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FOREWORD

This edition of *Platinum Quarterly* considers platinum supply and demand developments for the second quarter of 2020 and provides an updated outlook for 2020. The *Platinum Quarterly* report and data (starting on page 6) is prepared independently for WPIC by Metals Focus. We also provide WPIC's views on issues and trends relevant to investors considering exposure to platinum as an investment asset, plus an update on how our product partnerships continue to meet investors' needs.

The impact of the ongoing COVID-19 pandemic continued to unfold through the second quarter of 2020, as government lockdown measures to limit the spread of the virus prompted sharp contractions in global economic activity and heightened market volatility. Platinum market demand and supply have both been significantly reduced year-on-year by the impact of the pandemic. However, due in part to supply issues unrelated to the pandemic, plus the robust nature of physical investment demand, the potential effects of the pandemic on platinum's market balance are far less negative than previously expected. Forecasts of platinum's supply and demand, in particular, are likely to be subject to change over the balance of the year. Changes will depend on the timing of, and extent to which, lockdown measures are wound back, the likelihood and implication of second waves of infections, progress towards effective vaccines, and lastly, the longer term implications of governments economic policy responses to the pandemic.

Platinum supply and demand – updating 2020

The revised 2020 forecast has moved the platinum market into an annual deficit of -336 koz compared to the prior estimate of a +247 koz surplus. Total platinum supply in 2020 is now forecast to fall by 14% (-1,159 koz) to 7,102 koz. This reflects a 15% (-910 koz) decline in refined production and a 12% (-250 koz) decline in recycling supply.

Total platinum demand in 2020 is forecast to be 7,438 koz, 11% (-948 koz) lower than in 2019 due to lower demand from all four demand segments: automotive (-464 koz), jewellery (-287 koz), industrial (-5 koz) and investment (-192 koz). However, total investment demand in 2020 is now forecast to be 1,060 koz, 15% lower than in 2019 but 455 koz higher than previously forecast for the year. Indeed, heightened global risk is expected to continue to drive investor demand for hard assets, with bar and coin demand forecast to grow by 113% to 600 koz.

Q2 2020 was in deficit of -191 koz with total supply down 35% and total demand down 19% year-on-year

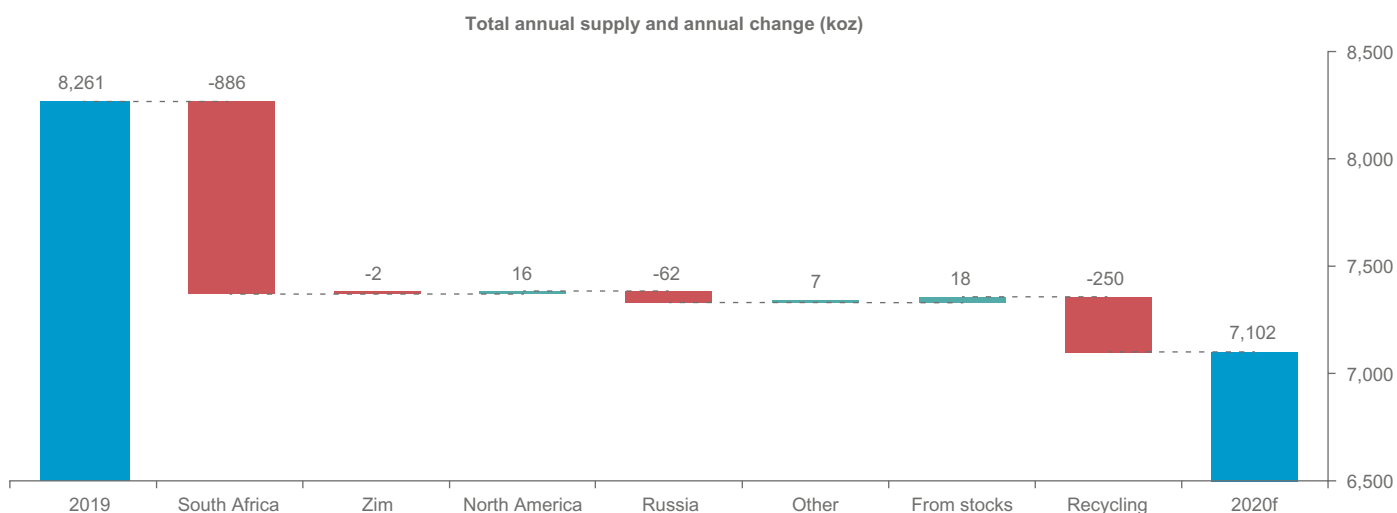
Supply in the second quarter of 2020 fell by 35% year-on-year (-748 koz) to 1,408 koz. The second quarter bore the full supply impact of the Anglo American Platinum Converter Plant (ACP) outage and South Africa's COVID-19 driven mining lockdowns. Indeed, South African mines were completely locked down from 26th March to 30th April, and only widely reopened after 1st June. As with the first quarter, refined metal released from process inventory (accumulated through 2019) partially replaced some lost refined platinum production, in this case 36 koz. Platinum recycling was also more severely impacted by COVID-19 related logistics disruption during the second quarter, with volumes down 19% (-100 koz). As with refined mine production, there was only a modest offset by the recycling of material backlogged at refiners during 2019.

Demand in the second quarter fell by 19% year-on-year (-387 koz) to 1,599 koz, but was only 2% (-36 koz) down on first quarter levels. Platinum automotive demand fell by 48% year-on-year (-360 oz) as COVID-19 related shutdowns limited vehicle production early in the quarter in all major markets bar China. Pandemic-enforced factory closures similarly reduced jewellery demand by 27%, while all industrial demand segments except glass contracted. However, most asset classes, including platinum, recovered from their March price lows due to heightened global risk coupled with coordinated government monetary and fiscal policies to limit the global economic impact of the pandemic. Platinum ETF inflows saw the quarter end with net additions of 122 koz, in sharp contrast to significant net outflows during the first quarter. Robust bar and coin demand continued in the second quarter, with 133 koz added to investor holdings. Additionally, strong inflows of platinum metal into NYMEX depositories, initially prompted by COVID-19 related platinum logistics constraints, saw exchange volumes almost double by quarter-end, to 291 koz.

The more severe supply downturn during the quarter, in part due to the impact of the COVID-19 pandemic, combined with robust investor demand, contributed to the deficit in the quarter of -191 koz.

2020 Supply – process outage and COVID-19 impacts drive mining and recycling declines

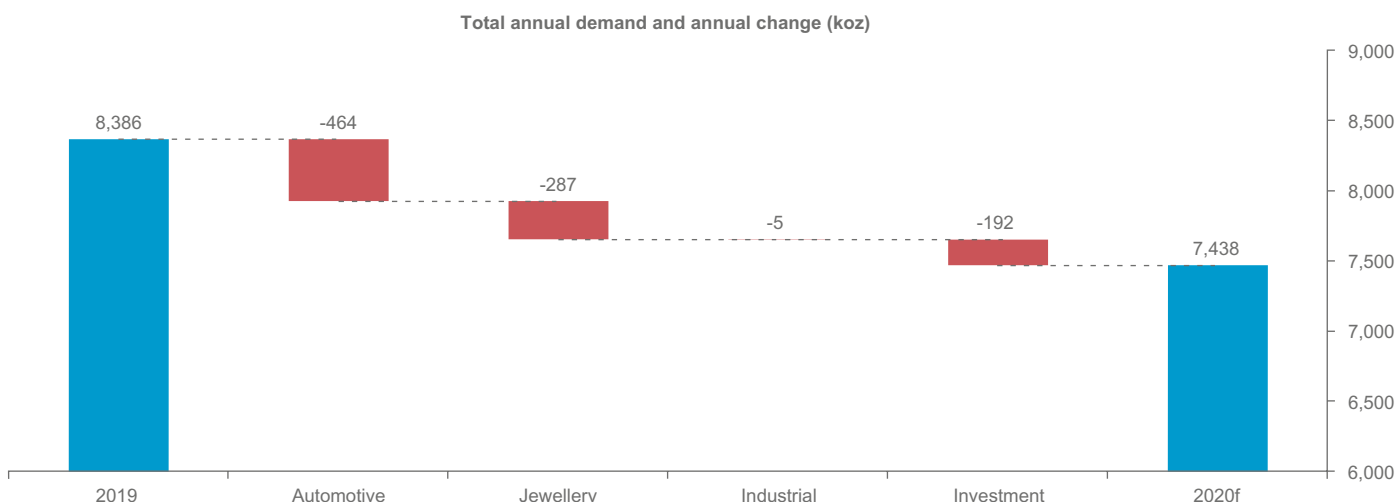
Refined mine production in 2020 is forecast to fall 15% (-927 koz) compared to 2019, to 5,167 koz. South Africa is expected to account for 95% (-886 koz) of this fall. Around 550 koz of the reduction in refined production from South Africa is due to the well documented 80-day ACP smelting outage, with the balance due to pandemic-related mine closures and reduced capacity. The ongoing impact of the pandemic on mining operations in 2020 remains uncertain, in particular at the labour-intensive underground mining operations. The fall in recycling supply of 12% (-250 koz), is mainly due to pandemic-related restrictions in the first half of the year that hampered collection and movement of spent autocatalysts and reduced retail jewellery recycling in China.



2020 Demand – COVID-19 pandemic still dominant, but signs of influence easing

The roll back of Chinese lockdown measures towards the end of the first quarter, earlier than much of the Western world, prompted a strong recovery in China’s platinum automotive demand, aided by partial adoption of China 6 light duty and China VI heavy duty vehicle emission regulations. Consequently, this demand is expected to grow by 27% year-on-year. However, outside of China, the global auto industry has experienced a deeper decline in vehicle production than previously expected, prompting a downgrade to 2020 global automotive platinum demand to 2,429 koz, 16% lower than 2019 levels. This is despite automotive stimulus packages in key European markets prompting a strong recovery in sales volumes from April lows.

China’s jewellery sector also saw strong recovery in the second quarter compared to the first, while demand in the second half of the year is expected to be similar to 2019 levels. Recovery has also been seen in the key North American and European markets, but uncertainty remains over the sustainability of the trend over the balance of the year.



The positive trend in ETF demand growth in the second quarter is expected to continue over the remainder of the year, during which period we also expect continued year-on-year gains in bar and coin demand. Positive platinum market fundamentals, including a forecast deficit, demand growth potential and price discounts to gold and palladium, are expected to provide added attraction to platinum from an investor perspective. Industrial demand remains least affected by the pandemic due to capacity growth in the glass sector, plus resilience in platinum's pandemic-related uses in the medical sector.

The platinum investment case – increasing investor appetite highlights platinum's undervaluation

Developments since the end of the first quarter of 2020 have enabled a better understanding of the impacts of the global pandemic on platinum supply and demand. The investment case for platinum has become more compelling due to increased global demand for precious metals and better than expected fundamentals. Adding to platinum's appealing discount to gold, platinum's supply outlook is further reduced and its demand growth potential is significantly increased with the unexpected change of over 500 koz, in the 2020 forecast supply demand balance, from a surplus to a deficit. Demand growth potential has been boosted as rapid growth in investment demand adds to growing substitution for palladium and the need for cost-effective solutions to address climate change, which have become more essential as the growing economic cost of the pandemic reduces available government funding globally.

Constrained supply – aggravated by processing outage and COVID-19 shutdowns and reduced mining capacity

Mining shutdowns to prevent the spread of COVID-19 are now expected to reduce platinum mine supply by c.360 koz, 42% more than forecast in May, with the supply reduction due to the ACP outage up from c.500 koz to c.550 koz in 2020. Although producer margins have increased as a result of sustained higher prices for palladium and rhodium and an uplift in the platinum price in 2020, any material mine supply growth to address platinum deficits is likely to have lead times in excess of three years. Producers would need to be sure that sustained deficits are likely before committing to supply-growth related capital expenditure. In the short-term, pandemic-related mine closures and the impact of safe working practices on output remain uncertain, yet appear weighted to the downside.

Demand growth potential – up on COVID-19, climate change, substitution for palladium and investment

Clean air experienced during the pandemic has given the world a glimpse of what could be possible if air quality and climate change are successfully addressed. However, the negative economic impacts of COVID-19 could further impede efforts in this regard, with less funding available.

However, as the global crisis has unfolded one key development that has gained momentum is the growth of the 'hydrogen economy'. Increasing numbers of national governments are recognising – through tangible strategies, policies and initiatives – that the use of hydrogen as a fuel for primary power and transportation is one of the most cost-effective and sustainable routes to a better climate future.

Platinum sits in the sweet spot for facilitating the hydrogen economy due to its use in not only generating green hydrogen, but also in fuel cells for fuel cell electric vehicles (FCEVs). FCEV growth is currently being led by buses, heavy-duty trucks and trains, with passenger cars a longer-term prospect. As the hydrogen economy and the FCEV market grows, it will create significant demand for platinum; this provides a robust basis as a long-term store of value.

Another pandemic-driven development beneficial to platinum is the desire to continue the transition away from internal combustion engine (ICE) vehicles to electric ones – both battery and fuel cell. The ongoing squeeze on public funds and the ensuing lack of funding for infrastructure such as electricity grid capacity expansion and charging points makes it essential to reduce CO₂ from internal combustion engine (ICE) vehicles at the lowest overall cost. Fortunately, automakers in Europe have been preparing the technical changes to reduce new vehicle CO₂ emissions for several years. In 2020, we are likely to see increased platinum demand as automaker CO₂ reduction strategies include the wide range of diesel and diesel hybrid vehicles already on sale and which have higher platinum loadings.

Despite the fall in metal prices in mid-March, palladium has remained at a significant premium to platinum, still over \$1,000/oz, maintaining impetus for the use of platinum in place of palladium in gasoline and diesel autocatalysts. During previous disconnects between the price of the two metals, the use of platinum to replace palladium balanced the two markets. Understandably, automakers and autocatalyst manufacturers have not published details of the extent to which platinum is currently being used to replace

palladium – it is proprietary and confidential information and publication would risk increasing the platinum price. We believe that the amount is greater than limited public information might suggest, and that this process is likely to continue and grow during and after the pandemic.

Increased global risk due to the COVID-19 pandemic has driven strong investor demand for gold as a risk hedge, with gold ETF holdings up over 20%, or \$50 billion, already in 2020. Although the price of gold is up 28% in 2020, rising to a new record high of \$2,067 on 6th August 2020, and outperforming almost all other asset classes this year, what may have gone unnoticed is that, since the platinum and gold price lows on 19th March 2020 of \$599/oz and \$1,472/oz respectively, platinum has significantly outperformed gold, rising 55% versus gold's rise of 33% by the end of August. Importantly, for the first time in years, investor sentiment towards platinum is turning positive.

Platinum's price outperformance of gold is no anomaly. Over the two years from the price lows of the Global Financial Crisis (GFC) in late 2008, platinum's weekly returns outperformed gold's by between 30% and 65%. Platinum's performance was not solely due to growing investment demand; exceptionally strong platinum jewellery demand and limited supply growth maintained positive investor sentiment despite very weak automotive demand. During 2020, platinum market fundamentals have improved appreciably, as noted above, with strong buying in China on the SGE and direct platinum imports. Platinum's longstanding strong correlation with gold has rebounded to over 0.7 since the COVID-19 pandemic unfolded. Consequently, many more gold investors could consider platinum as a proxy for gold on that correlation alone, with the added potential outperformance of platinum a further enticement.

WPIC initiatives highlights

The COVID-19 pandemic continued to impact our product partners in the second quarter of 2020. Product manufacturing at mints and refineries resumed during the quarter but with reduced capacity due to pandemic-related operational protocols. As a consequence, and in order to meet continued significant investor demand for precious metals, most European and North American manufacturers focussed on gold products once their operations recommenced. Supply chain constraints experienced during national lockdowns eased as international flights slowly resumed, although availability of platinum bar and coin products remains restricted.

The wide range of COVID-19 related impacts is expected to slow product development initiatives by varying degrees dependant on region and the nature of the specific investment product.

Our focus remains on increasing the number and impact of product partnerships in two of our key target markets, China and North America.

In China, despite some pandemic-related slowing of product partnership development, our Shanghai office continued to promote broadly the awareness and ownership of platinum as an investment asset. We increased our use of video conference webinars and training with partners and found their effectiveness increased as we met growing online investor needs.

The global rush into precious metals also boosted the demand for platinum investment in China, with our partners reporting a significant increase in holdings through their cash-settled investment accounts. As our partner engagement and broader networking returns to previous levels, within the new constraints of social distancing, we are pleased with the progress we have made in 2020.

In Japan, the most mature market for platinum bars and coins, our increased efforts to promote awareness and ownership of platinum were well received as demand for bars and coins remained strong in the second quarter. Our partnership with the Japan Bullion Market Association (JBMA) helped increase platinum insight content distribution to more existing and potential investors through webinars and social media content. Investor appetite for platinum was also boosted by the historically attractive yen price of platinum and its large discount to the yen price of gold.

In Europe and North America, we continued to work closely with our partners to heighten their focus on platinum, minimise the negative impacts of the pandemic and assist them in meeting investor demand. Investor appetite for platinum bar and coin products remained high in Q2 2020 but sales were significantly lower than in the first quarter due to unavailability of products. The focus by manufacturers on gold products resulted in platinum bars selling out by the end of April. Fortunately, the US Mint produced an additional 26,500 1oz 2020 platinum American Eagle coins to keep up with demand, but these also sold out during the quarter as did the limited number of platinum bars that reached investors in May and June. Platinum bar and coin availability has improved throughout July and August, and we expect sales to increase steadily during the remainder of 2020.

WPIC product partnerships work to increase the number, quality and awareness of platinum investment products available to investors worldwide. In addition, the established links between our partners and their clients, customers and partners are invaluable in increasing awareness of platinum as an investment asset. Our partners amplify the distribution of WPIC research and insights and contribute to meeting the research and insight needs of the growing pool of investors actively considering an investment in platinum.

We have a strong pipeline of new partners, new programs and effective products that will assist in enhancing awareness and distribution of platinum in 2020 and beyond.

As the serious and negative effects of the COVID-19 pandemic become clearer, we still believe that platinum's demand growth potential is likely to endure through and after the pandemic due to its role in reducing climate change, addressing the imbalance between the platinum and palladium markets and because of its increased attractiveness as a physical, industrial and precious metal investment.

Paul Wilson, CEO

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PLATINUM QUARTERLY Q2 2020

Table 1: Supply, demand and above ground stocks summary

	2017	2018	2019	2020f	2020f/2019 Growth %	Q1 2020	Q2 2020
Platinum Supply-demand Balance (koz)							
SUPPLY							
Refined Production	6,125	6,125	6,094	5,167	-15%	1,243	954
South Africa	4,380	4,470	4,402	3,517	-20%	832	532
Zimbabwe	480	465	455	453	-1%	118	114
North America	360	345	356	372	4%	98	87
Russia	720	665	716	654	-9%	150	177
Other	185	180	164	171	4%	45	44
Increase (-)/Decrease (+) in Producer Inventory	+30	+10	+2	+20	>±300%	+41	+36
Total Mining Supply	6,155	6,135	6,097	5,187	-15%	1,284	989
Recycling	1,895	1,935	2,165	1,915	-12%	489	419
Autocatalyst	1,325	1,420	1,630	1,471	-10%	406	309
Jewellery	560	505	477	388	-19%	70	97
Industrial	10	10	58	57	-3%	14	13
Total Supply	8,050	8,070	8,261	7,102	-14%	1,773	1,408
DEMAND							
Automotive	3,320	3,090	2,894	2,429	-16%	663	386
Autocatalyst	3,180	2,945	2,894	2,429	-16%	663	386
Non-road	140	145	†	†	†	†	†
Jewellery	2,460	2,245	2,100	1,813	-14%	394	392
Industrial	1,685	1,920	2,140	2,136	0%	499	428
Chemical	565	570	692	593	-14%	157	119
Petroleum	100	235	219	122	-44%	38	29
Electrical	210	205	145	136	-6%	32	34
Glass	180	245	259	540	108%	98	82
Medical and Biomedical	235	240	249	249	0%	59	64
Other	395	425	577	495	-14%	115	101
Investment	275	15	1,252	1,060	-15%	79	393
Change in Bars, Coins	215	280	281	600	113%	312	133
Change in ETF Holdings	105	-245	991	160	-84%	-213	122
Change in Stocks Held by Exchanges	-45	-20	-20	300	N/A	-20	138
Total Demand	7,740	7,270	8,386	7,438	-11%	1,635	1,599
Balance	310	800	-125	-336	N/A	138	-191
Above Ground Stocks	2,380	3,180	3,525**	3,189	-10%		

Source: Metals Focus 2019 - 2020, SFA (Oxford) 2017 - 2018.

Notes:

- **Above Ground Stocks 3,650 koz as of 31 December 2018 (Metals Focus).
- † Non-road automotive demand is included in autocatalyst demand.
- All estimates are based on the latest available information, but they are subject to revision in subsequent quarterly reports.
- The WPIC did not publish quarterly estimates for 2013 or the first two quarters of 2014. However, quarterly estimates from Q3 2014, to Q4 2017 are contained in previously published PQs which are freely available on the WPIC website. Quarterly estimates from Q2 2018 and half-yearly estimates from H1 2018 are included in Tables 3 and 4 respectively, on pages 20 and 21 (supply, demand and above ground stocks). Details of regional recycling supply in Table 6 on page 23 are only published from 2019.
- Data from Metals Focus and SFA (Oxford) may not have been prepared on the same or directly comparable basis.
- Prior to 2019 SFA (Oxford) data is independently rounded to the nearest 5 koz.

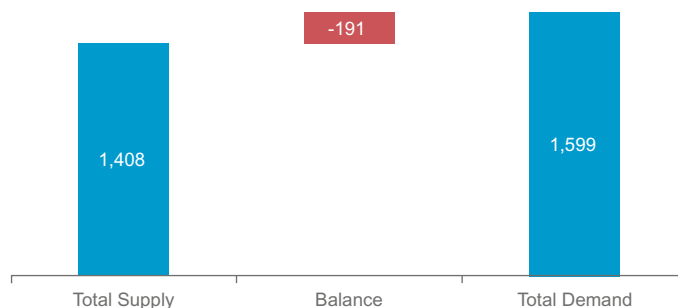
2020 SECOND QUARTER PLATINUM MARKET REVIEW

In the second quarter of 2020 the COVID-19 crisis continued to have a profound impact on the platinum market. Both supply and demand for the metal were severely impacted by measures to contain the pandemic as well as the associated negative economic impact on economies around the world. At the same time, the monetary and fiscal policy response to the crisis by authorities around the world boosted the appeal of precious metals investments, including platinum.

Total platinum supply in Q2'20 was down year-on-year by 35% (-748 koz). Total mining supply shed 40% (-648 koz) due to the constraints experienced predominantly in South Africa. Meanwhile, global secondary supply from recycling felt the impact of the pandemic more severely during this quarter, posting a 19% (-100 koz) decline compared to Q2'19. Total platinum demand in Q2'20 was down by 19% (-387 koz) due to declines in automotive demand of 48% (-360 koz), industrial demand of 25% (-145 koz) and jewellery demand of 27% (-149koz). This contraction reflects challenges during the quarter, as many factories were impacted by lockdowns and then, as they emerged from lockdown with new socially distanced production protocols, by supply chain disruptions as well as, in some cases, re-introduction of localised lockdowns. In contrast, all areas of investment demand strengthened in Q2'20, up year-on-year by 212% (+267 koz). The most significant increase in demand was the Change in Stocks Held by Exchanges which rose by 151 koz to 138 koz. In addition, the Change in ETF holdings rose by 72 koz to 122 koz while bar and coin demand increased 44 koz to 133 koz.

The offset that rising investment provided to the losses suffered elsewhere meant that overall demand fell less sharply than supply in Q2'20. In turn this meant that the platinum market ended up being in a deficit of 191 koz for the quarter.

Chart 1: Supply-demand balance, koz, Q2 2020



Source: Metals Focus

Supply

Global refined production in Q2'20 fell by 43% (-712 koz) to 954 koz, with South Africa representing the bulk of the losses. The declines were a result of the impact of COVID-19 constraints on operations and the Anglo American Platinum Converter Plant (ACP) shutdown.

South Africa spent April in the most severe form of COVID-19 related restrictions introduced there, leading to underground mines, which constitute 75% of South African production, remaining fully closed, while open-pit mines continued to operate on a limited basis. From 1st May the country partially eased some restrictions, with underground mines permitted to operate at 50% capacity and open-pit mines and processing operations allowed to return to full production. The lockdown eased further from 1st June, with all mining permitted to return to full capacity, provided specified COVID-19 protocols were in place.

As a result of the phased return to full production in South Africa, there was a marked variation in year-on-year output across different mine sites and mine types. Underground mine production of platinum-in-concentrate, unaffected by processing constraints or the ACP outage, declined, on average, by -57% with a range from -36% to -78%. Open-pit mine concentrate production was only down 11% during the quarter and is expected to remain less affected in the second half of 2020. Underground operations continue to ramp up production, with most operations near full capacity by the end of the second quarter, although two exceptions had only reached 50%.

Separate to COVID-19 disruptions, the ACP shutdown was a major contributor to the year-on-year decline in refined production in Q2'20 from South Africa. An explosion at the phase A plant and a water leak in the phase B plant necessitated a shutdown of the entire ACP on 6th March. Following repairs a separate water leak was detected and the phase B plant was again temporarily shut down. In total, there was no output from the ACP plant for 54 days during the second quarter, representing, in isolation, around -310 koz of the -685 koz reduction in refined production in the country. Had there been steady-state mine production, such a disruption would typically add to in-process inventory of smelter matte. However, due to pandemic-related declines in mine output discussed above, any such build-up will be less than previously expected.

In Zimbabwe, platinum mines were able to remain open during the national lockdown implemented from midnight on 30th March. Some mines ceased activities for a period but by the end of the second quarter all platinum operations were back at full capacity. Country output for the quarter declined 5% (-7 koz) to 114 koz and less than the decline in concentrate production, as some operations processed previously accumulated in-process inventory to partially offset losses.

For the second consecutive quarter Russia's output declined year-on-year, falling 6% (-12 koz) to 177 koz in Q2. Production from Nor Nickel, which constitutes most of the Russian output, fell due to reduced processing of inventory through the Krasnoyarsk Precious Metals Plant.

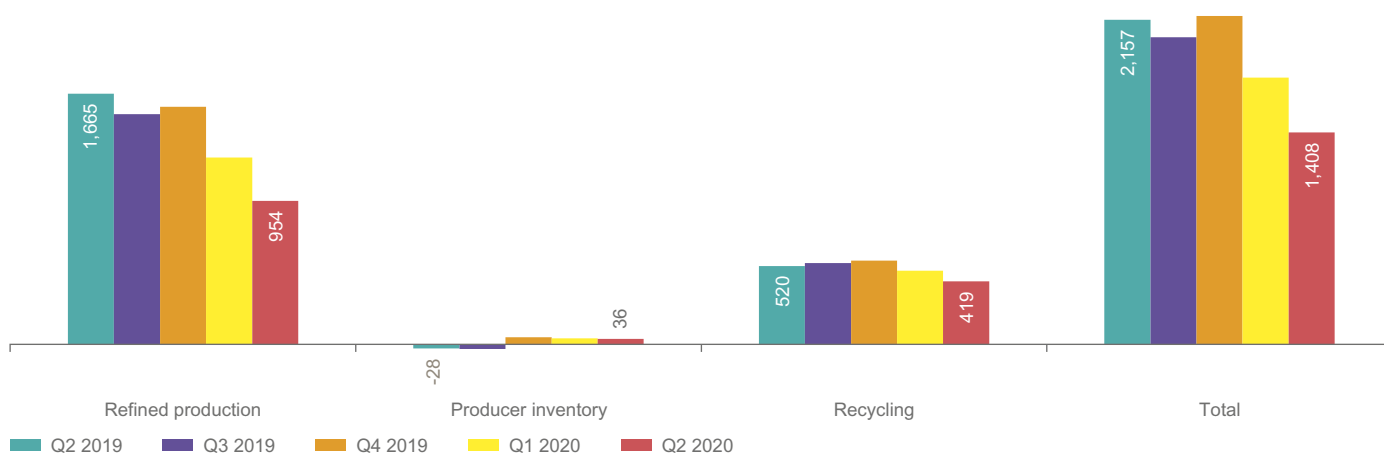
Production from other countries increased 11% (+4 koz) to 44 koz, primarily as a result of planned expansion growth from a mine in Finland.

Recycling

During Q2'20, platinum autocatalyst recycling fell by 20% (-78 koz) year-on-year to 309 koz. This largely reflected the impact of lockdown restrictions, especially in Europe and the US, which at times hampered the collection and movement of spent autocatalysts. There was some partial offset as smelters and refiners continued to process the backlog of material accumulated prior to the pandemic, due to limited capacity. In addition, elevated palladium and rhodium prices continued to encourage the de-stocking by some salvage yards, but the impact of this was muted because of lockdowns.

Jewellery recycling in China more than doubled during Q2'20, compared to Q1'20, as the price lifted off its lows and COVID-19 restrictions eased. However, global jewellery recycling was still down 18% (-22 koz) year-on-year, chiefly as there was less recycling of stocks held by retailers in China.

Chart 2: Platinum supply, koz

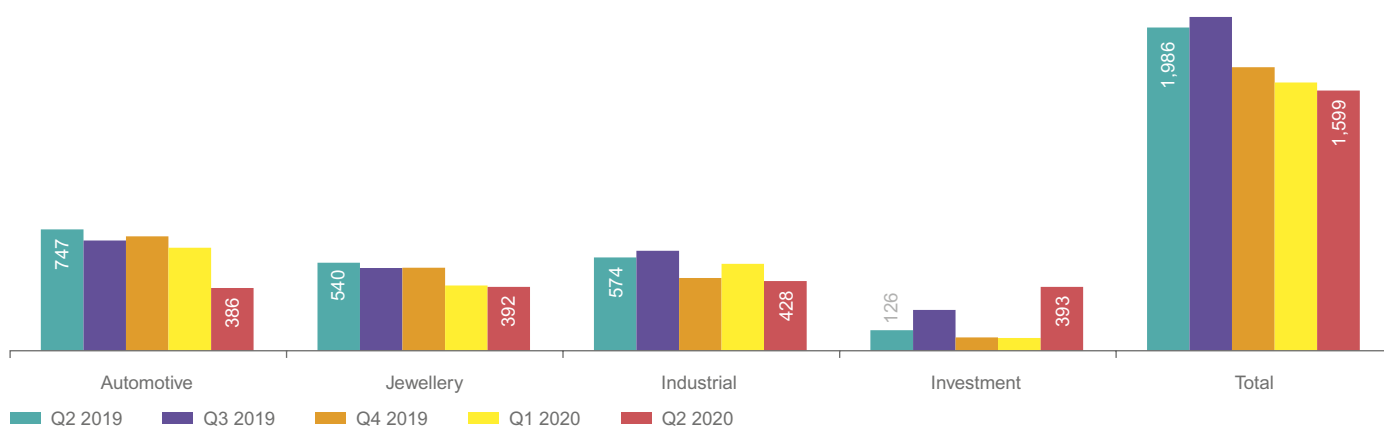


Source: Metals Focus

Demand

Demand in Q2'20 continued to fall year-on-year, however the rate of decline slowed as investors took a renewed interest in the metal. Even so, platinum demand was 387 koz (-19%) lower than the prior year quarter.

Chart 3: Platinum demand, koz



Source: Metals Focus

Automotive demand

By the end of Q2'20 the automotive sector reported production levels ranging from 60% to 95% of capacity, emerging from the lowest utilisation levels in its recorded history. As a direct result platinum demand was down 48% (-360 koz) to 386 koz in Q2'20. China has recovered strongly and average plant closures remained at the previously reported level of 16 days. Meanwhile, South America experienced escalating challenges in coping with the pandemic and average plant closures stood at 85 days by the end of the quarter. Plant closures in Europe, North America and other ASEAN markets ranged between 4 and 6 weeks, but with capacity utilisation at the end of the period already back above 90%.

Despite mild-hybrid vehicle sales benefiting from the targeted stimulus packages announced by various European governments during Q2'20, demand for platinum in this region was severely impacted by the pandemic and fell by 60% (-227 koz). Diesel's share fell from 33% in H1'19 to 30% in H1'20. North America recorded a two-thirds decline in overall vehicle production and a 60% (-55 koz) year-on-year reduction in platinum demand for Q2'20.

In contrast, China not only achieved growth in vehicle production but, despite the official delay of China 6 for light vehicles and gradual ramp up of heavy duty regulation enforcement of China VI by July 2021, the country has seen a healthy increase in platinum demand, due to the early adoption and roll-out of the regulation in several key cities. The China VI emission limits are similar to Euro VI emission limits and are significantly tightened compared to the China V standard, with the NO_x limit tightened by 77% and the PM limit by 67%. During Q2'20, at least 25% of heavy-duty vehicles (gross weight above 6t) produced, were fitted with a China VI compliant emission control system. Consequently, overall demand for platinum in China for the quarter increased by 62% (+31 koz) helping to somewhat offset the reduction in other markets.

Jewellery demand

Jewellery demand was down 27% (-149 koz) year-on-year in Q2'20 despite the healthy quarter-on-quarter recovery seen in China, as the rest of the world suffered more from the impact of the pandemic.

China's platinum jewellery fabrication in Q2 increased slightly by 1% (2 koz) year-on-year. This was driven by growing interest in platinum jewellery due to its price attractiveness compared to gold, especially over a period of economic slowdown. We have seen an increasing number of showrooms and retailers re-start selling platinum jewellery or making greater efforts in product innovation and marketing activities. Retail sales in May were healthy but lower than expected, resulting in only modest stock replenishment in June. From a retail perspective, demand continued to see a double-digit decline in Q2 as the ongoing structural change of shifting to lighter pieces outweighed the increase in the number of pieces sold.

North American offtake saw a brutal start to Q2'20, as lockdowns hit production, most retailers closed for lengthy periods and weddings were cancelled or postponed. Retailers also typically allowed stocks to run down, leading to fabrication suffering more than sales. By June, however, an easing of lockdowns meant a healthy recovery began, as indicated by US platinum jewellery imports being more than 5 times the size of those in May. Despite that, the full quarter still saw offtake slump by 48% (-44 koz) year-on-year.

European demand more than halved (-34 koz) year-on-year in Q2'20 due primarily to early COVID-instigated factory closures. As restrictions eased in May, offtake recovered strongly, with output for the top-end jewellery and watch brands by June being largely back to normal. Bridal demand however remained weak, as suggested by UK hallmarking in June being down 52% year-on-year (vs. -74% in May). European demand fell more steeply than in the US, chiefly as factories (especially in Italy) were obliged to close sooner with the earlier onset of lockdowns. Production for the high-end brands had also been hit by yet earlier retail restrictions in the key export market, China.

Indian platinum jewellery fabrication collapsed to just 3 koz in Q2'20. Jewellery demand has been deeply affected by the lockdown, announced on 25th March. The overall Indian economy suffered the consequence of lockdowns and, though the rural economy was less impacted, consumers remained extremely cautious towards making high value purchases. Jewellery manufacturing in turn has been affected by lockdowns, absence of demand and virtually zero buying from retailers holding adequate levels of inventory.

Industrial demand

Q2'20 demand was down 25% (-145 koz) year-on-year to 428 koz. Apart from the glass industry, all other sectors showed evidence of pandemic-related difficulties, including plant shutdowns or curtailment, supply chain disruptions and consumer demand contraction.

Petroleum

Following a major contraction in Q1'20, platinum use in the petroleum industry continued to weaken in Q2'20, with volumes nearly halving year-on-year (-26 koz) to 29 koz. This reflects the challenging backdrop for the oil industry after COVID-19 led to an unprecedented and abrupt demand shock. With the collapse of benchmark oil prices, OPEC and its allies agreed record supply cuts in late April. The impact on global oil refining output was even more pronounced, as storage for oil products was rapidly used up. Against this backdrop, Q2'20 saw widespread reduction in run rates (refinery utilisation percentage) and shutdowns in all regions except China. In China, oil throughput surged during Q2'20, as refineries took advantage of low prices to import crude oil. However, a slower pace in petrochemical capacity expansion (which has tended to be integrated with upstream oil refining units in the last couple of years) also weighed on platinum offtake.

Chemical

Platinum use in chemical applications dropped by 41% (-82 koz) year-on-year in Q2'20. The petrochemical sector accounted for the bulk of these losses. This in turn came as a result of weaker volumes in China, though it is worth noting that 2019 was an exceptional year when each quarter saw new mega oil-to-petrochemical complexes come on stream. While the construction of new plants has continued in the country this year, the rate of growth has fallen short of 2019. Outside China, weaker downstream consumption, COVID-related disruptions as well as capacity oversupply (in the wake of new plants opening in China in recent years) has seen many manufacturers cut operation rates or place plants on care and maintenance.

The use of platinum catalyst in silicone also weakened during Q2'20, although the results were mixed across key sectors. Demand was robust for products used in medical, health, hygiene and home care applications. This growth, however, was more than offset by declining volumes in other sectors such as automotive and construction. Finally, platinum demand in the production of nitric acid also decreased. This reflects a drop in fertiliser production, after COVID-19 spread to more emerging markets during the quarter. The pandemic led to both supply chain disruptions as well as weaker agricultural consumption.

Medical

The medical and pharmaceutical industry were largely unaffected by the impact of the pandemic, as they were essential services. Q2'20 demand for platinum was marginally down 5% (-3 koz). Although the US reported a marked decline in elective procedures which includes implantable cardio defibrillators (ICD), and a slight reduction in oncology treatments during lockdown, elsewhere,

demand for oncology related products and platinum based active pharmaceutical ingredients (APIs) contained in cancer treatment products such as cisplatin, oxaliplatin and carboplatin continued to grow meaningfully. The significant improvement in health care policy in China, and more expansive health insurance coverage in India, have seen dramatic increases in production of APIs in these countries. In the first half of 2020, India saw a marked increase in demand for platinum in pharmaceutical products compared to the prior year and in China, local pharmaceutical companies reported an increase in sale of APIs of between 10-20%.

Glass

Conflicting demand for liquid crystal display (LCD) substrate was seen during the quarter. Demand for television panels was under pressure while demand for IT panels was boosted by monitor and laptop purchases, as working from home proliferated. However, capacity investments were in some cases pushed back, although we are not aware of projects that have been entirely shelved. Glass fibre demand remained under pressure as demand in automotive, construction and oil and gas was weak, with wind turbine manufacture being the only area showing growth. Consequently Q2'20 glass demand was up 15% (+11 koz) to 82 koz compared to the prior year figure of 71 koz.

Electrical

Platinum demand in electronics fell by 5% (-2 koz) year-on-year, broadly in line with the decline of worldwide hard disk drive (HDD) shipments. In addition to COVID-19 related disruptions this segment has been plagued by sluggish demand in certain key consumer markets where economic uncertainties have tempered consumption. The growth in demand for nearline storage in more data centres was offset by weaker sales in surveillance and enterprise drives. Despite the rebound in personal computers (PC) sales in Q2'20, HDD demand continued to face strong competition as solid-state disks (SSD) now account for most of the notebook and desktop segment. In contrast, HDDs remain the mass data storage medium of choice due to its cost advantage, although the transition toward SSDs in new applications, such as next generation consoles and aerospace applications, will continue to weigh on platinum offtake in the sector.

Investment demand

Since the release of the first quarter review, the Covid-19 pandemic has continued to negatively impact the world economy on an unparalleled scale. In a bid to reduce the negative economic impact both the US and European central banks introduced targeted accommodative monetary and fiscal policies in quick succession. This has resulted in further lowering of interest rates and has reduced bond yields in both markets. Negative interest rates in real terms, mounting concern around the health of current stock market valuations, despite no clear evidence that the pandemic is under control, led investors to take a keener interest in the precious metals complex, benefiting gold, silver and platinum.

Investment demand in Q2'20 inclusive of bars and coins, ETF holdings and stocks held by exchanges increased by 212% (+267 koz) year-on-year. The context of these increases was a quarter dominated by growing concerns over the prospects of economic recovery, further and deeper supply disruptions and positive spill-over effects from demand for gold as a safe haven asset, which led to increasing interest by investors in platinum.

Bar and coin demand in Q2'20 was up 49% (+44 koz) year-on-year but fell 58% compared to Q1'20. The US experienced the steepest quarter-on-quarter fall in bar and coin demand during Q2'20, for two key reasons. First, product shortages were a feature throughout much of Q2'20, particularly of small, minted bars. Second, the Q1 total in most years tends to benefit from the launch of newly dated bullion coins, reflected for example in US Mint sales which were heavily weighted towards Q1'20, with very few new coins made available in Q2'20.

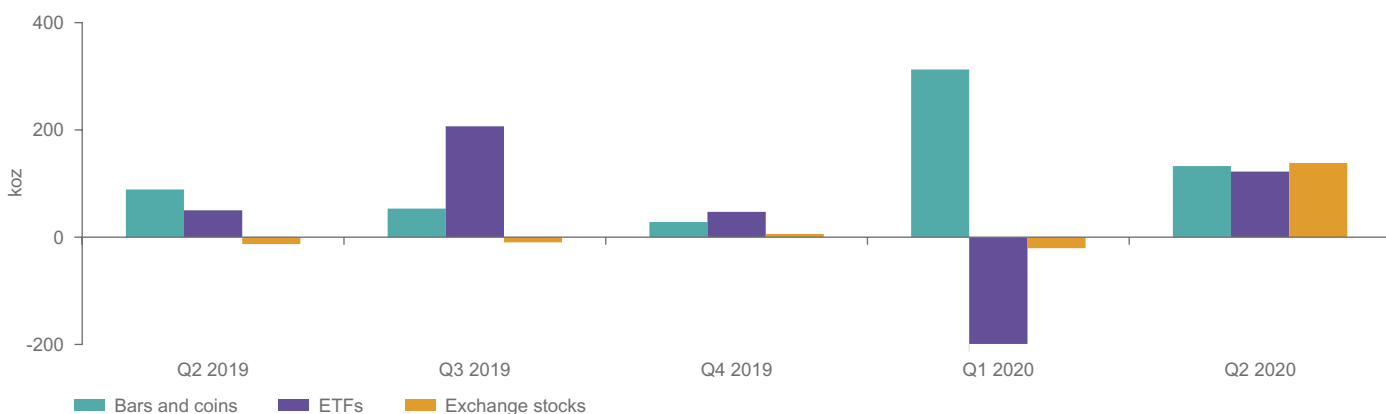
There was also a sharp decline in Japanese bar and coin investment in Q2'20 compared to the previous quarter and was mainly a reflection of the exceptionally strong levels of demand seen in the country in March. Indeed, the 78 koz net demand for Q2'20 was healthy by historical standards, reflecting ongoing appetite for platinum in the face of historically attractive price levels, particularly when compared to gold in yen per gram terms.

European bar and coin investment was broadly stable in Q2'20 compared to the prior quarter, and remained at a historically high level, up 99% on Q2'19. As platinum's discount to gold continued to widen, it encouraged fresh investment from those who believed platinum was undervalued.

ETF holdings increased significantly in Q2'20, with net accumulations totalling +122 koz compared to the -213 koz net liquidations in the prior quarter. The growth in holdings in North America and Europe more than offset the liquidations by South African funds. ETF holdings closed Q2'20 at 3.3 moz and at 93% of its previous all-time high on 2nd March 2020 of 3.5 moz. Holdings have subsequently set new all-time highs in August 2020.

Separately, the second half of June saw strong inflows of platinum into NYMEX approved depositories, holdings of which almost doubled by the end of Q2'20 closing at 291 koz and the prime driver for demand of 138 koz from the Change in Stocks Held by Exchanges. The inflows into NYMEX depositories continued throughout July and August and at 18th August 2020 stood at a record high of 437 koz. The widening gap between futures and spot prices, or the Exchange of Futures for Physical (EFP), is what resulted in this unprecedented flow of metal into these depositories. The significant rise of the EFP cost created arbitrage opportunities resulting in physical metal being delivered into NYMEX vaults. Market makers who are short futures and are hedged by long OTC or physical positions, decided to deliver exchange compliant bars against them and to keep bars locally, as a hedge against future expiry of contracts. Initially fuelled by logistical challenges and limitations to bar casting capacity, EFP costs have remained high as a result of tightening risk limits at financial institutions limiting the supply of futures on the NYMEX and the reduction in the number of market makers.

Chart 4: Platinum investment



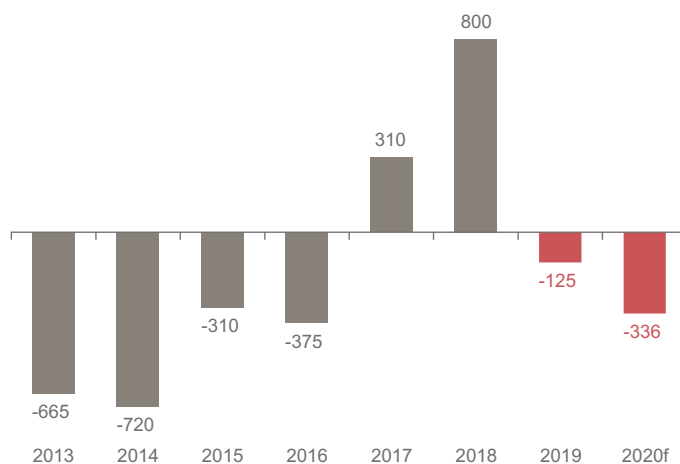
Source: Metals Focus

2020 FORECAST

More than halfway into 2020 the world is still firmly in the grip of a pandemic for which there is no definitive solution. Despite increasing emergence from lockdown and expectations of a much better H2'20 performance, the impact and dislocations created during the first half are expected to moderate platinum demand in the final six months of the year. In 2020, global supply is forecast to be 7,102 koz down -14% (-1,159 koz) compared to 2019, comprising refined mining production of 5,187 koz and 1,915 koz of recycling. Set against this, demand will be 7,438 koz down -11% (-948 koz), consisting of 2,429 koz of autocatalyst demand, 1,813 koz of jewellery demand, 2,136 koz of industrial demand and 1,060 koz of investment demand (comprising bar and coin demand, as well as changes in ETF holdings and changes in stock held by exchanges).

On the back of the above dynamics, the platinum market deficit is forecast to expand from -125 koz in 2019 to -336 koz this year.

Chart 5: Supply-demand balance, koz, 2013-2020f



Source: Metals Focus 2019-2020, SFA (Oxford) 2013-2018

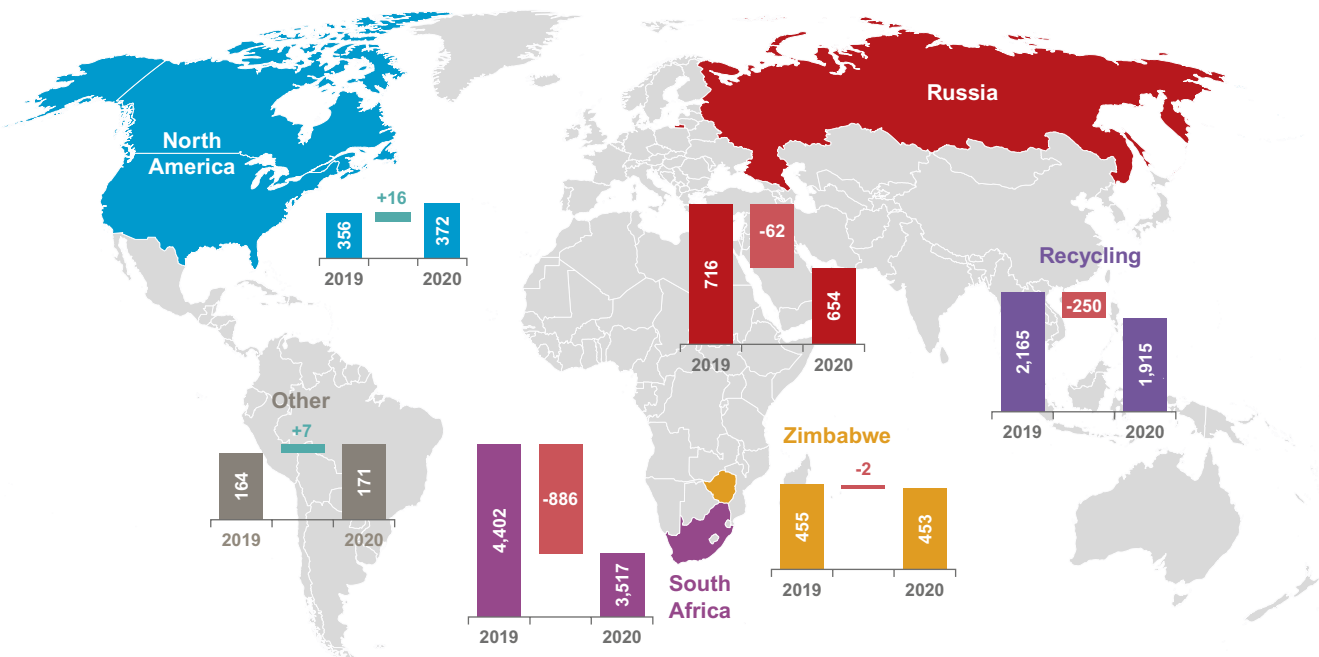
Supply

Refined production from South Africa, representing in 2019 72% of global refined production, is forecast to decline by 20% (-886 koz) in 2020, with most losses already realised in H1'20. The year-on-year decline in refined production in H1'20 was primarily due to the ACP outage. Mining supply is expected to recover strongly in H2'20, but still faces continued year-on-year declines as some labour-intensive underground operations have been slower to ramp-up, with two still at 50% of capacity at the end of H1'20. The risk of further COVID-19 mine site disruption still remains as the number of positive cases in the platinum industry continued to rise materially during August. We assume that mining workforce COVID-19 protocols will be sufficient to prevent a return to full-scale lockdowns, although some disruption is likely to occur.

We anticipate that miners will be drawing on in-process inventory to support refined production, and so refined output is expected to exceed mined output. Due to the ACP outage, Anglo American Platinum have reduced their expected refined platinum production in 2020 by 550 koz. Initially it was expected that this would result in an equivalent increase of in-process inventory that would take up to two years to refine. However, due to pandemic-related mining disruptions, the inventory increase will be smaller, with inventory levels returning to normal by the end of 2021.

Zimbabwean production is expected to remain virtually flat as losses due to mine shut-downs were offset by operations able to release refined platinum from previously accumulated in-process inventory. Russian output is forecast to decline by 9% (-62 koz) due to losses related to planned smelter maintenance.

Chart 6: Changes in supply, 2019 vs. 2020f
koz



Recycling

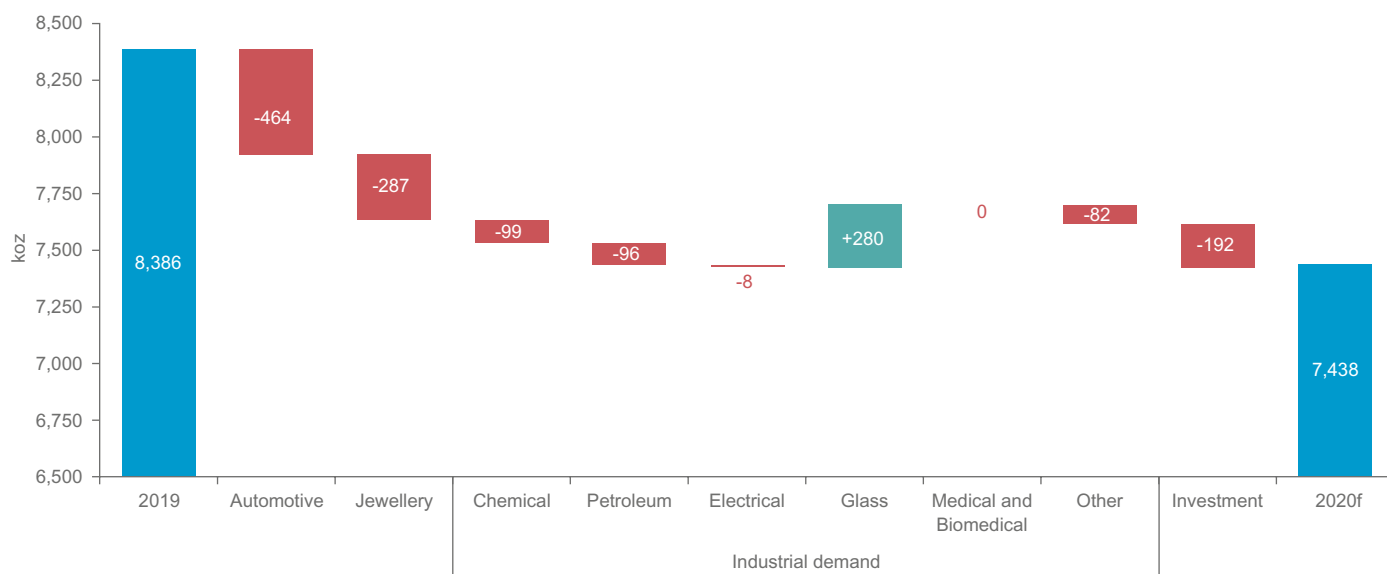
We forecast a 10% drop (-159 koz) in the recovery of platinum from spent autocatalysts in 2020 to 1,471 koz. This reflects the impact, during much of H1, of COVID-related restrictions, which offset the impact of strong PGM prices and de-stocking by some smelters and refiners. Even so, this will still be the second highest total on record.

We anticipate that jewellery recycling in 2020, despite firming prices and fewer restrictions in the main markets of Japan and China, will fall 19% (-89 koz), largely driven by the weakness in the first half of the year.

Demand

In 2020 demand for platinum is forecast to decrease from 8,386 koz to 7,438 koz, representing a reduction of 11% (-948 koz). Automotive demand is expected to fall by 16% (-464 koz), jewellery demand by 14% (-287 koz), industrial demand to remain flat (-5 koz) and investment demand (comprising bar and coin demand, as well as changes in ETF holdings and changes in stock held by exchanges) to reduce by 15% (-192 koz), all year-on-year.

Chart 7: Changes in demand by category, 2019 vs. 2020f



Source: Metals Focus

Automotive demand

Following the deeper than expected decline in the automotive industry outside of China in Q2'20, along with a more targeted approach to automotive stimulus packages in Europe, global vehicle production is forecast to be around 16% below 2019 levels for light-duty vehicles, while heavy-duty vehicle and non-road vehicle production forecasts for 2020 have been revised down by 25% and 16% respectively.

Automotive demand for platinum is forecast to weaken by 16% (-464 koz) driven by a decline in demand of 21% (-306 koz) in Europe as light-duty production is set to fall by 20% and heavy-duty by more than 30%. In Western Europe, despite incentives favouring battery electric vehicles (BEVs), the sale of hybrids will also benefit from these programmes, while the diesel share in this region is forecast to be around 30% for the rest of the year. Demand for platinum in North America is forecast to be down by 23% (-77 koz). In the US, manufacturers of diesel engines used in heavy-duty vehicles and other equipment have been advised by authorities that they will ease enforcement for those that fail to meet Clean Air Act requirements due to the COVID-19 pandemic. However, manufacturers that can do so, are encouraged to comply and we have not incorporated any delays in this region's forecast.

In China, platinum automotive demand is forecast to increase by 27% (+59 koz) as both vehicle units and higher loadings drive platinum consumption. Despite the delay of 6 months granted in China for light-duty vehicles, the introduction of China VI for heavy-duty vehicles this year will see approximately 25% of heavy-duty vehicles fitted with compliant emission control systems over the course of the year.

In other regions, including India and Mexico, demand for platinum for the rest of the year is expected to decline by 19% (-108 koz) as these nations have been plagued by lockdowns for longer than most. In India, motor manufacturers have submitted a request to delay implementation of corporate average fuel consumption (CAFC) standards for passenger vehicles, as part of an industry proposed COVID-19 recovery programme. However, there has so far been no formal response from the government. More recently for the non-road category, the Indian government has invited suggestions for deferral of the next stage of emissions standards for construction equipment, which was set to come into effect on 1st October this year.

Jewellery demand

Platinum jewellery demand is forecast to decline by 14% (-287 koz) to 1,813 koz. The first half of 2020 was dominated by COVID-19 related factors, such as retail restrictions, consumer caution regarding a potential recession and a weaker economic growth outlook. In contrast, we anticipate that the rapid recovery in China, the increased probability of an accelerated recovery in other regions and the release of pent-up demand could see growth in jewellery demand in H2'20, offsetting some of the first half losses.

Overall, we forecast Chinese platinum jewellery demand to remain unchanged year-on-year in the second half of 2020, leaving the annual total down 12% (-102 koz), at 769 koz. We believe that recent increases in the price of gold and platinum and expectations that prices may continue to increase over the rest of the year, will increase interest in platinum jewellery both from the retailers' and consumers' perspective. In addition, platinum's widened discount to gold and ongoing efforts in product innovation and market activities are expected to lend strong support to increased demand.

Trade feedback on sales in Europe and North America during June and July is mixed in terms of whether they represent the start of an ongoing recovery or merely pent-up spending that will soon fade. The latter could well apply in the US, as high COVID-19 infection rates continue to undermine platinum jewellery sales. As a result, it may not be until Q4'20 that local sales growth emerges. Fabrication for export of top-end jewellery and watches, however, has fared better than expected, partly as a result of the reported swift return of East Asian buyers.

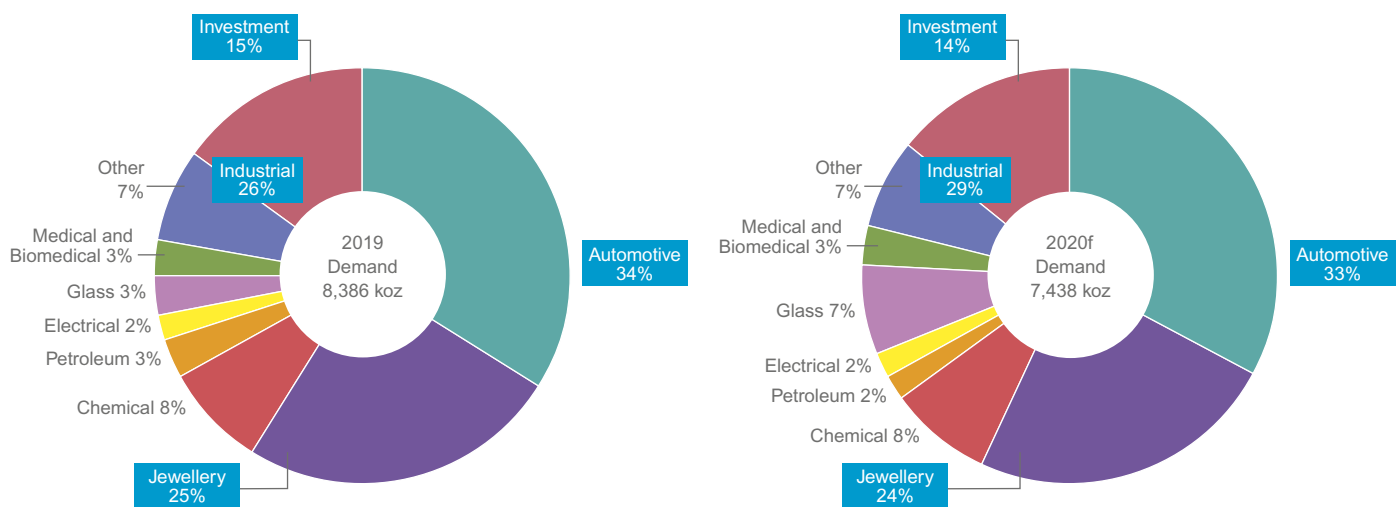
We expect a strong bounce back in the global bridal market later in 2020, as the peak engagement period approaches and rescheduled weddings go ahead. Top-end jewellery and watch sales may take longer to recover, as conspicuous consumption is pared back, although late 2019 trade war concerns meant that the main brands began 2020 only lightly stocked.

Indian platinum jewellery demand is estimated to drop by 45% (-46 koz) to 56 koz in 2020. Discretionary spending is likely to be impacted by the economic slowdown and loss of employment because of the pandemic. Retailers will first look to reduce inventory before placing new orders.

Industrial demand

Total industrial demand is expected recover in the second half of the year to close 2020 on 2,136 koz, flat (-5 koz) on the prior year.

Chart 8: Demand end-use shares, 2019 vs. 2020f



Source: Metals Focus

Chemical

As economic activity is expected to gradually improve during H2'20, so will platinum demand in the chemical industry. Additional support should come from China, where new paraxylene and propane dehydrogenation units are expected to be completed later this year. For the full year, we expect platinum offtake to drop by 14% (-99 koz) to 593 koz.

Petroleum

Sentiment in the oil industry has improved recently, as evidenced by a rebound in oil prices. The outlook, however, remains challenging, as rising COVID-19 cases and the introduction of partial lockdowns have cast doubts about the solidity of the recent recovery. Also of importance has been the record drop in global energy investment this year. Among these, investment in oil and gas is expected to post the largest decline on record, with refining capacity growth inevitably being affected. Overall, we expect platinum demand to record a substantial 44% (-96 koz) decline to 122 koz.

Electrical

The trend towards rising platinum loadings per drive, as more plates are added in high capacity drives to meet rising demand in cloud and big-data storage, should partly offset the downward pressure of platinum offtake in the segment. The introduction of energy-assisted magnetic recording HDDs, including HAMR (heat-assisted magnetic recording) and MAMR (microwave-assisted magnetic recording) is set to be commercialised next year, which should further strengthen HDDs' advantage from a storage cost perspective. As such, platinum offtake is forecast to decline marginally by 6% (-9 koz) to 136 koz in 2020.

Medical

Following the resilience of the first half and based on recovery expectations by both medical and pharmaceutical companies in regions such as China and India, the outlook for the full year is forecast to be flat on 2019.

Glass

In the LCD sector, tight conditions in the substrate market have pushed prices upwards. As such we expect investment in capacity growth will largely go ahead as planned. Moreover, as some earlier capacity investments/installations were pushed back as a result of COVID disruptions, the second half of this year is likely to see stronger capacity build, and platinum demand, compared to H1'20. One key concern is that travel restrictions into China could result in delays, as foreign engineers are unable to travel to sites.

In the glass fibre market, although there are signs of improvement, demand is expected to remain soft for the rest of the year. However, following a number of years of strong expansion, our projections already allowed for slower investment in 2020. Moreover, in its latest results presentation, one of the leading market players indicated no change in capital expenditure plans since the previous quarter. Following the pre-pandemic adjustment from 2019 into 2020, glass demand is forecast to be 540 koz for 2020.

Other

The forecast for other industrial demand has been revised lower to 495 koz a reduction of 14% (-82 koz) compared to the prior year, reflecting weaker spark plug and sensor demand in the automotive industry as vehicle production has declined.

Investment demand

Investment demand in 2020, comprising bars and coins, ETFs and changes to Stocks Held by Exchanges, is expected to decline by 15% (-192 koz), as lower ETF demand, from the very high level in 2019, exceeds increases in bar and coin and stocks held by exchanges.

This year, platinum bar and coin demand is expected to more than double year-on-year to 600 koz, driven by higher retail demand in every key market. The key reason behind the performance was the surge in retail buying in late Q1'20, which makes up for the shortfall in Q2'20 and Q3'20 of newly minted bars and coins in some locations. It is currently difficult to gauge the true scale of retail interest in platinum because of the interruption to some product supplies, especially in North America.

In Japan, the likelihood of yet higher yen platinum prices in the second half of the year, coupled with investors having already bought sizeable volumes of platinum over the first six months, suggests a further decline in bar and coin demand is likely. Indeed, we would not be surprised to see net investment turn negative during some months. As such, we maintain our forecast that Japanese demand will total 280 koz during 2020.

Following the strong performance during Q2'20, we expect net sales of global platinum ETFs in H1'20 to be more than offset by the net increase in ETF holdings during the second half of 2020, ending the year with a net inflow of 160 koz. Separately, and as indicated before, inflows into exchange depositories through July and August continued. As the current arbitrage conditions and logistical challenges may persist in H2'20, we forecast an increase of stocks held by exchanges, reflective of the current level, of 300 koz for 2020.

ABOVE GROUND STOCKS

In consideration of the factors above we forecast a market deficit for 2020 of -336 koz, which will result in above-ground stocks reaching 3,189 koz at the end of 2020.

PLATINUM QUARTERLY Q2 2020

Table 2: Supply, demand and above ground stocks summary – annual comparison

	2013	2014	2015	2016	2017	2018	2019	2020f	2020f/2019 Growth %
Platinum Supply-demand Balance (koz)									
SUPPLY									
Refined Production	6,060	4,865	6,155	6,030	6,125	6,125	6,094	5,167	-15%
South Africa	4,345	3,125	4,475	4,250	4,380	4,470	4,402	3,517	-20%
Zimbabwe	405	405	405	490	480	465	455	453	-1%
North America	355	395	365	390	360	345	356	372	4%
Russia	740	740	710	715	720	665	716	654	-9%
Other	215	200	200	185	185	180	164	171	4%
Increase (-)/Decrease (+) in Producer Inventory	-215	+350	+30	+30	+30	+10	+2	+20	>±300%
Total Mining Supply	5,845	5,215	6,185	6,060	6,155	6,135	6,097	5,187	-15%
Recycling	1,980	2,035	1,705	1,840	1,895	1,935	2,165	1,915	-12%
Autocatalyst	1,120	1,255	1,185	1,210	1,325	1,420	1,630	1,471	-10%
Jewellery	855	775	515	625	560	505	477	388	-19%
Industrial	5	5	5	5	10	10	58	57	-3%
Total Supply	7,825	7,250	7,890	7,900	8,050	8,070	8,261	7,102	-14%
DEMAND									
Automotive	3,125	3,245	3,370	3,445	3,320	3,090	2,894	2,429	-16%
Autocatalyst	2,985	3,095	3,230	3,310	3,180	2,945	2,894	2,429	-16%
Non-road	140	150	140	135	140	145	†	†	†
Jewellery	2,945	3,000	2,840	2,505	2,460	2,245	2,100	1,813	-14%
Industrial	1,485	1,575	1,685	1,790	1,685	1,920	2,140	2,136	0%
Chemical	535	540	505	560	565	570	692	593	-14%
Petroleum	50	65	205	215	100	235	219	122	-44%
Electrical	195	215	205	195	210	205	145	136	-6%
Glass	145	175	200	205	180	245	259	540	108%
Medical and Biomedical	220	220	225	230	235	240	249	249	0%
Other	340	360	345	385	395	425	577	495	-14%
Investment	935	150	305	535	275	15	1,252	1,060	-15%
Change in Bars, Coins	-5	50	525	460	215	280	281	600	113%
Change in ETF Holdings	905	215	-240	-10	105	-245	991	160	-84%
Change in Stocks Held by Exchanges	35	-115	20	85	-45	-20	-20	300	N/A
Total Demand	8,490	7,970	8,200	8,275	7,740	7,270	8,386	7,438	-11%
Balance	-665	-720	-310	-375	310	800	-125	-336	N/A
Above Ground Stocks	3,475*	2,755	2,445	2,070	2,380	3,180	3,525**	3,189	-10%

Source: Metals Focus 2019 - 2020, SFA (Oxford) 2013 - 2018.

Notes:

1. Above Ground Stocks: *4,140 koz as of 31st December 2012 (SFA (Oxford)). **3,650 koz as of 31 December 2018 (Metals Focus).
2. † Non-road automotive demand is included in autocatalyst demand.
3. Data from Metals Focus and SFA (Oxford) may not have been prepared on the same or directly comparable basis.
4. Prior to 2019 SFA (Oxford) data is independently rounded to the nearest 5 koz.

PLATINUM QUARTERLY Q2 2020

Table 3: Supply and demand summary – quarterly comparison

	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q2'20/Q2'19 Growth %	Q2'20/Q1'20 Growth %
Platinum Supply-demand Balance (koz)											
SUPPLY											
Refined Production	1,605	1,665	1,565	1,320	1,665	1,530	1,579	1,243	954	-43%	-23%
South Africa	1,160	1,230	1,170	874	1,218	1,122	1,189	832	532	-56%	-36%
Zimbabwe	115	120	120	113	120	116	106	118	114	-5%	-4%
North America	85	90	90	85	99	79	94	98	87	-12%	-11%
Russia	200	180	145	204	189	174	149	150	177	-6%	18%
Other	45	45	40	44	40	40	41	45	44	11%	-2%
Increase (-)/Decrease (+) in Producer Inventory	+55	-20	-20	12	-28	-30	48	41	36	N/A	-13%
Total Mining Supply	1,660	1,645	1,545	1,332	1,637	1,501	1,627	1,284	989	-40%	-23%
Recycling	480	490	495	549	520	540	556	489	419	-19%	-14%
Autocatalyst	345	365	380	413	387	410	420	406	309	-20%	-24%
Jewellery	135	125	115	120	119	116	121	70	97	-18%	39%
Industrial	0	0	0	15	14	14	15	14	13	-4%	-1%
Total Supply	2,140	2,135	2,040	1,881	2,157	2,041	2,183	1,773	1,408	-35%	-21%
DEMAND											
Automotive	815	715	765	766	747	678	703	663	386	-48%	-42%
Autocatalyst	770	680	730	766	747	678	703	663	386	-48%	-42%
Non-road	40	35	40	†	†	†	†	†	†	†	†
Jewellery	570	550	560	539	540	510	510	394	392	-27%	-1%
Industrial	475	470	495	506	574	614	447	499	428	-25%	-14%
Chemical	135	155	135	138	200	162	191	157	119	-41%	-25%
Petroleum	55	55	55	55	55	55	55	38	29	-47%	-24%
Electrical	50	50	55	35	36	38	36	32	34	-5%	6%
Glass	60	65	65	71	71	144	-26	98	82	15%	-17%
Medical and Biomedical	70	45	70	62	67	72	47	59	64	-5%	8%
Other	105	100	115	145	144	143	145	115	101	-30%	-12%
Investment	-55	65	-65	794	126	251	82	79	393	212%	>±300%
Change in Bars, Coins	70	70	50	111	89	53	28	312	133	49%	-58%
Change in ETF Holdings	-125	5	-115	687	50	207	47	-213	122	145%	N/A
Change in Stocks Held by Exchanges	0	-10	0	-4	-13	-10	6	-20	138	N/A	N/A
Total Demand	1,805	1,800	1,755	2,605	1,986	2,053	1,742	1,635	1,599	-19%	-2%
Balance	335	335	285	-724	171	-12	440	138	-191	N/A	N/A

Source: Metals Focus 2019 - 2020, SFA (Oxford) 2013 - 2018.

Notes:

- † Non-road automotive demand is included in autocatalyst demand.
- Data from Metals Focus and SFA (Oxford) may not have been prepared on the same or directly comparable basis.
- Prior to 2019 SFA (Oxford) data is independently rounded to the nearest 5 koz.

PLATINUM QUARTERLY Q2 2020

Table 4: Supply and demand summary – half-yearly comparison

	H1 2018	H2 2018	H1 2019	H2 2019	H1 2020	H1'20/H1'19 Growth %	H1'20/H2'19 Growth %
Platinum Supply-demand Balance (koz)							
SUPPLY							
Refined Production	2,905	3,230	2,985	3,110	2,196	-26%	-29%
South Africa	2,075	2,400	2,091	2,311	1,364	-35%	-41%
Zimbabwe	230	240	233	222	232	0%	4%
North America	175	180	184	173	185	0%	7%
Russia	340	325	393	324	327	-17%	1%
Other	85	85	84	81	88	6%	10%
Increase (-)/Decrease (+) in Producer Inventory	+50	-40	-15	+18	+77	N/A	>±300%
Total Mining Supply	2,955	3,190	2,969	3,127	2,273	-23%	-27%
Recycling	940	985	1,069	1,096	909	-15%	-17%
Autocatalyst	675	745	800	830	715	-11%	-14%
Jewellery	265	240	240	237	167	-30%	-30%
Industrial	0	0	29	29	27	-7%	-7%
Total Supply	3,895	4,175	4,038	4,224	3,181	-21%	-25%
DEMAND							
Automotive	1,615	1,480	1,513	1,381	1,049	-31%	-24%
Autocatalyst	1,535	1,410	1,513	1,381	1,049	-31%	-24%
Non-road	75	75	†	†	†	†	†
Jewellery	1,150	1,110	1,079	1,021	786	-27%	-23%
Industrial	950	965	1,079	1,061	927	-14%	-13%
Chemical	280	290	339	353	276	-19%	-22%
Petroleum	110	110	109	109	66	-39%	-39%
Electrical	105	105	71	74	66	-7%	-11%
Glass	120	130	142	118	179	27%	52%
Medical and Biomedical	125	115	130	119	123	-5%	3%
Other	210	215	289	288	216	-25%	-25%
Investment	5	0	920	332	472	-49%	42%
Change in Bars, Coins	155	120	200	82	445	123%	>±300%
Change in ETF Holdings	-140	-110	737	254	-91	N/A	N/A
Change in Stocks Held by Exchanges	-10	-10	-17	-4	118	N/A	N/A
Total Demand	3,720	3,555	4,591	3,795	3,234	-30%	-15%
Balance	175	620	-553	429	-53	N/A	N/A

Source: Metals Focus 2019 - 2020, SFA (Oxford) 2013 - 2018.

Notes:

- † Non-road automotive demand is included in autocatalyst demand.
- Data from Metals Focus and SFA (Oxford) may not have been prepared on the same or directly comparable basis.
- Prior to 2019 SFA (Oxford) data is independently rounded to the nearest 5 koz.

PLATINUM QUARTERLY Q2 2020

Table 5: Regional demand – annual and quarterly comparison

	2013	2014	2015	2016	2017	2018	2019	2020f	2020f/2019 Growth %	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020
Platinum gross demand (koz)														
Automotive	3,120	3,250	3,370	3,445	3,320	3,095	2,894	2,429	-16%	747	678	703	663	386
North America	420	465	505	460	425	430	342							
Western Europe	1,350	1,400	1,550	1,705	1,555	1,295	1,443							
Japan	580	590	510	450	440	430	327							
China	130	125	125	160	190	180	217							
India	165	170	175	170	175	195	††							
Rest of the World	475	500	505	500	535	565	565							
Jewellery	2,945	3,000	2,840	2,505	2,460	2,245	2,100	1,813	-14%	540	510	510	394	392
North America	200	230	250	265	280	280	341							
Western Europe	220	220	235	240	250	255	237							
Japan	335	335	340	335	340	345	372							
China	1,990	1,975	1,765	1,450	1,340	1,095	871							
India	140	175	180	145	175	195	102							
Rest of the World	60	65	70	70	75	75	177							
Chemical	535	540	505	560	565	570	692	593	-14%	200	162	191	157	119
North America	55	55	50	50	50	50	77							
Western Europe	110	105	75	110	115	110	125							
Japan	10	10	10	15	15	15	66							
China	195	215	230	225	215	215	220							
Rest of the World	165	155	140	160	170	180	204							
Petroleum	50	65	205	215	100	235	219	122	-44%	55	55	55	38	29
North America	40	25	-25	90	55	55	30							
Western Europe	-45	-15	70	10	5	20	14							
Japan	10	-35	5	0	-40	5	7							
China	80	-5	45	80	45	10	66							
Rest of the World	-35	95	110	35	35	145	103							
Electrical	195	215	205	195	210	205	145	136	-6%	36	38	36	32	34
North America	10	15	15	10	15	15	38							
Western Europe	5	10	10	10	10	10	27							
Japan	15	15	15	15	15	15	20							
China	75	70	70	80	90	85	28							
Rest of the World	90	105	95	80	80	80	31							
Glass	145	175	200	205	180	245	259	540	108%	71	144	-26	98	82
North America	5	10	0	20	5	5	7							
Western Europe	-10	15	10	5	5	35	59							
Japan	0	-25	-5	-10	-10	0	-132							
China	90	85	95	100	85	75	217							
Rest of the World	60	90	100	90	95	130	109							
Medical	220	220	225	230	235	240	249	249	0%	67	72	47	59	64
Other industrial	340	360	345	385	395	425	577	495	-14%	144	143	145	115	101
Bar & Coin Investment	-5	50	525	460	215	280	281	600	113%	89	53	28	312	133
North America							159							
Western Europe							52							
Japan							46							
Rest of the World							24							
ETF Investment	905	215	-240	-10	105	-245	991	160	99%	50	207	47	-213	122
North America							125							
Western Europe							509							
Japan							-13							
Rest of the World							370							
Change in Stocks Held by Exchanges	35	-115	20	85	-45	-20	-20	300	0%	-13	-10	6	-20	138
Investment	935	150	305	535	275	15	1,252	1,060	-11%	126	251	82	79	393
Total Demand	8,485	7,975	8,200	8,275	7,740	7,275	8,387	7,438	-11%	1,986	2,053	1,742	1,635	1,599

Source: Metals Focus 2019 - 2020, SFA (Oxford) 2013 - 2018.

Notes:

1. † Non-road automotive demand is included in autocatalyst demand.
2. †† India automotive demand is included in Rest of the World.
3. Data from Metals Focus and SFA (Oxford) may not have been prepared on the same or directly comparable basis.
4. Prior to 2019 SFA (Oxford) data is independently rounded to the nearest 5 koz.

PLATINUM QUARTERLY Q2 2020

Table 6: Regional recycling – annual and quarterly comparison

	2013	2014	2015	2016	2017	2018	2019	2020f	2020f/2019 Growth %	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020
Platinum recycling supply (koz)														
Automotive	1,120	1,255	1,185	1,210	1,325	1,420	1,630	1,471	-10%	387	410	420	406	309
North America							520							
Western Europe							847							
Japan							116							
China							37							
Rest of the World							110							
Jewellery	855	775	515	625	560	505	477	97	-80%	119	116	121	70	97
North America							3							
Western Europe							4							
Japan							187							
China							276							
Rest of the World							5							
Industrial	5	5	5	5	10	10	58	57	-2%	14	14	15	14	13
North America							3							
Western Europe							11							
Japan							34							
China							7							
Rest of the World							2							

Source: Metals Focus 2019 - 2020, SFA (Oxford) 2017 - 2018

GLOSSARY OF TERMS

Above ground stocks

The year-end estimate of the cumulative platinum holdings not associated with: exchange-traded funds, metal held by exchanges or working inventories of: mining producers, refiners, fabricators or end-users. Typically, unpublished vaulted metal holdings from which a supply-demand shortfall can be readily supplied or to which a supply-demand surplus can readily flow.

ADH

Alkane dehydrogenation: catalytic conversion of alkanes to alkenes. Broad term encompassing BDH and PDH.

BDH

Butane dehydrogenation; catalytic conversion of isobutane to isobutylene.

Bharat

The Government of India introduced Bharat emission standards (BSES) to reduce and regulate the output of air pollutants from internal combustion and spark-ignition engine equipment, including motor vehicles.

Bharat Stage V/VI standards (BS-V, BS-VI)

Early in 2016 the Indian government announced the intention to 'leapfrog' Bharat Stage V and move directly to Bharat Stage VI, equivalent to Euro 6, in 2020. This intention, despite lockdown, has not been altered.

China Vehicle Emission Standards

China's vehicle emission standards are set nationally by the Ministry of Environmental Protection and are regionally and locally enforced by Environmental Protection Bureaus. A number of cities and provinces in China continue the historic practice of early introduction of new standards.

China 6

As of December 2016, China adopted China 6 standards that apply nationwide to light duty passenger vehicles from July 2020 (China 6a) and July 2023 (China 6b). These standards incorporate elements of Euro 6 and U.S. Tier 2 regulations for tailpipe and evaporative emissions. China 6b includes mandatory on-road emissions testing modelled after the EU RDE regulation (also known as Euro 6d TEMP) with a few enhancements and modifications. A number of cities and provinces adopted China 6b in July 2019 and many automakers have proceeded to adopt China 6b early for all their production.

China VI

In June 2018, China finalized China VI standards that will apply to new heavy-duty diesel vehicles nationwide in two stages. The first stage, China VI-a, originally targeted to have become applicable by July 2020 for new models but has been delayed by 6 months to January 2021, and all new HDVs targeted for compliance in July 2021. The second stage, China VI-b will apply to gas engines nationwide starting in January 2021 and all new HDVs in July 2023.

Compounds (Platinum based)

Platinum combines with other elements to form chemical mixtures that are used as catalysts in chemical processes as well as in plating, metal deposition and other industrial processes.

Diesel oxidation catalyst (DOC)

A DOC oxidises harmful carbon monoxide and unburnt hydrocarbons, produced by incomplete combustion of diesel fuel, to non-toxic carbon dioxide and water.

Diesel particulate filter (DPF) and catalysed diesel particulate filter (CDPF)

A DPF physically filters particulates (soot) from diesel exhaust. A CDPF adds a PGM catalyst coating to facilitate oxidation and removal of the soot. The terms are often used interchangeably.

Emissions Legislation

Regulations that necessitate the fitment of autocatalyst systems dealing with the treatment of vehicle tailpipe emissions such as carbon monoxide (CO), particulate matter, hydrocarbons and oxides of nitrogen (NO_x). There are a range of standards specific to various regions and countries with varying minimum emissions targets and deadlines for compliance.

EPA

Environmental Protection Agency regulating the US vehicle and engine emission standards for pollutants.

ETF

Exchange-traded fund. A security that tracks an index, commodity, or basket of assets. Platinum ETFs included in demand are backed by physical metal (LPPM good delivery bars stored in a secure vault approved by the listing exchange).

Euro V/VI emission standards

EU emission standards for heavy-duty vehicles. Euro V legislation was introduced in 2008-09 and Euro VI in 2013/2014; similar standards have later been adopted in some other countries.

Euro 5/6 emission standards

EU emission standards for light-duty vehicles. Euro 5 legislation was introduced in 2009-11 and Euro 6 in 2014/2015. The limits set in Euro 6 have remained unchanged but the measuring methods have become more stringent progressively including Euro 6 a,b,c,d and Euro 6d-Temp, now in place. For CO₂ the laboratory based WLTP and for NO_x RDE.

Forward prices

The price of a commodity at a future point in time. Typically comprises of the spot price as well as the risk-free interest rate and cost of carry.

GTL

Gas-to-liquids is a process that converts natural gas to liquid hydrocarbons such as gasoline or diesel fuel.

HAMR

Heat-Assisted Magnetic Recording. A magnetic recording technology which involves spot-heating the drive platters with laser beam.

HDD

Hard disk drive. Data storage device that store digital data by magnetic platters.

HDV

Heavy-duty vehicle.

ICE

Internal combustion engine.

IoT

Internet of Things. Networking system that allows data to be sent to and received from objects and devices through internet.

Jewellery alloys

The purity of platinum jewellery is invariably expressed in parts per 1,000. For example, the most common variant, pt950, is 95% fine platinum, with the rest of the jewellery alloy made up of other metals such as cobalt or copper. Different markets would typically prescribe the purity levels for qualification and hallmarking of the jewellery as platinum jewellery.

Jewellery demand

Captures the first transformation of unwrought platinum into a semi-finished or finished jewellery product.

Koz

Thousand ounces.

LCD

Liquid-crystal display used for video display.

LCV

Light commercial vehicle.

Lean NO_x traps (LNT)

Platinum/rhodium-based, catalyses the chemical reduction of NO_x in diesel engine exhaust to harmless nitrogen.

Lease rates

The lease rate is defined as the rate at which the owner of the commodity lends, or sells it and buys it back from the borrower in the market.

LPPM

The London Platinum and Palladium Market (LPPM) is a trade association representing the interests of the platinum and palladium market. It provides guidance and benchmarks on the form and governance of platinum and palladium delivered to the market and publishes a list of the companies that comply with the guidelines and purity. This list is known as the Good Delivery List. As at May 2020 the Good Delivery Lists consists of: 31 platinum refiners, 28 palladium refiners, 15 full members, 41 associate members, 45 affiliate members and 2 affiliated exchange members.

MAMR

Microwave-Assisted Magnetic Recording. A magnetic recording technology by writing in the drive platters with a microwave field.

Metal-in-concentrate

PGMs contained in the concentrate produced after the crushing, milling and froth flotation processes in the concentrator. It is a measure of a mine's output before the smelting and refining stages.

MLCC

Multi-layer ceramic capacitors. A number of individual thin film capacitors stacked as a whole.

moz

Million ounces.

NEDC

New European Driving Cycle vehicle emissions test set out in United Nations Vehicle Regulation 101 maintained by the United Nations Economic Commission for Europe and updated and reviewed from time to time. The WLTP is aimed to significantly enhance and replace this regulation.

Net demand

A measure of the requirement for new metal, i.e. net of recycling.

Non-road engines

Non-road engines are diesel engines used, for example, in construction, agricultural and mining equipment, often using engine and emissions technology similar to on-road heavy-duty diesel vehicles.

Ounce conversion

One metric tonne = 1,000 kilogrammes (kg) or 32,151 troy ounces.

oz

A unit of weight commonly used for precious metals.
1 troy oz = 31.103 grams.

Paraxylene

A chemical produced from petroleum naphtha extracted from crude oil using a platinum catalyst. This is used in the production of terephthalic acid which is used to manufacture polyester.

PDH

Propane dehydrogenation, where propane is converted to propylene.

PGMs

Platinum group metals.

PMR

Precious metals refinery.

Pricing benchmarks

A price for a commodity that is traded on a liquid market that is used as a reference for buyers and sellers. In the case of platinum, the most commonly referenced benchmark is the LBMA Platinum Price, which is administered and distributed by the London Metals Exchange. The LBMA Platinum Price is discovered through an auction process.

Producer inventory

As used in the supply-demand balance, the change in producer inventory is the difference between reported refined production and metal sales.

Refined production

Processed platinum output from refineries typically of a minimum 99.95% purity in the form of ingot, sponge or grain.

RDE

The Real Driving Emissions (RDE) test measures the pollutants such as NO_x, emitted by cars while driven on the road. It is in addition to laboratory tests. RDE testing was implemented in September 2017 for new types of cars and has applied to all registrations from September 2019.

Secondary supply

Covers the recovery of platinum from fabricated products, including unused trade stocks. Excludes scrap generated during manufacturing (known as production or process scrap). Autocatalyst and jewellery recycling are shown in the country where the scrap is generated, which may differ from where it is refined.

Selective catalytic reduction (SCR)

Selective Catalytic Reduction (SCR) is an emissions control technology system that injects a liquid-reductant agent (urea) into the outlet stream of a diesel engine. The automotive-grade urea, known by the trade name AdBlue. The system typically requires a platinum bearing DOC ahead of the SCR unit.

SGE

Shanghai Gold Exchange.

SSD

Solid-state drive. Data storage device that uses memory chips to store data, typically using flash memory.

Stage 4 regulations

Non-road mobile machinery (NRMM) are regulated by increasingly stringent regulations set out in tiers from Stage 1 to 5. This was last reviewed in May 2018 with deadlines set for 2020 and 2021. A submission by industry bodies requesting a delay in implementation as yet to be ruled on.

Three-way catalyst

Used in gasoline cars to remove hydrocarbons, carbon monoxide and NO_x. Largely palladium-based now, they also include some rhodium.

US Vehicle Emission Standards

US vehicle and engine emission standards for pollutants, are established by the US Environmental Protection Agency (EPA) based on the Clean Air Act (CAA). The State of California has the right to introduce its own emission regulations. Engine and vehicle emission regulations are adopted by the California Air Resources Board (CARB), a regulatory body within the California EPA. Vehicles can in every year be certified in different emission classes, called "bins". The fleet average emissions over all "bins" are then regulated and reduced from year to year. To achieve the required fleet average, every year more vehicles have to be registered in the lower bins.

Tier 3

Emission regulation issued by EPA. The regulation defines common targets until 2025 in the USA.

Tier 4 stage

Non-road mobile machinery (NRMM) are regulated by increasingly stringent regulations set out in tiers from Stage 1 to 5. This was last reviewed in May 2018 with deadlines set for 2020 and 2021. A submission by industry bodies requesting a delay in implementation yet to be ruled on.

Washcoat

The layer that contains the active catalytic materials, such as PGMs, that is applied on the inactive, often ceramic, substrate within an autocatalyst block or component.

WIP

Work in progress.

WLTP

Worldwide Harmonised Light Vehicle Test Procedure is a laboratory test to measure pollutant emissions and fuel consumption. WLTP replaces the New European Driving Cycle (NEDC). It became applicable to new car types from September 2017 and new registrations from September 2018.

WPIC

The World Platinum Investment Council.

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