

HERAEUS PRECIOUS APPRAISAL

Heraeus

Ed. 3
11th February 2019



MARKET SPOTLIGHT

Uncompetitive miners still need to cut output, despite high rhodium price

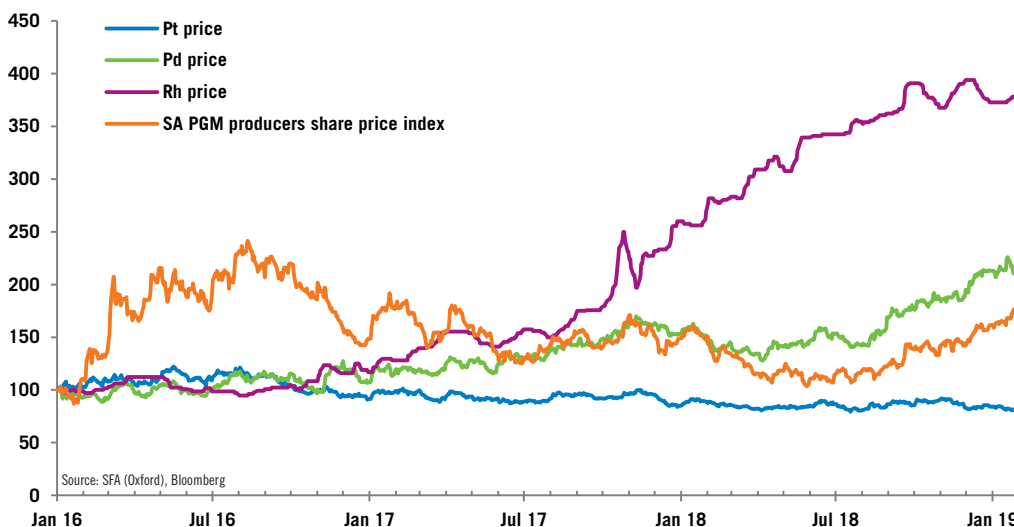
Last week saw the 25th Annual Mining Indaba in Cape Town, South Africa. Here, industry stakeholders, including platinum miners, came together to discuss the opportunities and challenges facing the industry.

South Africa is the world's largest producer of platinum. As platinum has historically represented the largest share of revenue for the companies that mine it, they have been known as 'platinum miners'. However, the orebodies that are mined to produce platinum are polymetallic and also contain other PGMs, gold and base metals. With the shift in metal prices over the last couple of years, it has become clear that these companies are really 'PGM miners'.

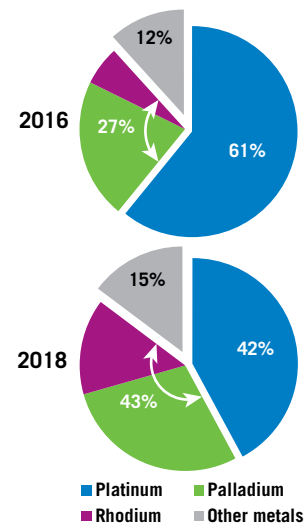
Platinum is no longer the major source of revenue for platinum miners, as the other metals' prices have advanced, while the platinum price has not. In 2016, platinum provided 61% of the companies' revenues whereas in 2018 platinum's share had fallen to 42%.

Rhodium's contribution to revenues is estimated to have more than doubled from 6% in 2016 to almost 15% in 2018. Palladium's contribution has increased by more than a quarter to 29%. The rand actually strengthened over this period, averaging 14.71:1 US\$ in 2016 and 13.24:1 in 2018.

Index of PGMs and producers' share price (ZAR; 100 = 1 Jan 2016)



Share of producer revenue by metal



The rise in metal prices has lifted revenues and improved profitability, which has seen the mining companies' share prices rebound. This means less pressure to cut production as little is now unprofitable. However, **the marginal producers still need to undertake aggressive restructuring to create a long-term sustainable business**, especially with new production, such as the expansion of Mogalakwena, being in the bottom half of the cost curve (see chart on p4).

South African producers are now less reliant on the platinum price, and with the rand forecast to weaken this year the dollar platinum price may weaken too.



PRECIOUS METALS REVIEW

79 Au Gold

	Close	Weekly change	High	Date	Low	Date
\$/oz	1,314	-0.21%	1,317	05/02/2019	1,303	07/02/2019
€/oz	1,160	1.09%	1,161	08/02/2019	1,144	04/02/2019

Sharp dovish turn at Fed supports gold price. The Federal Reserve took a very dovish tone following the latest meeting of the FOMC. Jerome Powell gave no predictions for further rate rises and indicated that changes to balance sheet policy are possible. Further, the statement said that patience was needed “in light of global economic and financial developments”. This contrasts to just six weeks earlier when the Fed indicated that further rate rises could be expected this year and the balance sheet reduction was said to be on "auto-pilot". The gold price increased \$10/oz from

\$1,310/oz to \$1,320/oz around the time of the announcement. The global economic policy uncertainty index reached a record level as uncertainty increased in the US, China and the Eurozone. Before the end of March, there is the prospect of tariff escalation in the US-China trade conflict, another shutdown of the US Government and Brexit day. **With investors already feeling cautious, further safe-haven buying should lift the gold price** which is already trading at its highest level since May 2018.

47 Ag Silver

	Close	Weekly change	High	Date	Low	Date
\$/oz	15.78	-1.03%	15.93	05/02/2019	15.65	07/02/2019
€/oz	13.93	0.26%	14.25	04/02/2019	13.47	07/02/2019

Investors buying more coins in 2019. Sales of Silver Eagles at the US Mint increased 24% (800 koz) year-on-year to 4.0 moz in January. For the last four years, January has been the highest volume month of the year, typically accounting for around a fifth of annual demand. For 2018 as a whole, sales were poor, falling 13% to 15.7 moz, the lowest volume since 2007. However, the year finished strongly as sales increased 52% year-on-year in H2'18. This suggests investor interest is

returning to silver as the metal traded above \$16/oz in February for the first time in six months. Additionally, Silver Eagle coin sales have outperformed Gold Eagles since mid-2018. A lack of investor demand is one of the reasons for silver's underperformance in 2018. Consequently, if it picks up, the gold:silver ratio, which has dropped from 86 to 83 in the last month, is expected to fall further as silver outperforms.

78 Pt Platinum

	Close	Weekly change	High	Date	Low	Date
\$/oz	797	-3.70%	825	05/02/2019	794	08/02/2019
€/oz	703	-2.44%	723	06/02/2019	700	08/02/2019

Could diesel and platinum's decline be nearing an end? Sales of diesel cars in Germany increased by 2.1% year-on-year in January while gasoline car sales fell by 8.1%, putting the market share at 34.5% and 57.6% respectively. This is an improvement over the average diesel share in 2018 which stood at 32.3%. It is also the third consecutive month above 34%, a level last seen in November 2017, suggesting there may be a trend. VW has also seen a recovery in diesel car sales as their share increased to 43% in 2018 from 39% in 2017. Among private customers, the share rose to 27% from 15%. The turnaround for diesel is particularly notable given the

general strong downward trend in diesel sales in Europe. Diesel's share of sales fell quarter-on-quarter throughout 2018 in the EU, reaching 34.1% in Q4 against an annual average of 35.9%. Germany accounts for two in five of all cars produced in Europe and used 0.4 moz of platinum in 2018, it is also the largest car market in Europe. If diesel's resilience in Germany is a sign of things to come in Europe more widely, there is potential upside for platinum demand. Each percentage point of diesel's EU market share saved is worth almost 20 koz of platinum demand.



PRECIOUS METALS REVIEW

46 Pd Palladium

	Close	Weekly change	High	Date	Low	Date
\$/oz	1,396	2.17%	1,404	08/02/2019	1,344	04/02/2019
€/oz	1,233	3.52%	1,237	08/02/2019	1,176	04/02/2019

Robust palladium demand in China. The Chinese passenger car market accounted for 1.9 moz of palladium demand in 2018, but this should increase in 2019 even with flat car sales due to rising loadings. With the palladium market in deficit, increased demand would lead to further price upside. However, China has recently announced the introduction of a number of measures to stimulate its slowing economy. China's GDP grew only 6.6% in 2018, the slowest rate since 1990. Some direct stimulus to the automotive industry has been announced, along with stimulus to the wider economy via reduced taxes and increased lending by banks. These policies will have a positive effect on car sales in 2019, but the effect will be limited and less than the impact of similar measures introduced in 2015 which saw car sales increase 15% in 2016. Before these announcements, the Chinese Auto Association CAAM had forecast flat car sales for 2019, so some growth may now be expected. A

1% increase in annual sales would translate to 20 koz of additional palladium demand.

BEVs continue to eat into gasoline's US market share.

Palladium demand from the US automotive industry was 1.7 moz in 2018 and growth was 1.6%. Without BEVs increased market share, growth could have been 2.4%, so this represents a loss of 14 koz of palladium demand. Sales of battery electric vehicles (BEVs) in the US more than doubled in 2018 to 238,000 from 106,000 in 2017, according to ev-volumes.com. This puts the market share at 1.4%, compared to 0.6% last year. The rapid rise is the result of the ramp-up in production of the Tesla Model 3, which sold 140,000 units last year. The share of BEV sales is likely to increase again in 2019 but there is a high degree of uncertainty around demand for the Model 3 once the order backlog has cleared.

45 Rh 44 Ru 77 Ir Rhodium, Ruthenium, Iridium

	Rhodium	Ruthenium	Iridium
Reporting week	\$2,520/oz	\$280/oz	\$1,470/oz
Previous week	\$2,500/oz	\$280/oz	\$1,470/oz

New tech battle to impact ruthenium demand?

Ruthenium demand could benefit from magnetic-assisted magnetic recording, a technology which facilitates larger capacity HDDs for enterprise customers. Western Digital plans to put the drives into mass production later this year and the technology utilises ruthenium layers in its construction. However, it will be competing with Seagate's heat-assisted technology, which is also entering production this year but does not utilise ruthenium. The two companies account for 80% of the HDD market,

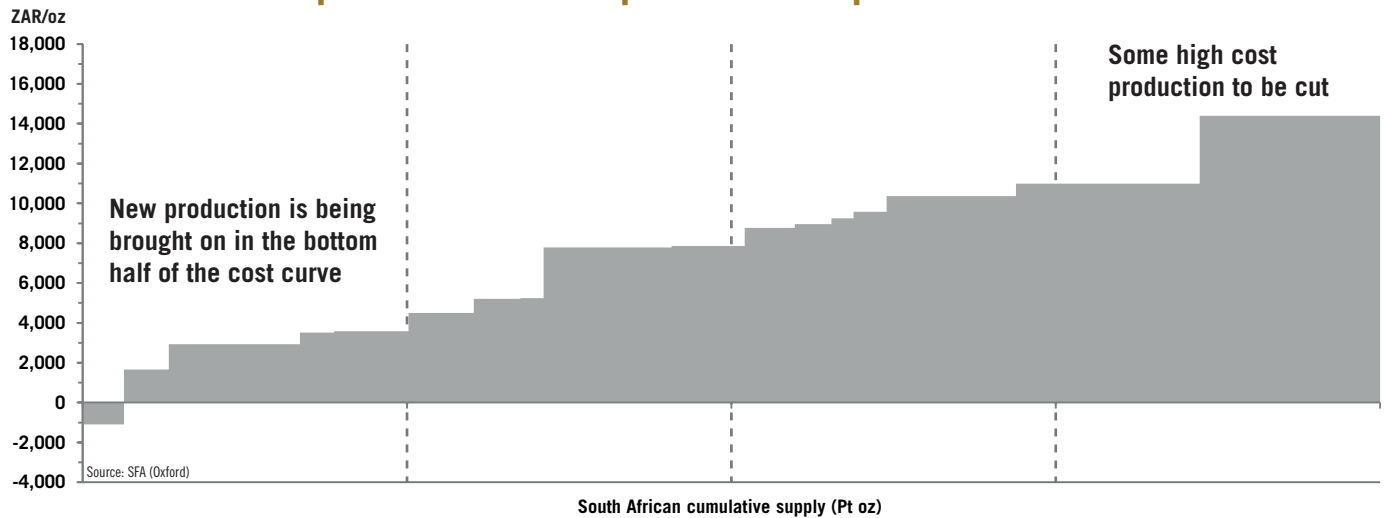
so the longer-term market share of each technology will have significant implications for ruthenium demand growth from this sector. However, for 2019, the majority of HDDs will still be based on older technologies and so positive growth is forecast as data requirements continue to grow year-on-year.

The rhodium price climbed \$20/oz last week but no changes to the ruthenium and iridium prices have been published.

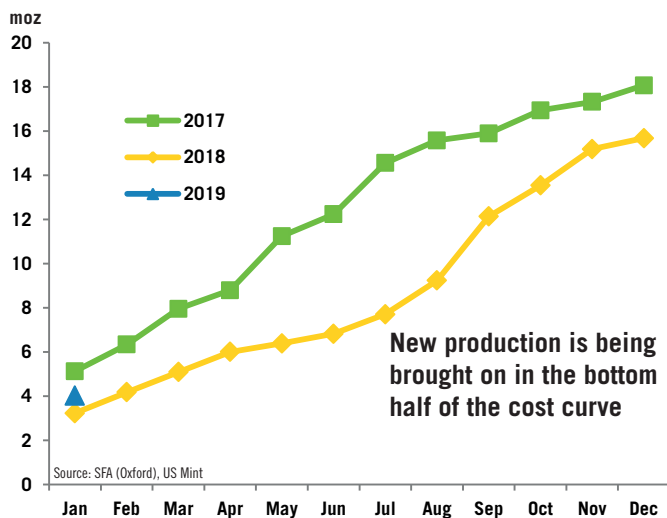


TRENDS AND INVESTMENTS

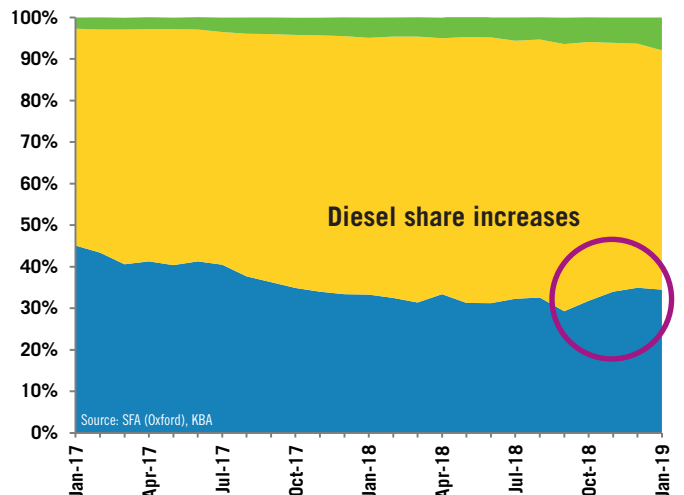
South Africa PGM producers' costs per ounce of platinum



US Mint cumulative silver coin sales



German car sales fuel split



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