined diamonds. It further argued that, by pricing its lab-grown diamonds at production cost rather than as a discount to mined diamonds, De Beers was aiming to ensure that there was enough differentiation between the two groups of diamonds to require separate markets, which should benefit the group in the long term. The bank suggested that other diamond miners might follow suit in entering the lab-grown diamond market, either directly or by partnering with producers of such diamonds.

Despite the effects of this move on the diamond industry, the bank believes that consumers will benefit, as they continue to have the option to buy the lower-cost lab-grown alternatives that have the same look and properties as mined diamonds.

Meanwhile, some in the diamond industry are also considering what impact the expected future shortage of mined diamonds might have on demand for lab-grown diamonds. Diamonds.net reported in August 2018, however, that many experts believed that, amid mined diamond supply constraints, lab-grown diamond supply would still capture only the lower end of the value chain, but not the engagement and bridal jewellery segments.

Meanwhile, Bloomberg reported in September 2018 that the lab-grown industry had filed a complaint with the FTC, arguing that De Beers was selling the lab-grown diamonds below cost, which the industry says is taking advantage of predatory pricing. Lightbox's diamonds are said to sell for about \$800/ct, which Bloomberg reports is one-fifth of the price of other lab-grown diamonds and one-tenth of the cost of a mined diamond.

RESPONSIBLE SOURCING

The global diamond industry continues to strive to further drive responsible sourcing of materials and eliminating conflict diamonds. The World Diamond Council (WDC) reports that the trade in conflict diamonds has almost entirely been eliminated as a result of the Kimberley Process (KP), which is an agreement between governments, civil society and the diamond industry to eliminate conflict diamonds from the global supply chain. The KP requires adherence to the Kimberley Process Certification Scheme, which certifies diamonds as being conflict free.

Nongovernmental organisation (NGO) Global Witness, however, states that the diamond industry is not doing enough to ensure responsible business conduct. It argues that diamond companies must take greater individual responsibility for dealing with trade in conflict diamonds, rather than relying only on the KP.

Another NGO Human Rights Watch further states that the KP has been focused on eliminating trade in conflict diamonds, but has not done enough to ensure that diamonds are not sourced from operations where abusive practices by governments or armed forces take place.

The WDC, meanwhile, has emphasised the importance of ongoing vigilance.

As part of ongoing efforts, the WDC's System of Warranties (SoW), which complements the KPCS, has undergone an industry review, with the SoW guidelines having been open for public review from June to October 2018. The SoW is a voluntary system of self-regulation for the diamond industry and requires buyers and sellers of rough and polished diamonds, as well as jewellery containing diamonds, to ensure that diamonds sold are conflict free. The WDC reported at the end of October 2018 that its members had, during its annual meeting, passed resolutions for further improvements for a responsible supply chain and enhanced self-regulation exercises within the new SoW guidelines.

A WDC strategic planning committee has been tasked with establishing a member's toolkit to help implement the guidelines, which will require adherence by WDC members to universally accepted principles on human and labour rights, anticorruption and antimoney laundering in support of the KPCS. Changes to the guideline will be implemented on an ongoing basis and will be included in the WDC Strategic Plan for 2021 to 2025.

Further, the WDC members also reaffirmed their commitment to KP reform, including through the implementation of an expanded definition of conflict diamonds that will consider human security and environmental concerns.

Members also emphasised the need to involve more African countries in the KP.

The diamond mining industry is, meanwhile, making great efforts to ensure the provenance of its diamonds and provide consumers with a record of a diamond's history from mine to retail store. Technology will play a significant role in this regard.

BLOCKCHAIN

More industries are adopting blockchain technology, which is used to create a secure digital ledger of transactions, and the diamond industry is no different. The industry expects blockchain to provide the origin of diamonds to assure consumers they are not buying synthetic diamonds that are marketed as mined diamonds or buying so-called blood or conflict diamonds.

De Beers is developing its Tracr blockchain platform, which will create a tamper-proof digital record of diamonds registered on the platform as they progress from the mine to the consumer. The platform will create a unique diamond identification for each diamond while keeping record of that diamond's carat, colour, clarity and other attributes. De Beers has successfully tracked 100 high-value diamonds along the value chain and hopes to eventually roll out the technology to the entire industry.

Diamond retailer Signet Jewelers joined the Tracr programme in May 2018. It stated at the time that it expected the platform to increase transparency and confidence in the diamond industry.

Alrosa in October 2018 also joined the Tracr pilot programme, with De Beers stating that Alrosa's involvement brought the world's two largest diamond producers together to provide enhanced assurance for consumers and trade participants about the origin and authenticity of their diamonds. De Beers CEO Bruce Cleaver stated, at the time of the announcement, that this would ensure significant benefits for consumers and diamond industry participants.

Another diamond producer, Lucara Diamond Corp, has acquired a company called Clara Diamond Solutions Corp, which uses analytics, as well as cloud and blockchain technologies, to ensure diamond provenance.

Meanwhile, London-based company Everledger has created its Diamond Time-Lapse Protocol initiative that uses multinational information technology company IBM's blockchain platform to trace diamonds from mine to consumer. It is also working with Chow Tai Fook Jewellery Group and diamond grading authority, the Gemological Institute of America (GIA), to provide consumers with a digital diamond grading report for diamonds using the IBM blockchain platform. The GIA announced in May 2018 that consumers who buy diamonds under the Chow Tai Fook T Mark diamond brand will receive a permanent blockchain record of the grading information for the diamonds they are buying. The GIA believes that this initiative will ensure consumer trust.

Further, Everledger has also partnered with US company Rare Carat on the launch of the 'Rare Carat Report', which provides consumers with a free tool to assess diamonds they may want to buy. The parties announced the launch of the online tool in August 2018 and explained that it would enable consumers to receive details of a particular diamond's price and attributes by entering the diamond's certificate number on the platform's website.

In the broader jewellery industry, IBM has partnered with a consortium of gold and diamond jewellery industry participants on the cross-industry TrustChain Initiative, which uses blockchain to trace the origins of entire pieces of jewellery through the supply chain. The consortium includes precious metals refiner Asahi Refining, US jewellery retailer Helzberg Diamonds, precious metals supplier LeachGarner, global jewellery manufacturer Richline Group and third-party verification firm UL. The consortium and IBM believe that the initiative will provide assurances for consumers about the quality of the jewellery pieces they are buying, and that those pieces have been sourced and created in a socially and environmentally responsible way.

Despite the benefits, ABN Amro cautions that blockchain may not work on a large scale in the diamond industry. The company points out in its 'Diamond Sector Outlook' report, published in December 2017, that the success of an industrywide adoption of blockchain technology will depend on the willingness of mining companies and artisanal miners to register diamonds on blockchain platforms. It points out that some mining companies may not want to participate in such initiatives and that it could be a time-consuming endeavour that may not appeal to all in the industry. It further warns that independent auditing of the inputs onto blockchain platforms may prove difficult.

Major and midtier diamond producers

Globally, De Beers Group and Alrosa are the two biggest diamond miners, with each contributing about one-third of global diamond production.

De Beers Group is the biggest diamond producer in Africa, with operations in South Africa, Namibia and Botswana. It is also increasing its presence in Canada.

Alrosa operates in nine countries, including Angola, where it has an interest in the Catoca mine and the Luaxe development project with partner, Angolan State-owned diamond company Endiama.

Rio Tinto is the world's third-biggest diamond producer, with operations in Australia and Canada, while Dominion Diamond, with operations in Canada, is the world's fourth-largest diamond miner.

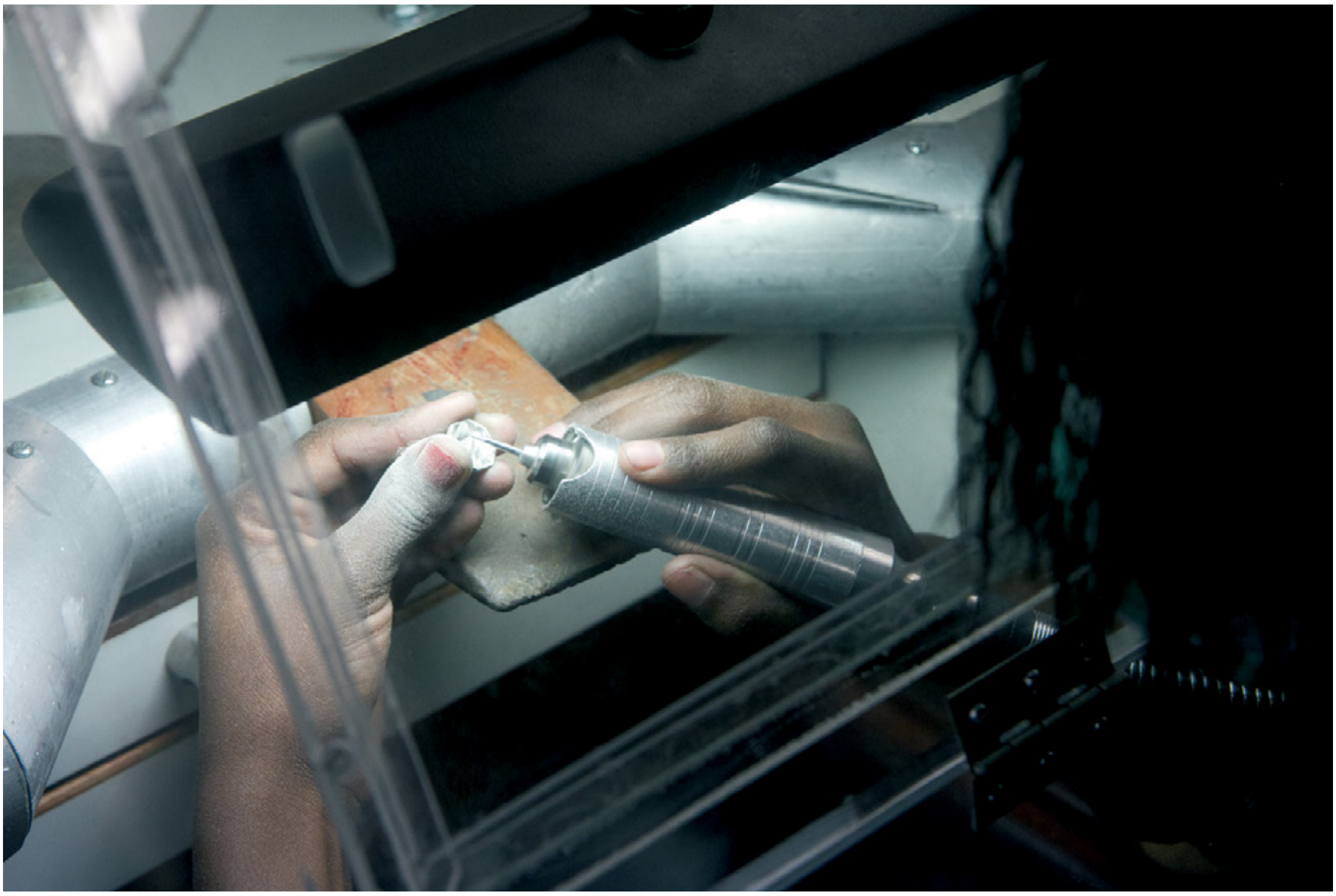
Petra Diamonds rounds out the list of the top five global diamond producers. It owns and operates mines in South Africa and Tanzania.

Global rough diamond production by biggest diamond miners (ct)

	2015	2016	2017
Alrosa	38.30-million	37.40-million	39.60-million
De Beers	28.70-million	27.30-million	33.50-million
Rio Tinto	17.40-million	18-million	21.60-million
Dominion Diamonds	2.60-million	2.70-million	3-million
Petra Diamonds	3.20-million	4.10-million	4.20-million

Source: Alrosa annual report 2017
Note: Production figures have been rounded off

The Zimbabwe Consolidated Diamond Company has, meanwhile, set its sights on becoming the world's fifth-largest diamond miner.



Picture by Creamer Media

DE BEERS

De Beers				
	FY 2017	FY2016	H1 2018	H1 2017
Production in carats	33.45-million	27.34-million	17.50-million	16.14-million
Revenue	$5.84-billion	$6.07-billion	$3.19-billion	$3.13-billion
Underlying Ebitda	$1.44-billion	$1.41-billion	$712-million	$786-million

Source: Anglo American annual report 2017 and interim results to June 30, 2018
FY – financial year; H1 – half-year

Diversified miner Anglo American owns 85% of De Beers Group, with the balance held by the government of Botswana. It has operations in South Africa, Namibia, Botswana and in Canada.

Its South African operations are operated under De Beers Consolidated Mines (DBCM), its operations in Namibia under Namdeb Holdings and its Botswana operations under Debswana Diamond Company.

De Beers Canada, meanwhile, holds a 51% interest in the Gahcho Kué mine, in Canada, which it developed in a joint venture with Mountain Province Diamonds. It also owns the Victor diamond mine, which will close in 2019, and has recently acquired Peregrine Diamonds, which owns the Chidliak diamond resource.

De Beers Group's production for 2017 increased by 22% year-on-year to 33.45-million carats, compared with the 27.34-million carats produced in 2016, in part as a result of the ramp-up of the Gahcho Kué mine.

Group production for the six months to June 30, 2018, increased by 8% year-on-year to 17.50-million carats, compared with the 16.14-million carats produced in 2016, as a result of the ramp-up at Gahcho Kué and an incremental increase in output at Jwaneng, in Botswana.

De Beers Group expects to produce 34-million to 36-million carats of diamonds during 2018.

Meanwhile, the group's revenue decreased by 4% in 2017 to $5.84-billion, compared with $6.07-billion in 2016, as a result of strong midstream restocking having taken place in the first half of 2016. The group's consolidated sales volumes increased by 8% to 32.50-million carats in 2017, compared with 30-million carats in 2016, but the average realised rough diamond price decreased by 13% to $162/ct, compared with $187/ct in 2016.

Revenue for the six months to June 30, 2018, however, increased to $3.19-billion, compared with $3.13-billion in the first half of 2017, while consolidated sales volumes decreased to 17.85-million carats, compared with the 18.43-million carats sold in the first half of 2017. Average realised rough diamond prices, however, increased by 4% to $162/ct, compared with the average price of $156/ct achieved in the first half of 2017.

Capital expenditure (capex), meanwhile, decreased by 48% year-on-year to $273-million, compared with $526-million in 2016, as a result of the completion of the development of Gahcho Kué, the delivery of Debmarine Namibia's *SS Nujoma* exploration and sampling vessel and lower waste capitalisation at the Venetia mine, in South Africa.

De Beers Group continues to innovate through several new initiatives. It announced in January 2018 that it is piloting its Tracr blockchain technology, which provides a tamper-proof digital record for every diamond registered on the Tracr platform, providing consumers with peace of mind that all diamonds registered on the platform are conflict-free and natural. It further reported in May 2018 that it had successfully tracked 100 high-value diamonds along the value chain during piloting.

In August 2018, it appointed Jim Duffy as GM of its Tracr platform. He will be responsible for the further development and scaling of the platform and will oversee all operational and commercial aspects of the venture.

As a further measure to ensure transparency in the diamond supply chain, De Beers Group launched the GemFair pilot programme in April 2018, which uses dedicated technology to record artisanal and small-scale (ASM) mined diamonds at sites that meet ethical standards, in Sierra Leone. GemFair is aimed at ensuring diamonds are bought from only approved sites while contributing to improving working conditions for employees in the diamond mining industry. GemFair has partnered with nongovernmental organisation the Diamond Development Initiative, which will certify that mine sites meet the required ethical standards. Once certified, De Beers will provide the miners with the GemFair technology, including an application and tablet, to digitally track the ASM diamonds throughout the supply chain. If the pilot programme is successful, the GemFair technology will be integrated into the Tracr blockchain platform.

As previously mentioned, De Beers Group has also entered the lab-grown diamond jewellery sales market to complement the sale of its mined rough diamond production.

DBCM

De Beers owns 74% of De Beers Consolidated Mines (DBCM), which operates the Venetia mine, in Limpopo, and the Voorspoed mine, in the Free State. The balance of DBCM is owned by black economic-empowerment (BEE) consortium Ponahalo Holdings.

DBCM produced 5.21-million carats of diamonds in 2017, compared with the 4.23-million carats produced in 2016, mainly as a result of higher grades and an improved operational performance at its Venetia openpit mine. Output at Venetia increased to 4.60-million carats (2016: 3.52-million carats), while output at the Voorspoed mine decreased to 606 000 ct (2016: 649 000 ct).

Further, for the six months to June 30, 2018, DBCM produced 2.11-million carats of diamonds, 16% lower than the 2.51-million carats produced in the first half of 2017 as a result of a safety-related production stoppage at Venetia and geotechnical issues that prevented DBCM from accessing the resource at the Voorspoed mine.

Construction continues on the $2-billion Venetia underground project, which will become the principal source of production at Venetia from 2023. The underground project, which will include the sinking of two 7-m-diameter vertical shafts to a depth of 1 080 m, will extend the mine's life to 2046 and produce an estimated 94-million carats of diamonds.

Meanwhile, DBCM has signed agreements with six BEE partners to participate in a R600-million to R700-million, eight-year transport contract to 2026. *Mining Weekly* reported in June 2018 that the Venetia Employee Bussing Empowerment transaction will result in the establishment of two empowered companies – Musina Newco and Blouberg Newco – operating 48 buses to transport employees and contractors between the Musina and Blouberg areas and the mine. BEE partners Budali Transport, TM Africa, JJ Transport and Uhuru will hold an initial 40% of Musina Newco, while Blouberg Consortium and Blouberg Transport Projects will hold an initial 40% of Blouberg Newco. VM Diamond Transport will hold a 60% stake in each of the two new companies. The

Conservation

In a significant conservation initiative aimed at helping to restore Mozambique's elephant population, De Beers will transport 200 elephants from its Venetia Limpopo Nature Reserve (VLNR), in South Africa, to Mozambique.

Wildlife populations in the Zinave National Park, which was founded in the 1960s, have been critically depleted following Mozambique's 15-year civil war. This will be one of the largest elephant translocations ever recorded in South Africa, the diamond miner reported in July 2018.

De Beers has partnered with nonprofit organisation Peace Parks Foundation (PPF) to execute the initiative. PPF is assisting De Beers with the translocation, ensuring that the elephants' social groups are not disturbed and that they flourish in their new habitat through ongoing monitoring of their wellbeing and enhanced protection efforts.

The first phase resulted in about 60 elephants being transported from the VLNR to the Zinave National Park, in Mozambique, from July to August 2018.

A further 140 elephants will be moved to other conservation areas within Mozambique that hold sufficient elephant carrying capacity from 2019.

"There is no greater symbol of Africa than the majestic elephant. For us . . . to help secure their future in Mozambique while . . . ensuring that other species at our VLNR can flourish, is something every employee of De Beers is proud of.

"This translocation is born of a deep sense of responsibility and is part of our wider commitment to continue to invest in new and innovative ways to protect the natural world," De Beers CEO Bruce Cleaver has noted.

As part of its investment in the elephant translocation initiative, De Beers is also providing PPF with $500 000 over five years for antipoaching support measures, which will include the hiring and training of new park rangers and the opening of new access roads to increase patrol coverage.

De Beers' Forevermark brand is, meanwhile, also supporting efforts to protect the black and white rhino population in the sub-Saharan region by supporting the Tusk Rhino Trail, an art installation in London, in the UK, which raises funds for the conservation of rhino populations.

De Beers subsidiary Debswana is also supporting initiatives to protect the white rhino population in Botswana.

Source: De Beers

empowerment partners will have the option to increase their interest in the two transport companies to 51% over a five-year period.

DBCM has also partnered with the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) to launch a capacity-building programme to support 500 women-owned microentrepreneurs in the Blouberg and Musina communities. The programme is aimed at equipping the microentrepreneurs with business management and life skills to expand their businesses.

Meanwhile, in early 2018, after two years of delays, South Africa's Department of Mineral Resources (DMR) finally approved 16 prospecting licence applications submitted by DBCM. *Mining Weekly* reported in January 2018 that the licences were located in the Kimberley area of the Northern Cape and that a further 38 licence applications were pending.

DBCM had warned in late 2017 that it might consider investing a further R30-million to R40-million a year in exploration expenditure in other countries rather than South Africa, as a result of a delay in the DMR approving prospecting licences.

On a less positive note, DBCM announced in July 2018 that it would close the Voorspoed mine by the end of 2018 unless the DMR was able to secure a suitable bid for the mine by the end of August 2018. DBCM put the mine up for sale in November 2017 but was unable to find a suitable bidder to buy the operation. The DMR has, however, decided that it will try to find a potential buyer for the mine. Voorspoed employs about 650 employees and contractors.

Debswana

Debswana Diamond Company is a 50:50 joint venture between De Beers and the government of Botswana. It owns and operates the Jwaneng, Orapa, Lethlakane and Damtshaa diamond mines, as well as the Morupule coal mine, in Botswana. The Damtshaa mine, which had been placed on care and maintenance in January 2016, resumed operations in December 2017.

Debswana produced 22.68-million carats of diamonds in 2017, 11% higher than the 20.50-million carats produced in 2016, mainly as a result of higher production at the Orapa mine. Orapa's output increased to 10.19-million carats (2016: 7.93-million carats), while production at Jwaneng decreased to 11.86-million carats (2016: 11.98-million carats). The Damtshaa mine produced 35 000 ct, compared with zero production in the prior year, while Letlhakane produced 607 000 ct, compared with 595 000 ct in 2016.

The company's production for the first six months of 2018 also increased year-on-year to 12.10-million carats (2016: 11.12-million), as a result of growing output at the Orapa and Jwaneng mines, the restart of the Damtshaa operation and the commissioning of the Letlhakane tailings plant.

Diamond Museum

Debswana Diamond Company opened Botswana's first diamond museum, the Adrian Gale Diamond Museum, in Orapa, in March 2018. The museum, which was named after the late Dr Adrian Gale, a former GM of the Orapa Letlhakane and Damtshaa mines, provides insight into the history of diamond mining in Botswana.

Source: Debswana Diamond Company

A mineworker displays a lump of diamond-bearing kimberlite rock from the pit floor at the Jwaneng mine

Picture by Bloomberg

Debswana, which produced first ore from the Jwaneng Cut-8 expansion project during 2017, announced in April 2018 that it planned to further deepen the mine to 830 m, compared with the current 650 m, as part of the Cut-9 expansion project. Bloomberg reported that the proposed expansion, for which Debswana was seeking permission, would extend Jwaneng's mine life by 11 years and result in the extraction of an additional 50-million carats of diamonds.

Further, in July 2018, it was reported by Botswana-based publication the WeekendPost that the first diamonds had been recovered from the Letlhakane Mine Tailings Resource Treatment project, in which Debswana invested about P2-billion. The plant is expected to produce about 800 000 ct/y of diamonds over a 20-year period.

Debswana has also reportedly come under fire from employees over plans to implement X-ray scanning technology to prevent theft from its mines. The WeekendPost reported in August 2018 that Botswana VP Slumber Tsogwane would try to resolve a dispute between Debswana and its employees. According to the media report, Debswana plans to start using Scannex machines, developed by De Beers subsidiary DebTech, in high-risk areas where employees are currently searched for possible hidden diamonds that may be smuggled out of the mines. The miner is reportedly planning to spend P50-million on installing four of the machines at Jwaneng, four at Orapa, one at Letlhakane and one at Damtshaa.

The media report notes that employees and labour unions believe that the Scannex machines pose a radiation risk to them. De Beers has, in the past, explained that although the Scannex machines – which are in operation at some of its mines in South Africa and Namibia – do use a low X-ray radiation dose, the dose limit is in line with international standards and deemed safe.

Namdeb

Namdeb Holdings is a joint venture between De Beers and the Namibian government and owns two subsidiaries – Namdeb Diamond Corporation, which undertakes land-based mining, and Debmarine Namibia, which is involved in marine mining.

Namdeb Diamond Corporation holds eight mining licences over 15 789 km^2. Its Northern Coastal Mines comprise the Bogenfels, Elizabeth Bay and Douglas Bay licences, while its Southern Coastal Mines operation is situated within Mining Licence 43 on the south-western coast of Namibia. Namdeb Diamond Corporation's Mining Licence 42 extends along the Orange river and includes the Sendelingsdrif and Daberas mines.

Debmarine Namibia, meanwhile, mines for diamonds in the offshore mining licence area off the southern coast of Namibia using six diamond mining vessels – *Debmar Atlantic, Debmar Pacific, !Gariep, Grand Banks*, *Mafuta* and *SS Nujoma* – and produces about one-million carats

Debmarine has six mining vessels and is planning to add another to its fleet by 2021 of diamonds a year. Debmarine is planning to add another vessel to its fleet by 2021. It announced in November 2017 that it intends, subject to a feasibility study, to acquire another offshore vessel, the construction of which will cost about N$2-billion. This excludes the cost of the equipment that will need to be retrofitted to ensure that the vessel is fit for purpose. Debmarine has entered into a memorandum of understanding with the Kleven Verft shipyard, in Norway, for the construction of the proposed vessel, which is expected to start operations in the third quarter of 2021.

The new vessel will be the biggest offshore vessel in the Debmarine Namibia fleet to deploy crawler-mounted dredge technology. At 176 m long, it will be slightly larger than the current largest vessel, *Mafuta*, which is 174 m long. The new vessel will contribute to Debmarine's growing production and is expected to create 130 new jobs.

Namdeb Holdings produced 1.81-million carats of diamonds in the year ended December 31, 2017, compared with the 1.57-million carats produced in 2016. Namdeb attributed the higher production to an increase in grades at its land-based mining operations. Production for the six months to June 30, 2018, increased by 21% year-on-year to 1.04-million carats, compared with the 863 000 ct produced in the first half of 2017.

Namdeb has also announced that it plans to sell its Elizabeth Bay mine, near Lüderitz. It reported in February 2018 that the company had determined that the best way to secure a future for the mine beyond 2019 would be to sell the mine to a low-cost operator. The mine employs about 160 people and produced about 200 000 ct of diamonds in 2017.

De Beers Canada

De Beers Canada's production increased to 3.76-million carats (2016: 1.03-million carats) in the 2017 financial year, as Gahcho Kué ramped up. The mine achieved better-than-expected grades during the year.

Further, although production at the Victor mine increased by 21% year-on-year to 700 000 ct, the openpit mine is still expected to become depleted in early 2019. At the Snap Lake mine, which was placed on care and maintenance at the end of 2016, De Beers Canada has completed the flooding of the mine workings to preserve the long-term viability of the orebody until market conditions and technology improve to make it economically feasible to mine the orebody.

De Beers Canada's output for the six months to June 30, 2018, increased to 2.25-million carats (2016: 1.64-million carats), as a result of higher grades at the Gahcho Kué and Victor mines.

Meanwhile, De Beers Canada signed an agreement in July 2018 to acquire TSX-listed Peregrine Diamonds, which owns the Chidliak diamond resource in Canada's Nunavut Territory, for about C$107-million. The resource comprises 74 kimberlite pipes, which De Beers CEO Bruce Cleaver has said will make an "exciting addition" to the group's existing portfolio of operations.

The transaction was finalised in mid-September. At the time, De Beers Canada CEO Kim Truter said the company had experience in developing and operating mines in Arctic-like conditions and was looking forward to understanding the Chidliak property and determine how to advance the project.

PETRA DIAMONDS

Petra Diamonds		
	FY 2017	**FY 2018**
Production in carats	4-million	4.60-million
Revenue	$495.30-million	$394.80-million
Capex	$145.50-million	$271.70-million

Source: Compiled from Petra Diamonds' FY18 trading update and FY19 guidance
FY – financial year

LSE-listed Petra Diamonds holds an interest in several underground mines and one opencast mine, as well as tailings retreatment assets and exploration projects in Southern Africa. It operates the Finsch, Cullinan and Koffiefontein underground mines, in South Africa, as well as the Williamson openpit mine, in Tanzania. Up until July 2018, it held a majority stake in the Kimberley Ekapa Mining (KEM) Joint Venture (JV), which holds Petra's Kimberley underground mine and Ekapa's tailings operations.

Petra, which also has exploration projects in Botswana, has a resource base of more than 300-million carats.

The company produced 4.60-million carats of diamonds in the financial year ended June 30, 2018, compared with the four-million carats produced in the prior financial year. This was also in line with guidance of 4.60-million to 4.70-million carats. Output at its Finsch mine, however, decreased by 4% to 2.07-million carats (2017: 2.15-million) as higher run-of-mine (RoM) carat production of 1.93-million carats (2017: 1.82-million carats) was offset by lower tailings production of 147 010 ct (2017: 331 442 ct).

At the Cullinan mine, production increased by 74% to 1.37-million carats (2017: 786 509 ct), mainly as a result of a 97% year-on-year increase in RoM production to 1.34-million carats (2017: 679 622 ct), as the new C-Cut Phase 1 block cave ramped up.

Production at the Koffiefontein mine increased by 3% to 52 537 ct (2017: 51 173 ct), while production at the Williamson mine reached its highest level in 40 years, at 341 102 ct (2017: 225 202 ct).

Petra's attributable production from the KEM JV decreased by 3% to 775 645 ct (2017: 800 434 ct), as a result of a 6% decrease in RoM production to 82 246 ct (2017: 87 783 ct) and a 3% decrease in tailings production to 693 399 ct (2017: 712 651 ct). RoM production was negatively impacted on by labour disruptions, project delays and a mudrush incident that led to the early closure of the Bultfontein underground mining area. Tailings output was negatively impacted on by severe rain storms that restricted access to higher-grade dumps.

In July 2018, Petra signed a heads of agreement with JV partner Ekapa Mining, which has agreed to acquire Petra's 75.90% stake in the KEM JV for R300-million. Petra decided to sell its interest in the JV, as it believes Ekapa's ability to focus solely on the JV assets will maximise the operation's value. Petra expects the disposal to free up its management's time to focus on its key assets – Finsch and Cullinan – while reducing Petra's cash outflow and decreasing operational risk.

Meanwhile, despite having achieved most of its development milestones in recent years, Petra announced plans in May 2018 to raise $178-million in a rights offer. It explained at the time that the company's cash flow generation had been negatively impacted on by operational delays in 2017, mainly the delay in bringing the new plant at Cullinan on stream and a slower-than-planned ramp-up of the new sublevel cave (SLC) at Finsch, which resulted in a deficit in operating cash flow of about $130-million. Further, during the first half of the 2018 financial year, strikes by employees in South Africa and the Tanzanian government's blocking of the export of a parcel of 71 654.45 ct of diamonds negatively impacted on the company's finances.

The stronger rand in the first half of the financial year also contributed to Petra's debt levels being higher than planned and the diamond miner intends to use $120-million of the rights offer proceeds to pay down outstanding debt with its South African lending group. The balance of the proceeds would be used for working capital. The rights issue was successfully concluded in June 2018 and Petra reduced its debt by $107-million.

Looking ahead, the diamond miner expects to produce between 3.80-million and four-million carats of diamonds in the 2019 financial year. This excludes any contribution from the KEM JV. The disposal of its interest in the KEM JV forms part of Petra's change in focus to value optimisation rather than higher carat volume production to maximise profitability and returns for shareholders.

Capex, excluding the KEM JV, is expected to reach $93-million in the 2019 financial year and to decrease further to $72-million in the 2020 financial year. Expansion capex at the Finsch mine in the 2019 financial year is estimated to reach about $16-million, with the investment going towards completion of the kimberlite tunnel development in the Block 5 SLC. A further $5-million in expansion capex will be invested in the kimberlite tunnel development in the SLC at the Koffiefontein mine.

Petra will invest a further $45-million in expansion capex to install the final C-Cut Phase 1 draw point and the shaft/plant interface, at the Cullinan mine.

At the Williamson mine, $5-million in capex will be spent on waste stripping in the 2019 financial year.

Meanwhile, the diamond miner announced in September 2018 that a process was under way to identify a successor to CEO Johan Dippenaar, as part of the company's succession plans. Dippenaar will step down once a new CEO has been appointed.

LUCARA DIAMOND CORP

Lucara Diamond Corp				
	FY 2017	FY 2016	H1 2018	H1 2017
Production in carats	249 767	353 974	157 205	122 865
Revenue	$220.80-million	$295.50-million	$89.90-million	$105.70-million
Capex	$34.20-million	$32.70-million	$7-million	$13.90-million

Source: Compiled from Lucara Diamond Corp's annual results for 2017 and its second-quarter results for 2018
FY – financial year; H1 – half-year

Canada-based Lucara Diamond Corp is part of the Lundin Group of Companies and is listed on the TSX, the Nasdaq Stockholm and the Botswana Stock Exchange. It owns and operates the Karowe diamond mine, in Botswana, which was brought into production in 2012 and which has delivered some of the world's biggest diamonds, including the 1 109 ct Lesedi La Rona and the 813 ct Constellation.

The mine produced 249 767 ct of diamonds in 2017 and, although lower than the 353 974 ct produced in 2016, was in line with the company's expectations. Karowe produced a further 157 205 ct of diamonds in the first half of 2018, including 11 diamonds larger than 100 ct.

Lucara had terminated its contract with mining contractor Eqstra Botswana in December 2016, and Aveng Moolmans took over as the mining contractor in early 2017; however, Aveng Moolmans experienced equipment availability issues that hampered ore mining. Throughout 2017, Lucara had worked with Aveng Moolmans to overcome the challenges, with additional trucks, shovels, excavators and drill rigs deployed on site in the third quarter of the year.

Further, in the fourth quarter of the year, a mining subcontractor was appointed to focus on ore mining, leaving Aveng Moolmans to focus on waste mining. Despite both parties' efforts, equipment availability issues and waste mining production challenges persisted throughout the first quarter of 2018. Operations improved in the second quarter of the year, but Lucara announced in August 2018 that it and Aveng Moolmans had agreed to "an amical termination" of the mining contract as of December 31, 2018. The parties also agreed that new

Picture by Lucara Diamond Corp

mining contractor Trollope Mining Service would gradually take over responsibility for ore and waste mining from Aveng Moolmans over six months, starting on July 1, 2018.

Meanwhile, the diamond miner had, during the third quarter of 2017, successfully completed its Mega Diamond Recovery circuit and its submiddles X-ray technology (XRT) circuit capital projects as part of measures to enhance diamond recovery at Karowe. It reported in February 2018 that the submiddles XRT circuit had shown consistent recoveries when compared with that of processing low-yield material through a standard dense-medium separation circuit.

Lucara expects to produce between 270 000 ct and 290 000 ct of diamonds in 2018 and has set its revenue guidance for the year at between $170-million and $200-million.

Lucara is also advancing the evaluation of developing a potential underground mine at Karowe. In 2017, it appointed Royal HaskoningDHV to undertake a preliminary economic assessment (PEA) into the proposed underground mine. The results of the PEA were released in November 2017 and demonstrated the economic viability of the proposed development. Underground operations will be focused on Karowe's high-value South Lobe.

The PEA considered the development of a sublevel caving operation to extract diamonds from the AK06 kimberlite resource over a ten-year period after the depletion of the current Karowe openpit operation in 2026. It estimated a preproduction capital cost for developing an underground operation of $195-million. It also estimated life-of-mine (LoM) production of 2.72-million carats of diamonds, an after-tax net present value of $451-million and an internal rate of return of 38.90%.

Lucara had planned to complete a prefeasibility study (PFS) on the proposed underground development by the second half of 2018 but reported in August 2018 that it had decided to convert the PFS into a feasibility study, following the publication of a June 2018 updated mineral resource estimate. The updated mineral resource estimate, which was completed by Mineral Services Canada, sets out a remaining indicated mineral resource of 7.90-million carats for the AK06's kimberlite. CEO Eira Thomas noted in a June 2018 press release that the updated estimate supported the recovery of high-value diamonds from the South Lobe at Karowe over the remaining life of the openpit operation, as well as possible underground mining until at least 2036. The feasibility study is scheduled for completion in the first half of 2019.

Meanwhile, Lucara has acquired Clara Diamond Solutions Corp, which uses analytics and cloud and blockchain technologies to modernise the diamond supply chain and ensure diamond provenance. The diamond miner announced in February 2018 that it would acquire Clara for an initial 13.10-million Lucara shares, valued at about $29-million, in addition to further staged equity payments of up to 13.40-million Lucara shares. The deal was finalised in March 2018.

Lucara will initially use the Clara platfrom to sell its own diamonds, but plans to eventually scale it up to accommodate uptake from other sources in the diamond value chain. The diamond miner believes that the acquisition will provide it with stable cash flow that is not tied to fixed sales cycles and that will potentially supplement revenue from the Karowe mine.

The diamond miner announced in August 2018 that Clara had also entered into an exclusive collaboration agreement with diamond industry technology developer Sarine Technologies. Under the terms of the agreement, selected diamonds recovered at a participating mine site will undergo inclusion mapping using Sarine's Galaxy technology to create a digital fingerprint of the diamond. The digital fingerprint will be loaded onto the Clara platform, which will use Sarine's Advisor rough planning technology, along with Clara's analytics, to match individual diamonds with buyers' requirements.

Lucara announced in October 2018 that the first diamond sale through the Clara platform will be held in November. CEO Eira Thomas said the platform had received strong interest from the diamond industry and that Clara had found excellent partners, including diamond manufacturers and jewellery houses. A select group of vertically integrated jewellery house and diamond manufacturers has been invited to participate in the first sale, which will allow buyers to place their polished diamond orders on the Clara platform. The platform will run a matching cycle to meet the demand of the buyers. A key benefit of the platform is that buyers will be able to buy only the diamonds they want, without having to re-trade and finance unwanted inventories.

GEM DIAMONDS

Gem Diamonds				
	FY 2017	**FY 2016**	**H1 2018**	**H1 2017**
Production in carats	119 895*	149 000*	61 596	50 478
Revenue	$214.30-million**	$189.82-million**	$167.70-million	$92.90-million
Net profit/(loss)	$17.23-million	($144.07-million)	$40.94-million	$578 000
Capex	$18-million	$11-million	$10.90-million	$7.20-million

Source: Compiled from Gem Diamonds' annual report for 2017, Gem Diamonds' first-half 2018 trading update and Gem Diamonds' half-yearly report 2018.
*Includes carats recovered at Letšeng and Ghaghoo
** Includes revenue from rough and polished diamond sales
FY – financial year; H1 – half-year

London-listed and -headquartered Gem Diamonds has mining operations in Lesotho and Botswana, and sales, marketing and manufacturing operations in Antwerp, Belgium. Its flagship asset is the Letšeng mine, in Lesotho, in which it holds a 70% interest. The mine, which comprises a 17 ha main pipe and a 5.20 ha satellite pipe, has delivered more than 60 diamonds larger than 100 ct since it was acquired by Gem in 2006.

The mine produced 111 811 ct of diamonds in the year ended December 31, 2017, an improvement on the 108 206 ct recovered in 2016. Gem CEO Clifford Elphick said in March 2018 that demand for Letšeng's high-quality diamonds had remained strong throughout 2017 and into early 2018, with 107 152 ct of diamonds sold at an average price of $1 930/ct in 2017, generating revenue of $206.80-million.

The diamond miner further reported in August 2018 that rough diamonds from Letšeng sold for an average of $2 742/ct in the six months to June 30, 2018, a 33% improvement on the average price of $2 061/ct achieved in the first half of 2017. Gem had recovered 61 596 ct of diamonds at Letšeng during the six months to June 30, compared with the 50 478 ct recovered in the first half of 2017. Ten diamonds larger than 100 ct had been recovered during the six-month period and, along with two more +100 ct diamonds recovered in July and August, respectively, resulted in the highest number of such large diamonds recovered by Gem in one year.

Among these large diamonds was a 910 ct diamond, named the Lesotho Legend, which was recovered in January and sold for $40-million, or about $43 912/ct, in March. The Lesotho Legend is the second-largest gem-quality diamond recovered in the past century and the largest diamond recovered to date at the Letšeng mine.

During the interim period, Gem sold 61 696 ct of diamonds and generated revenues of $169.20-million,

One of the large diamonds recovered from Gem Diamonds' Letseng mine – the Lesotho Promise

Picture by Gem Diamonds

Technical adviser

Gem Diamonds appointed Gavin Beevers as technical adviser in June 2018 while it seeks a successor for deputy CEO Johnny Velloza, who has resigned. Velloza, who was previously COO at Gem, was appointed deputy CEO in May 2018.

Source: *Mining Weekly*

of which $99.10-million was generated from the sale of 25 diamonds for more than $1-million each.

During 2017, Gem embarked on initiatives, including an updated openpit LoM plan, large diamond recovery, breakage initiatives and a mining optimisation project, to unlock further value at Letšeng.

Under the updated LoM plan, waste tonnes mined will decrease, while the tonnes of ore treated will increase from six-million tonnes a year to seven-million tonnes a year for the LoM. Further, the satellite pipe's contribution is expected to increase from 1.60-million tonnes a year to 1.80-million tonnes a year before increasing to two-million tonnes a year until 2029.

Letšeng's mining lease was up for renewal in 2024; however, given the updated LoM plan, Gem approached the government of Lesotho in March 2018 to extend the mining lease by a further ten years to 2034. Gem announced in April 2018 that the government had agreed to extend the lease, but that the terms of the extended lease were still to be negotiated with the Lesotho Mining Board.

Further, given that diamond damage and breakage remain a challenge in the diamond mining industry, Gem has contributed to the development of two technologies to reduce diamond damage. The first initiative involves using positron emission tomography (PET) technology to scan kimberlite and identify diamondiferous rocks. Gem reported in March 2018 that due diligence work completed during 2017 had generated positive results.

In October 2018, in line with its strategy of the early detection of large diamonds and reducing diamond damage, Gem Diamonds announced that it had approved the construction of a $3-million pilot plant, at Letšeng, in Lesotho. The plant will use innovative technology to identify diamonds within kimberlite ore and nonmechanical means of liberating the encapsulated diamonds. The pilot plant will be commissioned in the second quarter of 2019.

The second technology involves a nonmechanical crushing system that uses electrical power to fracture the kimberlite without damaging the diamond itself. A prototype of the system had been successfully tested in Johannesburg and was then moved to the mine for testing at high altitude.

Elphick has stated that the two technologies are expected to contribute to reducing diamond damage and operating costs while increasing Gem's margins and profits.

Meanwhile, Gem also initiated a business transformation initiative in 2017 to optimise mine planning, improve mining efficiencies, increase plant uptime, tighten cost control and capital discipline, and sell noncore assets. The diamond miner had initially identified $20-million of annualised and one-off efficiency and cost-reduction initiatives. It said in March 2018 that, based on the progress made to date, Gem was now targeting $100-million of cumulative cash savings by the end of 2021, as well as an ongoing rate of improvement of $30-million a year thereafter.

As part of cost control measures, the company also continues to seek a buyer for its Ghaghoo mine, in Botswana, which was placed on care and maintenance in early 2017, owing to the weak state of market conditions for the category of diamonds produced at the mine. Gem reported in August 2018 that it had received initial nonbinding offers for the mine.

It further reported that a water fissure at the mine, which had been damaged in an earthquake near the mine in early 2017, had successfully been sealed.

Ghaghoo mine

Picture by Gem Diamonds

Junior diamond mining companies

ALEXKOR

Alexkor is a State-owned company that produces diamonds in a pooling-and-sharing joint venture (PSJV) with the Richtersveld community, in the Northern Cape. Alexkor owns 51% of the PSJV and has the right to mine diamonds on the seabed, while the Richtersveld Mining Company (RMC), on behalf of the community, holds a 49% interest in the PSJV and holds the rights to mine diamonds on land.

The State-owned company is facing various investigations by government entities regarding its environmental compliance and corporate governance.

Like other State-owned enterprises (SoEs) in South Africa, Alexkor has been implicated in allegations of State capture involving the controversial Gupta family, who allegedly secured significant benefits through contracts with various SoEs as a result of their close links to former President Jacob Zuma. The amaBhungane Centre for Investigative Journalism reported in December 2017 that a Gupta-linked company, Scarlet Sky Investments, had won a tender, issued in October 2014, to handle the sale of Alexkor's diamonds, which is said to have negatively impacted on the Richtersveld community.

In light of the allegations, Public Enterprises Minister Pravin Gordhan said in May 2018 that he would appoint forensic investigators to probe the allegations.

FIRESTONE DIAMONDS

Firestone Diamonds, which is listed on the Aim market of the LSE, owns a 75% interest in the Liqhobong diamond mine, in Lesotho. The mine, in which the Lesotho government owns 25%, started production in October 2016.

In the six months to December 31, 2017 – the first six months of commercial production – the mine produced 379 716 ct of diamonds, compared with the 57 723 ct produced in the first half of the prior financial year. The company reported in March 2018 that the production plant at the mine had operated above expectation during the six months, achieving a throughput rate of 522 t/h, compared with the expected 500 t/h.

The diamond miner had also decided to revise the Liqhobong mine plan in December 2017, reducing the planned mine life from 14 years to 9 years. The revised plan, which was necessitated by the mine's lower-than-expected occurrence of larger, better-quality diamonds and subdued market conditions for the lower-quality diamonds that are recovered, also shifted the focus to mining the entire orebody at Liqhobong to ensure a better footprint and increase the potential of recovering large diamonds.

Firestone reported in July 2018 that it continued to make good progress on delivering on the revised mine plan and that it had achieved an average value of $75/ct for the second half of the 2018 financial year, ended June 30.

For the full financial year, Liqhobong delivered 835 832 ct of diamonds within the company's guidance of 800 000 ct to 850 000 ct. Firestone expects to recover between 820 000 ct and 870 000 ct in the 2019 financial year.

Meanwhile, the company also owns the BK11 mine, in Botswana, which has been placed on care and maintenance. Firestone agreed to sell the mine to Canadian company Amulet Diamond Corporation in May 2017; however, Firestone announced in December 2017 that it had agreed to extend the option period granted to Amulet to buy BK11 to December 2018. Under the terms of the agreement, Amulet is financing the construction and operation of a bulk sampling plant at the mine to assess the deposit. While steady progress had been made by Amulet in this regard by December 2017, equipment delivery delays prompted it to request the extension.

New CEO

Firestone Diamonds announced in May 2018 that CEO Stuart Brown would step down and that he would be succeeded by Paul Bosma, effective July 1, 2018. Bosma previously served as the GM of the Liqhobong mine.

Source: Firestone Diamonds

KOIDU LIMITED

Koidu Limited, owned by BSG Resources (BSGR), has resumed production at its Koidu mine, in Sierra Leone. Bloomberg reported in May 2018 that the mine had previously shut down as a result of high debt levels and the effects of the Ebola epidemic, among other challenges. The Bloomberg article notes that BSGR had spent about $50-million since 2017 on extending the life of the mine by converting it from an openpit to an underground operation, with the capacity to deliver 400 000 ct/y of diamonds. This could potentially increase to 650 000 ct/y. BSGR, however, still faces challenges with operating the mine, especially with regard to its high debt levels of about $100-million.

LUCAPA DIAMOND COMPANY

ASX-listed Lucapa Diamond Company has interests in diamond projects in Angola, Botswana, Lesotho and Australia. Its flagship operation is the Lulo mine, in Angola, in which it holds a 40% interest. It is also the operator of the alluvial mine, which produces large diamonds and fancy coloured gemstones. The mine has delivered the two biggest diamonds of 404 ct and 227 ct ever recovered in Angola.

The Lulo mine is owned by Lucapa (40%), Angola's State-owned diamond company Endiama (32%), and private company Rosas & Petalas (28%). The project partners have been undertaking alluvial and kimberlite exploration activities at the mine since 2008, resulting in the start of commercial alluvial diamond production in January 2015.

Changes introduced to Angolan diamond marketing policy

Junior miner Lucapa Diamond Company has welcomed changes made to Angola's Diamond Marketing Policy. The miner, which operates the Lulo mine, in Angola, along with partners Endiama and Rosas & Petalas, announced in August 2018 that the new policy, aimed at increasing diamond production in the country by establishing favourable investment and marketing policies, had been formally enacted.

Reuters reported in June 2018 that the Angolan government was planning to introduce changes to the country's diamond marketing policies to give diamond miners and producers more control over whom to sell their diamonds and at what prices. Previously, companies were required to sell their diamonds through State-owned diamond trading company Sodiam, which is alleged to have chosen politically connected buyers, who negotiated prices below fair value.

Reuters reported that the new legislation would also result in diamond prices being aligned with internationally benchmarked prices.

Lucapa MD Stephen Wetherall described the new legislation as a "significant and positive step for the Angolan diamond sector".

By September 2018, Lucapa was getting ready to sell its first parcel of diamonds, including six top-colour Type IIa white diamonds weighing 449 ct and one 46 ct pink diamond recovered at the Lulo mine, in Angola, through the country's new marketing channels.

Sources: Lucapa Diamond Company, Reuters and *Mining Weekly*

Lulo mine

Picture by Lucapa Diamond Company

Diamond-bearing gravels are processed through a 150 t/h plant, which achieved throughput of 251 968 bulk cubic metres in 2017, a 33% year-on-year increase. The mine produced 18 706 ct during the year, including 238 special diamonds – diamonds larger than 10.80 ct. Diamond sales generated revenues of $31.60-million at an average of $1 669/ct for 2017. Revenues were lower than the $51-million earned in 2016, as that year included the sale of the 404 ct diamond, which sold for $16-million.

The mine produced a further 9 566 ct of diamonds in the first half of 2018, to June 30, compared with the 8 301 ct produced in the first half of 2017. Diamond sales for the interim period generated $15.85-million in gross revenues, compared with $15.44-million in the first six months of 2017. This was despite several large special diamonds having been held back for sale at a later date.

The project partners continue to undertake systematic drilling and sampling to locate the primary kimberlite sources at Lulo. This activity is funded from the income generated from the alluvial mining operations.

Meanwhile, the company owns a 70% interest in the Mothae kimberlite project, in Lesotho. The project, which is located within 5 km of Gem Diamonds' Letšeng mine, is expected to also host large high-value diamonds.

Lucapa announced a new mine development plan for Mothae in October 2017 to bring the start of commercial production forward to the second half of 2018 and increase kimberlite extraction. As part of the revised mine plan, Phase 1 will include the construction of a 150 t/h diamond plant, compared with the previously planned 100 t/h plant, while kimberlite will now also be extracted up to a depth of 300 m, compared with the previously planned 255 m.

Meanwhile, a bulk sampling programme aimed at increasing the Mothae resource programme has also yielded encouraging diamond recoveries, with about 1 000 ct of diamonds having been recovered as part of the bulk sampling programme by the end of June.

By September 2018, the company had exported the first parcel of diamonds, comprising 2 500 ct recovered during bulk sampling at Mothae, to Antwerp for cleaning and evaluation.

In October 2018, Lucapa started commissioning the 1.10-million-tonne-a-year treatment plant at Mothae. First commercial diamond recoveries were expected in early November.

Mothae's development also received a boost in October 2018, when South Africa's Industrial Development Corporation provided Lucapa with a R100-million development facility. Lucapa said the facility would strengthen the mine's cash position.

In Botswana, Lucapa is undertaking exploration at the Orapa Area F project.

It is also undertaking exploration at the Brooking project, in Western Australia. The company reported in January 2018 that near-surface lamproite had been intersected during drilling at the Little Spring Creek prospect at the 80%-owned Brooking project. It added, at the time, that the discovery of diamond-bearing lamproite validated results from previous surface sampling programmes.

ROCKWELL DIAMONDS

Toronto-headquartered Rockwell Diamonds was, until 2017, focused on developing diamond mining operations in the Middle Orange River of South Africa and was aiming to establish itself as a midtier miner. However, following a dispute between contract mining company C-Rock Mining (CML) and some of Rockwell's operating subsidiaries, CML sought to have the subsidiaries – Rockwell Resources, HC van Wyk Diamonds and Saxendrift Mine – liquidated. The subsidiaries were placed under provisional liquidation in late 2017.

Honey Attorneys, based in Bloemfontein, were appointed as provisional liquidators (PLs) of the subsidiaries in October 2017.

Throughout 2017, Rockwell was trying to advance a potential sales transaction with Isotron, a subsidiary of Ascot Diamonds, which is, in turn, a subsidiary of Diacore, for its operations. Isotron plans to also acquire Rockwell's Cayman Island subsidiary N9C, which is the intermediate parent company to the three subsidiaries.

Working with the PLs, Rockwell continued to advance the proposed transaction throughout 2018 and, by July 2018, reported that negotiations were still ongoing.

Should the transaction succeed, Rockwell plans to settle with trade creditors and make an offer to buy back its shares from shareholders and, thereafter, dissolve.

TANGO MINING

Tango Mining is a Canadian junior mining company with coal and diamond mining interests in Southern Africa.

In 2015, it acquired a 51% stake in African Star, which holds 100% in the Oena alluvial diamond mine, in South Africa's Northern Cape province.

The mine restarted operations in November 2017 under a 60-month contract mining and diamond recovery agreement, signed in October 2017, with Bluedust 7. Under the terms of the agreement, Bluedust will process virgin material, as well as existing mine and bantam tailings. It will provide and maintain all plant and equipment required at the mine to perform the mining services.

Diamonds produced at the mine are sold through a tender facility in South Africa, with 75% of gross income payable to Bluedust for the duration of the contract.

South Africa's Department of Mineral Resources renewed the mining right for the Oena mine for a further nine years in April 2018.

Tango reported in June 2018 that the mine had, since being acquired by Tango, produced 2 019 ct of diamonds that have been sold at an average price of $1 106/ct. In July 2018, the company reported that it had recovered a 42.25 ct diamond at the mine.

Meanwhile, Tango acquired a 75% interest in the Middlepits alluvial diamond project, in Botswana, from Metswedi Mining in December 2017. The project, which is located about 470 km from Gabarone, comprises one prospecting licence.

In March 2018, Tango acquired a further prospecting licence, which hosts a kimberlite resource, to add to the Middlepits project.

The miner also sought to diversify into the Angolan diamond mining sector in September 2017 when it entered into a three-year services agreement with Txapemba Canguba, which holds an 84 km^2 concession for the exploitation of diamonds within the Luembe river basin, to develop the concession.

This was followed by the signing of a term sheet in February 2018 with CC Mining, which committed up to $1.30-million in funding for Tango to develop the Txapemba project. However, Tango announced in April 2018 that it and Txapemba had agreed to terminate their mining and marketing agreement, as the licence terms limited the maximum hourly production capacity of the project, making it unviable for Tango.

In September 2018, Tango announced its foray into Liberia, through the acquisition of an 80% interest in the Mano River project, which comprises a 104.3 km^2 diamond mineral exploration licence.

TRANS HEX

JSE-listed Trans Hex is involved in the exploration, mining and marketing of diamonds from land and marine alluvial deposits in South Africa and Angola.

The company placed its Baken and Bloeddrif mines, which form part of the Lower Orange River (LOR) operations, in South Africa, on care and maintenance during 2017, as a result of losses incurred at the operations. In April 2018, Trans Hex subsidiary Trans Hex Operations (THO) entered into an agreement to sell its LOR operations to black women-owned company Lower Orange River Diamonds (LOR Diamonds) for R72-million. The shareholders in LOR Diamonds indirectly own minority interests in a portfolio of greenfield prospecting rights for diamonds. It intends to use new mining techniques and recovery processes to recover diamonds at the LOR operations.

Meanwhile, Trans Hex concluded the acquisition of a further 27.20% interest in West Coast Resources (WCR) in February 2018, increasing its stake to 67.20% and giving it control of WCR. During the 2018 financial year, ended March 31, WCR produced 173 920 ct of diamonds, compared with the 80 506 ct produced in the 2017 financial year. The average grade at WCR's operations improved by 92.40% year-on-year to 27.84 carats per hundred tonnes (cpht), compared with 14.47 cpht in the prior year as a result of the implementation of process improvements.

WCR is expected to produce 240 000 ct of diamonds in the 2019 financial year.

Also in South Africa, Trans Hex's Shallow Water operations are expected to produce about 10 000 ct of diamonds in the 2019 financial year, compared with the 9 012 ct produced in the 2018 financial year.

Across the border, Trans Hex holds a 33% interest in the Somiluana mine, in Angola, which produced 136 402 ct in the 2018 financial year, slightly lower than the 137 219 ct produced in the 2017 financial year. During the 2018 financial year, the mine acquired additional mining equipment and started plans to accelerate a drilling programme at identified target areas, with a second drill rig acquired in February 2018. Trans Hex expects the mine to deliver about 145 000 ct of diamonds in the 2019 financial year.

Trans Hex posted a R186.79-million loss for the 2018 financial year, compared with a loss of R182.62-million in the prior financial year. Sales revenue from continuing operations, however, increased to R192.50-million, compared with R91.10-million in the prior year.

In September 2018, the diamond miner announced that it would sell the building in Parow, Cape Town, which has served as its head office for nearly three decades for R28.50-million. The funds will be used for additional working capital.

Mine auction

The Lerala diamond mine – previously owned by embattled Australian company Kimberley Diamonds – was sold to an undisclosed bidder for about $8-million in May 2018.

The mine, in north-east Botswana, comprises five kimberlite pipes and was sold during an online auction by auctioneers GoIndustry DoveBid.

The mine was closed in June 2017 as a result of high operating costs and weak sales and Kimberley Diamonds filed for voluntary administration not long after.

The sale included the mining pits, the resource, the process plant and ancillary equipment.

Source: *Mining Weekly*

Uncut diamonds

Picture by Bloomberg

BLUEROCK DIAMONDS

BlueRock Diamonds is listed on the LSE's Aim market. It is the majority owner and operator of the Kareevlei diamond mine, near Kimberley, in South Africa. The mine comprises five kimberlite pipes.

During the 2017 financial year, BlueRock continued to develop the first of the five kimberlite pipes – KV2 – a 1.10 ha pipe with a grade of 4.50 carats per hundred tonnes (cpht). Production at the mine reached a peak exceeding 25 000 t/m in November 2017.

The company is currently focused on the development of the second pipe at the mine – KV1 – which has an inferred grade of 6.30 cpht. Mining at KV1 started in June 2018. Processing of kimberlite from KV1 got under way in September 2018.

BlueRock expects KV1 and KV2 to secure a nine-year mine life using openpit mining methods. The third pipe at the mine – KV3 – could extend the mine life by a further eight to nine years.

After having recovered 3 728 ct of diamonds during 2017, BlueRock has set its production guidance at between 9 500 ct and 12 500 ct for 2018.

Meanwhile, to improve profitability, BlueRock plans to implement improvements at the mine to increase capacity and efficiency. The company reported in October 2018 that a technical review had found that existing production targets and further growth were being held back as a result of limited flexibility in the mining operation, plant capacity constraints and the consistency of production. The company has hired mining veteran Michael Houston to develop a new operational plan for Kareevlei.

BlueRock reported in August 2018 that the crushing circuit at the mine had reached its targeted production level of about 80 t/h, as a result of the addition of a second cone crusher and the completion of optimisation initiatives. Production at the mine's processing plant was halted in June 2018 when the company discovered a fault in the cone crusher. The existing cone crusher has since been refurbished, while a rented crushing unit has been retained to increase throughput capacity.

Meanwhile, BlueRock Diamonds reached a settlement agreement in August 2018 with former CEO Riaan Visser, who had sought to have the company's Kareevlei Mining subsidiary liquidated over claims that Kareevlei Mining owed him money. The claims included about R3.78-million, or about £232 000, with regard to advances he said were made by him to Kareevlei Mining between February 2015 and January 2016, and R987 525, or about £60 500, with regard to Kareevlei Mining's use of a generator owned by a company controlled by him.

While the company had said it would defend itself against the claims, it stated in August 2018 that, while it did not believe there was merit in Visser's claims, it was impossible to be certain that it would be successful in court. BlueRock, therefore, agreed with Visser that the liquidation application be removed from the court roll, subject to security being provided for the full amount Visser claims is owed to him.

BOTSWANA DIAMONDS

Aim- and Botswana Stock Exchange-listed company Botswana Diamonds is focused on the exploration for diamonds and the development of diamond projects in Botswana and South Africa.

The company, which is led by MD James Campbell, holds a 50% interest in Sunland Minerals, a joint venture (JV) with Russian diamond miner Alrosa, on certain licences, in Botswana. Botswana Diamonds reported in July 2018 that the first exploration programme undertaken at the Sunland Minerals JV had revealed encouraging quantities of kimberlitic indicator minerals at all anomalies sampled.

Botswana Diamonds is also conducting exploration in partnership with a Botswana-based mining company in the Gope region and holds three prospecting licences in the Orapa region.

In June 2018, Campbell indicated that the company was also interested in buying liquidated mining company BCL Mine's 51% interest in Maibwe Diamonds for an undisclosed amount. Maibwe Diamonds, in which consortium Future Minerals holds a 20% stake and South African company Siseko a 29% stake, holds a block of ten licences in the central Kalahari region of Botswana.

In South Africa, the company is earning a 72% interest in the Vutomi JV, which holds ten prospecting rights covering about 50 000 ha in Limpopo, the North West and Free State. The current focus in South Africa is on the Thorny River project, in Limpopo, which is a consolidation of the Frischgewaagt, Hartbeesfontein and Doornrivier properties. Botswana Diamonds started a six-month scoping study at Thorny River in February 2018 to determine its commercial potential. The study is expected to refine the volumes of diamonds, the grade and the value per tonne of ore.

The exploration company revealed in June 2018 that the study had determined a deposit of between 1.20-million and two-million tons, grading at between 46 carats per hundred tonnes (cpht) and 74 cpht and values of between \$120/ct and \$220/ct. Following the outcome of the study, the company decided that it warranted further investigation.

Botswana Diamonds was also awarded a prospecting licence in June 2018 for another South African project – the 2.50 ha Mooikloof kimberlite pipe, in Limpopo. The company believes that past explorers have underestimated the size, grade and diamond quality of this kimberlite pipe.

Free State potential

Botswana Diamonds believes the Free State has the potential to host further commercial kimberlites. Document research and whole rock geochemistry tests have confirmed the existence of eight kimberlite pipes of 0.30 ha to 1.15 ha. Mineral chemistry work undertaken in the area has indicated the existence of garnets, with similar chemical signatures as those found at the Jagersfontein and Koffiefontein mines in the province.

Botswana Diamonds said in September 2018 that it planned to undertake a phased drilling programme in the province, with a focus on areas within the Koppiesfontein, Poortjie, Swartrandsdam and Tafelbergsdam.

Source: *Mining Weekly*

The company is also setting its sights on potential opportunities in Zimbabwe and, in May 2018, signed a memorandum of understanding with fellow Aim-listed company Vast Resources to exchange information derived from past exploration on areas prospective for diamonds in the country. The companies also plan to form a jointly owned special purpose vehicle to develop diamond resources in Zimbabwe.

Vast entered into an agreement with Red Mercury in August 2018 to secure exclusive access to the 15 km^2 Heritage concession in the Marange diamondfield. Under the terms of the agreement between Vast and Red Mercury, Vast has the right to conduct an initial due diligence on the concession, with the aim of concluding a JV agreement.

In October 2018, Botswana Diamonds and Vast concluded an agreement for the development of Vast's concessions in the Marange diamondfield, including the Heritage concession. The parties will establish a special purpose vehicle, in which Botswana Diamonds will hold an initial 13.33%, for the purpose of developing the concessions. The parties have started a desktop review of the concessions.

Meanwhile, an independent competent person's preliminary geological assessment of the Heritage concession has determined that there are a number of targets for alluvial diamond placer deposits, which will now be subject to further fieldwork and exploration.

DIAMCOR

Canadian company Diamcor Mining is developing the Krone-Endora at Venetia diamond mine, in Limpopo, South Africa. It acquired the mine, which is adjacent to De Beers Consolidates Mines' (DBCM's) flagship Venetia mine, from DBCM in 2011.

Towards the end of 2017, the company had successfully increased the capacity of both processing plants at Krone-Endora; however, insufficient recovery of water from settling dams did not allow for the plants to reach their design capacity. Diamcor reported in October 2017 that its operational team and consultants had determined that the borehole water quality and the suspensive properties of the fine kimberlitic clay materials found at the mine were limiting the processing plants' capacity.

Diamcor had invested in an in-field dry screening plant as part of the processing infrastructure to remove the fine material and, although the plant removed much of the fine material, additional fines were entering the processing plant after the introduction of water at the mine's main treatment plant. Johannesburg-based company Vietti Slurrytec subsequently suggested that water treatment and paste thickening solutions may be the solution.

Diamcor subsequently decided to implement such a solution and, in March 2018, announced plans to raise C$5-million through a share placement with existing shareholders to finalise the installation of a paste thickening plant and associated equipment.

By August 2018, the company reported that the improvements to the processing plants were starting to bear fruit, with six "special" diamonds – each larger than 10.80 ct – having been recovered at Krone-Endora. The diamonds included a high-quality 18.45 ct gem octahedron, two gem-quality diamonds weighing 18.56 ct and 14.71 ct, and three nongem-quality diamonds weighing 21.92 ct, 17.32 ct and 15.84 ct. The mine had also delivered about 2 400 additional carats of rough diamonds.

In addition to the advancement of the Krone-Endora at Venetia project, Diamcor continues to review and pursue mining opportunities in South Africa and other known diamond mining regions.

PANGOLIN DIAMONDS

TSX-V-listed Pangolin diamonds is exploring for diamonds in eight kimberlite project areas – Malatswae, Motloutse River, Tsabong North, Lorolwane, Mmadinare, Rehoboth, Machaneng South and Jwaneng South – in Botswana. The company also entered into a 12-month option agreement with private company Makanwu Civil Blasting (MCB) in April 2018 to earn up to a 75% interest in MCB's AK10 project, which is located in the Orapa kimberlite field and 4 km from Lucara's highly successful Karowe mine. A detailed ground magnetic survey and a soil sampling programme at AK10 have since been completed.

TSODILO RESOURCES

Tsodilo Resources is a TSX-V-listed company that is focused on exploration in Botswana. It holds a prospecting licence over the BK16 kimberlite pipe in the Orapa kimberlite field. As part of the ongoing evaluation of large-diameter drilling (LDD) samples from the project, the company recovered the first diamond in January 2018. The LDD samples are processed through a 10 t/h mobile dense-medium separation (DMS) plant. The DMS concentrate is then processed through a Bourevestnik Polus-M X-ray sorter to recover diamonds.

Picture by Bloomberg

By May 2018, two parcels of diamonds comprising 101 diamonds weighing 18.57 ct and 130 diamonds weighing 17.79 ct had been recovered at BK16 and sent to Lucara's acid cleaning laboratory at the Diamond Technology Park (DTP), in Gaborone, Botswana. Tsodilo subsequently appointed Ray Ferraris of QTS-Kristal Dinamika, in South Africa, to undertake a size frequency distribution study and a diamond reconstruction and breakage study using the two parcels of diamonds.

Tsodilo reported in July 2018 that many white, gem-quality diamonds were identified, with an independent evaluation of the diamonds having yielded an average valuation of $197.68/ct. The average value of larger diamonds in the parcels was $360.22/ct, while the average value of smaller diamonds was $87.86/ct.

By September 2018, a third parcel comprising 279 diamonds and weighing 43.95 ct, had been recovered and delivered to diamond broker Hennig & Co's office at the DTP.

Outlook

Mined diamond production is expected to decrease in coming years, while demand for diamonds continues to grow. As more diamond mines' resources become depleted, mining companies are seeking new greenfield opportunities and investing in expanding existing operations, but greenfield projects are not as large as those resources that have been depleted, leaving some analysts to believe that the industry might struggle with a supply crunch in the next few years.

Meanwhile, De Beers CEO Bruce Cleaver commented in May 2018 that consumers are spending more on diamond jewellery than ever before and that demand growth for 2018 is positive for the main diamond-consuming markets, including the US, China and India. Improving global macro- economic conditions are expected to continue to support growing demand for polished diamonds throughout 2018.

The growing Millennial and Gen Z generations will be key drivers of diamond demand going forward and the industry will have to ensure it adapts its marketing efforts to effectively reach these generations. De Beers points out that retailers will have to create a smart presence on social media to meet the needs of these digital natives, while also appealing to their social consciousness by ensuring ethical and responsible business practices.

While mined diamond supply is decreasing, lab-grown diamond production is on the rise. Although it still represents only a small percentage of the overall gem-quality diamond producing market, technological advances are resulting in the creation of high-quality diamonds. As a result of effective marketing by the lab-grown diamond industry, some consumers are willing to buy these diamonds, as many also consider them to be more environment-friendly and carry assurances that they are not conflict minerals.

Even De Beers has forayed into the lab-grown diamond market by launching its own brand of such diamond jewellery.

Technological advances are, meanwhile, also helping the diamond industry to ensure the transparency of mined and lab-grown diamonds, with blockchain technology being used to provide a history of a diamond's journey from the mine or laboratory to the retail sector. This provides assurance for consumers that the diamonds they are buying are what they are marketed as and that they are not conflict diamonds or mined at operations that do not uphold human rights and labour relations standards.

ABN Amro says transparency could help the industry attract new forms of financing. It states in its 'Diamond Sector Watch' report that increased transparency could potentially attract the interest of investors in diamonds as an asset class. It explains, however, that large investors seek transparency and liquidity of an investment, which the diamond industry currently does not offer. As things stand, it is unlikely that investors will invest in diamonds as an asset class in the near future, the financial services provider states.

Meanwhile, South Africa's Department of Mineral Resources has made great strides in improving policy certainty in the mining industry. Minister Gwede Mantashe confirmed the gazetting of Mining Charter 3 in September 2018, which he said represented consensus among industry stakeholders. He added that the charter would create regulatory certainty, while ensuring sustainable growth and a competitive and transformed mining industry.

He further reported that a formal request had been submitted for the withdrawal of the Mineral and Petroleum Resources Development Act (MPRDA) Amendment Bill, paving the way for a new legal framework to be established to govern the petroleum and gas sectors. The approval of the MPRDA Amendment Bill had been delayed for many years and contributed to policy uncertainty in the mining industry.

By resolving these policy issues, the Minister has sought to create a more conducive environment for the mining industry, which should also benefit those in the diamond mining sector.

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