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# PLATINUM QUARTERLY

## Q3 2014

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3rd December 2014

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### FOREWORD

It gives me great pleasure to release the World Platinum Investment Council's (WPIC) first quarterly analysis of global platinum supply and demand fundamentals. Our study is independently researched by SFA (Oxford), a market specialist in mining and metals research. We hope that Platinum Quarterly will quickly become an invaluable tool for those investors seeking to make more informed decisions, based on thorough, consistent and transparent data.

WPIC was recently launched by six of the world's major platinum producers to further develop the global market for platinum investment. A key part of the strategy of our organisation is to shed more light on the key drivers behind the platinum market's fundamentals, as these are critical to a full appreciation of the platinum investment opportunity. It is our intention therefore to commission analysis and research which can help achieve this goal and to present the platinum investment proposition to a wider range of investors.

*Platinum Quarterly* is the first independent, freely-available, quarterly analysis of the global platinum market. This inaugural publication incorporates analysis of forecast annual platinum supply and demand for 2014, set against 2013 results. It also includes the first analysis of supply and demand for a standalone quarter (Q3 2014). We provide an estimate of year-end above ground stocks of platinum for 2012, 2013 and 2014, figures that are often discussed, yet traditionally have been hard to come by.

Today's publication shows that the fundamentals of the industry are tightening, with demand exceeding supply in each of the last three years. Our data points to a 2014 global platinum shortfall of 885,000 oz. It is evident that mine supply was significantly reduced by the unprecedented five month strike in South Africa this year. Investment demand is at a lower level than in 2013, while autocatalyst and jewellery segments have continued to grow.

The two largest sources of demand are both forecast to grow in 2014. Autocatalyst requirements continue to be the main industrial driver for platinum demand, particularly as automotive manufacturers make the shift to the tighter Euro 6 and Euro VI emission requirements, for light duty and heavy duty vehicles respectively, as legislation takes effect from 2013 to 2015. The jewellery success story of the last decade continues, with demand expected to rise by 4% in 2014, notably driven by the Chinese and Indian growth markets.

We expect overall demand to fall in 2014. This primarily reflects the fact that the above-trend investment demand seen in 2013, following the exceptional uptake of the new rand-denominated platinum ETF, is not expected to be matched this year.

The SFA analysis shows that above ground stocks (which do not include ETFs, metal held by exchanges or industry working inventories) will be 2.56 million ounces at the end of 2014, significantly down from 4.14 million ounces at the end of 2012.

We hope you find our inaugural issue of *Platinum Quarterly* to be the comprehensive and objective study that we said at our recent launch we were aiming to produce. As the data series builds, from quarter to quarter, we expect the publication to bring greater clarity to all participants in the platinum market. We are interested in your feedback, not just on this paper, but also on the sort of information and analysis that you would find most enlightening when considering platinum's investment qualities. We are here to serve the investment community and I look forward to engaging with you soon.

Paul Wilson, CEO

## PLATINUM QUARTERLY Q3 2014

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

Platinum Supply-demand Balance, (koz)	2013	2014f	Growth %	Q3 2014
<b>SUPPLY</b>				
<b>Refined Production</b>	<b>6,070</b>	<b>4,730</b>	<b>-22%</b>	<b>1,275</b>
South Africa	4,355	2,985	-31%	820
Zimbabwe	405	400	-1%	100
North America	355	390	10%	105
Russia	740	740	0%	200
Other	215	215	0%	50
Increase (-)/Decrease (+) in Producer Inventory	-215	+370		-15
<b>Total Mining Supply</b>	<b>5,855</b>	<b>5,100</b>	<b>-13%</b>	<b>1,290</b>
<b>Recycling</b>				
	<b>1,985</b>	<b>2,025</b>	<b>2%</b>	<b>560</b>
Autocatalyst	1,120	1,245	11%	365
Jewellery	855	770	-10%	195
Industrial	10	10	0%	0
<b>Total Supply</b>	<b>7,840</b>	<b>7,125</b>	<b>-9%</b>	<b>1,850</b>
<b>DEMAND</b>				
<b>Automotive</b>	<b>3,140</b>	<b>3,285</b>	<b>5%</b>	<b>770</b>
Autocatalyst	3,000	3,125	4%	730
Non-road	140	160	14%	40
<b>Jewellery</b>	<b>2,945</b>	<b>3,060</b>	<b>4%</b>	<b>745</b>
<b>Industrial</b>	<b>1,525</b>	<b>1,500</b>	<b>-2%</b>	<b>380</b>
Chemical	595	645	8%	165
Petroleum	175	155	-11%	35
Electrical	185	195	5%	50
Glass	175	100	-43%	25
Medical & Biomedical	235	245	4%	65
Other	160	160	0%	40
<b>Investment</b>	<b>925</b>	<b>165</b>	<b>-82%</b>	<b>-200</b>
Change in Bars, Coins	-10	10	-200%	0
Change in ETFs Holdings	900	270	-70%	-95
Change in Stocks Held by Exchanges	35	-115	-429%	-107
<b>Total Demand</b>	<b>8,535</b>	<b>8,010</b>	<b>-6%</b>	<b>1,695</b>
<b>Balance</b>	<b>-695</b>	<b>-885</b>	<b>27%</b>	<b>155</b>
<b>Above Ground Stocks</b>	<b>4,140*</b>	<b>3,445</b>	<b>-26%</b>	

Source: SFA (Oxford)

\*as of 31st December 2012



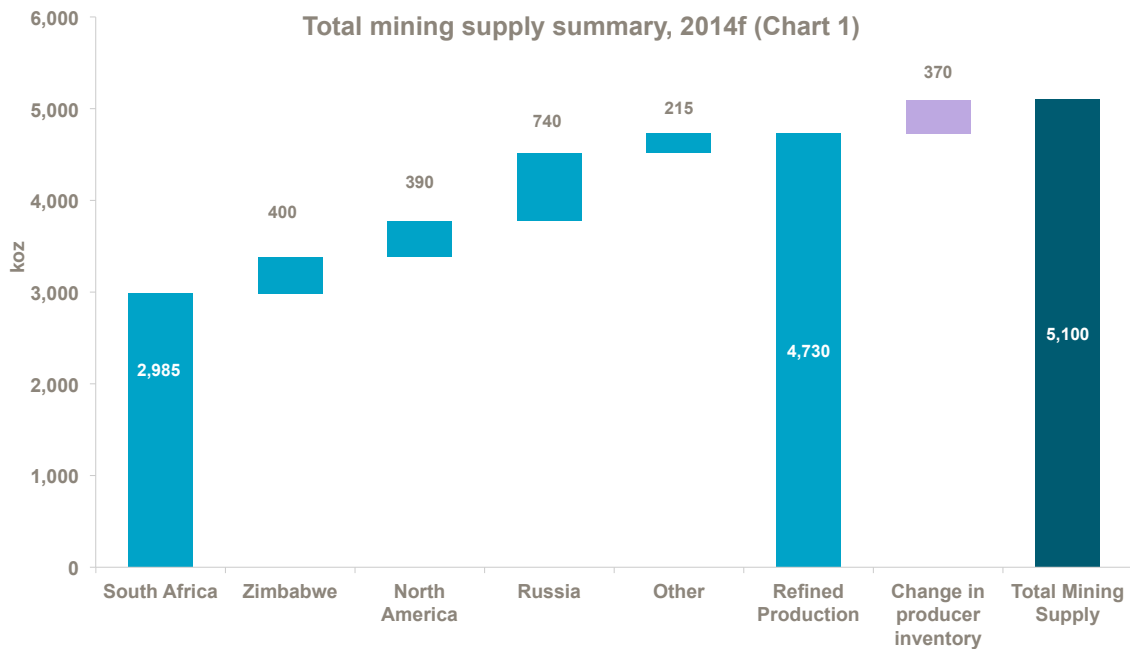
**2014 FORECAST**

**Mine supply**

On 23 January, some 70,000 Association of Mineworkers and Construction Union (AMCU) members embarked on a co-ordinated strike at Anglo American Platinum, Lonmin and Impala Platinum flagship mines in South Africa. A deal was signed with unions on 24 June, effectively ending the longest mine strike in South Africa’s history. As a result, refined platinum production for South Africa is forecast to be down by a total of 1.37 million ounces (moz) for the year versus production volumes for 2013. This shortfall also includes the full-year impact of closures of some marginal mines in 2013. Refined output from South Africa is therefore forecast to be down 31% to 2.99 moz compared to 2013.

Outside South Africa, refined metal production remains largely flat year-on-year. Output from Zimbabwe is set to fall 5 koz owing to mining and expansion delays. Refined output from North America is forecast to rise by 10% to 290 koz as supply from Canada increases. Meanwhile, refined production from Russia and the balance of world supply are expected to remain around 740 koz and 215 koz respectively.

Despite disruptions to mine supply, South African producers were able to sell additional ounces from stocks and from releases from their metallurgical pipelines. SFA (Oxford) estimates that stock holdings increased by 215 koz in 2013 as production exceeded sales. In 2014, however, an estimated 370 koz of stock sales brings supply from mining companies to 5.1 moz (Chart 1), a reduction of 755 koz or 12.9% down on 2013.



Source: SFA (Oxford)

**Recycling**

Total recycling is forecast to increase by 2% to 2.03 moz as growth in supply from spent autocatalysts is partially offset by lower jewellery scrap volumes. Global supply from autocatalyst recycling is likely to grow by an estimated 11% to 1.25 moz. The majority of the growth is expected in Europe, which rises by a quarter or 90 koz to 455 koz. The number of catalysts scrapped is projected to increase by 6%, but platinum recycling growth is higher as more diesel catalysts are being collected relative to gasoline following the diesel vehicle sales boom in Europe that started in the late 1990s. Diesel catalysts have a higher proportion of platinum relative to palladium, as well as higher loadings relative to gasoline catalysts. Recycling was up in the third quarter, but it is evident that collection rates are decreasing through the fourth quarter as lower prices delay collection from scrapyards and this may shift some collection to early next year.

## Demand

SFA (Oxford) forecasts gross global demand for platinum to fall by 6.2% to 8.01 moz in 2014 (Chart 2). Investment is the main contributor to the contraction (Chart 3), with an estimated 760 koz reduction in demand year-on-year. South African ETF holdings are expected to grow by 310 koz, which is 595 koz less growth than in 2013, and metal held by exchanges is predicted to reduce by 114 koz, reflecting net long futures contracts' liquidation, which dropped by 32% during Q3 2014. Industrial demand is forecast to drop 1.6% to 1.50 moz, owing mainly to reductions in plant capacity in the glass and oil industries. Nevertheless, platinum's most substantial end-users – the automotive and jewellery sectors – are likely to see growth of 4.6% and 3.9% respectively this year. Higher loadings associated with Euro 6 tailpipe emissions legislation are leading to increased requirements for platinum in Europe, while jewellery demand continues to grow in India. Meanwhile, Chinese platinum jewellery requirements are forecast to rise, bucking the headline trend of lower imports and reduced buying on the Shanghai Gold Exchange (SGE) which is a consequence of a fall in demand from industrial requirements after exceptional buying in 2013.

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



Source: SFA (Oxford)

## Autocatalyst demand

Global on-road autocatalyst demand for platinum is forecast to rise by 4.2% to 3.13 moz in 2014, compared to the previous year. This is above the projected growth in automotive production of 3.3%. Within this, the passenger car segment is set to grow 4.0% year-on-year, more than offsetting the 2% drop in heavy commercial vehicle production.

The majority of the growth in autocatalyst platinum consumption is from Western Europe, which is projected to be up 5.9% to 1.34 moz as Euro 6 emissions legislation takes effect, requiring more platinum per vehicle than in 2013. Vehicle output from Western Europe is growing by 3.6%, while diesel's share of the passenger car market is forecast to drop slightly to 53%. Also, engine sizes are continuing a downsizing trend, and heavy commercial vehicle production is estimated to fall 9.3% owing to a spike in buying of Euro 5-compliant vehicles ahead of Euro 6 coming into force.

Thus the resulting 75 koz of growth in platinum demand in Western Europe is from higher metal loadings associated with tighter tailpipe emissions standards through the promulgation of Euro 6 legislation. Euro 6 for diesel and gasoline light vehicles came into force for new vehicle approvals on 1 September 2014, and will apply to all new registrations from 2015. The main change is to cut the diesel NOx limit by more than half to 80 mg/km, compared to just a 20% reduction for Euro 5. Selective catalytic reduction (SCR) technology, which does not use platinum or other platinum-group metals, is being deployed on larger

diesel cars to comply with Euro 6. Other NOx-reducing technologies, such as lean NOx traps (LNT), which contain platinum as the oxidation catalyst and rhodium as the reduction catalyst, are being deployed by manufacturers for smaller vehicles.

Euro VI standards became mandatory for heavy-duty vehicle registrations from 1 January 2013 for new type approvals and for all new vehicles from 1 January 2014. Heavy-duty vehicles are required to reduce NOx by 80% and particulate matter by over 90% compared to Euro V levels (2009) and this has boosted requirements for platinum in diesel particulate filters (DPFs). However, at present, increased loadings have been offset by falling vehicle production.

North American demand is forecast to rise as a result of combined growth from the production of heavy-duty vehicles and diesel light trucks and the increased uptake of diesel passenger cars, albeit from a low base. Automotive sales look set to reach the highest levels since 2007 on the back of lower fuel prices and attractive financing options. Platinum consumption in North America is therefore estimated to rise 8.2% year-on-year in 2014 to 395 koz.

In Japan vehicle sales registrations are up 4.5% in the year to September but fell by over 9% in October, which was the third consecutive monthly reduction. Nevertheless, vehicle manufacture remains robust as car makers in Japan are generating good returns on exports in 2014 due to the 12% decline in the value of the yen against the US dollar since the beginning of the year. A reduction in platinum loadings in gasoline catalysts has been partially offset by slight increases in diesel car and heavy commercial vehicle production. This, along with minor growth in overall vehicle output, is expected to keep platinum demand flat at 570 koz.

Thirteen major cities in India currently have Bharat Stage (BS) IV standards, similar to Euro IV heavy-duty and Euro 4 light-duty standards, with the rest of the country at BS III. As more than half of passenger cars in India are diesel-powered and production is almost three-times higher than before the financial crisis, many cars now have diesel oxidation catalysts. A slight drop in diesel share does not quite offset the slight increase in vehicle production, lifting platinum demand forecasts by 3.1% to 165 koz for the year.

Consumption growth from China is expected to drop 3.8% to 125 koz, while that from the Rest of the World (RoW) remains relatively steady, rising by 20 koz year-on-year to 530 koz. A drop in demand in Thailand, Brazil and Argentina is offset by greater requirements from South Korea and other parts of South East Asia.

### **Non-road engine catalyst demand**

This is an important year for platinum use in non-road engines. In the US, Tier 4 emissions legislation became fully effective for smaller engines in September 2014, and requires a significant reduction in both NOx and particulate matter levels for non-road diesel engines. At the Tier 4 stage, the EPA also mandated a reduction in sulphur content in non-road diesel fuels. In Europe, Stage 4 regulations came into force for non-road diesel engines in 2014, with limits being imposed on more powerful vehicles from January, before being enforced for less powerful vehicles from October. Many engines at Stage 4 require the addition of a catalysed DPF (CDPF) which traps particulate matter.

### **Jewellery demand**

Despite the drop in SGE trading and imports into China, jewellery demand has held up in 2014. In 2013, jewellery retailers bought gold as the gold price collapsed, leading to a 'gold rush', so retailer stocks of platinum were low until the end of the year when significant restocking started in December. Retailers predicted gold jewellery sales would underperform in 2014, so they shifted their focus to platinum jewellery. In the first quarter of 2014 many jewellery retailers in China achieved double-digit sales growth, and this was reflected in strong buying on the SGE.

The second quarter is normally a weak period for the jewellery market. Manufacturers and retailers were well stocked and trading and imports dropped. Many retailers launched new products in the third quarter, which coincided with Golden Week and the wedding season, so jewellery sales are estimated to be up in the mainland Chinese market. China's major jewellery retailers continued to expand their jewellery sales points in China throughout 2014. The country has also reportedly surpassed the US to become the largest online shopping market. However, political disturbances in Hong Kong affected mainland tourist buying and sales there will continue to be affected as long as the protests last.

Jewellery demand in Japan has held up relatively well and is estimated to remain flat at 335 koz in 2014. This takes account of the tax hike from 5% to 8% and its impact on sales from April, as well as higher local platinum prices which peaked at just under ¥5,000/g in July. This brought forward consumer buying to the first quarter of the year and led to a reduction in purchases in the second quarter and a year-on-year fall in the third. So far, overall demand is up slightly, but the final quarter could decide whether requirements slip into negative territory. A number of new platinum campaigns were launched throughout 2014, with a new one in September. Meanwhile, platinum prices that are back to the mid-¥4,000/g level would normally support demand. However, consumer confidence is likely to be dented by political uncertainty ahead of a snap election called by the Prime Minister for December, against a backdrop of the country slipping back into recession.

Platinum jewellery continues to gain ground in India, with 25% growth in demand to 175 koz forecast for 2014. Compared to the universal appeal of gold, the platinum jewellery market in India is niche, with platinum pitched as a premium jewellery metal over gold to a mainly young, urban clientele. India is the least price sensitive of the platinum jewellery markets; buyers see it as a store of value and expect it to appreciate in value. A premium over gold helps to maintain platinum's attraction.

Sales have tended to be especially strong around the main festival seasons, such as Eid and Diwali. Platinum Guild International (PGI), with its trade and retail partners, has recently launched its EVARA Platinum Blessings campaign, marking the entry of platinum into the bridal jewellery segment in India. A growing bridal market might be expected going forward.

In summary, purchasing by jewellery manufacturers held up throughout 2014 and was particularly strong in the third quarter. Gross global demand is therefore estimated to rise by 3.9% for the year to 3.06 moz.

### Industrial demand

Industrial demand is estimated to be down 1.6% relative to 2013 at 1,500 koz this year. Owing to plant overcapacity, consumption is forecast to fall by 75 koz and 20 koz in the glass and petroleum sectors respectively. These contractions are partially offset by growth in chemical demand and other end-uses.

Industrial demand went through a period of significant capacity expansion and maintenance in China during 2013, and while usage has grown this year, reduced consumption and more recycling has curbed the need for new metal imports. Cumulative sales on the SGE reached close to 900 koz by the end of October compared to 1.16 moz over the same period in 2013. During May, trading dropped to a low of 50 koz compared to normal average sales of 90 koz. In the year to September, platinum exports to China and Hong Kong are estimated to have declined by over 350 koz and are back to 2012 levels.

### Chemical

Chemical demand for platinum was relatively strong in 2013 at 595 koz and is forecast to increase by 8.4% to 645 koz in 2014 owing to greater capacity in chemical processes. Paraxylene capacity has grown in 2014. China demands more paraxylene than it produces currently and this shortfall is being met by other paraxylene producers in Asia and the Middle East, as construction to add new paraxylene plants has run into issues in China due to environmental concerns from the general public.

Construction of new propane dehydrogenation (PDH) plants, particularly in China, also led to a rise in platinum demand. These PDH plants have been built because of the current excess supply of propane and the undersupply of propylene, both caused by the increasing supply of shale gas.

### Petroleum

There has been a shift in refining capacity from OECD countries to non-OECD countries caused by a decline in demand in developed countries and a major rise in demand in developing countries. An increase in capacity in non-OECD countries has led to higher exports of petroleum products to other parts of the world, as supply in these regions has outstripped demand. However, this additional supply has led to falling refining margins at older refineries, mainly those in OECD countries. This culminated in a number of closures and cuts in reforming capacity in Europe and Japan, leading to a 20 koz drop in consumption in 2014 to 155 koz.

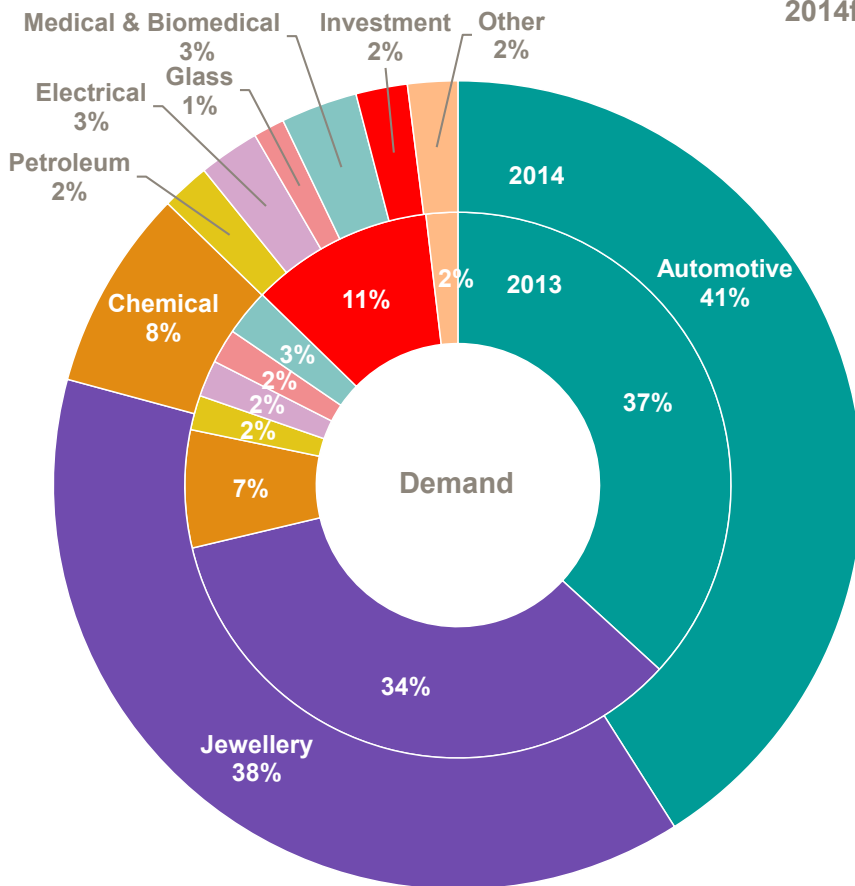
US refiners have generally been immune to closures seen elsewhere owing to the expansion in supply from shale oil leading to a lower feedstock price for refiners and improved margins. This has led to platinum usage in the US remaining constant in 2013 and 2014 at 35 koz.

Demand for platinum was down 30 koz in Western Europe in 2013 and is forecast to fall another 35 koz in 2014, with platinum being sold back to the market. Cuts to capacity have been driven by competition from other regions with lower costs, weaker European demand for petrochemical products, as excess gasoline used to be exported to the east coast of the US and Africa, both of which are now able to access cheaper supplies from elsewhere.

Chinese refineries expanded capacity, particularly in 2013, leading to growth in platinum consumption. Platinum demand in 2013 (65 koz) was considerably higher than is expected in 2014 (25 koz) owing to the rapid expansion of 'teapot' (independent) refineries to meet an end-of-2013 deadline set by the government to eliminate smaller plants. Alongside this, in 2013 and continuing into 2014, larger refineries expanded as policymakers aimed to not only meet the expected increase in demand for domestic refined products, but also to become larger exporters of refinery products.

The RoW is forecast to experience 11% growth in demand for platinum in 2014 to 150 koz, as refinery capacity expands and new gas-to-liquids (GTL) plants are built.

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



Source: SFA (Oxford)

### **Electrical**

Platinum demand for electrical applications is forecast to increase by 5% from the previous year to 195 koz. Higher demand in the RoW accounts for the majority of the rise, as consumption in other areas is expected to remain relatively flat. Demand for hard disk drives (HDDs) has stabilised, with slight growth now expected in 2014. The enterprise (cloud storage), external (branded) and consumer electronics sectors are the main drivers of growth in HDD shipments, offsetting the projected decline in personal computer demand.

### **Glass**

Demand for platinum from the glass sector is projected to be down 75 koz in 2014, mainly due to overcapacity in China and the developed world. China saw strong growth in 2013, mainly from LCD glass capacity expansions which have not been repeated in 2014. There have been plant closures in Western Europe, Japan and the US over this period, keeping platinum demand from these regions relatively low or in negative territory.

Most expansions and new plant construction are occurring in Eastern Europe, South America and South East Asia where glass companies feel there will be increasing demand for their products as these countries develop. These expansions are mostly focused on float glass production for use in construction and autos, as there is an oversupply of LCD glass currently, which use significantly higher quantities of platinum. The capacity of glass production for photovoltaics has fallen over the last few years owing to oversupply, and some of these plants are being converted to float glass production.

### **Investment demand**

ETF demand was relatively quiet at the beginning of 2013 with investors in the US making steady purchases, while European investors sold a small amount of their holdings. However, the launch of Absa's NewPlat ETF in April was enthusiastically embraced by South African investors and it had gained over 900 koz by the end of the year. This made the NewPlat ETF the fastest growing ETF and in six months the largest single global platinum ETF. This ETF was attractive to fund managers in South Africa because it provided exposure to platinum using on-shore investment allowances. In addition it provided a currency hedge.

During 2014 we estimate global platinum ETF holdings will increase by 270 koz. A second ETF was launched in South Africa by Standard Bank in March and investors in South African ETFs continued to add to their holdings, albeit not on the same scale as that seen in 2013. Even with reduced inflows this year compared to 2013, the South African ETFs were still the main driver of global ETF demand.

Net coin and bar sales have made little contribution to platinum demand because the level of recycling is expected to closely match new purchases. In response to strong expressions of interest from investors and collectors the US Mint reintroduced the one ounce American Eagle Platinum Bullion Coin in 2014 with modest sales reaching 17 koz to date.

### **ABOVE GROUND STOCKS**

The aftermath of the global financial crisis has been a build-up of metal holdings as a result of mining and recycling supply exceeding demand for several years. This build-up has been acknowledged by industry participants but its quantification avoided as it typically represents vaulted metal holdings held confidentially. In this report we define above ground stocks as 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. It is this stock that has been able to provide metal to satisfy the shortfall between demand and supply.

We estimate that above ground stocks, which exclude ETFs, metal held by exchanges and industry working inventories will be 2.56 million ounces at the end of 2014.

The last two annual platinum shortfalls have reduced above ground stocks from their level of 4.14 million ounces at the end of 2012.



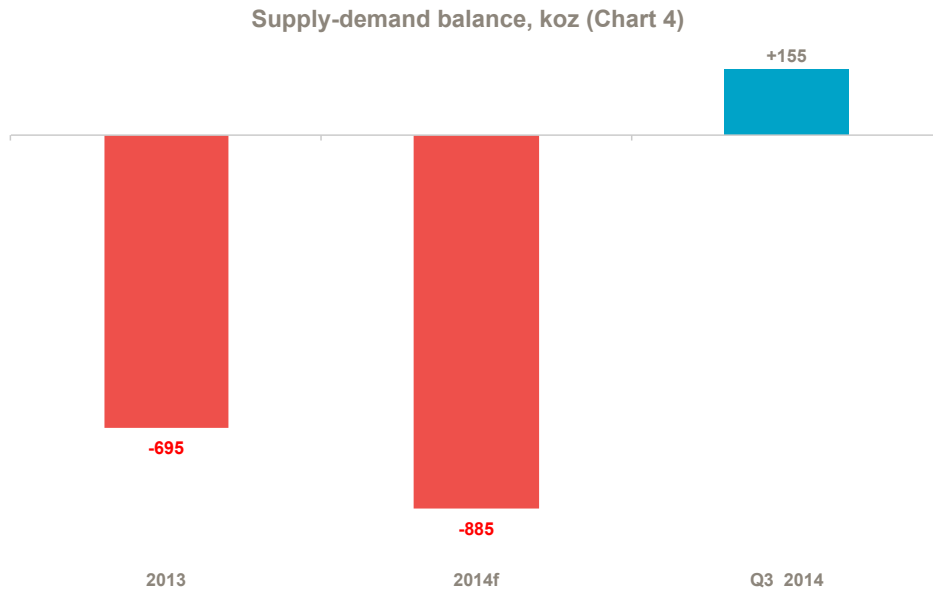
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## THIRD QUARTER PLATINUM MARKET REVIEW

Several references to Q3 performance have been included in the commentary above. This short section focuses on the market balance for the third quarter, and its principal influences.

In contrast to the year in review, supply exceeded demand in the third quarter of 2014 by 155 koz.

The third quarter tends to be the seasonally weakest quarter for automotive production, with an estimated 730 koz required in this quarter to match vehicles produced. This, combined with net sales by investors, a post-strike ramp-up in refined output in South Africa and increased recycling, has resulted in the platinum surplus softening the market. A key component of the surplus is the net outflow of 200 koz from investment. European funds saw a net reduction of 5% while South African funds experienced a 2% reduction leading to a 95 koz decline in platinum held in ETFs. Meanwhile, platinum stocks held by NYMEX fell by 107 koz over the quarter as investors liquidated speculative derivative positions representing over 1 million ounces in the futures market.



Source: SFA (Oxford)

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### OUTLOOK

Refined production is likely to be higher in 2015 as South African mines fully recover from the 2014 strike, although it is unlikely that supply will return to 2013 levels. Producer metal sales are expected to be more in line with production, although some excess stock sales may still occur in the first quarter of 2015, and there will be an increase in metal lock-up in the metallurgical pipeline.

Delayed collection in the fourth quarter of 2014 are likely to boost recycling volumes in early 2015, and an anticipated further increase in platinum from scrapped diesel catalysts from Europe would lift overall recycling volumes for the year.

Autocatalyst requirements are forecast to be the main industrial driver for platinum demand in 2015, as platinum benefits from a higher proportion of Euro 6-compliant vehicles being manufactured and the production of heavy-duty vehicles in Europe returns to growth. Euro 6 legislation came into force in September 2014 for new models and will be enforced for all light vehicles sold from September 2015. The imposition of Euro 6 legislation supports higher platinum demand, despite diesel's share of light vehicle powertrains dropping slightly and vehicle production growing only modestly. Some thrifting can be expected thereafter, once the new formulations have been proved.

Heavy-duty on-road vehicle sales rose ahead of the introduction of Euro VI legislation in 2014, as fleet operators sought to avoid the cost penalty by buying cheaper Euro V vehicles. Consequently, sales of new Euro VI-compliant heavy duty vehicles have so far been slow through 2014, but should begin to accelerate in 2015, with a corresponding increase in platinum loadings and therefore demand, as fleet operators replace their old vehicles.

India, the second-largest diesel light vehicle market after Western Europe, is in flux after the government reduced the long-term subsidy on diesel fuel, so drivers are increasingly forced to pay the real additional cost of diesel fuel over gasoline. With a high diesel share, rapid growth in vehicle ownership and the prospect of tighter emissions legislation, India represents an important growth market for platinum in autocatalysts. The rising fuel price will inevitably curb demand growth, but the government remains committed to diesel vehicles as a way to reduce vehicle CO2 emissions.

Demand for jewellery is forecast to remain robust in China, while growth is forecast in India as platinum continues to establish itself through sustained marketing by retailers and the PGI. Overall industrial demand is projected to be slightly higher in 2015. There are new PDH plants being built in China and the US which, along with a small increase in other chemical usage, should help to lift requirements for platinum. As in 2014, there will continue to be petroleum refinery capacity expansions in developing countries leading to higher platinum demand in those regions.

Against this growth, a reduction in capacity is expected to continue in Europe and Japan owing to decreasing oil product demand and poor margins, while platinum consumption in the US is likely to remain steady. Demand for platinum for glass in China will be similar to that seen in 2014, while in the developed world it will remain sluggish. Meanwhile, the rate of glass plant expansion in South America and Eastern Europe is predicted to slow, and in South East Asia there are expected to be some plant expansions.

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Change in Bars, Coins	-10	10	-200%	0
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<b>Total Demand</b>	<b>8,535</b>	<b>8,010</b>	<b>-6%</b>	<b>1,695</b>
<b>Balance</b>	<b>-695</b>	<b>-885</b>	<b>27%</b>	<b>155</b>
<b>Above Ground Stocks</b>	<b>4,140*</b>	<b>3,445</b>	<b>-26%</b>	

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

## PLATINUM QUARTERLY Q3 2014

### Regional demand (Table 2)

Platinum Gross Demand (koz)	2013	2014f	Growth %	Q3 2014
<b>Automotive</b>	<b>3,140</b>	<b>3,285</b>	<b>5%</b>	<b>770</b>
North America	420	455	8%	
Western Europe	1,340	1,420	6%	
Japan	580	590	2%	
China	130	125	-4%	
India	160	165	3%	
Rest of the World	510	530	4%	
<b>Jewellery</b>	<b>2,945</b>	<b>3,060</b>	<b>4%</b>	<b>745</b>
North America	200	230	15%	
Western Europe	220	225	2%	
Japan	335	335	0%	
China	1,990	2,030	2%	
India	140	175	25%	
Rest of the World	60	65	8%	
<b>Chemical</b>	<b>595</b>	<b>645</b>	<b>8%</b>	<b>165</b>
North America	65	70	8%	
Western Europe	70	70	0%	
Japan	30	30	0%	
China	170	205	21%	
Rest of the World	260	270	4%	
<b>Petroleum</b>	<b>175</b>	<b>155</b>	<b>-11%</b>	<b>35</b>
North America	35	35	0%	
Western Europe	-30	-35	17%	
Japan	-30	-20	-33%	
China	65	25	-62%	
Rest of the World	135	150	11%	
<b>Electrical</b>	<b>185</b>	<b>195</b>	<b>5%</b>	<b>50</b>
North America	20	20	0%	
Western Europe	20	20	0%	
Japan	15	15	0%	
China	80	80	0%	
Rest of the World	50	60	20%	
<b>Glass</b>	<b>175</b>	<b>100</b>	<b>-43%</b>	<b>25</b>
North America	15	0	-100%	
Western Europe	10	5	-50%	
Japan	0	-10	n/a	
China	90	30	-67%	
Rest of the World	60	75	25%	
<b>Medical and Biomedical</b>	<b>235</b>	<b>245</b>	<b>4%</b>	<b>65</b>
North America	90	95	6%	
Western Europe	90	95	6%	
Japan	20	20	0%	
China	15	15	0%	
Rest of the World	20	20	0%	
<b>Other industrial</b>	<b>160</b>	<b>160</b>	<b>0%</b>	<b>40</b>
<b>Investment</b>	<b>925</b>	<b>165</b>	<b>-82%</b>	<b>-200</b>
<b>Total Demand</b>	<b>8,535</b>	<b>8,010</b>	<b>-6%</b>	<b>1,695</b>

## 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 emissions 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 emissions 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 NOx 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, taking engine and emissions technology similar to on-road heavy duty diesel

### 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 NOx 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 NOx. 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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