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# PLATINUM QUARTERLY

## Q4 2014

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11th March 2015

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### FOREWORD

I have had the opportunity to speak to numerous market participants about our mission since we launched the World Platinum Investment Council (WPIC) in November. Your feedback has been both forthcoming and positive, particularly on our approach to constructing the *Platinum Quarterly*: analysing, in detail, and presenting to all market participants free of charge, a fully independent view of global platinum supply and demand fundamentals.

It is clear to me that our goal of bringing greater transparency to the platinum market through insightful analysis and new investment research is well supported and welcomed by the market. If the platinum investment opportunity is to be fully evaluated, then clear and consistent data is a prerequisite.

However, our undertaking is far from easy. As the first independently written, quarterly analysis of the global platinum market, *Platinum Quarterly* must set a high standard. We present the 'best researched' picture that we can construct, which I am confident we will continue to further improve. We, with our partners SFA (Oxford), are committed to making ongoing improvements to our data sourcing, collection and presentational formatting. We are building a better, and more objective, understanding of all aspects of global platinum supply and demand. Consequently, we will make adjustments to the underlying historical and forecast data series, from quarter-to-quarter, as our insights develop.

Today's publication incorporates an analysis of platinum supply and demand for the fourth quarter of 2014 on a standalone basis, an updated breakdown of annual platinum supply and demand for 2014, as well as a forecast for supply, demand and above ground stocks for 2015.

2014 was not a typical year for platinum. Supply was reduced from planned levels by the unprecedented five month mining strike in South Africa, even though producers supplemented output by using previously built metal inventories to partially satisfy customer demand. On the demand side, there was demonstrable growth in the automotive, jewellery and industrial demand segments, however overall global demand fell relative to 2013, largely because the exceptional investment uptake of the new rand-denominated platinum ETF in 2013 was not repeated. The 2014 supply-demand balance was a substantial deficit, as we had previously forecast. Demand for platinum outstripped total supply in 2013 and 2014. Above ground stocks have been substantially eroded since 2012.

Looking ahead to 2015, the SFA data indicates that total mining supply will recover to a level close to that in 2013, with overall demand growing once again after the decline in 2014.

All major sources of long-term demand are forecast to continue their broad growth trajectory in the year 2015. However, global investment demand remains the most difficult demand segment to predict. Use in autocatalysts will continue to be a key driver for platinum demand, particularly as automotive manufacturers adopt tighter emissions requirements in Europe. This year, SFA's estimates also indicate an upswing in wider non-automotive industrial demand for platinum, which is typically driven by global economic growth, with some volatility due to the timing of plant capacity expansions. Meanwhile, we expect that the jewellery successes of the last decade will continue, with important growth potential in Asian markets and stable demand in the rest of the world.

As a result, we expect another deficit for platinum in 2015 which would reduce above ground stocks to 2.5 million ounces by the end of 2015, equivalent to 60% of the level at the end of 2012.

After a particularly trying year in 2014, 2015 will, no doubt, have its own challenges. We hope that *Platinum Quarterly* is a valuable resource for our industry; contributing to better-informed investment decision-making and encouraging appropriate wider consideration of platinum as an attractive investment asset.

Paul Wilson, CEO

# PLATINUM QUARTERLY Q4 2014

## Supply, demand and above ground stocks summary (Table 1)

	2013	2014	2015f	2015f/2014 Growth %	Q3 2014	Q4 2014
<b>Platinum Supply-demand Balance (koz)</b>						
<b>SUPPLY</b>						
<b>Refined Production</b>	<b>6,070</b>	<b>4,815</b>	<b>5,710</b>	<b>19%</b>	<b>1,315</b>	<b>1,395</b>
South Africa	4,355	3,070	4,005	30%	865	965
Zimbabwe	405	400	420	5%	95	95
North America	355	390	385	-1%	105	105
Russia	740	740	690	-7%	200	175
Other	215	215	210	-2%	50	55
<b>Increase (-)/Decrease (+) in Producer Inventory</b>	<b>-215</b>	<b>+385</b>	<b>+90</b>	<b>-77%</b>	<b>+65</b>	<b>-25</b>
<b>Total Mining Supply</b>	<b>5,855</b>	<b>5,200</b>	<b>5,800</b>	<b>12%</b>	<b>1,380</b>	<b>1,370</b>
<b>Recycling</b>	<b>1,985</b>	<b>2,025</b>	<b>2,165</b>	<b>7%</b>	<b>575</b>	<b>485</b>
Autocatalyst	1,120	1,240	1,435	16%	365	310
Jewellery	855	775	725	-6%	205	175
Industrial	10	10	5	-50%	5	0
<b>Total Supply</b>	<b>7,840</b>	<b>7,225</b>	<b>7,965</b>	<b>10%</b>	<b>1,955</b>	<b>1,855</b>
<b>DEMAND</b>						
<b>Automotive</b>	<b>3,135</b>	<b>3,245</b>	<b>3,370</b>	<b>4%</b>	<b>775</b>	<b>810</b>
Autocatalyst	2,995	3,095	3,210	4%	740	770
Non-road	140	150	160	7%	35	40
<b>Jewellery</b>	<b>2,945</b>	<b>2,990</b>	<b>3,085</b>	<b>3%</b>	<b>745</b>	<b>685</b>
<b>Industrial</b>	<b>1,510</b>	<b>1,555</b>	<b>1,695</b>	<b>9%</b>	<b>365</b>	<b>410</b>
Chemical	590	585	675	15%	155	140
Petroleum	75	145	150	3%	35	35
Electrical	190	190	195	3%	50	50
Glass	150	115	125	9%	10	35
Medical & Biomedical	235	240	255	6%	50	75
Other	270	280	295	5%	65	75
<b>Investment</b>	<b>925</b>	<b>135</b>	<b>50</b>	<b>-63%</b>	<b>-180</b>	<b>-5</b>
Change in Bars, Coins	-10	35			10	35
Change in ETFs Holdings	900	215			-95	-30
Change in Stocks Held by Exchanges	35	-115			-95	-10
<b>Total Demand</b>	<b>8,515</b>	<b>7,925</b>	<b>8,200</b>	<b>3%</b>	<b>1,705</b>	<b>1,900</b>
<b>Balance</b>	<b>-675</b>	<b>-700</b>	<b>-235</b>	<b>-66%</b>	<b>250</b>	<b>-45</b>
<b>Above Ground Stocks</b>	<b>4,140*</b>	<b>3,465</b>	<b>2,765</b>	<b>-8%</b>	<b>2,810</b>	<b>2,765</b>

Source: SFA (Oxford), \*as of 31st December 2012

Notes: The 2014 Q4 and full-year estimates are based on the latest available information and are subject to revision in the event that additional information is identified.

The WPIC did not publish quarterly estimates for the first two quarters of 2014 however estimates for H1 and H2 2014 are included in the table on page 12 (supply, demand and above ground stocks) and page 13 (regional breakdown of gross demand by category) for additional insight.

The 2015 forecast is based on historical data and trends as well as modelling with varying degrees of accuracy, dependent upon the supply or demand category. Investment demand is expected to be the least predictable segment in 2015 and the forecast assumes some platinum price appreciation.



**2014 FULL YEAR REVIEW**

The platinum market in 2014 was in deficit by 700 koz. As a result, above ground stocks fell to 2,765 koz at year-end. The majority of the drawdown in stock took place at the beginning of the year reducing by 905 koz, predominantly owing to the five-month strike affecting mine supply from South Africa and despite the additional supply from producer inventories during the strike. The second half of the year yielded a slight surplus, estimated at 205 koz, mainly due to 185 koz of net outflows from measured investment demand.

**Mine supply**

Total 2014 mining supply is estimated at 5,200 koz (Chart 1). Global refined platinum production decreased by 1,255 koz year-on-year, though 385 koz supplied from producer inventory reduced the year-on-year supply reduction to 655 koz.

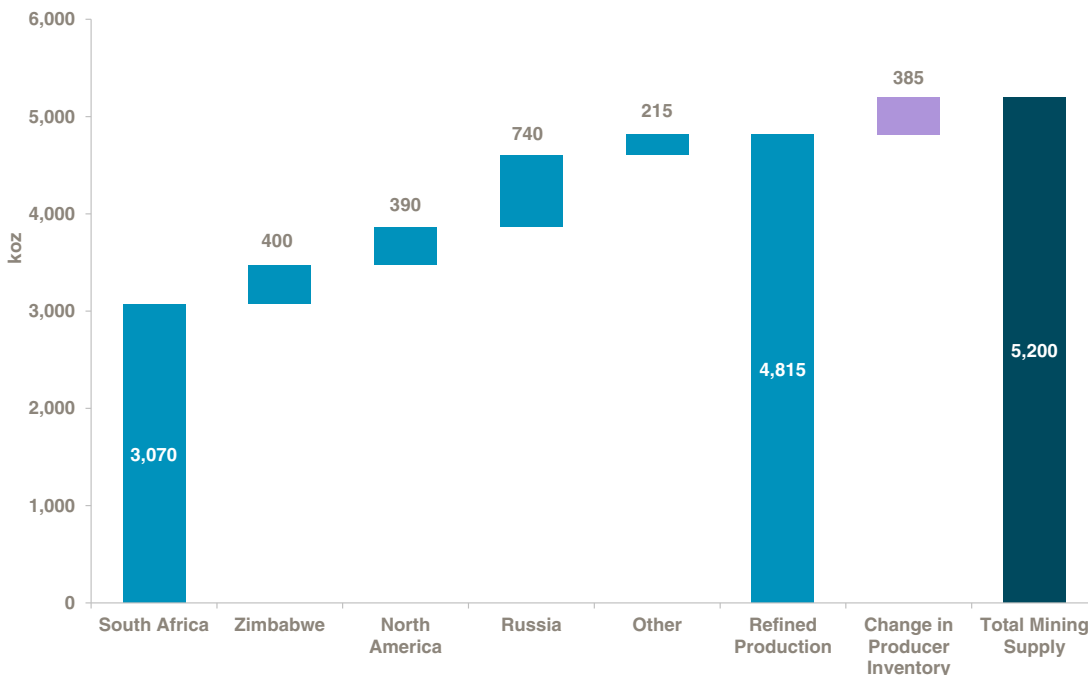
South African mine production of refined platinum decreased by 1,285 koz year-on-year to 3,070 koz in 2014. Production in the second half of the year exceeded the strike-affected first half by over 590 koz.

Refined production from Russia in 2014 is unchanged at 740 koz although output dropped in Q4 following inventory processing in Q3.

Zimbabwean refined production fell by 1% year-on-year to 400 koz in 2014.

North American output increased by 10% in 2014, and this is primarily attributed to higher yield from by-product nickel operations. Nine-month output rose by 27% year-on-year.

**Total mining supply summary, 2014 (Chart 1)**



Source: SFA (Oxford)

## Recycling

Global recycling of platinum was 2,025 koz in 2014, some 2% higher than 2013. Autocatalyst recycling grew by 11% to 1,240 koz in 2014. This increase reflects the higher platinum loadings in catalysts from vehicles scrapped in 2014, a growing portion of which were manufactured when the market share of diesel sedans in Europe was rising. Growth in autocatalyst recycling was partly offset by lower Q4 jewellery recycle volumes in China where jewellery recycle is mainly used as a currency to fund purchases of new pieces. New sales and consequently jewellery recycling decreased in Q4 2014. Some supply from recycled autocatalysts may have been moved from Q4 2014 into 2015 as the weakening of the platinum price near a period-end can lead to short-term withholding of end-of-life catalytic converters by scrapyards, the primary collectors.

The majority of the growth in platinum recycling arose in Europe where, in 2014, over 50% of the catalysts collected were from scrapped cars manufactured between 1999 and 2005. During this period, Western European demand for platinum more than doubled as the share of diesel cars with platinum-rich catalysts rose from close to 30% of the passenger car market to over 50%. Over the same period Euro 3 and then Euro 4 emissions regulations were implemented, increasing the amount of platinum required to achieve the associated lower emissions limits. Engine sizes also grew as cars became heavier and safer, further increasing platinum loadings per vehicle.

## Demand

Estimates for 2014 demand have been revised down by 85 koz to 7,925 koz since our inaugural Platinum Quarterly report for Q3 2014. These revisions are evenly spread across automotive, jewellery, industrial and investment demand, and are due to changes to year-end vehicle production data, a weaker than expected fourth quarter for jewellery in China and an increase in recycling metal flows in industrial applications, which reduced new metal requirements, particularly in China.

Total platinum demand in 2014 was down by an estimated 6.9% or 590 koz (Chart 2). Demand grew in automotive, jewellery and industrial applications by 200 koz collectively year-on-year, but was offset by a 790 koz reduction in investment demand. Investment balances rose by 135 koz in 2014, compared to 925 koz in 2013 which was exceptional and was due to the launch of a new South African platinum ETF product.

Demand end use shares for 2014 versus 2013 are shown in Chart 3.

Changes in demand by category, 2014 vs. 2013 (Chart 2)



Source: SFA (Oxford)

### Autocatalyst demand

Demand for platinum in on-road autocatalysts grew by 3.3% year-on-year to 3,095 koz in 2014. Platinum requirements from Western Europe were up just over 80 koz or 6.5%, well ahead of vehicle production growth rates of 3.1% and despite a 9.4% drop in heavy-duty vehicle (HDV) output. HDV demand fell as consumers had stocked up on cheaper Euro V compliant trucks in 2013 ahead of the enforcement and roll-out of Euro VI compliant vehicles at the beginning of 2014.

According to LMC Automotive, European car sales grew for the first time in six years and diesel's share of the passenger car market dropped by less than 1% to 53%, while the actual number of diesel cars registered increased by 4% year-on-year. The majority of platinum demand growth came from Spain and Germany, each of which added 30 koz. Both countries witnessed growth in diesel car registrations, at 17% and 4% respectively. Spain has been in recovery mode since vehicle production bottomed out in 2012 at below 2 million units. The Spanish government has aided local sales through a scrappage incentive scheme, which was on its sixth edition in 2014. In Germany, a combination of a 3% rise in passenger car production and higher loadings associated with Euro 6 emissions legislation led to greater platinum requirements.

Euro 6 emissions legislation for light vehicles came into force on 1 September 2014. However, it began to take effect only from 1 January 2015 for the registration and sale of new models, with a number of manufacturers planning to bring compliant vehicles to market throughout 2015 as products reach the end of their life-cycle. Therefore, while some manufacturers have geared up to be Euro 6 compliant with new model releases ahead of the deadline, there are many cars currently on sale that are not yet Euro 6 ready. Consequently, the full benefit of higher platinum loadings per car is yet to be realised and will be phased in during 2015.

Overall platinum demand from North America has been positive in 2014; collectively, the continent boosted requirements by 30 koz to 450 koz. Over three-quarters of the increase was due to growth in the US following higher production of diesel-powered commercial vehicles. Passenger car demand also grew as diesel's share expanded, to a level still below 10%.

Elsewhere in Japan, India and the Rest of the World (RoW) demand remained flat. Small growth in the RoW resulted from reductions in Brazil and Thailand being offset by growth in other RoW countries.

### Non-road engine catalyst demand

Platinum demand from non-road engines increased by 7% (10 koz) to 150 koz in 2014, supported by growth in Japan and Western Europe, where Stage 4 regulations came into force for non-road diesel engines during the year. Stage 4 regulations require many vehicles to have a catalysed DPF (CDPF), with limitations imposed on more powerful vehicles from January, before being enforced in respect of less powerful vehicles from last October. In the US, Tier 4 legislation also became effective in October, but non-road production declined, resulting in platinum demand remaining flat in North America last year.

### Jewellery demand

Platinum requirements for the jewellery industry increased by 1.5% in 2014 to 2,990 koz. A 1.3% drop in demand from China to 1,965 koz was offset by growth from North America and India.

The Chinese jewellery market was mixed in 2014. State-reported wedding registrations were down by 3% year-on-year and jewellery demand was impacted by lower store footfall associated with a weaker gold market and bans on non-personal gift-giving. During the year, jewellery manufacturers in China took advantage of lower local platinum prices of below 300 yuan/gram in August and September to boost stock levels. However, when the price continued to fall most manufacturers ceased buying to avoid loss of competitiveness and, despite the lowest local platinum prices since April 2009, buying remained subdued.

Platinum jewellery demand in Japan remained stable year-on-year in 2014 at 335 koz, although the year was mixed. Purchases were strong at the start of the year ahead of the government raising consumption tax in April, but the higher tax hit sales in Q2 and Q3. However, in Q4 platinum demand benefited as the platinum-gold price differential narrowed. Consumers switched from white gold to platinum and multiple retailers promoted a move to high-purity platinum jewellery.

Platinum benefited from GDP and diamond demand growth in the US, which consumed an additional 30 koz of platinum, lifting demand to 230 koz. Meanwhile, demand from India continues to grow, rising by an estimated 35 koz to 175 koz during 2014. The Platinum Guild International (PGI) continues to expand

platinum's market for jewellery in India. Most recently in Q4, the PGI announced its entry into the Indian bridal market with the launch of a jewellery collection to supplement gold jewellery collections.

### Industrial demand

Industrial demand for platinum grew by 3% year-on-year (45 koz) to 1,555 koz last year, mainly owing to growth in the petroleum industry (70 koz), and slighter higher usage in the medical and biomedical (5 koz) and other (10 koz) sectors. However, growth was hindered by reduced buying from the glass and chemical industries, down by 35 koz and 5 koz respectively, whilst electrical demand was flat.

Following plant maintenance and significant platinum buying in 2013, China's net industrial consumption declined during 2014, as the platinum recovered from recycled industrial catalysts reduced the need for new metal purchases. Cumulative sales on the Shanghai Gold Exchange (SGE) were down by 435 koz year-on-year by the end of 2014. Despite demand improvements in all the other regions, the increased recycled supply in China resulted in muted global growth last year.

Industrial demand includes the regular replacement of worn catalysts (top-up) as well as purchases for new plant capacity construction. The latter category is often far greater than the former and can cause measurement and forecast volatility within a demand segment if plant construction or commissioning is accelerated or delayed. Similarly, recycled material from decommissioned plants can reduce metal requirements in the same or subsequent period.

### Chemical

Platinum demand from the chemical industry dropped slightly to 585 koz in 2014, as growth in China and the RoW was negated by lower consumption in North America and Western Europe. Platinum usage in China increased as new propane dehydrogenation (PDH) plants were completed during the latter half of the year, whilst additional buying occurred towards the end of the year ahead of the commissioning of plants in H1 2015. Paraxylene capacity expansion, which continued from last year as producers attempt to plug the supply-demand gap that exists in the country, and growth in silicone elastomer production, also lifted China's platinum consumption in 2014. Consumption growth in the RoW was driven by rising paraxylene capacity, although PDH demand returned to lower levels following a strong 2013. Globally, chemical demand was generally evenly spread throughout the year, with demand in the second half of the year only slightly above demand in the first half.

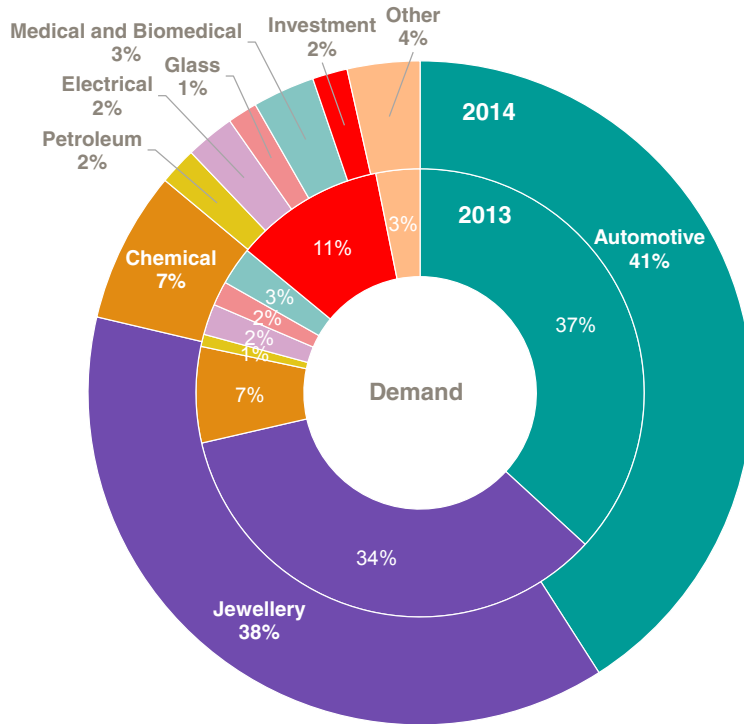
### Petroleum

Demand for platinum in the petroleum sector in 2014 climbed by 70 koz to 145 koz, supported by growth in gas-to-liquids (GTL) capacity in North America and the RoW. Demand in 2013 has been revised downwards to 75 koz, as a result of a capacity expansion in the RoW, previously apportioned to that year, happening in 2012.

Following several refinery closures in 2013, platinum demand in Japan and Western Europe recovered to a certain extent, owing to fewer reforming capacity reductions last year. However Western Europe's net consumption remained negative, as the amount of recovered platinum was greater than the region's top-up requirements over the year. Capacity in Western Europe, in particular, continued to be under threat from lower domestic oil consumption and stronger competition from newer, more cost-efficient refineries in the RoW and China.

However, growth in North America and the recovery in demand in Japan and Western Europe were all offset by a downturn in new metal buying in China, where the platinum recovered from catalysts recycled during plant maintenance in 2013 satisfied local requirements in 2014. Platinum demand from the petroleum sector was slightly higher in H1 versus H2, as consumption in North America, Western Europe and Japan declined in the second half of the year.

Demand end use shares, 2014 vs. 2013 (Chart 3)



Source: SFA (Oxford)

**Electrical**

Usage in electrical applications remained flat year-on-year at 190 koz in 2014, as the growth in demand for platinum in hard disk drives (HDDs) in 2013 levelled off in 2014. HDD shipments rose slightly from 2013, driven by greater requirements from the consumer electronics, external (branded) and enterprise sectors. However, the average HDD form factor (disk size) declined. Higher HDD shipments in H2 versus H1 helped to lift electrical industry consumption by 10 koz during the latter half of the year, with China and the RoW maintaining their collective share of the sector at ~70%.

**Glass**

Demand from the glass sector decreased by 23% year-on-year (35 koz) to 115 koz last year, with reduced demand in Japan, China and the RoW. China's capacity growth was hindered by the current overcapacity in the country, resulting in fewer expansions and new plants compared to 2013. Demand in Western Europe recovered following the spate of closures early in 2013, but this was mostly offset by capacity reductions in Japan. In the RoW, many of the capacity expansions occurred early in the year, which led to some platinum buying in 2013, thus reducing the region's glass sector requirements in 2014. Platinum demand for new plants and expansions scheduled for later in the year was also partially offset by closures. Global platinum usage by the glass sector fell by 25 koz in H2 from H1, mainly owing to capacity reductions in Japan and the RoW.

**Other**

Platinum demand from other end-uses grew by 4% (10 koz) to 280 koz in 2014, mostly driven by higher requirements for fuel cells. Consumption increased in all regions except North America, where demand for oxygen sensors fell slightly. Detailed investigation and more data on a variety of other end-uses, mainly oxygen sensors, throughout the previous quarter have resulted in an upward adjustment to 2013 and 2014 demand figures of 110 koz and 120 koz respectively.



### Investment demand

Global investment demand in 2014 was 135 koz, a substantial decline from the 925 koz seen in 2013 which was an exceptional year for investment as the launch of the first platinum ETF in South Africa attracted a record flow of metal into the ETF.

Worldwide ETF investment demand in 2014 was 215 koz, still a strong gain, but a significant drop from the 900 koz gain in 2013. The growth in South African ETFs eased during 2014 with investors adding 305 koz to their holdings. A second South African platinum ETF was launched in April 2014 by Standard Bank and this had accumulated 110 koz by the end of the year, with the balance of the metal being gained by Absa's NewPlat ETF. The NewPlat ETF reached a record high of 1,188 koz in July, but after small redemptions in the second half of the year, the ETF held 1,105 koz at year-end.

By the end of 2014, ETF investors in Europe had reduced their holdings by 70 koz. UK-based funds saw their holdings rise in the first half of the year but this was more than matched by sales in the second half of the year, leaving them down 25 koz overall. Swiss ETFs were little changed in the first quarter and saw consistent selling during the remaining three quarters for an overall decline in holdings of 45 koz.

US investors sold some of their ETF holdings in the first quarter of 2014 but became modest buyers in the second and third quarters. However, selling resumed in the final quarter of the year and overall investment had fallen by 25 koz by the end of the year.

Bars and coins contributed 35 koz to investment demand in 2014, which was an improvement on the small amount of net sales seen in 2013. Japanese investors were net sellers of bars in 2013 and continued to sell through the first half of 2014. However, in the second half of the year as the platinum price weakened, buying increased, particularly in the fourth quarter, and this was sufficient to shift the balance for the year to net purchases. Coin sales started the year on a positive note with the US Mint's reintroduction of the American Eagle Bullion coin. However, coin purchases tailed off in the second half of the year and overall were relatively modest.

There was an outflow of metal from the stocks held by exchanges of 115 koz over the course of the year with the majority of the decline occurring in the third quarter of the year, which coincided with the futures and options interest on NYMEX dropping by half. Although the stocks held by NYMEX broadly reflect the size of speculative derivative positions, stocks started the year at a high level so the decline in 2014 is greater than the change in positions over the year.

### ABOVE GROUND STOCKS

The WPIC definition of above ground stocks as used in this report is: 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. This will increase or decrease by the estimated surplus or deficit each year.

The estimated market shortfall of 700 koz in 2014 has reduced above ground stocks from 3,465 koz at the end of 2013 to 2,765 koz at the end of 2014. A combination of the five-month strike in South Africa and significant demand for platinum in ETFs since 2012 has largely accounted for a 1,375 koz reduction in above ground stocks.

Year-end stocks are 205 koz higher than previously estimated in our first Platinum Quarterly report for Q3 2014 owing to revisions to 2013 and 2014 end-use requirements. Above ground stocks, as defined in this report, are 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.



**FOURTH QUARTER PLATINUM MARKET REVIEW**

The platinum market shifted back to deficit in Q4 of 45 koz after the surplus of 250 koz in Q3 (Chart 4). Total supply fell by 100 koz during the last quarter, with recycling down by 90 koz quarter-on-quarter and total mining supply down 10 koz, as production ramp-up in South Africa was offset by producer restocking and lower output from Russia. Overall demand increased by 195 koz from Q3, with investor purchases accounting for 175 koz of this growth.

Despite a deficit in Q4, H2 remained in a surplus of 205 koz (Chart 5). This represents a 1,110 koz swing from the 905 koz deficit at the end of H1. In H2, total mining supply improved by 300 koz as South African output ramped up following the strike in H1, whilst recycling increased by 95 koz. Investment demand fell by 505 koz, as ETFs switched from net platinum buying in H1 to selling platinum in H2. Half-year jewellery and automotive demand dropped by 130 koz and 75 koz respectively in H2.

On the whole, Q4 platinum requirements for the on-road auto industry tend to be higher than in Q3 as production ramps up following the summer break in Europe. The final quarter's global demand is estimated at 770 koz, up 30 koz on Q3. However, second-half demand was seasonally down 75 koz relative to the first half of the year, with Western Europe's requirements reducing by 7% in the second half. Outside of Europe, Q4 platinum requirements were lower in the US, making first- and second-half comparisons almost equal, while in Japan Q4 demand was lower in than in Q3 and the second half was 7% down on the first.

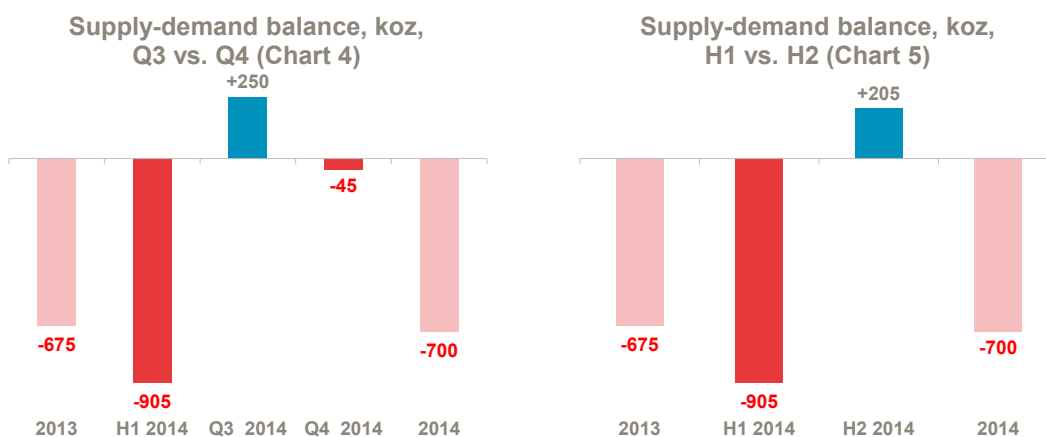
Jewellery demand fell by an estimated 8% to 685 koz in Q4, due mainly to a decline in China which saw volumes drop by 70 koz to 430 koz. Normally, this is a period of strong buying by manufacturers ahead of high New Year demand, but the sharp drop in prices led to a reduction of inventories held rather than a rush to stock up. Japan was the growth outperformer in Q4, with platinum benefiting from a switch from white gold to platinum as the price differential narrowed.

Recycling is estimated to have fallen by 15.7% in Q4 as a significant reduction in platinum prices encouraged scrap dealers to withhold catalyst scrap from collectors. This impacted 2014 recycling rates as a whole, indicating that some excess material is likely to be recycled in 2015 and this is included in the 2015 recycling forecast.

Sales from ETFs continued in the fourth quarter but at a lower level than in the third quarter, with ETF holdings declining by 30 koz. South African investors had reduced their holdings for the first time in the third quarter, but in the fourth quarter they became buyers again, taking advantage of the lower price and adding 35 koz. Sales from European ETFs were 50 koz in the final quarter of the year, and both UK and Swiss based funds saw a slightly lower level of sales than in the third quarter. US investors had made small purchases in the third quarter, but switched and sold 15 koz in the fourth quarter.

Japanese investors took advantage of the lower platinum price in Q3 and Q4 to increase their bar purchases. The fourth quarter, in particular, saw relatively robust buying which swung the year as a whole to one of net demand.

The decline in exchange stocks slowed in the final quarter of the year to 10 koz as positioning on NYMEX stabilised after its rapid decline in the third quarter.



Source: SFA (Oxford)

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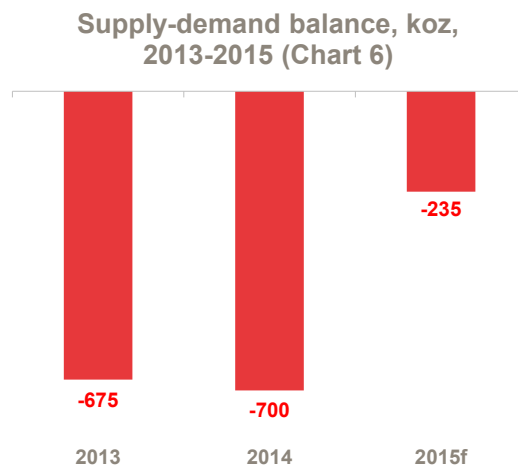
## 2015 FORECAST

The global platinum market supply-demand balance in 2015 is forecast to be a deficit of 235 koz (Chart 6). An increase in mining supply, as South African mines affected by the strike in 2014 return to normal output, and recycling growth are unable to meet the forecast growth in demand. Increased vehicle production, higher platinum loadings in autocatalysts and increased industrial demand underpin demand growth in 2015.

South African production is forecast to recover to above 4,000 koz in 2015. Restructuring and delayed shaft projects mean some mature mines are unlikely to achieve 2013 production levels, though growth is forecast at several newer operations.

Output from Zimbabwe should also increase, with a major expansion reaching steady-state capacity this year. Elsewhere, Russian producer guidance for 2015 is slightly down on 2013 and 2014 levels, putting total supply from the country at around 690 koz (-7%) for the year. North American output should remain stable at 385 koz, with growth at a number of operations in the US and Canada being offset by lower yields elsewhere.

Global mine production is therefore forecast to grow by 19% year-on-year to 5,710 koz, and further destocking is expected which could put total mining supply at 5,800 koz in 2015.



Source: SFA (Oxford)

Growth is expected in automotive, jewellery and industrial demand in 2015 despite the global and EU economic concerns.

Automotive demand for platinum is forecast to rise by 4% to 3,370 koz in 2015, motivated by tighter emissions legislation in Western Europe, diesel vehicle volume increases in North America and a return to growth in India. Demand in Japan is likely to be negative over the year as vehicle production contracts slightly.

In Europe the total vehicle market is forecast to rise only slightly in 2015, but there should be a return to growth in the heavy-duty market which was affected by price hikes associated with the launch of Euro VI compliant vehicles in 2014.

Higher platinum loadings per vehicle are forecast as manufacturers continue to release new models that adhere to Euro 6 regulations for passenger cars. Manufacturers have a multitude of options to ensure cars meet Euro 6, including exhaust gas recirculation (EGR), lean NO<sub>x</sub> traps (LNT), selective catalytic reduction (SCR) and a combination of options. Platinum-containing LNT will feature on many small to medium-sized diesel cars owing to smaller packaging and 'fit and forget' benefits. Exact loadings on new models and across the powertrain range will vary considerably, increasing forecast uncertainty of the higher loadings somewhat during 2015.

Platinum jewellery demand is forecast to rise by a steady 3% year-on-year in 2015 to 3,085 koz. However, the increase of 95 koz is not dominated by growth in China which accounts for only 20 koz of the increase, with growth contributions spread between the US (35 koz), India (25 koz), Western Europe (5 koz) and the RoW (10 koz).

Following relatively soft demand in 2014, particularly in China, industrial platinum usage is expected to grow by 9% year-on-year (140 koz) to 1,695 koz in 2015, mainly driven by expansion in China's PDH capacity plus a recovery in the country's petroleum consumption following a dip last year. Chemical demand in North America is also likely to be boosted by an increase in PDH capacity, whilst petroleum demand in the region should be lifted by a rise in refining capacity and construction of a new GTL plant. Oil refining capacity is also forecast to continue to grow in the RoW, with upgrades and new plants scheduled for completion in India, South America and the Middle East this year, maintaining the high levels of platinum demand seen in the region's petroleum sector in 2014.

However, industrial demand in Western Europe is likely to decline as a result of the oil refinery closures and capacity reductions anticipated throughout the region in 2015. Lower domestic oil consumption and greater competition from the RoW and China have already led some European refineries to announce capacity reductions and closures, with more expected as the year progresses. A similar scenario is also likely to play out in Japan, although on a smaller scale, thus reducing its impact on platinum demand.

Recycling is forecast to grow by 7% year-on-year to 2,165 koz in 2015. Jewellery recycling may fall slightly on lower prices to an estimated 725 koz, but autocatalyst recycling is predicted to rise this year by a faster rate than in 2014, by 16% to 1,435 koz. The majority of the increase is from Europe with more platinum-loaded diesel catalysts returning to market, while recycling is also lifted by material withheld in 2014 when the price fell.

Investment demand is forecast to be 50 koz in 2015. Measured investment demand, particularly published ETF holdings and NYMEX stocks, provides a measure of the changes in investment holdings on a quarterly and annual basis. No new ETFs are currently known to be launching in 2015 and, while ETF holdings have declined by 60 koz year-to-date, ETF investment is expected to be positive over the year as a whole as the price appreciates from current levels. At the current price level, Japanese investors are also likely to continue buying bars.

# PLATINUM QUARTERLY Q4 2014

## Supply, demand and above ground stocks summary (Table 1)

	2013	2014	2015f	2015f/2014 Growth %	Q3 2014	Q4 2014	H1 2014	H2 2014
<b>Platinum Supply-demand Balance (koz)</b>								
<b>SUPPLY</b>								
<b>Refined Production</b>	<b>6,070</b>	<b>4,815</b>	<b>5,710</b>	<b>19%</b>	<b>1,315</b>	<b>1,395</b>	<b>2,105</b>	<b>2,710</b>
South Africa	4,355	3,070	4,005	30%	865	965	1,240	1,830
Zimbabwe	405	400	420	5%	95	95	210	190
North America	355	390	385	-1%	105	105	180	210
Russia	740	740	690	-7%	200	175	365	375
Other	215	215	210	-2%	50	55	110	105
<b>Increase (-)/Decrease (+) in Producer Inventory</b>	<b>-215</b>	<b>+385</b>	<b>+90</b>	<b>-77%</b>	<b>+65</b>	<b>-25</b>	<b>+345</b>	<b>+40</b>
<b>Total Mining Supply</b>	<b>5,855</b>	<b>5,200</b>	<b>5,800</b>	<b>12%</b>	<b>1,380</b>	<b>1,370</b>	<b>2,450</b>	<b>2,750</b>
<b>Recycling</b>	<b>1,985</b>	<b>2,025</b>	<b>2,165</b>	<b>7%</b>	<b>575</b>	<b>485</b>	<b>965</b>	<b>1,060</b>
Autocatalyst	1,120	1,240	1,435	16%	365	310	565	675
Jewellery	855	775	725	-6%	205	175	395	380
Industrial	10	10	5	-50%	5	0	5	5
<b>Total Supply</b>	<b>7,840</b>	<b>7,225</b>	<b>7,965</b>	<b>10%</b>	<b>1,955</b>	<b>1,855</b>	<b>3,415</b>	<b>3,810</b>
<b>DEMAND</b>								
<b>Automotive</b>	<b>3,135</b>	<b>3,245</b>	<b>3,370</b>	<b>4%</b>	<b>775</b>	<b>810</b>	<b>1,660</b>	<b>1,585</b>
Autocatalyst	2,995	3,095	3,210	4%	740	770	1,585	1,510
Non-road	140	150	160	7%	35	40	75	75
<b>Jewellery</b>	<b>2,945</b>	<b>2,990</b>	<b>3,085</b>	<b>3%</b>	<b>745</b>	<b>685</b>	<b>1,560</b>	<b>1,430</b>
<b>Industrial</b>	<b>1,510</b>	<b>1,555</b>	<b>1,695</b>	<b>9%</b>	<b>365</b>	<b>410</b>	<b>780</b>	<b>775</b>
Chemical	590	585	675	15%	155	140	290	295
Petroleum	75	145	150	3%	35	35	75	70
Electrical	190	190	195	3%	50	50	90	100
Glass	150	115	125	9%	10	35	70	45
Medical & Biomedical	235	240	255	6%	50	75	115	125
Other	270	280	295	5%	65	75	140	140
<b>Investment</b>	<b>925</b>	<b>135</b>	<b>50</b>	<b>-63%</b>	<b>-180</b>	<b>-5</b>	<b>320</b>	<b>-185</b>
Change in Bars, Coins	-10	35			10	35	-10	45
Change in ETFs Holdings	900	215			-95	-30	340	-125
Change in Stocks Held by Exchanges	35	-115			-95	-10	-10	-105
<b>Total Demand</b>	<b>8,515</b>	<b>7,925</b>	<b>8,200</b>	<b>3%</b>	<b>1,705</b>	<b>1,900</b>	<b>4,320</b>	<b>3,605</b>
<b>Balance</b>	<b>-675</b>	<b>-700</b>	<b>-235</b>	<b>-66%</b>	<b>250</b>	<b>-45</b>	<b>-905</b>	<b>205</b>
<b>Above Ground Stocks</b>	<b>4,140*</b>	<b>3,465</b>	<b>2,765</b>	<b>-8%</b>	<b>2,810</b>	<b>2,765</b>	<b>2,560</b>	<b>2,765</b>

Source: SFA (Oxford), \*as of 31st December 2012

# PLATINUM QUARTERLY Q4 2014

## Regional demand (Table 2)

PLATINUM GROSS DEMAND (KOZ)	2013	2014	2015f	2015f/2014 Growth %	Q3 2014	Q4 2014	H1 2014	H2 2014
<b>Automotive</b>	<b>3,135</b>	<b>3,245</b>	<b>3,370</b>	<b>4%</b>	<b>775</b>	<b>810</b>	<b>1,660</b>	<b>1,585</b>
North America	420	450						
Western Europe	1,340	1,425						
Japan	575	575						
China	130	120						
India	160	160						
Rest of the World	510	515						
<b>Jewellery</b>	<b>2,945</b>	<b>2,990</b>	<b>3,085</b>	<b>3%</b>	<b>745</b>	<b>685</b>	<b>1,560</b>	<b>1,430</b>
North America	200	230						
Western Europe	220	220						
Japan	335	335						
China	1,990	1,965						
India	140	175						
Rest of the World	60	65						
<b>Chemical</b>	<b>590</b>	<b>585</b>	<b>675</b>	<b>15%</b>	<b>155</b>	<b>140</b>	<b>290</b>	<b>295</b>
North America	90	75						
Western Europe	60	45						
Japan	30	30						
China	165	180						
Rest of the World	245	255						
<b>Petroleum</b>	<b>75</b>	<b>145</b>	<b>150</b>	<b>3%</b>	<b>35</b>	<b>35</b>	<b>75</b>	<b>70</b>
North America	40	65						
Western Europe	-45	-15						
Japan	-30	5						
China	80	-5						
Rest of the World	30	95						
<b>Electrical</b>	<b>190</b>	<b>190</b>	<b>195</b>	<b>3%</b>	<b>50</b>	<b>50</b>	<b>90</b>	<b>100</b>
North America	20	20						
Western Europe	20	20						
Japan	15	15						
China	75	75						
Rest of the World	60	60						
<b>Glass</b>	<b>150</b>	<b>115</b>	<b>125</b>	<b>9%</b>	<b>10</b>	<b>35</b>	<b>70</b>	<b>45</b>
North America	5	10						
Western Europe	-10	5						
Japan	0	-10						
China	75	60						
Rest of the World	80	50						
<b>Medical and Biomedical</b>	<b>235</b>	<b>240</b>	<b>255</b>	<b>6%</b>	<b>50</b>	<b>75</b>	<b>115</b>	<b>125</b>
North America	90	95						
Western Europe	90	90						
Japan	20	20						
China	15	15						
Rest of the World	20	20						
<b>Other industrial</b>	<b>270</b>	<b>280</b>	<b>295</b>	<b>5%</b>	<b>65</b>	<b>75</b>	<b>140</b>	<b>140</b>
<b>Investment</b>	<b>925</b>	<b>135</b>	<b>50</b>	<b>-63%</b>	<b>-180</b>	<b>-5</b>	<b>320</b>	<b>-185</b>
<b>Total Demand</b>	<b>8,515</b>	<b>7,925</b>	<b>8,200</b>	<b>3%</b>	<b>1,705</b>	<b>1,900</b>	<b>4,320</b>	<b>3,605</b>

Source: SFA (Oxford)

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## 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.

### Bharat Stage III/IV standards

Bharat Stage III is equivalent to Euro 3 emissions legislation. Introduced in 2005 in 12 major cities across India and enforced nationwide from April 2010. Bharat Stage IV is equivalent to Euro 4 emissions legislation. Introduced in 2010 in 14 major cities across India and set to be enforced nationwide from April 2017.

### 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

Tailpipe regulations covering emissions of particulate matter, hydrocarbons and oxides of nitrogen.

### 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.

### Euro V/VI emission standards

EU emission standards for heavy-duty vehicles. Euro V legislation introduced in 2009, Euro VI in 2013/2014, will be widely adopted later in other regions.

### Euro 5/6 emission standards

EU emission standards for light-duty vehicles. Euro 5 legislation introduced in 2009, Euro 6 in 2014/2015, will be widely adopted later in other regions.

### GTL

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

### HDD

Hard disk drive.

### HDV

Heavy-duty vehicle.

### koz

Thousand ounces.

### LCD

Liquid-crystal display used for video display.

### LCV

Light commercial vehicle.

### Lean NOx traps (LNT)

Rhodium-based, catalyses the chemical reduction of NO<sub>x</sub> in diesel engine exhaust to harmless nitrogen.

### moz

Million ounces.

### Net demand

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

### Non-road engines

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

### OECD

Organisation for Economic Co-operation and Development, consisting of 34 developed countries.

### oz

A unit of weight commonly used for precious metals. 1 troy ounce = 1.1 ounces.

### Paraxylene

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

### PDH

Propane dehydrogenation, where propane is converted to propylene.

### PGMs

Platinum-group metals.

### Refined production

Processed platinum output from refineries.

### Secondary supply

Recycling output.

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### **Selective catalytic reduction (SCR)**

PGM-free, converts harmful NO<sub>x</sub> in diesel exhaust to harmless nitrogen, via a tank of urea solution. Used in heavy-duty diesel vehicles, increasingly competes with LNT in light-duty diesel vehicles.

### **SGE**

Shanghai Gold Exchange.

### **Stage 4 regulations**

European emission standards implemented in 2014 for non-road diesel engines.

### **Three-way catalyst**

Used in gasoline cars to remove hydrocarbons, carbon monoxide and NO<sub>x</sub>. Largely palladium-based now, some rhodium.

### **Tier 4 stage**

Emissions standards phased in between 2008 and 2015 in the US for non-road vehicles.

### **WPIC**

The World Platinum Investment Council.

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### **Ounce conversion**

1 million ounces = 31.1 tonnes



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