

# PGM market report

May 2026



The PGM market report is written by Alison Cowley.

Johnson Matthey's PGM market research for this report was conducted by:

Stewart Brown

Alison Cowley

Joanna Dickson

Mikio Fujita

Nicolas Girardot

Xiaobai Liu

Rupen Raithatha

Michael Underwood

Athena Wang

Johnson Matthey defines 'light duty' as cars and light trucks with a gross vehicle weight (GVW) of up to 3.5 tonnes, except in the USA, Canada and Mexico, where vehicles are considered 'light' if they have a GVW of up to 6 tonnes. Automotive production data is taken from S&P Global Mobility, Powertrain Production Forecast, February 2026 (vehicles with a GVW of up to 6 tonnes) and KGP-GlobalData Commercial Vehicle Powertrain Forecast Q4 2025 (vehicles with a GVW over 6 tonnes).

The PGM market report is published annually, in May each year.

## Disclaimer

Johnson Matthey PLC endeavours to ensure the accuracy of the information and materials contained within this report, but makes no warranty as to accuracy, completeness or suitability for any particular purpose. Johnson Matthey PLC accepts no liability whatsoever in respect of reliance placed by the user on information and materials contained in this report, which are utilised expressly at the user's own risk.

This report has been prepared by the Market Research Department of Johnson Matthey PLC and contains information, opinions, estimates and forecasts relating to the development of the PGM markets. Such information, opinions, estimates and forecasts are as of the date set out and are subject to change. None of the information contained in the report should be construed as, or form part of, a recommendation to buy or sell any regulated precious metal related products or any other regulated products, securities or investments, or as making any recommendation or as providing any investment or other advice with respect to the purchase sale or other disposition of, any regulated precious metal related products or any other regulated products, securities or investments.

A decision to invest in any regulated precious metal related products or any other regulated products, securities or investments should not be made in reliance on any of the information or materials in this presentation. This report does not, and should not be construed as acting to, sponsor, advocate, endorse or promote any regulated precious metal related products or any other regulated products, securities or investments.

# Table of contents

<b>Definitions</b>	4	<b>Tables</b>	
<hr/>		Platinum supply and demand: Troy ounces	27
<b>PGM summary</b>		Platinum supply and demand: Tonnes	28
Supply and demand in 2025	5	Palladium supply and demand: Troy ounces	29
<hr/>		Palladium supply and demand: Tonnes	30
<b>PGM outlook</b>		Rhodium supply and demand: Troy ounces	31
Supply and demand in 2026	16	Rhodium supply and demand: Tonnes	32
<hr/>		Ruthenium supply and demand: Troy ounces	33
<b>Emissions legislation update</b>	24	Ruthenium supply and demand: Tonnes	33
<hr/>		Iridium supply and demand: Troy ounces	34
		Iridium supply and demand: Tonnes	34
		<b>Glossary</b>	35
		<hr/>	

# Definitions

<b>Europe</b>	EU+ (includes UK and Turkey but excludes Russia)
<b>Japan</b>	Japan only
<b>North America</b>	USA and Canada (excludes Mexico)
<b>China</b>	China only
<b>RoW</b>	Rest of World: all countries not captured in the above
<b>Primary supply</b>	Supply figures represent sales of <b>primary PGM</b> by producers and are allocated to the region where mining took place, rather than the region of subsequent processing.
<b>Secondary supply</b>	<p>Secondary supply is the quantity of metal recovered from open-loop recycling (i.e. where the original purchaser does not retain ownership of the PGM). Outside the automotive, jewellery and electronics markets, open-loop recycling is negligible.</p> <p>Automotive recycling represents the weight of metal recovered from end-of-life vehicles and aftermarket scrap. It does not include warranty or production scrap.</p>
<b>Demand</b>	<p>Demand figures for any given application represent the sum of industry demand for new metal in that application, net of any closed-loop recycling (i.e. where industry participants retain ownership of the metal).</p> <p><b>Automotive demand</b> is allocated to the region where the vehicle is manufactured and is accounted for at the time of vehicle production. It includes emissions catalysts on vehicles, motorcycles and three-wheelers, as well as fuel cell vehicles. Non-road mobile machinery is counted as industrial demand, in the pollution control category.</p> <p><b>Jewellery demand</b> is allocated to the region where the finished jewellery is manufactured, not sold.</p>
<b>Movements in stocks</b>	This figure gives the overall market balance in any one year and reflects the extent of stocks that must be mobilised to balance the market in that year. It is thus a proxy for changes in stocks held by fabricators, dealers, banks and depositories, but excludes stocks held by primary and secondary refiners and final consumers. A positive figure (market surplus) thus reflects an increase in global market stocks. A negative value (market deficit) indicates a decrease in global market stocks.

# PGM summary

## Supply and demand in 2025

All the PGM were in deficit in 2025

Primary supplies contracted, despite continued producer destocking

Production of ICE vehicles proved resilient, supporting auto PGM demand

High gold prices led to a surge in platinum jewellery fabrication

Investor sentiment was positive, as BEV adoption lagged earlier expectations

Trade flows to China and the USA drained market liquidity, lifting lease rates

Platinum and palladium prices surged in December, after PGM futures began trading on China's GFEX

All the platinum group metals saw supply fall short of demand in 2025. Industrial consumption was firm, and world production of internal combustion engine (ICE) vehicles was stable, although auto PGM use was trimmed by a small decline in average catalyst loadings. Investment demand for platinum and palladium remained strong, while Chinese platinum jewellery fabrication surged during the first half. The minor PGM also saw some purchasing for strategic holdings, but we do not count this in our demand numbers. All five metals made significant price gains, especially platinum, rhodium and ruthenium, prices of which more than doubled.

### Market overview: platinum, palladium and rhodium

The three autocatalyst PGM recorded deficits in 2025, adding to significant cumulative shortfalls over the previous three years. While the underlying drivers differed somewhat between the metals, a common theme was weak supply: autocatalyst recycling has been slow to recover from a downturn during 2023–2024, while primary supply from South Africa and North America has been eroded by rationalisation and mine closures. At the same time, industrial demand has been robust, especially in the petrochemicals and electronics sectors, and output of ICE vehicles has proved resilient, albeit with some ongoing substitution, thrifting and model mix impacts.

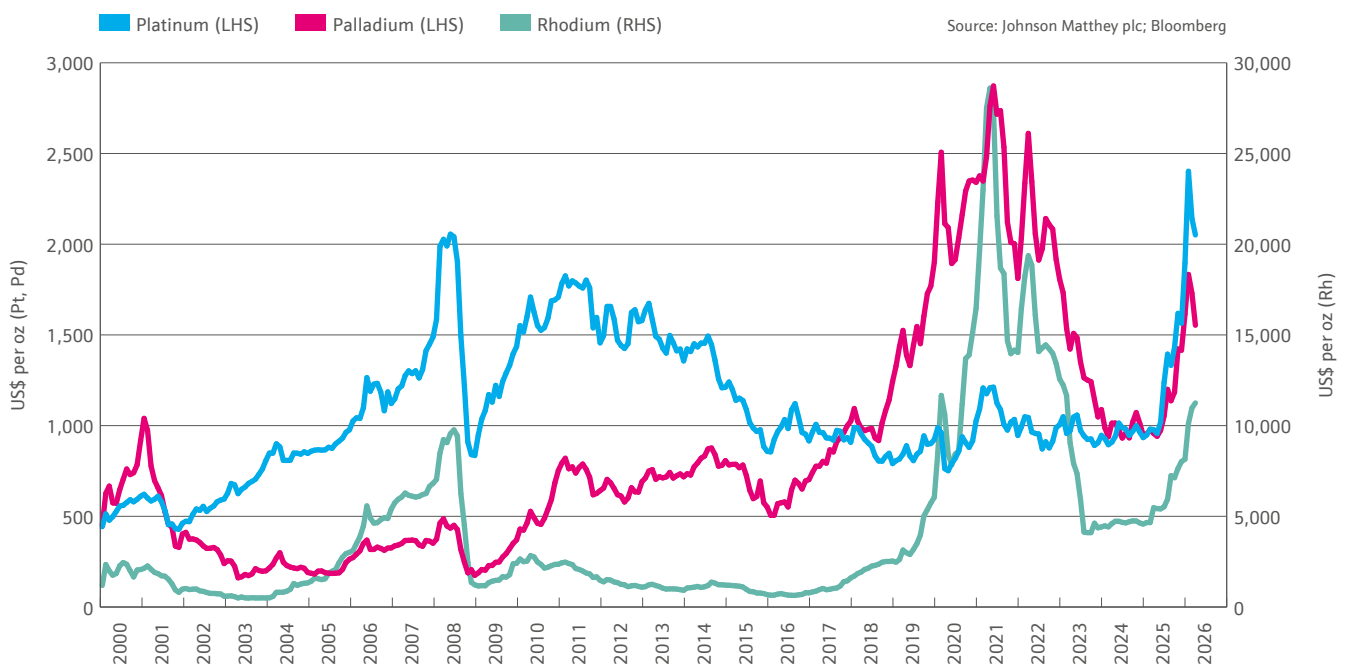


Figure 1 Monthly average platinum, palladium and rhodium prices, 2000–2026

Supply '000 oz	2024	2025	2026
South Africa	4,154	3,957	3,873
Russia	700	650	630
Others	970	950	952
<b>Total primary supply</b>	<b>5,824</b>	<b>5,557</b>	<b>5,455</b>
Secondary supply*	1,399	1,547	1,576
<b>Total combined supply</b>	<b>7,223</b>	<b>7,104</b>	<b>7,031</b>

Demand '000 oz	2024	2025	2026
Automotive	3,389	3,329	3,226
Jewellery	1,380	1,507	1,349
Industrial	2,490	2,627	2,656
Investment	523	556	171
<b>Total demand</b>	<b>7,782</b>	<b>8,019</b>	<b>7,402</b>
Movements in stocks	-559	-915	-371

\*Secondary supply comprises open-loop recycling from the automotive, jewellery, electronics and pollution control industries

**Table 1** Platinum supply and demand

Investor sentiment began to revive in 2024 and remained positive during 2025, as it became clear that the pace of battery electric vehicle (BEV) adoption would be substantially slower than earlier predictions in all regions except China. Meanwhile, a steep rise in the gold price also helped fuel interest in much cheaper platinum and palladium. There was substantial exchange traded fund (ETF) buying of both metals during 2025, along with rapid growth in sales of platinum bars to retail investors in China. Rhodium ETFs also saw active purchasing for the first time in nearly a decade. This investment activity was a material contributor to market deficits in 2025.

Prior to 2025, market liquidity and price had been slow to reflect underlying supply-demand dynamics. For much of 2023

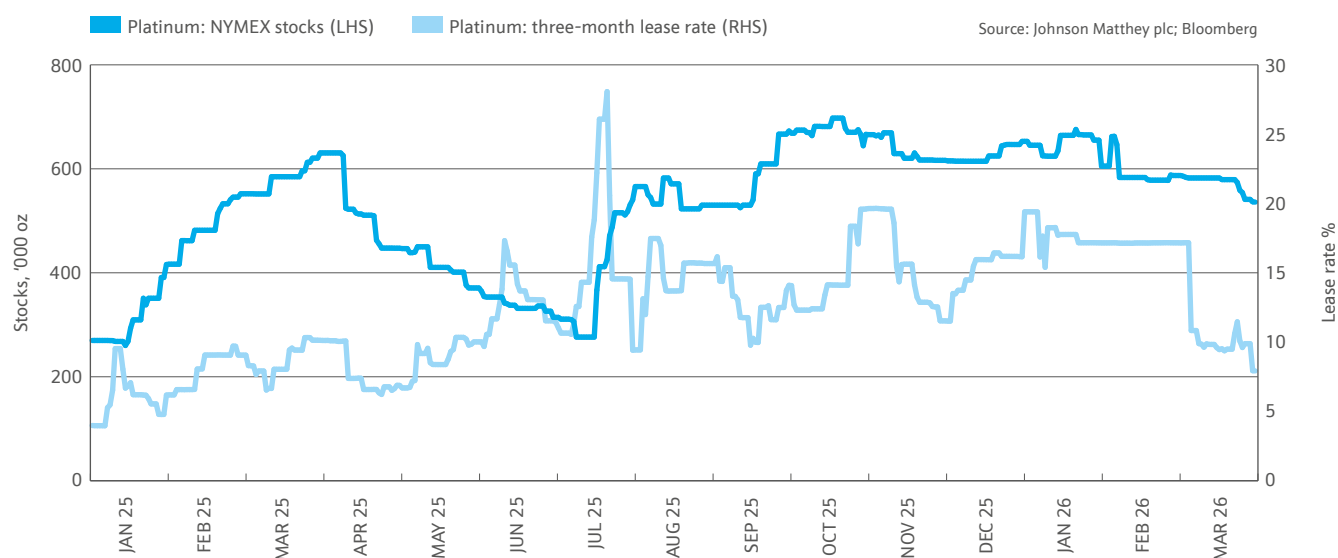
Supply '000 oz	2024	2025	2026
South Africa	2,438	2,246	2,235
Russia	3,000	2,950	2,450
Others	1,490	1,393	1,347
<b>Total primary supply</b>	<b>6,928</b>	<b>6,589</b>	<b>6,032</b>
Secondary supply*	2,921	3,135	3,427
<b>Total combined supply</b>	<b>9,849</b>	<b>9,724</b>	<b>9,459</b>

Demand '000 oz	2024	2025	2026
Automotive	8,329	8,227	7,829
Jewellery	85	83	82
Industrial	1,424	1,448	1,449
Investment	229	382	-115
<b>Total demand</b>	<b>10,067</b>	<b>10,140</b>	<b>9,245</b>
Movements in stocks	-218	-416	214

\*Secondary supply comprises open-loop recycling from the automotive, jewellery, electronics and pollution control industries

**Table 2** Palladium supply and demand

and 2024, prices for the autocatalyst PGM were held back by a combination of market anxieties around BEV adoption, the existence of excess stocks at some consumers (a hangover from Covid market disruption and extreme price movements), and lack of a compelling demand story to sustain any rallies. However, by the beginning of 2025, a new narrative was developing, centring on the risk that the incoming Trump administration might disrupt trade flows with aggressive tariff policies. At the same time, critical mineral supply was emerging as a national security issue, while geopolitical tensions were unusually elevated, and the gold price reached a series of all-time highs. This provided the backdrop for a remarkable turnaround in PGM market sentiment.



**Figure 2** Platinum lease rates and NYMEX warehouse stocks

During early 2025, the Trump administration imposed increased tariffs on imports from most countries. Although PGM sponge and ingot (and some other critical industrial inputs) were exempt from these duties, the risk that tariffs might in future be applied to precious metals led to a massive influx of platinum into NYMEX warehouses during the first quarter, removing liquidity from the European ingot market.

## "2025 saw a remarkable turnaround in PGM market sentiment"

Tightness in the platinum market was exacerbated by heavy platinum exports to China during April and May 2025, mainly in response to a surge in jewellery fabrication. This upturn was stimulated by high gold prices, which caused retail gold jewellery demand to shrink and the cost of holding inventory to soar. In response, jewellery makers and distributors took a gamble on platinum, despite a lack of evidence for a revival in retail demand. It is likely that some of this activity had a speculative component, and that a portion of the jewellery manufactured during this period was recycled and returned to the market as metal prices rose. We believe that demand for investment bars was also unusually strong during this period.

The combination of increased metal flows to the USA and China led to a dramatic increase in platinum lease rates as the traditional European trading hubs were drained of liquidity. Short-term borrowing rates moved up from 3% in late 2024 to around 10% during the first quarter, before surging above 20% in mid-year, in the wake of exceptionally strong exports to Hong Kong and China in April and May. US tariff fears had temporarily eased by this point, and platinum flowed out of Nymex warehouses and back to Europe during the second quarter, but this was not enough to assuage liquidity shortages.

While prices were slow to respond to increasing signs of market stress, platinum finally began to react in May, breaking through the \$1,300 barrier in June and trading above \$1,450 in July – its highest level since 2014, when industrial action severely dented South African PGM production. Palladium also posted some gains, tracking platinum upwards (although at an increasing discount).

Platinum lease rates remained extremely elevated over the second half of 2025, and palladium borrowing costs also moved up sharply during this period. A reawakening of US tariff fears resulted in both platinum and palladium flooding into Nymex warehouses between July and September, and probably into industrial inventories as well. PGM prices began to climb again, with spot platinum briefly breaching \$1,700 in October, and palladium closing the gap to reach \$1,600.

High borrowing rates accompanied by steadily improving prices acted to draw excess metal out of China: by the third quarter, the wave of jewellery fabrication had started to fade, and excess platinum holdings were being liquidated at a profit.

Supply '000 oz	2024	2025	2026
South Africa	593	566	557
Russia	64	68	55
Others	72	67	69
<b>Total primary supply</b>	<b>729</b>	<b>701</b>	<b>681</b>
Secondary supply*	292	312	339
<b>Total combined supply</b>	<b>1,021</b>	<b>1,013</b>	<b>1,020</b>

Demand '000 oz	2024	2025	2026
Automotive	915	899	856
Chemical	94	91	88
Glass	-3	38	38
Electrical & Other	24	35	23
<b>Total demand</b>	<b>1,030</b>	<b>1,063</b>	<b>1,005</b>
Movements in stocks	-9	-50	15

\*Secondary supply comprises open-loop recycling from the automotive industry

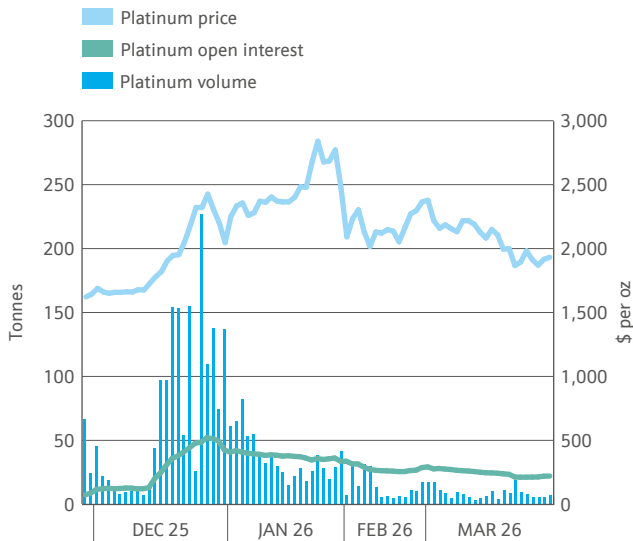
**Table 3 Rhodium supply and demand**

Trade statistics show that between August and October, more than 15 tonnes (around 500,000 oz) of platinum was re-exported from Hong Kong back to European trading hubs.

As the year drew to a close, platinum and palladium prices embarked on a remarkable rally, driven by the launch of PGM futures contracts on the Guangzhou Futures Exchange (GFEX) in late November. During December, a trading frenzy on GFEX lifted platinum by more than \$600 to all-time highs of over \$2,300. Following the imposition of trading limits by GFEX on 29th December, intended to curb speculation, platinum eased back to end the year at just over \$2,000. Meanwhile, palladium leapt to highs of over \$1,800 and ended 2025 at around \$1,600.

## "In December, a trading frenzy on GFEX lifted platinum to all-time highs"

Just ahead of the GFEX launch, the Chinese government moved to end a long-standing 13% VAT exemption on platinum sold on the Shanghai Gold Exchange (which was exclusively imported by the state-controlled China Platinum Company). This policy shift, implemented in November, resulted in a collapse in the volumes of platinum traded on the SGE (Figure 5). While SGE volumes have in the past been a good proxy for jewellery and industrial purchasing trends in China, this decline was not reflective of underlying demand, but rather of a shift in industrial buying behaviour, with market participants instead purchasing platinum direct from local refiners or overseas sellers, and some companies purchasing forward on GFEX.



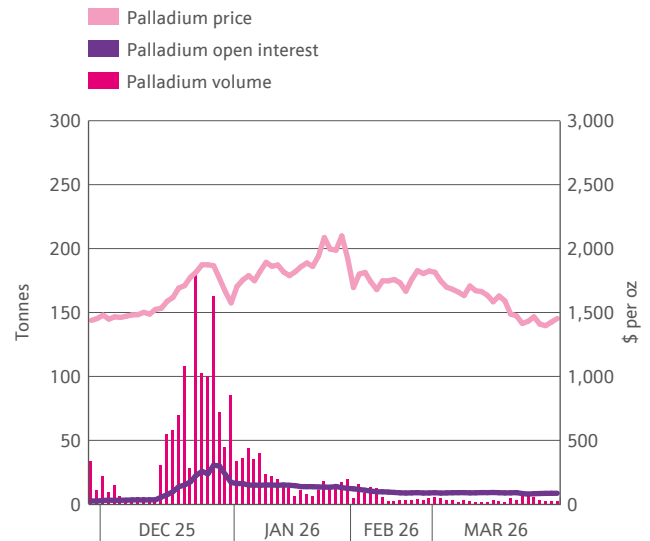
Source: Guangzhou Futures Exchange; Johnson Matthey plc

**Figure 3** GFEX daily trading volume and price: platinum

The rhodium price also saw strong gains on the back of firm demand and constrained supply, exacerbated by some strategic buying. In early 2025, the price moved up through \$5,000, probably in response to temporarily weak sales from South Africa, where first quarter PGM production is often constrained by scheduled maintenance and stocktakes. Rhodium gained momentum during the second half, surging above \$7,000 in late July, reaching \$8,000 in October, and spiking above \$9,000 during the final days of December.

### Market overview: ruthenium and iridium

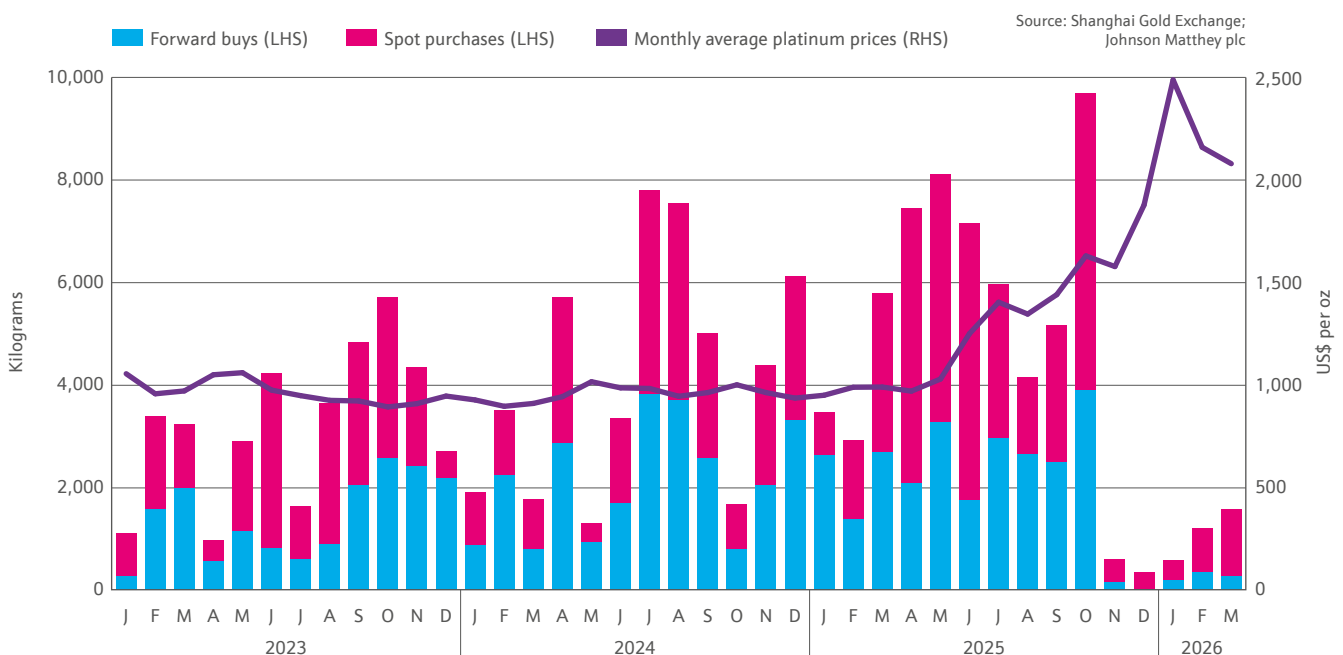
The gap between mine supply and industrial consumption of ruthenium has been growing in recent years, following rationalisation and mine closures in South Africa (which accounts for over 85% of global primary supply), and growth



**Figure 4** GFEX daily trading volume and price: palladium

in chemical industry demand. However, market liquidity has been augmented by intermittent large sales from producer stocks, particularly in 2021. Since then, although producers have continued to make sporadic sales from their refined inventory, new primary supply has fallen significantly short of demand.

The market deficit widened to nearly 300,000 oz in 2025 – representing a shortfall of almost a quarter of annual consumption. Existing market stocks helped satisfy industrial requirements, but by mid-2025, signs of increasing market tightness were emerging, eventually driving the price to a then all-time record of \$1,275 by the year end. We believe that this tightness has been exacerbated by strategic buying, especially in China, reflecting ruthenium’s status as a critical mineral with a geographically limited resource base. In addition, Chinese export controls on ruthenium



**Figure 5** Shanghai Gold Exchange: platinum sales volumes

and ruthenium-containing materials, imposed in February 2025, may have intensified shortages in other regions.

On a pure supply-demand basis, the iridium market has been broadly balanced in recent years. However, in 2020 and 2021, intense interest in the potential for iridium use in the hydrogen economy pushed prices dramatically higher. During this period, we believe that market participants acquired metal in excess of their immediate requirements as a buffer against potential future shortages. (This buying is not included in our demand numbers because of the difficulty of allocating it to any specific industrial application; it is instead considered as a movement in market stocks). The iridium market is by far the smallest and least liquid of the PGMs, so even relatively modest additional buying activity can cause significant volatility.

The 2020–2021 price spike led to some demand destruction; for example, Chinese manufacturers of iridium crucibles adopted platinum for some crucible formats. At the same time, demand in hydrogen applications has been slower to emerge than initially expected. With users relatively well-stocked, iridium purchasing slowed during the 2022–2024 period, leading prices to drift down from the 2021 peak of \$6,300 to trade either side of \$4,500.

## “Ruthenium market tightness was exacerbated by strategic buying”

More recently, industrial demand has been firm, while a new wave of strategic buying has emerged, especially in China. This has removed liquidity from the market, even though iridium remains close to balance from a conventional supply-demand perspective. Unlike the other PGM, iridium prices were relatively stable during 2025, but they began to move up at the year-end, setting new all-time highs in early 2026.

### South African supplies

Platinum supplies from South Africa fell by just under 5% to 3.96 million oz in 2025, with mine output once again supplemented by the release of work-in-progress inventory (albeit to a lesser extent than in 2024).

Underlying mine production of platinum was around 3.86 million oz, down 3%, following extreme rainfall in the first quarter which closed parts of Valterra’s Amandelbult mine for several months, and also disrupted mining activities at some other operations. In addition, the Bokoni mine (owned by African Rainbow Minerals, ARM) ceased mining and milling at its ‘early ounce’ project in mid-year, although the company is continuing to work on a feasibility study of a larger-scale reopening in future.

Elsewhere, and with no significant shaft closures or rationalisations during the year, most mines reported similar production volumes to the previous year. One new mine started commercial operations: Ivanplats’ Platreef mine commissioned its concentrator and sold its first PGM concentrate to Northam Platinum during the final quarter. However, given typical

Supply '000 oz	2024	2025	2026
<b>Primary supply</b>	<b>1,125</b>	<b>972</b>	<b>977</b>
<b>Demand '000 oz</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Chemical	520	567	477
Electrical	365	413	435
Electrochemical	143	135	127
Other	142	150	154
<b>Total demand</b>	<b>1,170</b>	<b>1,265</b>	<b>1,193</b>
Movements in stocks	-45	-293	-216

**Table 4** Ruthenium supply and demand

Supply '000 oz	2024	2025	2026
<b>Primary supply</b>	<b>237</b>	<b>229</b>	<b>229</b>
<b>Demand '000 oz</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Chemical	37	34	28
Electrical	27	33	33
Electrochemical	94	100	109
Other	68	69	70
<b>Total demand</b>	<b>226</b>	<b>236</b>	<b>240</b>
Movements in stocks	11	-7	-11

**Table 5** Iridium supply and demand

refining timescales, this new mine will only contribute to PGM supplies from 2026. Target output for Phase 1 of the Platreef project is around 100,000 oz of PGM annually.

South African production of the other PGM broadly followed the same trends as for platinum, with no material changes to the mix of ore mined last year. However, ruthenium sales fell by 14%, as a large release of refined inventory in 2024 was not repeated. We believe that producers still have some remaining ruthenium stock, but holdings of this metal have been much depleted over the past decade.

With PGM prices improving dramatically during 2025, the value of a typical South African PGM 4E basket (comprising platinum, palladium, rhodium and gold) increased from around ZAR 24,000 per oz in January to over ZAR 40,000 by the year end. In addition, producers benefited from unusually elevated ruthenium and iridium prices, while chrome and copper prices were also firm. This has relieved financial pressure on the industry and allowed producers to reconsider some additional capital projects, mainly aimed at extending mine life or providing replacement ounces when older shafts reach the end of their lives. This is discussed in more detail in the outlook section on page 19.

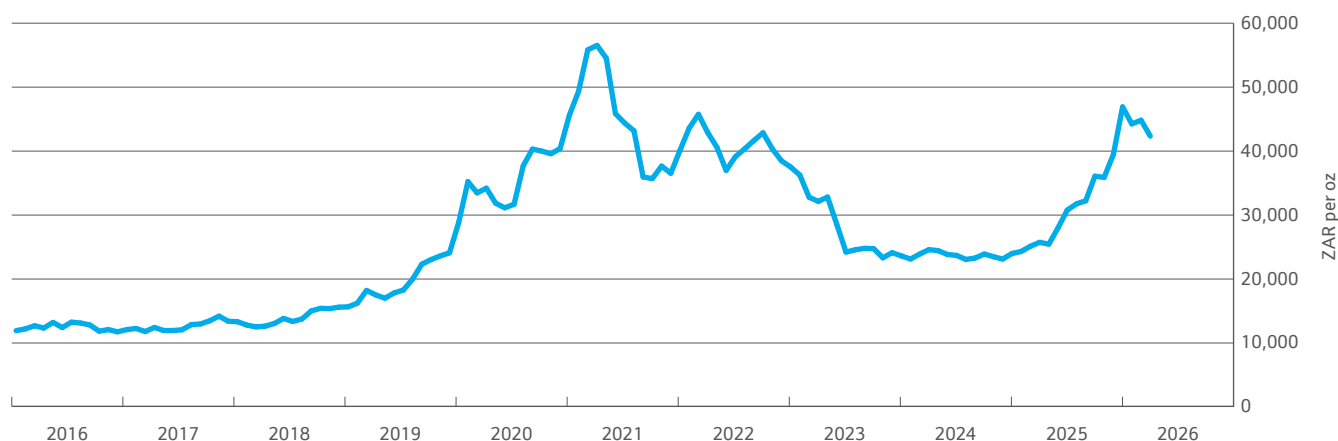


Figure 6 Value of a typical South African PGM (4E) basket

## North American supplies

North American supplies dropped sharply in 2025, mainly due to rationalisation at the large Stillwater mine in Montana, USA, where PGM output fell by a third. Impala Platinum's Canadian operation also contracted, as the company prioritised profitability over volumes. The mine was due to shut this year, but in November 2025 received a one-year reprieve, and will now operate until mid-2027. A further five-year life extension might be possible, but would require significant investment at the tailings facility, which will in turn depend on the outlook for palladium prices.

PGM supplies from Canadian nickel mining increased slightly in 2025, mainly due to higher palladium production at Glencore. Most of the company's PGM output comes from the Raglan nickel mine in northern Quebec, which mines relatively palladium-rich ores. Glencore also mines nickel in the Sudbury area, but volumes here have fallen steeply over the past few years, with the closure of the Nickel Rim South mine in 2024 and the Fraser mine at the end of 2025. The company's replacement Onaping Depth project should begin to ramp up this year but did not contribute materially to PGM output last year.

Vale, the other large nickel miner in the Sudbury area, reported a significant increase in ore volumes last year, but this was not reflected in PGM output. Grades in Canadian nickel-copper ores are very variable, so PGM volumes do not necessarily track ore production. In addition, long processing pipelines mean that PGM mined in one year may not be refined until the next.

## Russian PGM production and sales

PGM production at Norilsk Nickel was little changed last year, at 2.73 million oz of palladium (down 1% versus 2024) and 667,000 oz of platinum (unchanged). The company reported an increase in the share of disseminated ores, which typically have lower grades than the rich and cuprous ores mined at its underground Talnakh operations.

Johnson Matthey's Russian supply numbers are based on estimates of sales of Russian PGM into world markets. Since the beginning of the Ukraine conflict in 2022, outlets for

Russian platinum have become increasingly restricted, due to market sanctions such as the withdrawal of LPPM Good Delivery status and the imposition of import tariffs in some markets. Since 2024, virtually all Russian platinum has been exported to the Chinese market, mainly via Hong Kong.

Russian platinum exports were low in 2022, but it appears that most of the resulting unsold platinum inventory was delivered during 2023 and 2024. Trade data suggests that Russian platinum shipments fell last year, and we estimate that sales were close to mine production.

## "US imports of Russian palladium ceased in August 2025"

Palladium sales were also limited in 2022, with the result that by the end of that year, Norilsk Nickel held significant unsold palladium inventory (accumulated both since the Ukraine invasion, and during Covid-related disruption in 2020). Based on a reassessment of available data, we now believe that most of this stock was sold during the 2023–2025 period, and we have revised our Russian supply estimates accordingly.

Russian palladium has been protected from some market sanctions such as import tariffs, because Norilsk Nickel's large share of global mine production means it is harder for industrial users to find alternative suppliers. Nevertheless, several countries which were formerly large importers of Russian palladium (including the UK, Germany, South Korea and Japan) have either significantly cut, or entirely ceased, purchases of Russian metal over the last four years. As a result, Norilsk Nickel has become more reliant on sales to the Chinese and (until mid-2025) US markets.

Shipments of Russian palladium to the USA were particularly strong during the first seven months of last year, in line with a general increase in US imports of PGM in response to the risk of trade disruption. Then, at the end of July 2025, an anti-dumping and countervailing duty petition was filed with the US Department of Commerce by Sibanye-Stillwater and the

United Steelworkers Union, claiming that the US palladium mining industry had been materially injured by imports of Russian palladium, which was alleged to be subsidised by the Russian government and sold at less than fair value. The risk that any penalties could be backdated led to an immediate cessation of Russian palladium imports into the USA. Anti-dumping duties have been fixed at 133%, while a preliminary ruling has set countervailing duties at 109%; this will permanently exclude Russian palladium from the US market.

This development has left Norilsk Nickel significantly more dependent upon trade with China. Most Russian palladium has traditionally entered the Chinese market via Hong Kong. However, starting in mid-2023, material quantities of Russian PGM have been imported directly into the Chinese market, mainly via 'entrepots': bonded zones in which metal can be stored duty-free until it is delivered to a customer (at which point any relevant taxes are paid) or re-exported. Since September 2025, there has been a notable increase in this entropot trade, as Russian palladium which cannot be sold elsewhere is moved into China. We assume that most of this metal has been or will be sold into the Chinese domestic market; however, it is difficult to ascertain the precise time of sale, or whether there has been an accumulation of stocks of unsold metal in China.

## Secondary supplies

Secondary PGM supply again benefited from strong growth in the relatively new autocatalyst recycling market in China, where scrap volumes have been galvanised by government incentives aimed at encouraging consumers to scrap older, more polluting vehicles. In 2025, this scheme was extended for another year and widened to include vehicles registered before June 2012 meeting China 4 (or earlier) emissions standards. This helped to lift the number of Chinese vehicles being recycled by around a quarter in 2025. In addition, rising PGM prices encouraged the release of some spent catalyst material that had been hoarded by small-scale collectors at the bottom of the recycling supply chain.

Outside China, there was a modest recovery in 2025, reflecting some improvement in underlying vehicle scrappage rates along with price-related dishoarding of material that had been held up at different points in the recycling supply chain.

## "Chinese auto recycling was galvanised by government incentives"

Recycling volumes in the mature auto markets of Europe, North America and Japan were unusually weak in 2023–2024, reflecting a shortfall in the number of end-of-life vehicles reaching scrap yards. This was a consequence of low vehicle sales in the aftermath of the Covid pandemic, which drastically reduced the flow of one-to-three-year-old vehicles onto the second-hand market, and led to significant increases in used car prices. This encouraged owners to keep vehicles on the road for significantly longer than in the past.

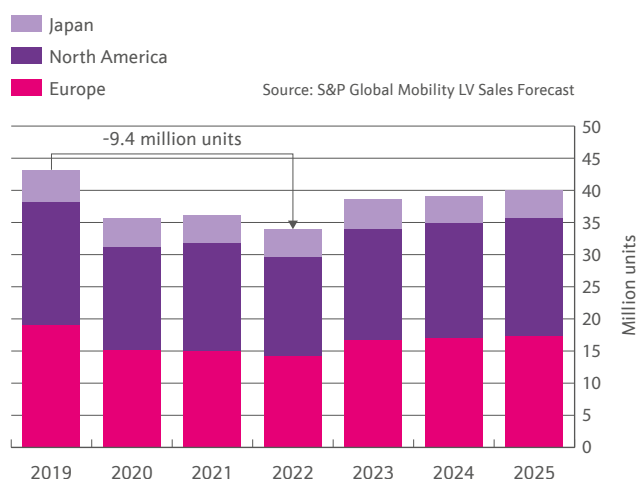


Figure 7 Light vehicle sales in mature auto markets, 2019–2025

Since 2022, new car sales in these regions have recovered, but they are still well below 2019 levels. Used car prices remain elevated, and this continues to restrict the flow of end-of-life vehicles into scrap yards. Nevertheless, stronger prices for scrap steel and PGMs helped stimulate a modest upturn in the number of vehicles entering scrap yards during 2025, especially in North America and Europe. In contrast, the number of vehicles scrapped in Japan continued to fall last year, with many older vehicles being exported to developing markets rather than being recycled. Overall, we estimate that the recovery of PGM from autocatalyst scrap collected outside China increased by 4% last year.

Recovery of platinum from jewellery scrap rose sharply in 2025, reflecting a significant increase in recycling in China. Fabrication demand increased strongly last year, particularly during the second quarter, but retail purchasing remained lacklustre. As a result, some excess jewellery stock was melted down and the metal returned to the market. The Chinese jewellery market is discussed in more detail on page 14.

## Auto production and PGM demand

PGM consumption by automakers saw only a small overall change in 2025, falling around 180,000 oz or 1.4%. Demand was supported by increased PGM use in the Chinese heavy-duty sector, where vehicle production rose by a remarkable 20%, and on light vehicles in the Rest of World region, reflecting strong growth at domestic Indian automakers. This was offset by a further contraction in the European light-duty diesel market, a large fall in heavy vehicle output in North America, and ongoing thrifing of PGM loadings on light duty gasoline vehicles in China.

At the time of our May 2025 report, industry forecasters expected increased tariffs on vehicles, automotive parts and raw materials to result in a decline in global light vehicle production volumes. Ultimately, output grew by nearly 4% last year, despite increased trade friction.

Virtually all this growth came from China: domestic sales were buoyed by the extension of a vehicle trade-in subsidy programme, while car exports rose by over 20% to more than

6 million units. In total, China produced nearly 32 million light duty vehicles in 2025, up 10%. Other markets saw much more limited changes, with Japan and the Rest of World region recording a 2% increase in light vehicle output, European production flat, and North America seeing a marginal decline.

Battery electric vehicles accounted for most of last year's gains, with a very strong performance by Chinese BEV producers in both their domestic and export markets. Chinese light duty BEV output rose by a third to over 10 million units, accounting for nearly 70% of the global total. However, there was also a modest increase in ICE vehicle volumes in China, with gasoline car output up by around 450k units (+2%). We believe that a significant proportion of these additional vehicles were inexpensive models destined for export markets. There was also further growth in production of plug-in hybrid ICE models, for both the domestic market and for export.

## “World gasoline vehicle output set a post-Covid high”

Elsewhere, some other Asian markets – particularly India – also saw increases in gasoline car volumes, with the result that global light gasoline production actually rose slightly last year, to 68.7m units, matching the post-Covid peak seen in 2023. However, the light diesel segment, dominated by Europe and India, continued to shed market share, with world production falling a further 5%.

Global average PGM loadings on light gasoline vehicles declined marginally in 2025, reflecting some further thrifting along with changes in regional and model mix. In China, PGM loadings have been reduced aggressively in recent years, particularly by domestic OEMs, despite the implementation of China 6b with real-driving emissions (RDE) testing. While China 6b requires vehicles to meet very strict emissions limits during laboratory homologation, RDE testing has comparatively lenient 'conformity factors' and does not apply to the cold start portion of the drive cycle. In addition, Chinese car companies typically use relatively mild catalyst ageing cycles during durability testing.

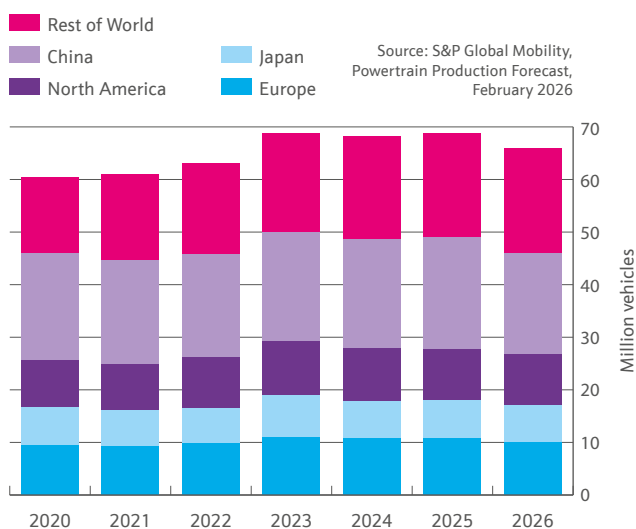


Figure 8 World light-duty gasoline vehicle production

These factors have enabled Chinese OEMs to make significant cuts in the PGM content of their vehicles over the past five years, such that catalyst loadings at domestic automakers are now significantly lower than those used by international joint ventures in China (which tend to have a more conservative, risk averse approach to catalyst fitment) and by car companies in other regions. The PGM content of Chinese vehicles destined for domestic sale is often significantly lower than on export models, especially those meeting Euro 6 and equivalent legislation.

European loadings have also seen some marginal thrifting over the past two years, as OEMs have become more comfortable with the demands of stringent RDE testing. In contrast, the PGM content of North American vehicles continued to creep higher in 2025, as the phase-in of Federal Tier 3 emissions standards was completed.

In the heavy vehicle sector, vehicle production trends saw large regional variations in 2025. North American output plunged by 28%, with freight volumes depressed, OEMs carrying excess inventory, and truck prices inflated by tariffs that raised the costs of parts and materials. Uncertainty over the timing and content of future emissions legislation also hindered new truck sales, with expected pre-buying ahead of tighter federal regulations in 2027 failing to materialise. As a result, PGM use on North American HD vehicles dropped by more than a quarter.

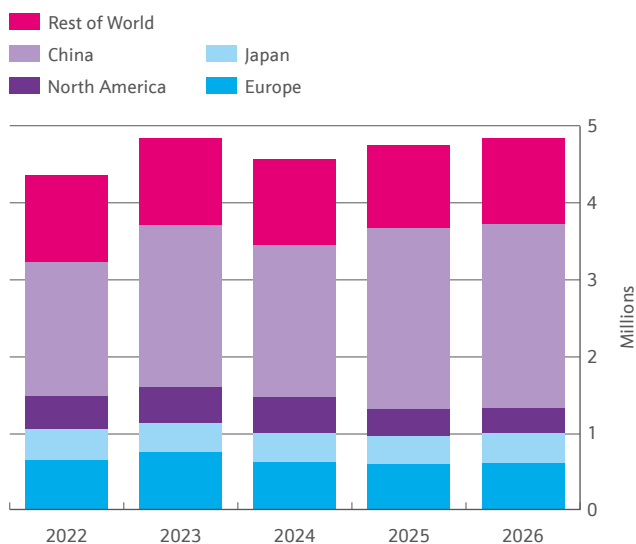
In contrast, Chinese truck production surged by 20%, in response to a widening of eligibility conditions for trade-in subsidies, with China IV diesel trucks (sold between 2010 and 2016) qualifying for the incentives in 2025. The battery electric segment captured most of the resulting gains, recording year-on-year growth of 83%, but there was also a significant increase in production of heavy vehicles with diesel (+9%) and CNG (+24%) powertrains.

As a result, PGM consumption on Chinese trucks and buses saw a double-digit increase in 2025 and accounted for nearly 20% of total Chinese auto demand. This is a much higher share than in other regions, where the heavy-duty sector typically accounts for 5–10% of PGM use. Not only do heavy vehicles account for a larger share of total vehicle production in China than in other major markets (7%, versus 3–4% in North America and Europe), but the Chinese fleet also includes a significant number of vehicles with CNG powertrains. These typically have heavier catalyst loadings than equivalent diesel-powered trucks.

## Industrial PGM demand

Since the mid-2010s, Chinese industrial policy has been an important driver of industrial PGM demand. The 'Made in China 2025' programme, launched as part of the Thirteenth Five-Year Plan (2016–2020), has stimulated heavy investment to improve Chinese self-sufficiency in core industrial feedstocks and materials, along with the modernisation of the country's industrial base. This has contributed to robust PGM demand in industrial applications over the past decade, with China's share of industrial demand rising from around 25% in 2016 to a peak of 40% in 2024.

The main drivers of Chinese PGM demand have been the chemical and glass industries. In recent years, China has



Source: KGP-GlobalData Commercial Vehicle Powertrain Forecast Q4 2025 (GVW >6 tonnes) and S&P Global Mobility, Powertrain Production Forecast, February 2026 (GVW 3.5–6 tonnes).

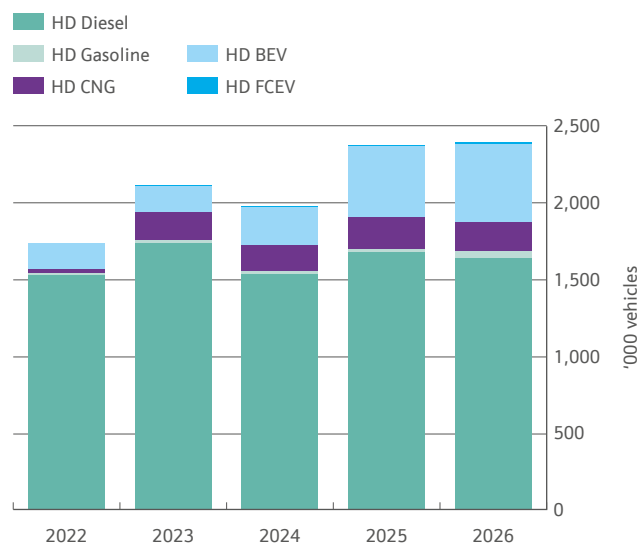
**Figure 9** World heavy-duty vehicle production by region

accounted for more than 50% of total global demand in the chemicals sector, with heavy investment in integrated petrochemical complexes that produce a variety of important chemical feedstocks. Many of these processes use PGM catalysts, including paraxylene (platinum), PTA (palladium), acetic acid (rhodium or ruthenium-iridium), and caprolactam (ruthenium). In 2025, purchasing of PGM by the Chinese chemical industry reached an all-time high of nearly 1 million oz, driven by firm demand in most major PGM-catalysed processes, and above all by record demand for ruthenium catalysts used to produce caprolactam and adipic acid, precursors for nylon production.

## “Data centre construction lifted PGM use in hard disks”

Over the past ten years, China has become by far the world’s largest producer of both fibreglass and display glass, both of which require production equipment made from platinum alloys. Capacity expansions in these sectors have resulted in heavy buying of platinum by the Chinese glass industry, particularly since 2021. This period of investment coincided with concerted efforts by Chinese fibreglass manufacturers to reduce their rhodium use (by increasing the platinum content of glassmaking alloys), contributing to strong platinum demand in 2022–2024. Surplus rhodium stocks were sold back to the market during this period.

By last year, the wave of expansion in Chinese fibreglass and display glass capacity was starting to fade, while some pre-buying of platinum during 2024 also reduced new metal requirements. As a result, purchases of platinum by Chinese glassmakers halved last year. However, with rhodium thriving in fibreglass equipment approaching its technical limits, and excess metal stocks largely liquidated, there was a return to net rhodium purchasing after four years of



**Figure 10** China: heavy-duty vehicle production by powertrain

negative demand. Some Chinese glassmakers now use pure platinum equipment to produce the most common grades of fibreglass, but rhodium remains essential for some types of specialist glass fibre, as well as for display glass production.

Lower platinum purchasing by the glass industry resulted in a fall in total Chinese industrial PGM demand last year, with China’s share of the global total falling to a six-year low of 36%. However, this decline was more than offset by growth in industrial consumption elsewhere, especially Japan and the Rest of World region. These gains were led by the display glass sector, which saw a return to positive demand following a period of rationalisation, and by the electronics industry, which has been enjoying a robust recovery from the post-Covid lows seen in 2022–2023. Electronics demand continues to be concentrated outside of China, in particular in the Rest of World region.

All the PGM see material use in the electronics industry, particularly in hard disks (platinum and ruthenium), in passive electronic components such as capacitors and resistors (palladium and ruthenium), in the plating of connectors and lead-frames (mainly palladium, with some platinum), in crucibles for growing single crystals used in telecommunications and other applications (mainly iridium, with some platinum), and in thermocouples used in semiconductor production (platinum and rhodium). Since 2024, consumption of PGM in electronics has returned to growth, due to a recovery in the consumer electronics and automotive sectors (the latter boosted by the increased electronic content of BEVs and hybrid vehicles), and more recently in response to a boom in hard disk demand, associated with the construction of data centres to meet the storage requirements of artificial intelligence software. Total PGM use in electrical and electronics applications rose by around 100,000 oz (+8%) to reach 1.25 million oz in 2025.

## Jewellery demand

Global platinum jewellery fabrication climbed by 8% to reach 1.61 million oz in 2025, the highest level in five years. During the first half, there was a surge in platinum jewellery fabrication in China, as a sustained rise in the gold price hit consumer purchasing while greatly increasing the cost of holding gold jewellery inventory. This encouraged retailers to rotate some gold stock into platinum, which in turn stimulated a surge in platinum jewellery fabrication, particularly during the second quarter.

However, better availability of platinum jewellery at retail outlets failed to translate into stronger consumer demand. As a result, the increase in fabrication was very short-lived. During the final quarter of 2025, platinum jewellery manufacturing activity slumped, while it appears that some newly fabricated jewellery was melted down and the metal sold into industrial applications at a profit (reflected in our jewellery recycling numbers).

## “Chinese jewellery retailers rotated gold stock into platinum”

Demand in Europe also benefited from high gold prices, with platinum jewellery taking share from white and yellow gold. In the UK (the largest European market for platinum bridal jewellery), there was an increase of 12% in the number of platinum items hallmarked last year, while fabrication of platinum watches in Switzerland also increased by 11%.

In contrast, North American demand was flat: although platinum gained market share from white gold in the bridal sector, the fashion jewellery sector came under pressure from fragile consumer confidence, increased economic uncertainty and high metal prices. The Japanese platinum jewellery industry saw similar trends, with bridal demand supported by an

increase in the number of marriages, but the fashion sector hit by high metal costs and reduced fabricator margins.

In the developing Indian market for platinum jewellery, fabrication demand increased by 5%. The domestic market saw double-digit sales growth, propelled by high gold prices and an expansion in the number of stores stocking platinum items. However, export manufacturing volumes declined by around a third, as shipments to the US dried up due to high import duties.

## Investment demand

Last year was another very strong year for PGM investment, with positive ETF investment in platinum, palladium and rhodium, combined with significant over-the-counter purchasing of platinum bars, especially in China.

Improving sentiment and rising prices boosted ETF purchasing during 2025. Investors added nearly 200,000 oz to their platinum holdings during the second quarter, as prices broke through the \$1,100 level and climbed steadily towards \$1,300 – an eleven-year high. This was followed by heavy selling in mid-year, probably representing liquidation by longer-term investors who had had few profit-taking opportunities in recent years. Sustained buying returned during the final quarter, especially during periods of sharply rising price in October and December. At the year end, more than 3.3 million oz of platinum were held in ETFs globally, up around 100,000 oz.

Interest in palladium ETFs has been low in recent years: holdings hovered around the 500,000 oz level between 2020 and early 2024, at which point ‘value’ investors began to enter the market. Since then, ETF holdings have risen steadily, largely in line with price movements. During 2025, palladium saw three distinct phases of ETF purchasing: in June–July (when prices climbed steadily from below \$1,000 to reach \$1,300), in September–October (as palladium moved abruptly towards

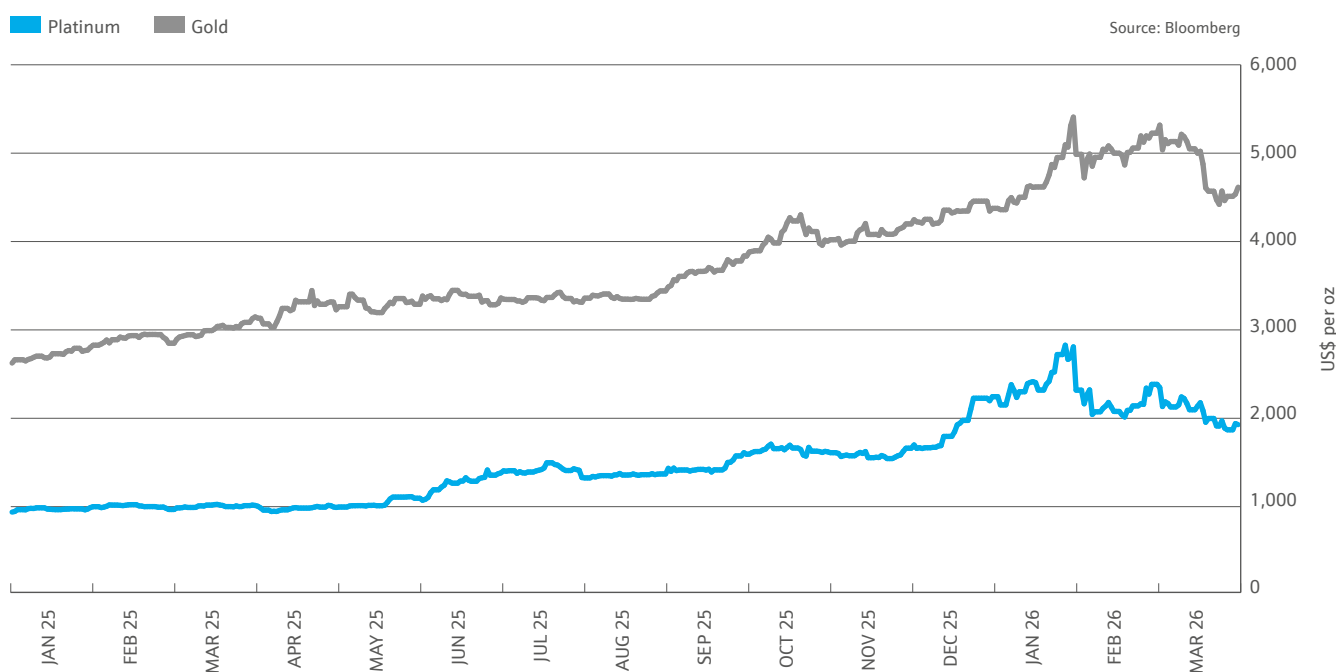
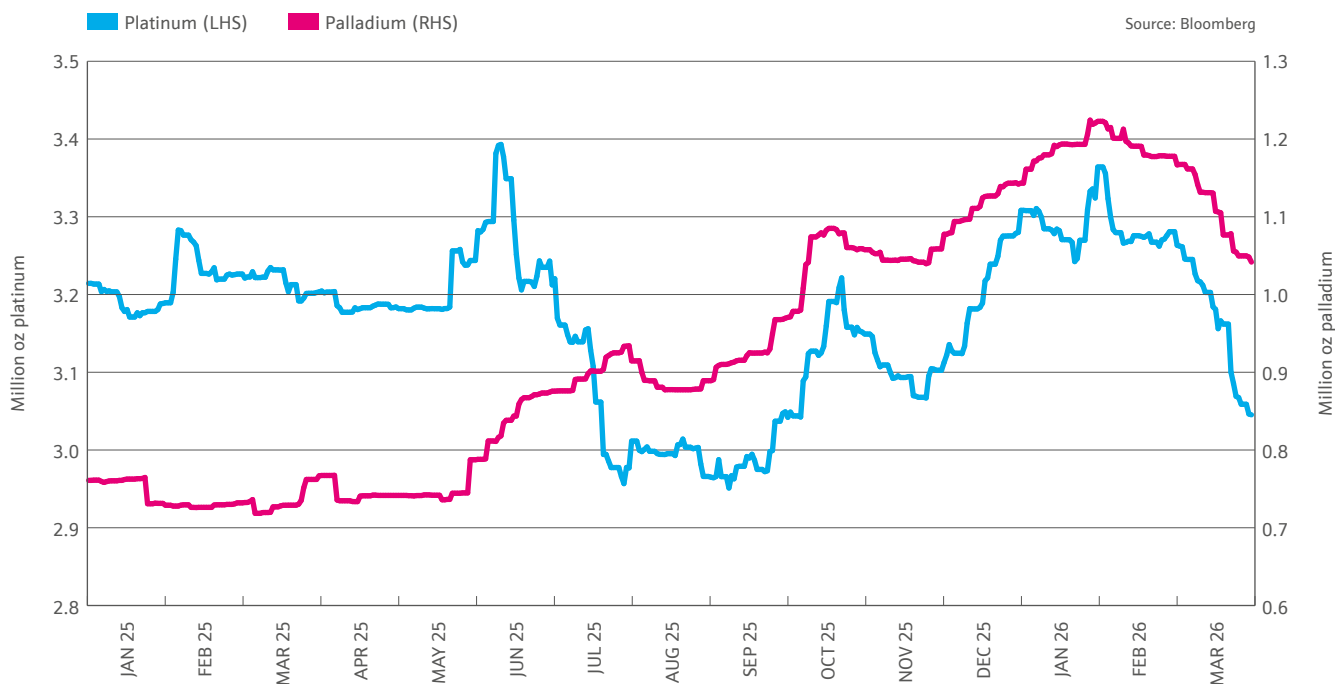


Figure 11 Platinum and gold prices, January 2025 to March 2026



**Figure 12** Platinum and palladium ETF holdings

and then through the \$1,500 level) and finally in December (during the year-end rally which saw palladium set a two-year high of over \$1,800). As the year closed, palladium ETF holdings totalled 1.14 million oz, the highest since early 2015.

Rhodium ETFs have seen little activity in recent years. However, during 2025, South African investors added modestly to their ETF positions, lifting total rhodium holdings to around 22,000 oz, the highest for more than five years.

Demand for large platinum bars in Japan was also positive, despite high prices, which would normally have been expected to result in net liquidation. Historically, platinum investment in Japan has been strongest during periods of falling price, while investors have returned metal to the market during rallies. Activity tends to be particularly pronounced when prices move sharply higher or lower. This has been a consistent feature of the Japanese large bar market for many years, although over the long term, new investment has exceeded liquidation.

## “Chinese investors bought platinum bars via e-commerce sites”

Platinum bar purchases by Japanese investors continued to follow this typical pattern during the first half of 2025. There was modest net investment between January and April, as retail platinum prices drifted down towards ¥5,000 per gram, followed by active disinvestment during May and June, when prices moved decisively higher, breaking through the ¥7,000 level for the first time since 2008. However, net liquidation was smaller than had been seen during rallies in previous years – suggesting that while longer-term holders were taking profits, new investors were simultaneously entering the market.

From July onwards, typical Japanese investment patterns were upended. Net large bar investment was positive in most months, despite exceptionally strong gains in the local platinum price, which moved through ¥8,000 per gram in September, ¥9,000 in November and peaked at a then all-time high of over ¥13,000 in late December. Overall, Japanese large bar investment was moderately positive in 2025, despite dramatic price movements and record prices.

In recent years, a market for large (usually between one and five kilogram) investment bars has also emerged in China. These bars are produced locally by Chinese fabricators and sold to wealthy private individuals. Demand has grown materially over the past 2–3 years, with platinum bars viewed as a diversification opportunity, in the context of weak performance in the domestic stock and real estate markets, and restrictions on overseas investments. Gains in the gold price have reinforced investor interest in these products, with platinum seen as underpriced in view of its widening discount to gold.

Until 2025, demand for small investment bars and coins in China was mainly limited to platinum ‘Panda’ coins, issued most years by the Chinese Mint. However, during 2025, rising precious metal prices triggered a surge of interest in small (10 gram to 100 gram) platinum bars and wafers among retail investors. Sales of these bars usually take place online via e-commerce platforms, with bars fabricated only after orders are placed. Margins are higher than on traditional large bars, so growth in demand during 2025 attracted a significant number of new entrants to this market. Purchasing of small bars was particularly strong during the second quarter, but demand remained positive throughout the second half, despite significant increases in the platinum price that stimulated some sales of metal back to the market.

# PGM outlook

## Supply and demand in 2026

Platinum will be in deficit again, but palladium and rhodium could move into surplus

Strong PGM prices are supporting a recovery in autocatalyst recycling

Primary supply is forecast to contract, due to lower Russian shipments

Autocatalyst PGM demand is set to fall, in line with lower ICE vehicle output

Ruthenium chemicals demand will fall, but the other PGM will see stable industrial consumption

Middle East conflict has created downside risk to demand in auto and chemicals

Platinum set an all-time high of \$2,860 in January, but retreated below \$2,000 in March due to Iran war concerns

The near-term outlook for PGM demand is particularly uncertain, due to conflict in the Middle East, unresolved questions over US trade policy, and increasing resource nationalism. Our forecast shows demand for all the PGM except iridium contracting in 2026. Lower global output of ICE vehicles will hit automotive PGM use, while jewellery and investment demand could also weaken this year. Ruthenium chemicals demand will fall, but industrial PGM consumption will otherwise be broadly stable, albeit with some downside risk due to disruption to petrochemical shipments. Mine production is expected to drop, especially in Russia, but double-digit growth in autocatalyst recycling will boost secondary supplies. Prices for platinum, palladium and rhodium set multi-year highs in January 2026, before moving sharply lower during March, as markets reacted to high oil prices and a deteriorating world economic outlook.

### PGM market outlook

Primary supplies of PGM are forecast to fall this year, in the wake of strong Russian shipments and higher-than-expected South African sales in 2025. The decline in primary palladium supply could be particularly significant, with output at Norilsk Nickel set to decline by as much as 10%, and Russian inventories of refined metal thought to have been depleted over the past 3 years. Platinum and rhodium supply will see much smaller drops, in line with modestly lower refined output in South Africa.

“Platinum set a record high of \$2,860 in January”

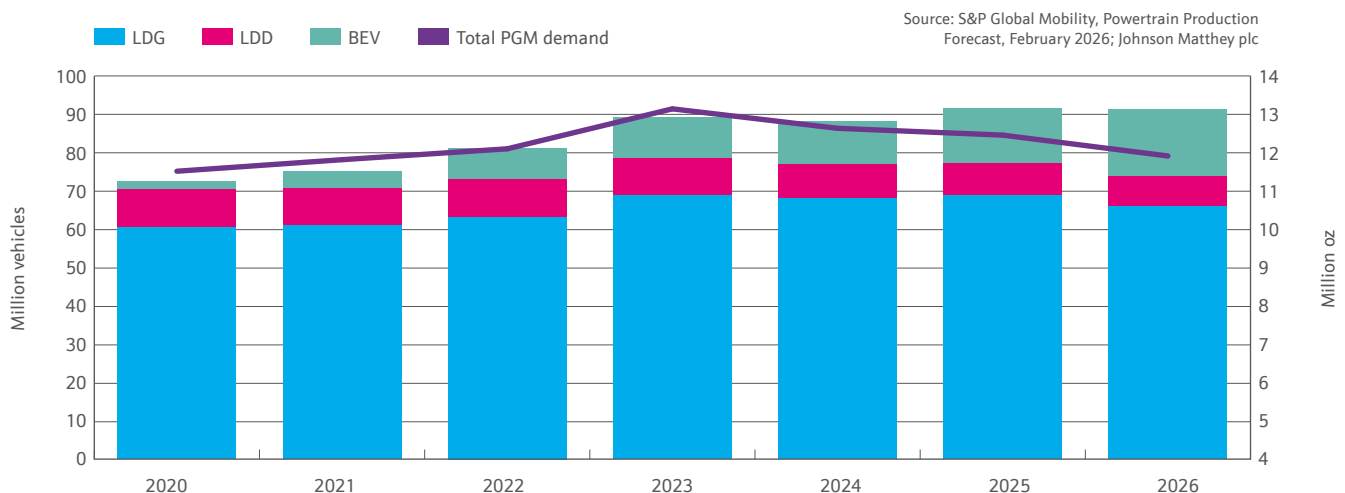


Figure 13 PGM demand & light vehicle powertrain split



**Figure 14** Monthly average ruthenium and iridium prices

In contrast, secondary supplies are forecast to rise by around 8%, with a gradual improvement in underlying vehicle scrappage rates in mature markets, combined with some dishoarding in the recycling supply chain, stimulated by high PGM prices. In China, a vehicle trade-in incentive scheme has been renewed for another year and should continue to support growth in recycling volumes. Overall, we expect combined primary and secondary palladium supplies to fall by around 3%, while those of platinum and rhodium (less impacted by changes in Russian sales) will be broadly flat.

## “Iridium and ruthenium prices hit new all-time records”

Automotive PGM consumption is predicted to fall by around 4% in 2026, broadly in line with the outlook for global ICE vehicle production. We do not anticipate any material change in the average PGM content of light duty vehicles: although European PGM loadings will rise modestly this year, with Euro 7 regulations being enforced on new models starting in late November, this will be offset by thrifting in countries where there is no near-term change in emissions legislation.

Recent years have seen auto industry production forecasts being adjusted progressively upwards over the course of the year, so there may be some upside to our automotive PGM demand estimates. However, conflict in the Middle East and revived uncertainty over global trade will act as headwinds for the auto market this year. It is also possible that high gasoline and diesel prices could boost BEV sales, at the expense of ICE vehicles.

Industrial PGM demand is forecast to be relatively firm this year. However, our 2026 estimates do not yet capture any downside risk due to military conflict in Iran. Damage to oil and gas installations in the region, combined with significant impacts on shipping through the Strait of Hormuz, are

likely to have near-term consequences for PGM use in the petrochemical sector. There is also a wider risk to industrial demand, due to potential impacts on supply chains, along with higher costs and weaker consumer demand.

Jewellery fabrication demand will be depressed this year by surplus stocks in the Chinese jewellery distribution chain, a hangover from the mid-2025 surge in jewellery fabrication. While some of last year’s excess inventory has already been melted down and returned to the market, retailers are well-stocked with platinum jewellery, and consumer demand remains lacklustre. As a result, Chinese fabrication volumes are forecast to contract sharply this year.

## Prices and market balance

PGM prices saw further dramatic movements during the first quarter of 2026. Platinum and palladium surged during January, peaking at over \$2,800 and \$2,100 respectively. This represented a new all-time high for platinum. However, prices subsequently slid lower, amid growing concerns over the world economy – especially after the outbreak of war in Iran in March. With US dollar strength exacerbating the sell-off, platinum and palladium descended below year-opening levels, falling to \$1,908 and \$1,448, respectively, at the end of March. Reflecting these price movements, platinum ETFs shed around 260,000 oz during the first quarter, while palladium ETFs saw about 100,000 oz of liquidation. While we still allow for positive demand for small and large platinum investment bars (especially in China), it remains to be seen how investors will respond to a less bullish price environment.

Minor PGM prices were more robust during the first quarter. The rhodium price peaked at a three-year high of \$12,000 in late February and remained above end-2025 levels throughout March, despite a retreat towards \$10,000. Iridium and ruthenium both saw strong gains during the first quarter, hitting new all-time highs of \$8,000 and \$1,750, respectively.

## Platinum market balance

Platinum is forecast to remain in deficit this year. Combined primary and secondary supplies are set to contract, with moderate growth in autocatalyst recoveries outweighed by lower jewellery recycling and weaker mine supply from South Africa. On the demand front, platinum has a broader base of applications than the other PGM, making it less vulnerable to downturns in any single sector. Disruption to oil supplies could dent petroleum refining and chemicals demand, while high fuel prices represent a downside risk to ICE vehicle output, but combined automotive and industrial consumption should nevertheless remain robust by historical standards.

In contrast, platinum demand in the jewellery and investment sectors could see a double-digit decline this year, following strong purchasing in 2025. Platinum jewellery manufacturing in China surged in mid-2025, as retailers swapped gold inventory for cheaper platinum, but a hoped-for improvement in consumer purchasing failed to materialise. Fabrication volumes are expected to fall this year, as inventories normalise.

Platinum investment demand could also weaken materially this year. Some 260,000 oz of platinum ETF holdings were liquidated during the first quarter, as the price subsided from the late January high of over \$2,800. Interest rates had been expected to fall this year, but a resurgence of

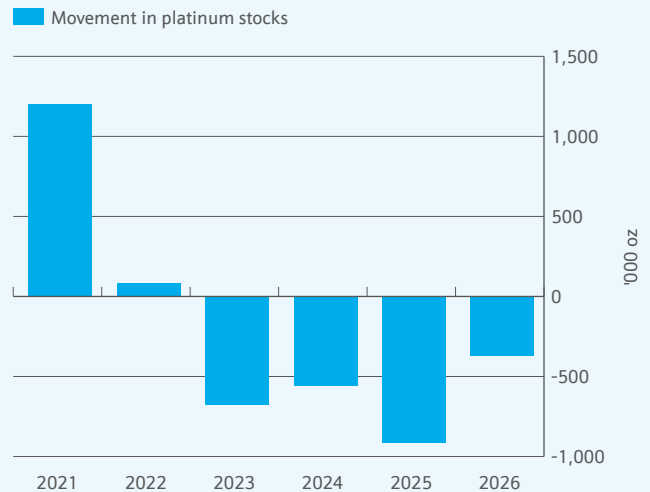


Figure 15 Platinum market balance

inflationary pressures could result in tighter monetary policy; this would be negative for precious metal ETFs. In contrast, investment demand in China appears to be robust, with platinum enjoying a rising profile among investors and sales of small bars to retail investors seeing double-digit growth in early 2026. This is a new and evolving market, in which investor behaviour is difficult to predict, and which could materially impact the magnitude of the deficit this year.

## Palladium market balance

Demand for palladium is forecast to decline by 9% this year, with automotive use shrinking in line with a drop in ICE vehicle production, industrial consumption flat, and investment turning negative. Supplies are also expected to fall, as a sharp drop in Russian shipments more than offsets growth in autocatalyst recycling, but this may not be enough to prevent palladium from moving into a small surplus.

The auto sector accounts for more than 80% of palladium demand, so any downside risks to vehicle production are particularly significant for the overall market balance. Our forecast of automotive palladium use was based on data available at the end of the first quarter, which does not yet capture likely Iran war impacts. Production and sales of vehicles in the Middle East will see the heaviest losses, but high fuel prices and fears of future shortages could affect the volume and powertrain mix of vehicle sales elsewhere.

Investment demand will remain an important swing factor, with potential to influence market balance in both directions. During February and March, the palladium price declined by more than 30% from the late January high of over \$2,100; this triggered around 100,000 oz of net liquidation in palladium ETFs. At this stage in the year,

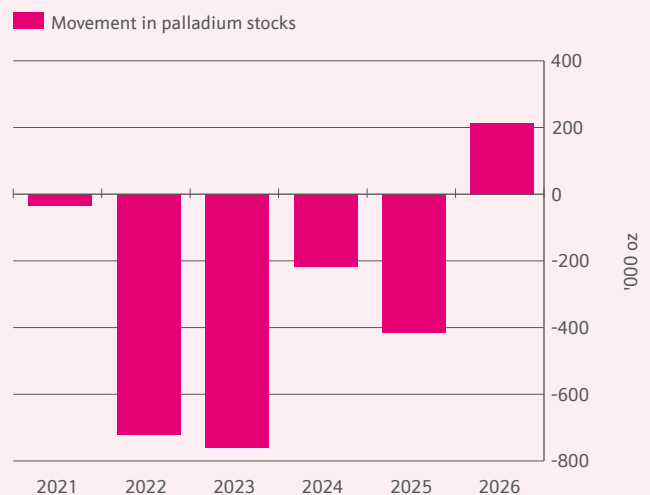


Figure 16 Palladium market balance

there is clearly some scope for a recovery in investment demand, but there is also a risk of further selling, especially if lower ICE vehicle sales dent investor confidence, or if rising inflation puts upward pressure on interest rates.

Even before allowing for the potential impact of geopolitical conflict on industrial and automotive demand, it is likely that the three autocatalyst PGM will move closer to balance in 2026. Although we still anticipate a deficit in platinum, we expect the gap between supply and demand to close, reflecting lower ICE vehicle production, reduced physical investment, and a sharp fall in jewellery fabrication in China. Meanwhile, palladium and rhodium – which are more exposed to falling ICE vehicle production – are both forecast to move into a small surplus.

Ruthenium and iridium will remain in deficit. The shortfall in iridium will be modest, with supply unchanged, and demand forecast to increase moderately, as green hydrogen projects get underway in Europe. However, ruthenium looks set to remain in deep structural deficit, despite lower consumption in chemical catalysts. Any additional strategic buying, above and beyond current industrial requirements, would further reduce liquidity in these markets.

### Primary supply outlook

We expect a modest decline in South African PGM supplies this year, reflecting a smaller benefit from the release of work-in-progress than in 2024 and 2025, and a limited contraction in underlying mine production volumes. Company guidance suggests that output will fall at Sibanye-Stillwater’s western Bushveld operations, but this will be partly offset by gains at other producers, including a recovery at Valterra’s Amandelbult operation (affected by flooding last year), along with additional production from projects currently in the ramp-up phase, such as Ivanplats’ Platreef project and Northam’s Eland mine.

Higher prices are starting to filter through into mine planning. Both Impala Platinum and Sibanye-Stillwater have a number of life-extension projects at various stages of development, intended to bolster life-of-mine at their large western Bushveld operations. In addition, Implats (with its JV partner ARM) may consider a restart at the mothballed Merensky Reef expansion project at the Two Rivers mine on the eastern Bushveld. ARM is also continuing with underground development at its Bokoni mine, although

mining and milling activities were temporarily halted in mid-2025. Northam is proceeding with a tailings expansion at its Booyendal mine, which could facilitate increased production volumes in future if PGM prices remain favourable, and has started work on a fourth shaft at Zondereinde. At Valterra, work on the underground Sandsloot mine at Mogalakwena is progressing, with an investment decision due in the first half of 2027. Outside South Africa, Implats has also announced a one-year life extension at Impala Canada and is considering a tailings project which could allow another five years of operation.

### “Palladium and rhodium could move into a small surplus”

Most of these projects are intended to replace or extend the life of existing mines, thereby limiting future declines in production, rather than expanding output. However, given a more positive price environment and adequate capital spending, we believe that South African PGM production could be maintained at close to current levels until at least the early 2030s.

Russian supplies are forecast to fall sharply this year. As shown in Figure 17, average grades in the ore mined at Norilsk-Talnakh have fallen steadily over the past two decades, but PGM volumes have been supported by a combination of increases in ore production, and the treatment of historic PGM-bearing materials. However, this year, PGM production at Norilsk Nickel is set to drop steeply, which the company attributes to a temporary change in the mining mix in favour of lower-grade ores. According to guidance, palladium output will be in a range of 2.42–2.47 million oz, which would represent a decline of 10–11% compared with 2025, and would be the lowest total since at least 2005 (the first year in which Norilsk Nickel was permitted to report PGM production data). Platinum output is expected to fall by between 5% and 8%.

Our forecast does not allow for any further shipments of palladium from refined stocks, and we therefore show a

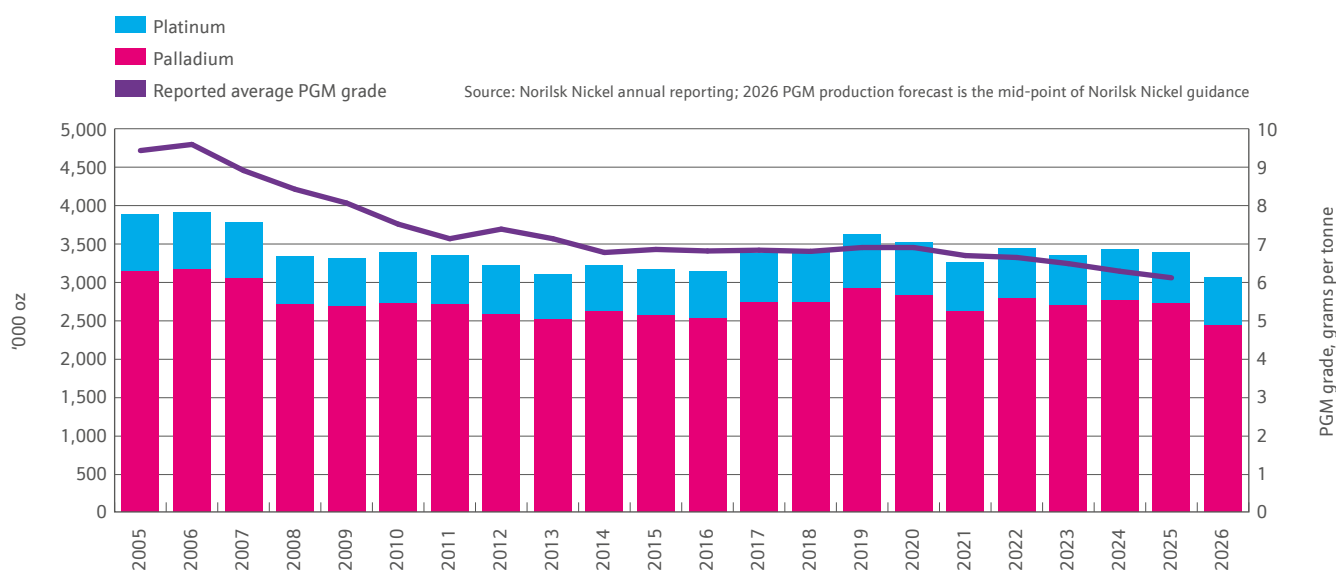


Figure 17 Norilsk Nickel PGM production history and average ore grade

## Rhodium market balance

We expect rhodium to move into a small surplus in 2026. However, liquidity remained tight during the first quarter, the result of strong purchasing by consumers and other market participants.

Mine supplies are predicted to fall by around 3% this year, with lower shipments from both South Africa and Russia. Offsetting this, we expect a further recovery in global autocatalyst recycling, leaving combined primary and secondary supplies virtually flat. On the demand side, automotive consumption will fall by around 5%, in line with expected trends in ICE vehicle production, while purchases by glassmakers are expected to be stable. Our forecast of total demand, at just over 1 million oz, represents a ten-year low.

Rhodium is particularly exposed to demand from the auto industry, which in the last ten years has accounted for between 85% and 95% of annual consumption. Any downward pressure on ICE vehicle production, as a result of high fuel prices and shortages, would therefore have an outsized impact on the rhodium market, potentially tipping it into a more substantial surplus.

While the glass sector rarely accounts for more than 10% of annual rhodium use, purchasing by this industry

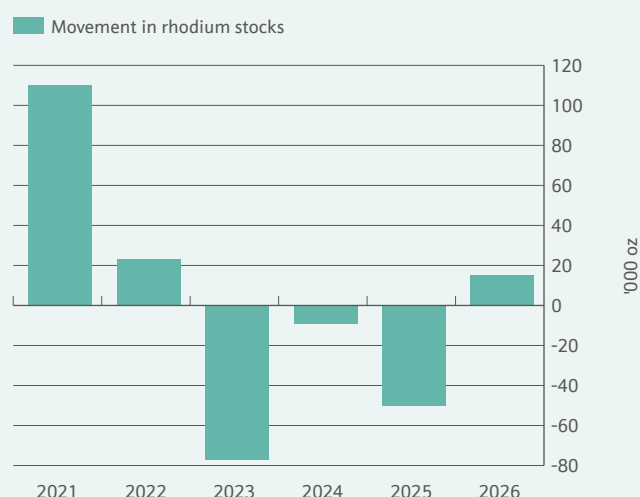


Figure 18 Rhodium market balance

has been highly variable in recent years. Between 2023 and 2025, demand rose by 60,000 oz, as the rhodium content of glass fibre alloys stabilised, following significant reductions during 2020–2022. We do not expect any significant change in average rhodium content this year, but there may now be some upside, as producers add capacity for specialist e-glass fibre.

significant decline in Russian supplies in 2026: down 17% for palladium and 3% for platinum. We think that Norilsk Nickel has liquidated most of its palladium inventory in the past three years. If our assumption is correct, this will result in a material fall in global primary palladium supply in 2026, helping to limit the move into market surplus.

Beyond 2026, Norilsk Nickel has several projects underway that should support or increase PGM output, including an expansion at its Talnakh concentrator, a deepening of its Skalisty underground mine, and completion of the South Cluster open-cast project. The company is also expected to process PGM from the neighbouring Chernogorsky mining project, where concentrator commissioning is expected to take place by end of 2026. At full production, this project could produce up to 500,000 oz of palladium annually.

North American palladium supply is expected to fall this year. Production at the Stillwater mine in Montana, USA, is planned to be stable, while output at Impala Canada's Lac des Iles mine will decline as it nears the end of its life (it is currently expected to close in mid-2027). This will be only partly offset by additional PGM production from the Sudbury nickel operations, where Vale is expanding mining volumes, and development of Glencore's new Onaping Depth project will be completed this year. In contrast, North American platinum supplies should rise slightly, reflecting higher platinum-to-palladium ratios in Sudbury ores than at Stillwater or Impala Canada.

## Secondary supply outlook

A recovery in the world autoscrap market is forecast to accelerate in 2026. Outside China, most market participants have reported a positive start to the year, with increased activity at scrapyards, and high prices helping to accelerate the movement of PGM through the recycling supply chain. At the time of writing, it was difficult to assess how much of the improvement reported by collectors is due to dishoarding, how much to changes in market share (following consolidation in the industry last year) and how much to organic growth in scrap volumes. Our forecast is conservative: used car prices remain high, and available data suggests that the average age of vehicles when they enter scrap yards is still rising. In addition, conflict in the Middle East means that there is some downside risk to auto sales this year, which could in turn be negative for vehicle scrappage rates.

## “Domestic Chinese car sales shrank 17% in the first quarter”

In China, we expect further double-digit gains in autocatalyst recycling volumes, although the rate of growth will slow somewhat compared to 2025. Trade-in incentive programmes have been extended for a further year, but subsidies are now based on a percentage of the new vehicle's price (versus a fixed amount previously), which is significantly less favourable for buyers of entry-level vehicles. In addition, the purchase tax

exemption for new energy vehicles (NEVs: includes BEVs and plug-in hybrids) was withdrawn at the beginning of this year, with plug-in vehicles now subject to a 5% purchase tax, half that imposed on vehicles with conventional ICE powertrains.

These changes contributed to an estimated 17% drop in domestic sales of passenger vehicles in the first quarter of 2026. This fall was exacerbated by distortions in monthly sales patterns caused by the timing of Chinese New Year, and by pre-buying in late 2025 ahead of the reduction in subsidies. At the time of writing, industry forecasters expect domestic sales of light vehicles to fall by around 2% this year, but if annual sales disappoint, then so too could recycling volumes.

### Automotive production and demand

Industry forecasts published in early 2026 anticipated little overall change in world light vehicle production this year. However, further gains in battery electric market share will depress output of vehicles with ICE powertrains, with the light gasoline and light diesel segments expected to see declines of 4% and 8%, respectively.

Most of this fall will occur in Europe and China. Both regions are expected to see strong BEV growth in the context of a flat or modestly declining overall light duty (LD) market. In China, LD BEV production is set to rise by 16% in 2026, to reach 37% of the total market (up from 32% in 2025). Meanwhile, Europe is forecast to see BEV output jump by nearly 40%, to capture a 20% production share, as several large OEMs launch electric models. In addition, the Chinese automaker BYD will begin to produce electric cars at its new transplant in Hungary this year.

### “Euro 7 implementation will result in a small increase in PGM loadings”

Only in North America is LD BEV output forecast to contract, in response to the withdrawal of tax credits at the end of September 2025. However, with the overall light-duty market suffering from a combination of weak consumer sentiment, rising car prices and high financing costs, ICE vehicle output in North America is also expected to fall slightly this year.

In the heavy-duty sector, global vehicle production is forecast to rise by around 2%. Outside China, there should be a modest rebound in output of ICE trucks, especially in Japan and the Rest of World region, following a weak year in 2025. However, this will be largely offset by further gains in BEV share in the domestic Chinese market.

China saw dramatic growth in output of electric trucks during 2025, especially in medium (gross vehicle weight over 6 tonnes) and heavy (GVW over 15 tonnes) truck categories, where production more than doubled. This was driven by falls in battery prices, making electric powertrains more competitive in larger vehicles, along with trade-in subsidies which incentivised owners of older trucks to acquire a ‘new

energy’ vehicle. Part of these gains probably represented a pull-forward of demand, ahead of less favourable incentives in 2026; as a result, growth rates are expected to fall sharply this year. Nevertheless, battery powertrains should continue to capture share of the heavy-duty market this year, especially in smaller (3.5–6 tonne GVW) truck categories.

Based on this outlook, we expect global automotive PGM demand to fall by 4–5% this year, broadly in line with the fall in ICE vehicle production. World average loadings on light duty vehicles are expected to be stable this year, with increases in Europe and North America offset by some thrifting elsewhere. Euro 7 will be implemented for new models starting in 2026, and this will result in a small uplift in the average PGM content of European gasoline vehicles. For light vehicles, Euro 7 represents only a limited increase in overall stringency versus current Euro 6e legislation. This means that any changes in loadings are likely to be modest, and we expect OEMs to turn their attention to thrifting as soon as the legislation is fully implemented.

In North America, the implementation of Federal Tier 3 regulations was completed during 2025; the phase-in of Tier 4 will begin with model-year 2027 vehicles, which will be launched this year. In addition, changes in vehicle mix are expected to be positive for PGM loadings, with larger pick-ups and SUVs expected to gain production share versus smaller passenger cars. Typically, heavier vehicles with larger engines require catalyst systems which contain more PGM.

Global average PGM loadings on heavy duty vehicles are forecast to decline marginally this year, mainly due to vehicle and powertrain mix effects in China. The heaviest truck categories are expected to account for a smaller proportion of Chinese heavy vehicle production in 2026; these vehicle types typically have aftertreatment systems that contain more PGM than smaller commercial vehicles. In addition, we expect some on-going thrifting on catalyst systems used on heavy-duty CNG vehicles.

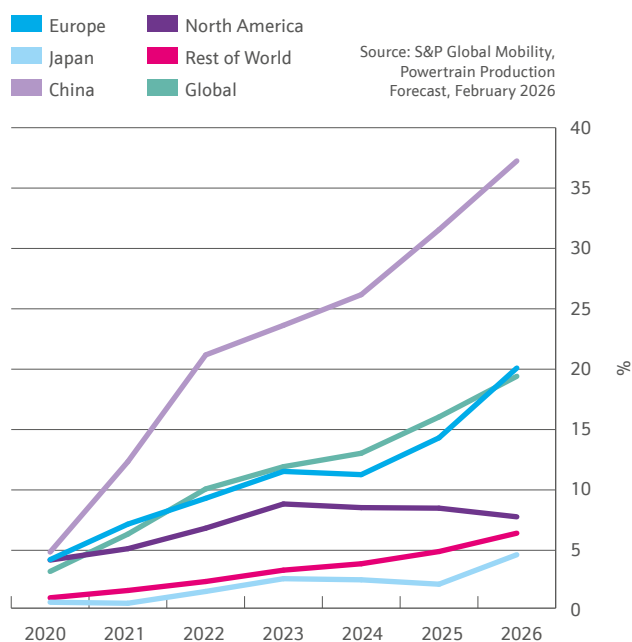


Figure 19 BEV share of light-duty production, by region

## Ruthenium and iridium market balance

Pressure on liquidity in the ruthenium and iridium markets could intensify this year, with both metals expected to remain in deficit. Fundamental shortfalls could be exacerbated by further strategic purchasing.

The iridium market will edge further into deficit in 2026, with mine supply flat, while demand reaches a three-year high. This year will see the first significant demand for iridium in PEM electrolysis, as large green hydrogen projects in Germany and Portugal near completion and PEM electrolyser arrays are delivered. We also expect further gains in iridium demand for electrodes used to manufacture copper foil, employed in lithium batteries and electronic circuit boards. This will more than offset a fall in chemicals demand, as investment

in new acetic acid capacity using the Cativa process subsides; high iridium and ruthenium prices have made the alternative rhodium-catalysed Monsanto process more competitive.

The ruthenium market is forecast to remain in deep deficit, despite a decline in industrial demand. Consumption in the Chinese chemicals industry is set to see a double-digit drop, as the domestic caprolactam market moves into oversupply, triggering the postponement or cancellation of planned capacity additions. However, this will be partly offset by very strong demand from the electronics industry, both for ruthenium pastes used in electronic components such as resistors, and for hard disks. With South African producer stocks much depleted over the past five years, supply will once again fall short of demand, requiring existing market stocks to be mobilised to meet consumer requirements.

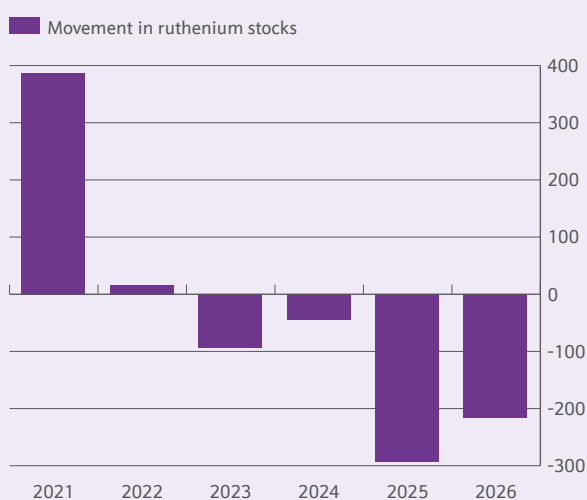


Figure 20 Ruthenium market balance

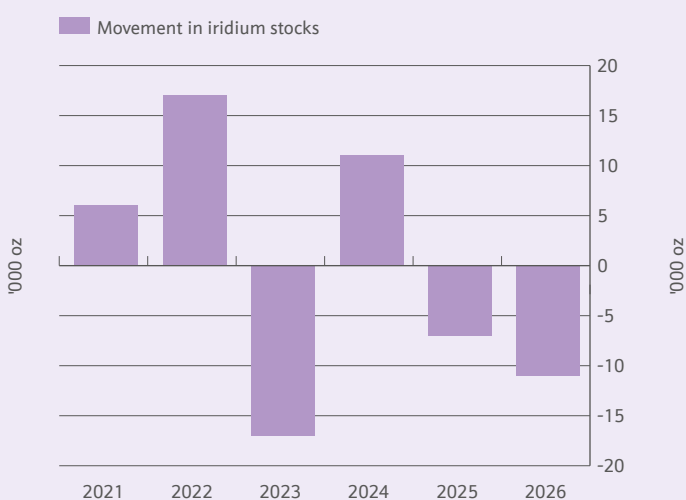


Figure 21 Iridium market balance

The auto industry production forecasts on which our PGM demand outlook is based were made in early 2026. The outbreak of war in Iran, and its impact on fuel prices and on the wider economy, could result in some downside risk to our numbers. The volume of production and sales at immediate risk from the conflict is relatively small: vehicle sales in the Middle East were just over 3 million units last year, of which 1.1 million were in Iran itself. However, high fuel prices and other supply chain impacts could cause more generalised economic damage, harming vehicle sales globally.

## Industrial PGM demand

Consumption of PGM in industrial applications is forecast to be broadly stable this year, for all the PGM except ruthenium. The latter is expected to see a sharp fall in demand from the chemical industry, following exceptionally high purchasing of ruthenium catalysts by caprolactam producers over the past two years. During 2025, the Chinese caprolactam industry moved into oversupply and margins began to fall; as a result, producers have reduced their operating rates and postponed or cancelled some expansions that had been planned this year.

In addition, high prices are putting pressure on ruthenium use in some applications. With the price almost quadrupling between January 2025 and March 2026, there has been some demand destruction, for example in catalytic wastewater treatment processes (used to remove toxic organic pollutants from industrial effluents), which faces increased competition from alternative non-PGM processes.

Iridium consumption is expected to be stable this year. Chemical industry demand is set to fall, with lower demand for ruthenium-iridium catalysts used in the Cativa acetic acid process, but this will be offset by slightly higher iridium use in electrochemical applications. Demand for iridium in electrodes used in copper foil production has been hit by overcapacity, but is now recovering, driven by rising requirements in printed circuit boards and lithium batteries. This year should also see the first commercial-scale use of iridium in PEM (proton exchange membrane) electrolysis, with two large green hydrogen projects in Europe nearing completion.

Industrial platinum demand is expected to be relatively robust this year, reflecting an ongoing recovery in electrical applications

(mainly in hard disks), and expected purchasing of chemical catalysts for paraxylene and propane dehydrogenation projects. Glass demand could also show a modest improvement, following weaker demand in 2024, but consumption in the petroleum and liquid fuels industry is expected to fall back this year, in the wake of significant purchases of platinum catalysts for biofuel and synthetic fuel production in 2025.

During the 1990s, use of palladium in industrial applications was consistently above 3 million oz per annum. Since then, repeated cycles of price-driven demand destruction have reduced consumption to less than 1.5 million oz annually. In 2026, industrial purchasing is expected to be stable, with firm demand from the chemicals and electronics industries offsetting lower use in dental alloys.

Industrial consumption of rhodium is also forecast to be stable. Demand for rhodium in glassmaking was negative during 2021–2024, as Chinese fibreglass companies sold surplus metal back to the market, but returned to positive territory in 2025. We expect further net buying by fibreglass producers this year. Thrifiting of rhodium in glassmaking alloys appears to have reached its limits, and there is now some evidence of additional rhodium use in specialist glass fibre applications. In particular, alloys with a rhodium content of at least 10% are typically preferred for equipment used to produce high-performance categories of electric glass fibre, employed in advanced composites and electronic materials. This type of glass fibre requires high-purity raw materials that must be processed at elevated temperatures – conditions under which the use of alloys with a higher rhodium content can provide significant benefits, in terms of improved product quality and longer equipment life. High-performance electric glass fibre currently accounts for only a small proportion of total fibreglass production, but this market segment is seeing rapid growth.

Our demand forecasts were finalised in March 2026 and are therefore subject to downside risk due to the closure of the Strait of Hormuz and damage to petrochemical facilities in the region. Disruption to the supply of oil, gas and petrochemicals has the potential to impact PGM consumption in the petroleum refining and chemical industries, particularly in Asia, which is heavily dependent upon imports from the Middle East.

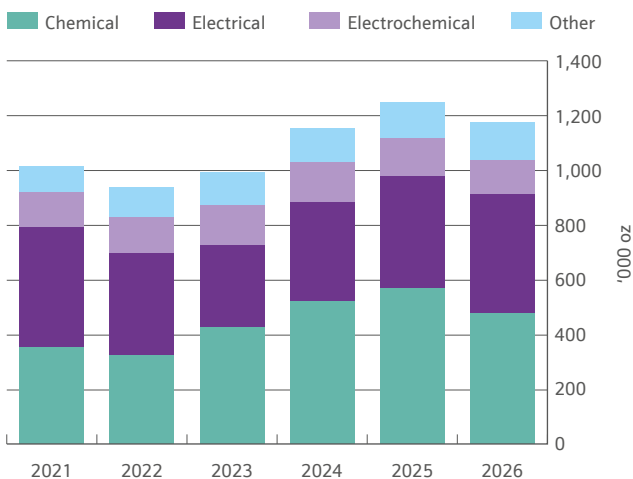


Figure 22 Ruthenium industrial demand by application

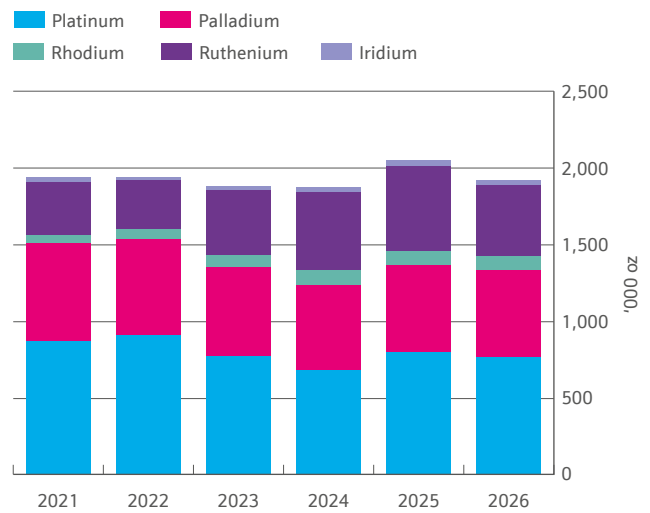


Figure 23 PGM demand in the chemical and petroleum industries

As of early April, prices for most basic petrochemical feedstocks – including naphtha, propane, benzene and methanol – had risen by at least 30%, and some Asian countries were facing supply shortages. Many PGM-catalysed processes depend on such feedstocks: for example, the production of paraxylene involves a platinum catalyst and typically uses naphtha as its primary input; propane is used to manufacture propylene via the propane dehydrogenation process (platinum catalyst); benzene is a feedstock for caprolactam and adipic acid (ruthenium); the Cativa (ruthenium and iridium) and Monsanto (rhodium) processes are based on the carbonylation of methanol. Some of these chemicals are, in turn, precursors for other downstream processes, such as purified terephthalic acid (which uses a palladium catalyst) and oxo-alcohols (rhodium). Thus, PGM demand from the chemicals industry – especially in Asia – is highly exposed to disruption to oil and petrochemical supplies due to the Iran war.

## “Two large green hydrogen projects are nearing completion in Europe”

At the time of writing, some Asian chemicals producers had already responded to high prices and shortages by reducing capacity utilisation, or by scheduling maintenance in the hope that feedstock supplies will have normalised by the time their plants reopen. These temporary closures and lower operating rates will have an impact on the frequency of catalyst renewal, and hence on 'top-up' PGM demand, to replace metal lost during routine plant operation. If disruption is relatively short-lived, and operating rates subsequently rebound, the effect on demand should be limited. However, the longer supply disruption continues, the more likely it becomes that planned expansions will be postponed or cancelled. This would have a more significant impact on PGM demand, especially if it were to affect bulk petrochemical projects, which often require an initial catalyst charge containing tens of thousands of ounces of PGM.

# Emissions legislation update

## Europe

### Euro 7 emissions standards

Euro 7 emissions legislation will be phased-in starting on 29th November 2026, when the new standards will be implemented for new light duty models (they will be extended to all new vehicles one year later).

Emissions limit values for light duty gasoline and diesel vehicles are unchanged compared to current (Euro 6e) regulations. However, the size of particulates on which the particle number count is made has been reduced from 23nm to 10nm, while durability requirements and real driving emissions (RDE) testing procedures have also been strengthened.

In the light duty sector, we anticipate an initial uplift to PGM loadings as a result of the new regulations. Although the limit values for pollutants are unchanged, harsher RDE testing and extended durability periods will make them more challenging to meet. In addition, some automakers finalised their Euro 7 catalyst systems before the definitive version of the legislation was adopted (earlier proposals had included tighter emissions limits). There should be scope to thrift PGM from some of these systems once the new legislation has 'bedded in'.

There will also be some initial impact on the platinum-to-palladium ratio in European catalysts, with platinum-rich systems selected for some Euro 7 models (these catalyst decisions were made at a time when palladium was more expensive than platinum). As post-Euro 7 thrifting programmes progress, we expect this substitution to be reversed.

Euro 7 heavy-duty limits will apply to new truck models from May 2028 and to all new HD registrations from May 2029.

Emissions limits for heavy vehicles have been materially tightened versus Euro VI, with more stringent NO<sub>x</sub> requirements, new ammonia and N<sub>2</sub>O limits, and longer durability periods. However, there will be little or no impact on the PGM content of heavy-duty catalyst systems, as tighter NO<sub>x</sub> control will be achieved using non-PGM selective catalytic reduction (SCR) technology. While some vehicles will require additional ammonia slip catalysts (ASC), these have very low PGM loadings and the impact on average PGM content per vehicle will be marginal.

### European Union CO<sub>2</sub> legislation

European CO<sub>2</sub> legislation is currently undergoing change. An amendment has already been adopted to the 2025 standard, which required CO<sub>2</sub> emissions from cars and vans to be reduced by 15% relative to a 2021 baseline. Compliance will now be assessed over the 2025–2027 period, with car companies allowed to offset excess CO<sub>2</sub> emissions in any one year by exceeding the target in other years. The European Commission has recently issued further proposals, which would give automakers some additional compliance flexibility when CO<sub>2</sub> limits tighten again, in 2030 and 2035.

## “New EU proposals would allow ICE vehicles to be sold after 2035”

Under these proposals, the 2030 target for passenger cars remains unchanged (a 55% reduction versus the 2021 baseline), but compliance would be assessed over a two-year period; for vans, the required CO<sub>2</sub> reduction would be cut to 40%. More significantly, the proposed 100% CO<sub>2</sub> reduction in 2035 would be set at 90% (for both cars and vans), with the additional CO<sub>2</sub>

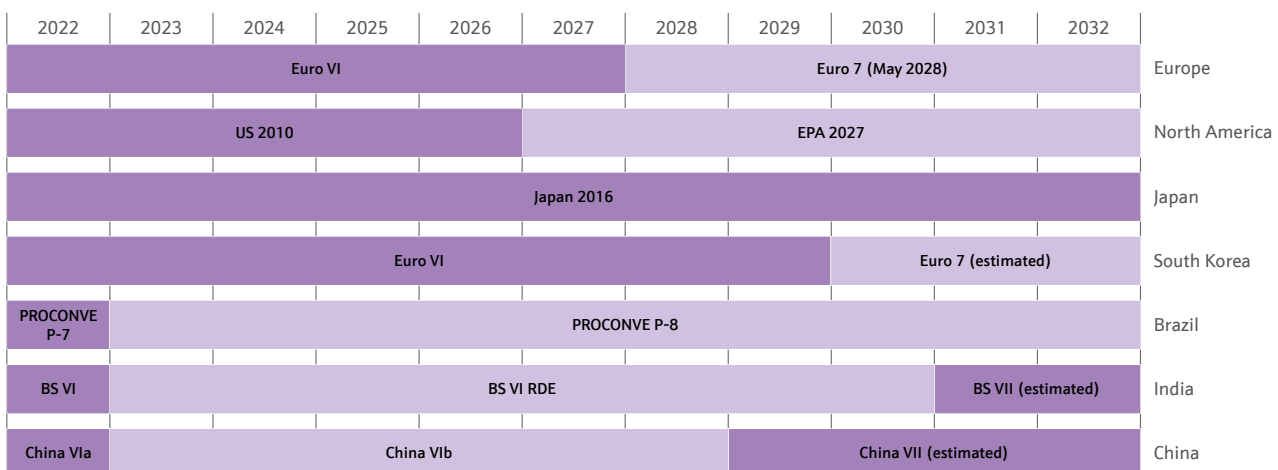
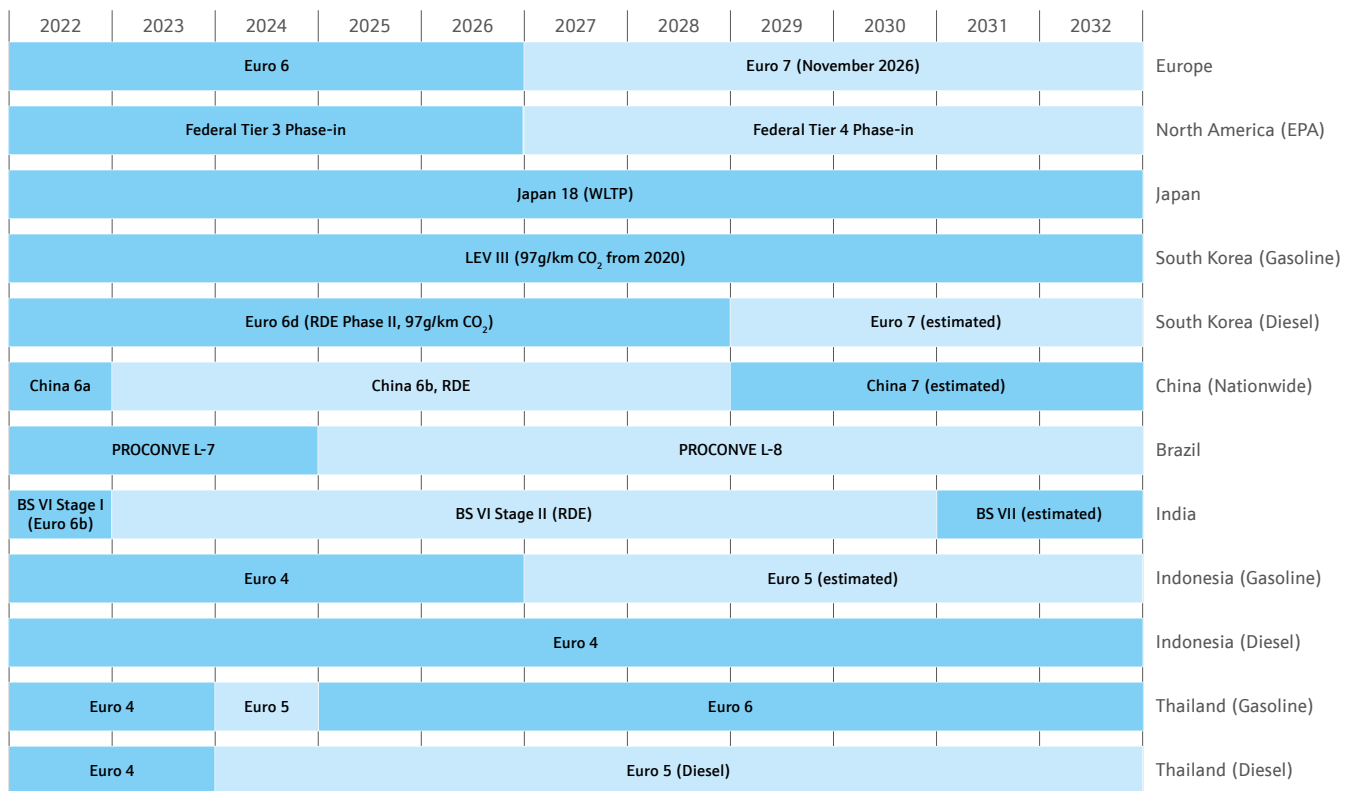


Figure 24 Emissions legislation for heavy duty vehicles



**Figure 25** Emissions legislation for light duty vehicles

offset by credits for the use of EU 'green steel' and renewable fuels. This would provide significant additional flexibility in meeting the legislation, allowing automakers to continue to sell ICE vehicles after 2035. Post-2035 ICE vehicle production will depend on the powertrain strategies adopted by automakers, and in particular on the share of highly electrified hybrid powertrains such as PHEVs and REEVs (which currently represent only 9% of ICE vehicle production across the European region).

The new CO<sub>2</sub> proposals, which form part of a wider 'Automotive Omnibus' (including additional CO<sub>2</sub> credits for small electric vehicles, and country-specific targets for the electrification of corporate fleets), will now undergo consultations before going through the EU legislative procedure, with final adoption not expected until 2027.

## China

In early 2025, the Chinese authorities published a proposed amendment to China 6 regulations, intended to tighten the rules around type approval and in-use compliance testing. The amendment provides for improved traceability in type-approval testing; greater information disclosure by car manufacturers, including monthly reporting of any emissions equipment failures; a revision to RDE test conditions, along with new requirements for portable emissions measurement (PEMS) instrument calibration; and stricter requirements for the type approval of hybrid vehicles including PHEVs and REEVs. These amendments came into effect in May 2026.

The publication of draft China 7 legislation has been delayed and is now expected before the end of 2026. The proposals may include more stringent cold-start provisions, and the

creation of different emissions 'bins', which would enable automakers to certify their vehicles at different levels of emissions compliance, to meet fleet average requirements (a similar approach to that taken under US federal legislation). We currently anticipate that China 7 will be implemented for both light and heavy vehicles in 2029.

## North America

The Trump administration has signalled its intent to roll back environmental legislation implemented by previous administrations. To date, it has mainly targeted greenhouse gas (GHG) regulations, revoking waivers granted to the California Air Resources Board (CARB) that would have enabled it to impose zero emission vehicle (ZEV) share mandates for both light- and heavy-duty vehicles, repealing the 'Endangerment Finding' which was the basis for federal regulation of CO<sub>2</sub> emissions, and proposing to weaken corporate average fuel economy (CAFE) standards. However, it has also indicated that it could move to delay the tightening of 'criteria' (toxic) pollutant emissions limits.

### US federal: criteria pollutant regulations

In March 2024, the Environmental Protection Agency (EPA) finalised new Tier 4 standards for light- and medium-duty vehicles, requiring further progressive reductions in emissions of toxic pollutants, over a five-year phase-in period starting with model-year 2027 vehicles. The standards represent an increase in stringency versus Tier 3, and will therefore be positive for PGM loadings, particularly in the near-term. However, as the Tier 4 phase-in period progresses, we expect this to be partly offset by changes in the model mix. Automakers are beginning to rationalise their portfolios,

phasing out some higher-emitting engines, and replacing them with smaller, turbocharged versions which have inherently lower emissions and hence PGM requirements.

In December 2025, it was reported that the EPA could delay the enforcement of Tier 4 regulations for two years, as part of a review of standards set under the previous administration. At the time of writing, no further information was available. Because of the typical timeframe for developing and implementing catalyst fitment programmes, a delay to rolling out Tier 4 standards would have little near-term impact on PGM loadings.

New federal standards for heavy-duty emissions are due to be enforced starting in model-year 2027, under the 'Low-NO<sub>x</sub> rule' that formed part of the EPA's 2022 Clean Trucks Plan. These tighter standards are expected to result in a modest increase in PGM loadings on heavy duty diesel vehicles, largely because of more challenging durability requirements. At the time of writing, the implementation schedule remained unchanged, and no amendments to criteria emissions limits under the Low NO<sub>x</sub> rule had been proposed. However, changes to other provisions, such as a relaxation of durability requirements, remain possible.

### US federal: GHG regulations

In February 2026, the EPA issued a rule rescinding the Greenhouse Gas 'Endangerment Finding' of 2009, which had become the basis for federal emissions standards regulating CO<sub>2</sub> emissions from vehicles. The new rule repeals GHG emission standards for light-duty, medium-duty, and heavy-duty vehicles and engines, including cuts in CO<sub>2</sub> emissions mandated by Federal Tier 4 standards, and 'Phase 3' GHG emission standards for heavy-duty vehicles. These regulations would have driven increases in the market share of electric vehicles (including BEVs, FCEVs and plug-in hybrids). The roll-back of GHG regulations is likely to reduce growth prospects for ZEVs and plug-in hybrids in the US market, resulting in ICE and conventional hybrid vehicles retaining a higher market share for longer.

The revocation of the Endangerment Finding faces legal challenges from public health and environmental organisations, and some US states are also expected to initiate litigation.

The new rule does not affect corporate average fuel economy (CAFÉ) standards, established by the National Highway Traffic Safety Administration (NHTSA) under the Energy Policy and Conservation Act of 1975. However, in December 2025, proposals were announced to roll back tighter fuel efficiency rules introduced by NHTSA during the Biden administration; these would have required carmakers to achieve a CAFÉ standard of 50 miles per US gallon by 2031, versus an average of 27 mpg today. The current administration proposes to replace this with a new target of 34.5 mpg by 2031. It will also seek to end a credit-trading programme that permitted automakers to purchase credits from competitors with a more fuel-efficient fleet.

### Other changes to US federal legislation

Federal tax credits for the purchase of electric vehicles were withdrawn in October 2025. These credits, which have existed since 2008 and were extended under the 2022 Inflation Reduction Act, gave drivers up to \$7,500 in credits towards the purchase of a new electric vehicle. The ending of the scheme has had a significant impact on consumer enthusiasm for battery vehicles: during the first quarter of 2026, US BEV sales were down 27% year-on-year. It will also have near-term consequences for the BEV share of light duty production in North America, which peaked at nearly 9% in 2023 but is forecast to slip below 8% this year.

## "US BEV sales fell 27% in the first quarter of 2026"

### California: CARB waiver

Under the Clean Air Act, the California Air Resources Board (CARB) was granted the right to set vehicle emissions standards that are stricter than federal legislation, subject to an EPA waiver. During the Biden administration, waivers were granted for the Advanced Clean Cars II (ACC II) regulation for light-duty vehicles (revising toxic pollutant limits and imposing future ZEV share requirements), the Advanced Clean Trucks (ACT) regulation (mandating an increase in heavy-duty ZEV penetration), and the 'Omnibus' low-NO<sub>x</sub> regulation (requiring a reduction in toxic pollutant emissions from heavy trucks from model-year 2024).

In May 2025, resolutions were passed by Congress and then signed by President Trump revoking these waivers. This decision has been challenged in a lawsuit filed by California and a coalition of ten other states, and a ruling is expected later this year.

Following the revocation of the ACC II waiver, CARB moved to reinstate the predecessor legislation, ACC I, which was covered by an earlier waiver (not subject to revocation) and included GHG emissions limits and a ZEV sales requirement. However, the federal administration has sued to block enforcement of these standards.

# Platinum supply and demand

## Troy ounces

Primary supply '000 oz	2021	2022	2023	2024	2025	2026
South Africa	4,609	3,966	3,961	4,154	3,957	3,873
Russia	640	350	850	700	650	630
North America	279	270	288	264	224	235
Zimbabwe	465	488	515	507	513	515
Others	222	160	162	199	213	202
<b>Total primary supply</b>	<b>6,215</b>	<b>5,234</b>	<b>5,776</b>	<b>5,824</b>	<b>5,557</b>	<b>5,455</b>
<b>Secondary supply '000 oz<sup>1</sup></b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Automotive	1,230	1,201	1,082	1,092	1,132	1,204
Electrical & other	49	48	58	74	85	98
Jewellery	366	273	226	233	330	274
<b>Total secondary supply</b>	<b>1,645</b>	<b>1,522</b>	<b>1,366</b>	<b>1,399</b>	<b>1,547</b>	<b>1,576</b>
<b>Combined primary and secondary supply</b>	<b>7,860</b>	<b>6,756</b>	<b>7,142</b>	<b>7,223</b>	<b>7,104</b>	<b>7,031</b>
<b>Demand '000 oz<sup>2</sup></b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Automotive	2,409	2,742	3,356	3,389	3,329	3,226
Chemical	674	700	634	549	614	633
Dental & biomedical	224	245	258	266	281	282
Electrical & electronics	262	241	206	236	261	277
Glass	762	875	813	459	428	443
Investment	-1	-475	179	523	556	171
Jewellery	1,468	1,401	1,372	1,380	1,507	1,349
Petroleum	222	234	164	153	213	168
Pollution control	191	225	280	264	264	283
Other	446	485	557	563	566	570
<b>Total demand</b>	<b>6,657</b>	<b>6,673</b>	<b>7,819</b>	<b>7,782</b>	<b>8,019</b>	<b>7,402</b>
Movement in stocks	1,203	83	-677	-559	-915	-371

<sup>1</sup>Secondary supply comprises 'open-loop' recycling from the automotive, jewellery, electronics and pollution control sectors.

<sup>2</sup>Industrial demand is net of 'closed-loop' recycling and sales of surplus metal back to the market, for example due to plant closures. It represents new metal requirements by industrial consumers in each year.

# Platinum supply and demand

## Tonnes

Primary supply tonnes	2021	2022	2023	2024	2025	2026
South Africa	143.4	123.4	123.2	129.2	123.1	120.5
Russia	19.9	10.9	26.4	21.8	20.2	19.6
North America	8.7	8.4	9.0	8.2	7.0	7.3
Zimbabwe	14.4	15.2	16.0	15.8	16.0	16.0
Others	6.9	5.0	5.0	6.2	6.6	6.3
<b>Total primary supply</b>	<b>193.3</b>	<b>162.9</b>	<b>179.6</b>	<b>181.2</b>	<b>172.9</b>	<b>169.7</b>

Secondary supply tonnes <sup>1</sup>	2021	2022	2023	2024	2025	2026
Automotive	38.3	37.4	33.7	34.0	35.2	37.4
Electrical & other	1.5	1.5	1.8	2.3	2.6	3.1
Jewellery	11.4	8.5	7.0	7.2	10.3	8.5
<b>Total secondary supply</b>	<b>51.2</b>	<b>47.4</b>	<b>42.5</b>	<b>43.5</b>	<b>48.1</b>	<b>49.0</b>

<b>Combined primary and secondary supply</b>	<b>244.5</b>	<b>210.3</b>	<b>222.1</b>	<b>224.7</b>	<b>221.0</b>	<b>218.7</b>
--	--------------	--------------	--------------	--------------	--------------	--------------

Demand tonnes <sup>2</sup>	2021	2022	2023	2024	2025	2026
Automotive	74.9	85.4	104.4	105.4	103.5	100.3
Chemical	21.0	21.7	19.7	17.1	19.2	19.7
Dental & biomedical	6.9	7.6	8.1	8.3	8.8	8.8
Electrical & electronics	8.1	7.5	6.4	7.3	8.1	8.6
Glass	23.7	27.2	25.3	14.3	13.3	13.8
Investment	-0.1	-14.7	5.5	16.3	17.3	5.3
Jewellery	45.7	43.6	42.6	42.9	46.9	42.0
Petroleum	6.9	7.3	5.1	4.7	6.6	5.2
Pollution control	6.0	7.0	8.7	8.3	8.2	8.8
Other	14.0	15.1	17.4	17.5	17.6	17.7
<b>Total demand</b>	<b>207.1</b>	<b>207.7</b>	<b>243.2</b>	<b>242.1</b>	<b>249.5</b>	<b>230.2</b>
Movement in stocks	37.4	2.6	-21.1	-17.4	-28.5	-11.5

<sup>1</sup>Secondary supply comprises 'open-loop' recycling from the automotive, jewellery, electronics and pollution control sectors.

<sup>2</sup>Industrial demand is net of 'closed-loop' recycling and sales of surplus metal back to the market, for example due to plant closures. It represents new metal requirements by industrial consumers in each year.

# Palladium supply and demand

## Troy ounces

Primary supply '000 oz	2021	2022	2023	2024	2025	2026
South Africa	2,645	2,288	2,340	2,438	2,246	2,235
Russia	2,689	2,200	2,900	3,000	2,950	2,450
North America	908	819	863	819	712	660
Zimbabwe	392	409	427	419	422	424
Others	212	235	247	252	259	263
<b>Total primary supply</b>	<b>6,846</b>	<b>5,951</b>	<b>6,777</b>	<b>6,928</b>	<b>6,589</b>	<b>6,032</b>

Secondary supply '000 oz <sup>1</sup>	2021	2022	2023	2024	2025	2026
Automotive	2,886	2,790	2,388	2,447	2,657	2,945
Electrical & other	426	442	455	464	467	470
Jewellery	9	10	10	10	11	12
<b>Total secondary supply</b>	<b>3,321</b>	<b>3,242</b>	<b>2,853</b>	<b>2,921</b>	<b>3,135</b>	<b>3,427</b>

<b>Combined primary and secondary supply</b>	<b>10,167</b>	<b>9,193</b>	<b>9,630</b>	<b>9,849</b>	<b>9,724</b>	<b>9,459</b>
--	---------------	--------------	--------------	--------------	--------------	--------------

Demand '000 oz <sup>2</sup>	2021	2022	2023	2024	2025	2026
Automotive	8,451	8,414	8,806	8,329	8,227	7,829
Chemical	593	595	543	522	519	529
Dental & biomedical	208	189	192	172	163	151
Electrical & electronics	649	547	485	516	535	538
Investment	17	-109	61	229	382	-115
Jewellery	88	87	87	85	83	82
Pollution control	100	110	131	131	131	139
Other	96	82	85	83	100	92
<b>Total demand</b>	<b>10,202</b>	<b>9,915</b>	<b>10,390</b>	<b>10,067</b>	<b>10,140</b>	<b>9,245</b>
Movement in stocks	-35	-722	-760	-218	-416	214

<sup>1</sup>Secondary supply comprises 'open-loop' recycling from the automotive, jewellery, electronics and pollution control sectors.

<sup>2</sup>Industrial demand is net of 'closed-loop' recycling and sales of surplus metal back to the market, for example due to plant closures. It represents new metal requirements by industrial consumers in each year.

# Palladium supply and demand

## Tonnes

Primary supply tonnes	2021	2022	2023	2024	2025	2026
South Africa	82.3	71.2	72.8	75.8	69.9	69.5
Russia	83.6	68.4	90.2	93.3	91.8	76.2
North America	28.2	25.5	26.8	25.5	22.1	20.5
Zimbabwe	12.2	12.7	13.3	13.0	13.1	13.2
Others	6.6	7.3	7.7	7.8	8.1	8.2
<b>Total primary supply</b>	<b>212.9</b>	<b>185.1</b>	<b>210.8</b>	<b>215.4</b>	<b>205.0</b>	<b>187.6</b>

Secondary supply tonnes <sup>1</sup>	2021	2022	2023	2024	2025	2026
Automotive	89.8	86.8	74.3	76.1	82.6	91.6
Electrical & other	13.2	13.7	14.1	14.4	14.5	14.6
Jewellery	0.3	0.3	0.3	0.3	0.3	0.4
<b>Total secondary supply</b>	<b>103.3</b>	<b>100.8</b>	<b>88.7</b>	<b>90.8</b>	<b>97.4</b>	<b>106.6</b>

Combined primary and secondary supply	2021	2022	2023	2024	2025	2026
	<b>316.2</b>	<b>285.9</b>	<b>299.5</b>	<b>306.2</b>	<b>302.4</b>	<b>294.2</b>

Demand tonnes <sup>2</sup>	2021	2022	2023	2024	2025	2026
Automotive	262.8	261.7	273.9	259.0	255.9	243.5
Chemical	18.5	18.6	16.9	16.2	16.1	16.5
Dental & biomedical	6.5	5.9	6.0	5.3	5.1	4.7
Electrical & electronics	20.2	17.1	15.0	16.1	16.6	16.7
Investment	0.6	-3.4	1.9	7.1	11.9	-3.6
Jewellery	2.7	2.6	2.7	2.6	2.5	2.5
Pollution control	3.0	3.4	4.0	4.2	4.1	4.3
Other	3.0	2.5	2.6	2.6	3.1	2.8
<b>Total demand</b>	<b>317.3</b>	<b>308.4</b>	<b>323.0</b>	<b>313.1</b>	<b>315.3</b>	<b>287.4</b>
Movement in stocks	-1.1	-22.5	-23.5	-6.9	-12.9	6.8

<sup>1</sup>Secondary supply comprises 'open-loop' recycling from the automotive, jewellery, electronics and pollution control sectors.

<sup>2</sup>Industrial demand is net of 'closed-loop' recycling and sales of surplus metal back to the market, for example due to plant closures. It represents new metal requirements by industrial consumers in each year.

# Rhodium supply and demand

## Troy ounces

Primary supply '000 oz	2021	2022	2023	2024	2025	2026
South Africa	645	570	548	593	566	557
Russia	53	54	75	64	68	55
North America	17	20	19	20	15	19
Zimbabwe	42	43	46	45	45	43
Others	6	6	7	7	7	7
<b>Total primary supply</b>	<b>763</b>	<b>693</b>	<b>695</b>	<b>729</b>	<b>701</b>	<b>681</b>

Secondary supply '000 oz <sup>1</sup>	2021	2022	2023	2024	2025	2026
Automotive	361	339	289	292	312	339
<b>Total secondary supply</b>	<b>361</b>	<b>339</b>	<b>289</b>	<b>292</b>	<b>312</b>	<b>339</b>

<b>Combined primary and secondary supply</b>	<b>1,124</b>	<b>1,032</b>	<b>984</b>	<b>1,021</b>	<b>1,013</b>	<b>1,020</b>
--	--------------	--------------	------------	--------------	--------------	--------------

Demand '000 oz <sup>2</sup>	2021	2022	2023	2024	2025	2026
Automotive	954	942	979	915	899	856
Chemical	58	66	81	94	91	88
Electrical & electronics	8	7	7	8	9	10
Glass	-16	-20	-22	-3	38	38
Other	10	14	16	16	26	13
<b>Total demand</b>	<b>1,014</b>	<b>1,009</b>	<b>1,061</b>	<b>1,030</b>	<b>1,063</b>	<b>1,005</b>
Movement in stocks	110	23	-77	-9	-50	15

<sup>1</sup>Secondary supply comprises 'open-loop' recycling from the automotive sector.

<sup>2</sup>Industrial demand is net of 'closed-loop' recycling and sales of surplus metal back to the market, for example due to plant closures. It represents new metal requirements by industrial consumers in each year.

# Rhodium supply and demand

## Tonnes

Primary supply tonnes	2021	2022	2023	2024	2025	2026
South Africa	20.1	17.7	17.0	18.4	17.6	17.3
Russia	1.6	1.7	2.3	2.0	2.1	1.7
North America	0.5	0.6	0.6	0.6	0.5	0.6
Zimbabwe	1.3	1.3	1.4	1.4	1.4	1.4
Others	0.2	0.2	0.2	0.2	0.2	0.2
<b>Total primary supply</b>	<b>23.7</b>	<b>21.5</b>	<b>21.5</b>	<b>22.6</b>	<b>21.8</b>	<b>21.2</b>

Secondary supply tonnes <sup>1</sup>	2021	2022	2023	2024	2025	2026
Automotive	11.2	10.5	9.0	9.1	9.7	10.5
<b>Total secondary supply</b>	<b>11.2</b>	<b>10.5</b>	<b>9.0</b>	<b>9.1</b>	<b>9.7</b>	<b>10.5</b>

<b>Combined primary and secondary supply</b>	<b>34.9</b>	<b>32.0</b>	<b>30.5</b>	<b>31.7</b>	<b>31.5</b>	<b>31.7</b>
--	-------------	-------------	-------------	-------------	-------------	-------------

Demand tonnes <sup>2</sup>	2021	2022	2023	2024	2025	2026
Automotive	29.7	29.3	30.4	28.5	28.0	26.6
Chemical	1.8	2.0	2.5	2.9	2.8	2.7
Electrical & electronics	0.2	0.2	0.2	0.2	0.3	0.3
Glass	-0.5	-0.6	-0.7	-0.1	1.2	1.2
Other	0.3	0.4	0.5	0.5	0.8	0.4
<b>Total demand</b>	<b>31.5</b>	<b>31.3</b>	<b>32.9</b>	<b>32.0</b>	<b>33.1</b>	<b>31.2</b>
Movement in stocks	3.4	0.7	-2.4	-0.3	-1.6	0.5

<sup>1</sup>Secondary supply comprises 'open-loop' recycling from the automotive sector.

<sup>2</sup>Industrial demand is net of 'closed-loop' recycling and sales of surplus metal back to the market, for example due to plant closures. It represents new metal requirements by industrial consumers in each year.

# Ruthenium supply and demand

## Troy ounces

Primary supply '000 oz	2021	2022	2023	2024	2025	2026
<b>Total primary supply</b>	<b>1,417</b>	<b>971</b>	<b>914</b>	<b>1,125</b>	<b>972</b>	<b>977</b>
<b>Demand '000 oz<sup>1</sup></b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Chemical	351	324	426	520	567	477
Electrical & electronics	441	374	300	365	413	435
Electrochemical	129	131	146	143	135	127
Other	108	125	136	142	150	154
<b>Total demand</b>	<b>1,029</b>	<b>954</b>	<b>1,008</b>	<b>1,170</b>	<b>1,265</b>	<b>1,193</b>
Movement in stocks	388	17	-94	-45	-293	-216

## Tonnes

Primary supply tonnes	2021	2022	2023	2024	2025	2026
<b>Total primary supply</b>	<b>44.1</b>	<b>30.2</b>	<b>28.4</b>	<b>35.0</b>	<b>30.2</b>	<b>30.4</b>
<b>Demand tonnes<sup>1</sup></b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Chemical	10.9	10.1	13.3	16.2	17.6	14.8
Electrical & electronics	13.7	11.6	9.3	11.4	12.8	13.5
Electrochemical	4.0	4.1	4.5	4.4	4.2	4.0
Other	3.4	3.9	4.2	4.4	4.7	4.8
<b>Total demand</b>	<b>32.0</b>	<b>29.7</b>	<b>31.3</b>	<b>36.4</b>	<b>39.3</b>	<b>37.1</b>
Movement in stocks	12.1	0.5	-2.9	-1.4	-9.1	-6.7

<sup>1</sup>**Industrial demand** is net of 'closed-loop' recycling and sales of surplus metal back to the market, for example due to plant closures. It represents new metal requirements by industrial consumers in each year.

# Iridium supply and demand

## Troy ounces

Primary supply '000 oz	2021	2022	2023	2024	2025	2026
<b>Total primary supply</b>	<b>235</b>	<b>218</b>	<b>229</b>	<b>237</b>	<b>229</b>	<b>229</b>
<b>Demand '000 oz<sup>1</sup></b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Chemical	30	25	31	37	34	28
Electrical & electronics	50	26	25	27	33	33
Electrochemical	82	88	120	94	100	109
Other	67	62	70	68	69	70
<b>Total demand</b>	<b>229</b>	<b>201</b>	<b>246</b>	<b>226</b>	<b>236</b>	<b>240</b>
Movement in stocks	6	17	-17	11	-7	-11

## Tonnes

Primary supply tonnes	2021	2022	2023	2024	2025	2026
<b>Total primary supply</b>	<b>7.3</b>	<b>6.8</b>	<b>7.1</b>	<b>7.4</b>	<b>7.1</b>	<b>7.1</b>
<b>Demand tonnes<sup>1</sup></b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Chemical	0.9	0.8	1.0	1.1	1.1	0.9
Electrical & electronics	1.6	0.8	0.8	0.9	1.0	1.0
Electrochemical	2.6	2.7	3.7	2.9	3.1	3.4
Other	2.1	1.9	2.2	2.1	2.1	2.2
<b>Total demand</b>	<b>7.2</b>	<b>6.2</b>	<b>7.7</b>	<b>7.0</b>	<b>7.3</b>	<b>7.5</b>
Movement in stocks	0.1	0.6	-0.6	0.4	-0.2	-0.4

<sup>1</sup>**Industrial demand** is net of 'closed-loop' recycling and sales of surplus metal back to the market, for example due to plant closures. It represents new metal requirements by industrial consumers in each year.

# Glossary

<b>ACC I</b>	Advanced Clean Cars I, a CARB regulation	<b>ICE</b>	Internal combustion engine
<b>ACC II</b>	Advanced Clean Cars II, a CARB regulation	<b>LD</b>	Light duty
<b>ACT</b>	Advanced Clean Trucks, a CARB regulation	<b>LDD</b>	Light duty diesel
<b>BEV</b>	Battery electric vehicle	<b>LDG</b>	Light duty gasoline
<b>CAFÉ</b>	Corporate average fuel economy	<b>LEV</b>	Low emission vehicle
<b>CARB</b>	California Air Resources Board	<b>LPPM</b>	London Platinum and Palladium Market
<b>CF</b>	Conformity factor	<b>LV</b>	Light vehicle
<b>CNG</b>	Compressed natural gas	<b>NEV</b>	New energy vehicle (BEV, PHEV or FCEV)
<b>CO</b>	Carbon monoxide	<b>NO<sub>x</sub></b>	Oxides of nitrogen
<b>CO<sub>2</sub></b>	Carbon dioxide	<b>NYMEX</b>	New York Mercantile Exchange
<b>DOC</b>	Diesel oxidation catalyst	<b>PEM</b>	Proton exchange membrane
<b>DPF</b>	Diesel particulate filter	<b>PEMS</b>	Portable emissions measurement system
<b>EC</b>	European Commission	<b>PGM</b>	Platinum group metals
<b>ELV</b>	End-of-life vehicle	<b>PHEV</b>	Plug-in hybrid electric vehicle
<b>EP</b>	European Parliament	<b>PM</b>	Particulate matter or soot
<b>EPA</b>	Environmental Protection Agency	<b>PN</b>	Particle number
<b>ETF</b>	Exchange traded fund	<b>RDE</b>	Real driving emissions
<b>EUCO</b>	European Council	<b>REEV</b>	Range-extended electric vehicle
<b>FCEV</b>	Fuel cell electric vehicle	<b>RoW</b>	Rest of World region
<b>GFEX</b>	Guangzhou Futures Exchange	<b>SCR</b>	Selective catalytic reduction
<b>GHG</b>	Greenhouse gas	<b>SGE</b>	Shanghai Gold Exchange
<b>GPF</b>	Gasoline particulate filter	<b>ZEV</b>	Zero emission vehicle
<b>GVW</b>	Gross vehicle weight	<b>4E grade</b>	Combined content of four elements: platinum, palladium, rhodium and gold
<b>HD</b>	Heavy duty	<b>6E grade</b>	Combined content of six elements: platinum, palladium, rhodium, gold, ruthenium and iridium
<b>HDD</b>	Heavy duty diesel		

