# PLATINUM ESSENTIALS

## Jun'25, Five-year supply/demand outlook; platinum deficits persist, despite a shifting economic landscape

This Platinum Essentials leverages market developments seen through the first half of 2025 into our five-year forecasts for the platinum and palladium markets. The platinum investment case remains compelling, with the overriding feature being that the substantial market deficits of 2023 and 2024 are expected to persist throughout our forecast period to 2029f. Inclusive of 2025 forecasts which are provided by Metals Focus, we expect annual platinum deficits to average 727 koz from 2025f to 2029f, or 9% of average demand. The palladium market is expected to record a small deficit in 2025f, before transitioning to a small surplus in 2026f.

Economic uncertainty has increased since our previous five-year outlook, with US President Trump upending global trade norms. Whilst very little is finalised, global growth expectations have been downgraded. Nevertheless, platinum prices have increased by a third year-to-date. Rising platinum prices are a reaction to entrenched market deficits, depleting above ground stocks, geographic dislocations of physical metal supply and demand, and emerging demand growth from China's jewellery market. Moreover, within an uncertain global macroeconomic environment, de-dollarisation trends that had initially supported gold prices and widening premiums to platinum and silver has caught investor interest in catch-up trades supporting the white metals.

While platinum prices may have broken out of their recent range of US\$900 to US\$1,100 per ounce to notch four-year highs of >US\$1,250, we do not believe prices have changed the metal's supply and demand fundamentals. Both platinum supply and demand are highly price inelastic over the short-term, which leaves our forecast five-year platinum market deficits from 2026f to 2029f broadly stable versus our previous forecasts. On average, our total platinum supply and total platinum demand estimates have both been revised by -0.9% respectively from 2026f to 2029f. Whilst the headline deficits are largely unchanged, it should be noted that this reflects a number of offsetting trends. For supply, we raised expectations for mine output, but this is offset by lower recycling supply expectations. For demand, jewellery was upgraded while automotive and industrial needs were downgraded.

Figure 1. Platinum and palladium market balances 2022 to 2029f



#### Edward Sterck

Director of Research +44 203 696 8786 esterck@platinuminvestment.com Wade Napier Analyst +44 203 696 8774

wnapier@platinuminvestment.com Kaitlin Fitzpatrick-Spacey

Associate Analyst +44 203 696 8771 kfitzpatrick@platinuminvestment.com

#### **Brendan Clifford**

Head of Institutional Distribution +44 203 696 8778 bclifford@platinuminvestment.com

World Platinum Investment Council www.platinuminvestment.com Foxglove House, 166 Piccadilly London W1J 9EF

#### 19 June 2025

WPIC's updated two- to five-year supply demand outlook for platinum incorporates only modest changes, with deficits expected to perpetuate for the foreseeable future.

The forecasts in this report were generated amidst ongoing trade negotiations between the US and global partners. Whilst these are on balance negative for near-term growth prospects, we do not expect them to be of sufficient magnitude to materially change the platinum and palladium deficits laid out herein.

\*WPIC in-house supply data is based solely on publicly published supply data, including forward looking guidance, with any adjustments noted. It does not represent the views of any WPIC members or those of Metals Focus which independently prepare our Platinum Quarterly reports. Demand data is based on public data but includes WPIC in-house analysis.

Source: Metals Focus 2022 to 2023 (palladium) and 2022 to 2025f (platinum), Company guidance, WPIC Research

Figure 2. Platinum and palladium supply and demand summary tables

	Published Platinum Quarterly*					
	2022	2023	2024	2025f		
PLATINUM SUPPLY						
Refined mine production						
- South Africa	3,915	3,957	4,133	3,869		
- Zimbabwe	480	507	512	491		
- North America	263	275	254	189		
- Russia	663	674	677	686		
- Other	200	190	191	191		
- Producer inventory movement	43	11	16	0		
Total mining supply	5,563	5,615	5,782	5,426		
Recycling						
- Autocatalyst	1.383	1.114	1,156	1.200		
- Jewellerv	372	331	298	292		
- Industrial	69	71	76	81		
Total recycling	1,824	1,515	1,530	1,573		
Total supply	7,387	7,130	7,311	6,999		
PLATINUM DEMAND						
Automotive	2,775	3,203	3,106	3,052		
Jewellery	1,880	1,849	2,008	2,114		
Industrial	2,341	2,576	2,487	2,111		
Total investment	-516	397	702	688		
- Bar and coin	259	322	194	252		
- China bars ≥500g	90	134	162	186		
- ETF	-558	-74	296	100		
- Stocks held by exchanges	-307	14	50	150		
Total demand	6,479	8,026	8,303	7,965		
Supply/demand balance	908	-896	-992	-966 /		

WPIC ESTIMATES‡									
202	6f :	2027f	2028f	2029f					
Production at mid-point of									
ag	aggregate guidance ranges								
4.00	0	2 0 2 5	2 014	2 0 4 2					
4,00	3	563	5/7	5,542					
21		205	106	106					
2	20	200	660	190					
10	1	101	101	101					
18	0	191	191	191					
E CC		5 5 5 2	5 540	E EEE					
<b>3,0</b> 4	20	5,552	5,510	5,555					
1,26	67	1,296	1,378	1,426					
33	39	326	325	337					
ç	94	103	112	118					
1,70	00	1,725	1,814	1,881					
7,32	25	7,276	7,330	7,436					
2,99	99	2,919	2,864	2,853					
2.13	35	2.157	2.178	2.200					
2.31	0	2.299	2.353	2.389					
59	94	594	594	594					
32	21	321	321	321					
18	36	186	186	186					
8	37	87	87	87					
	0	0	0	0					
	-	Ŭ	Ŭ	5					
8,03	39	7,969	7,990	8,037					
-71	3	-693	-659	-602					

	Publis	ned Metal	s Focus	<b>v</b>	WPIC Platinum ESTIMATES‡			
	2022	2023	2024	/ 2025f	2026f	2027f	2028f	2029f
PALLADIUM SUPPLY				Produ	iction at r	nid-point	of aggreg	jate
					guidance ranges			
Refined mine production								
- South Africa	2,238	2,315	2,354	2,347	2,341	2,344	2,379	2,422
- Zimbabwe	404	428	424	457	457	468	457	470
- North America	822	847	789	636	641	532	424	424
- Russia	2,790	2,692	2,762	2,730	2,730	2,730	2,730	2,730
- Other	234	229	228	234	234	234	234	234
<ul> <li>Producer inventory movement</li> </ul>	-4	13	69	0	0	0	0	0
Total mining supply	6,483	6,524	6,626	6,403	6,402	6,308	6,224	6,280
Total recycling	3,117	2,561	2,789	2,895	3,114	3,377	3,544	3,776
- Autocatalyst	2,602	2,071	2,329	2,439	2,675	2,949	3,128	3,372
- Jewellery	112	93	65	74	65	64	60	58
- Industrial	403	397	395	382	374	364	356	347
Total supply	9,601	9,085	9,415	9,298	9,516	9,685	9,768	10,056
PALLADIUM DEMAND								
Automotive	7,977	8,495	8,096	7,710	7,696	7,638	7,611	7,573
Jewellery	226	232	235	240	243	246	249	252
Industrial	1,490	1,428	1,419	1,448	1,433	1,470	1,484	1,522
Total investment	-70	85	289	20	20	20	20	20
- Bar & coin	18	-1	3	1	1	1	1	1
- ETF	-88	86	286	19	19	19	19	19
Total demand	9,623	10,240	10,039	9,418	9,391	9,373	9,364	9,367
Supply/demand balance	-23	-1,154	-624	-120	125	312	404	689

Focus

\*The Platinum Quarterly report and data are prepared independently for the WPIC by Metals available information

Source: Metals Focus 2022 to 2025f (platinum) and 2022 to 2024 (palladium), Company guidance, WPIC Research

## Contents

Introduction	.3
Key projections	.4
Economic overlay	.6
Automotive demand to be impacted by lower growth outlook	.6
Jewellery uplift	10
Industrial demand facing minor downgrades	12
Investment demand	14
Mine supply - movement on Platreef	15
Recycling supply not recovering to pre-pandemic levels	17
Conclusion	18
Appendix I – Risks to forecasts	20
Appendix II – WPIC outlook methodologies	20

## Introduction

The WPIC's medium-term platinum supply and demand projections are intended to complement the estimates and forecasts published in our *Platinum Quarterly*, but they look further into the future and allow for longer-term scenario analysis. Similarly, our palladium forecasts complement our platinum forecasts.

The *Platinum Quarterly* report and data are prepared independently for the WPIC by Metals Focus, with Metals Focus's estimates provided on a one year forward basis (currently 2025). For the avoidance of doubt,

- All estimates for platinum from 2026f to 2029f included in this report are WPIC forecasts, with the exception of mine supply which is based solely upon publicly published company guidance.
- Palladium estimates from 2025f to 2029f in this report are WPIC forecasts, again with the exception of public company guidance for mine supply.

Specifically, WPIC has made no use of any forward-looking data or views included in Metals Focus's separate five-year forecast available to its clients, that provides an outlook for all the major PGMs.

WPIC's research is predominantly desk based and not focussed on developing in-country and in-industry relationships to obtain fresh/incremental data. The information and sources used to develop our supply/demand model are all in the public domain.

Please see the appendix for a complete description of the methodologies we have used to develop each model and section of this report as well as a risk analysis for our forecasts. WPIC's base case published supply/demand projections for 2026f to 2029f provide the ability to run scenario analysis on different parts of the supply/demand landscape for platinum and palladium.

## **Key projections**

Our revised outlook is compared to the supply/demand *Platinum Essentials* published in February 2025 (*link*). Since our last update, the macroeconomic landscape has been dominated by President Trump's second term, and particularly the vacillation of US trade policies.

At the time of writing, a New York Court of International Trade (CIT) has ruled that the president unlawfully imposed tariffs on US trade partners. The ruling is expected to be appealed, which is likely to keep trade uncertainty heightened. Notably, as they are enacted under a separate mechanism, the 25% tariffs on vehicle and automotive parts imports are unimpacted by the court's ruling.

The initial impacts of the new US trade policies have been mixed with some trade volumes being brought forward. Nevertheless, the economic outlook has deteriorated with broad downgrades to global growth. Furthermore, President Trump's attacks on Fed. Chair Powell and calls to cut rates has called into question the independence of the Fed. This spooked investors, driving up treasury yields and causing a stock market sell-off. Whilst this reaction was sufficiently worrying for President Trump to row back on his demands which stabilised markets, a legacy of this in combination with tariff risks to US GDP has been persistent US dollar weakness (Fig. 3), which is generally positive for US dollar commodity prices.

The forecasts in this report were generated amidst ongoing trade negotiations between the US and global counterparties. Whilst these are on balance negative for nearterm growth prospects, we do not expect them to be of sufficient magnitude to materially change the platinum and palladium deficits laid out herein.

Figure 3. Tariffs risks to US GDP and President Trump questioning the Fed's independence has resulted in US dollar weakness, which is reflected in the DXY index trending lower



Source: Bloomberg, WPIC Research, n.b. the USD DXY or Dixie is an index of the US dollar against a basket of major international currencies

We have reflected the evolving macroeconomic landscape within our PGM forecasts via the following key assumptions:

- Downgrades to global vehicle production expectations of 1.8% on average from 2026f to 2029f and increase BEV market share will negatively impact automotive PGM demand. However, lower new sales will support higher used vehicle prices which in turn will reduce vehicle scrapping and recycled automotive PGM supply.
- Deferrals to industrial capacity additions as capital investments decisions are likely to stall due to trade uncertainty.

- Upgrades to platinum jewellery demand as high gold prices supports some switching to platinum.
- Decreasing US hydrogen linked platinum demand due to the repealing, by congress, of the Inflation Reduction Act's 45V tax credit.

#### For platinum, key revisions to our projections are broadly offsetting. Accordingly, our projected market deficits reduce by a modest average of only 6 koz over our forecast period from 2026f to 2029f. In summary,

- 1. **Total supply** has reduced by 0.9% on average, with downward revisions to recycling supply offsetting the inclusion of Platreef Phase 2 in our mine supply forecasts.
- 2. **Total demand** is forecast to be 0.9% lower on average than previously published with an uplift in jewellery demand being offset by lower automotive and industrial demand.

## For palladium, we have made the following key revisions to our projections (i.e. revisions to 2025f-2029f):

- 1. **Total supply** has been decreased by an average of -1% on the same basis as platinum supply downgrades.
- 2. Total demand has been revised 4% lower on average. Downgrades to automotive production forecasts have had an outsized impact on palladium due to its large exposure to automotive demand (82% of demand). Demand was further impacted by revisions to China's drivetrain forecasts, where BEV uptake is exceeding our expectations.
- 3. **Market balances** are now forecast to transition to from a deficit in 2025f to persistent surpluses from 2026f.
- 4. **Market sensitivities:** Palladium's forecasts risks are heightened by its large reliance on automotive demand, and potential supply growth from spent autocatalysts. Changes to autocatalyst loadings from emission legislation or thrifting have the potential to shift expectations for when or if the market transitions to a surplus.

800 Previous Pt forecast Previous Pd forecast Market balance surplus/(deficit), koz Revised Pt forecast Revised Pd forecast 400 0 -400 -800 -1200 '25f\* '26f '27f '28f '29f '25f '26f '27f '28f '29f Platinum Palladium

Figure 4. Platinum market deficits are forecast to sustainably exceed >500 koz to at least 2029f, while palladium markets will move from deficits to a surplus by 2026f

Source: \*Metals Focus provides the 2025 platinum forecasts in WPIC's Platinum Quarterly, Company guidance, WPIC Research

Platinum market deficits are forecast to be somewhat stable, while palladium's shift from deficit to surplus has pulled forward from 2028 to 2026.

## **Economic overlay**

The global economic outlook for 2025 has been downgraded, largely due to escalating trade tensions as a result of US protectionist policies. In April, President Trump launched sweeping tariffs, including a 10% duty on imports from all countries and higher rates on specific nations, significantly disrupting global trade flows.

While reciprocal tariffs were paused and the US Court of International Trade (CIT) passed a ruling deeming them illegal on 28 May 2025, a federal court has subsequently reinstated the tariffs while the White House appeal proceeds, allowing them to remain in effect for the time being. Several countries have responded with retaliatory measures, exacerbating trade tensions and policy unpredictability.

The back and forth has triggered a sharp rise in global uncertainty, akin to that seen during the COVID-19 crisis. This environment initially saw trade brought forward, however, economic data is beginning to reflect a slowdown. Business confidence has deteriorated, slowing investment and contributing to a broader deceleration in economic activity. The Organisation of Economic Co-operation and Development is latest amongst a string of forecasters to have downgraded its GDP growth forecasts for 2025f (Fig. 5), expecting growth to slow from 3.3% in 2024 to 2.9% in 2025f.

Global growth expectations have been downgraded due to uncertainty surrounding US trade policies.

Figure 5. The OECD has lowered its GDP growth forecasts for 2025f by 40bps following trade uncertainty

	Estimated			Estimated C				Outlo	ok	
GDP growth (OECD)	2022	2023	2024	2025 (Jan)	2025 (May)	Δ	2026			
United States	2.5%	2.9%	2.8%	2.2%	1.6%	-0.6%	1.5%			
European Union	3.5%	0.5%	0.8%	0.7%	1.0%	0.3%	1.2%			
China	3.1%	5.4%	5.0%	4.8%	4.7%	-0.1%	4.3%			
World	3.5%	3.4%	3.3%	3.3%	2.9%	-0.4%	2.9%			

Source: OECD, WPIC Research

Beyond 2025f, growth rates are expected to be flat in 2026f, well below the pre-pandemic average of 3.7%, highlighting the long-lasting effects of trade disruptions and uncertainty.

# Automotive demand to be impacted by lower growth outlook

Light vehicle production (and demand) has shown a strong historical correlation with global GDP (Fig. 6). In addition to a slowdown in global growth, specific tariffs such as those on US vehicle and automotive parts imports and steel and aluminium imports are likely to be inflationary, which will slow demand.

Figure 6. The automotive sector is correlated to global GDP which implies automotive demand growth expectations would be impacted by downgrades to GDP growth forecasts



Vehicle production has been revised lower as economic uncertainty is likely to weigh on consumer demand.

Source: OICA, World Bank, WPIC Research

To reflect slower growth and automotive inflation, WPIC has reduced its light vehicle (including light commercial vehicle) production forecasts by an average of 1.8% from 2026f through 2029f (Fig. 7). We note that the impacts of reductions to our production forecasts sequentially reduce over time as the initial economic shock is gradually overcome. Our heavy-duty production forecasts have been reduced by an average of 2.0% from 2026f to 2029f.

Figure 7. Our light vehicle production forecasts have been reduced due to trade on certainty, but are expected to exceed 95M units by 2028f



Source: OICA, WPIC Research

Adding more detail to our headline production forecasts, we highlight that our long-term drivetrain expectations are largely unchanged. We expect battery electric (BEV) light vehicle market share to reach 28% by 2030f and for ICE-based vehicles to have a long-tail as hybrid vehicles form the core of vehicles produced well into the 2030s (Fig. 8).

Figure 8. Despite increasing BEV production, ICE and hybrid vehicle drivetrains are forecast to account for the majority of vehicles to 2040f



Chinese government incentives are supporting higher than expected BEV production in the mediumterm.

Source: OICA, Country automotive bodies, WPIC Research

Whilst our long-term drivetrain forecasts have remained stable at a headline level, we have made short- and medium-term amendments to BEV market share. We see upward revisions to our global BEV market share forecasts of ~110bps over the next three years (on average) given exceptional production growth from China, where demand is benefitting from government incentives, fierce price competition, and Chinese firms' aggressive export growth strategies. In ex-China markets however, we do expect to see a slower rate of BEV adoption (Fig. 9) versus prior forecasts because BEVs are more expensive than their ICE-based counterparts. Accordingly, we expect higher cost BEVs (ex-China) to absorb a larger proportion of our production downgrade (versus ICE-based models).





Palladium is expected to face greater demand risks from lower vehicle production estimates.

Source: Country automotive industry bodies, WPIC Research

Since China's BEV production is likely to be faster than previously expected, we believe automotive palladium demand sees a greater impact than automotive platinum demand from revised vehicle production forecasts. The net impact of projected vehicle drivetrain revisions has resulted in downgrades of -1.3% on average and -3.2% on average respectively to of our automotive platinum and palladium demand forecasts to 2029f.

Despite downgrading automotive platinum demand by less than automotive palladium demand, we expect platinum's demand erosion to outpace palladium's between 2024 to 2029f. In our view, platinum will relatively underperform palladium due to 'reverse' substitution (i.e. using more palladium in place of platinum). Looking forward, we forecast automotive platinum and palladium demand to decline by -1.7% CAGR and -1.3% CAGR respectively from 2024 to 2029f (Fig. 10).







#### Regulatory discussions are re-emerging

We have not revised the legislative outlook within our updated automotive forecasts. However, there have been some emerging developments on emission legislation and testing which may support an uplift in automotive PGM demand beyond the base case estimates presented here, pending further regulatory clarity.

Firstly, China has proposed updates to the testing regime for its China 6 emission standards. Nine Chinese government bodies jointly issued an "Opinions on further optimising the environmental supervision of motor vehicles" which state the intention to pilot a differentiated periodic emission testing protocol which includes the use of remote and ongoing emission monitoring technology through onboard diagnostics systems. If enacted, the revised testing protocol would reduce the prevalence of unauthorised modifications to emission control equipment (i.e. replacing certified autocatalysts with inferior parts for economic gain).

In terms of PGM demand, we are not factoring in a step change in requirements, but there may be some marginal loadings uplift to improve the useful lives of autocatalysts beyond the current ~80,000 to 100,000 km design scope. In our view, for Chinese autocatalyst loadings to approach comparable levels to that of Europe and North America (Fig. 11), domestic emission legislation would need to implement cold-start requirements and tighten conformity factors on real driving emission testing, which is being proposed but has not been implemented. As the proportion of plug-in hybrids (PHEVs) and range extender (EREVs) vehicles has increased on domestic roads, China's regulators are evaluating updates to real driving and cold-start

PGM demand benefit if China amends cold-start and real-driving emission legislation. This could result in Chinese loadings converging towards European and North American levels.

Source: Metals Focus (Platinum: 2021 to 2025f; Palladium: 2021 to 2024), WPIC Research

emission standards because emissions are highest where a hybrid's engine constantly cycles between on and off.





Source: Metals Focus, OCIA, WPIC Research

In the US, regulators are evaluating whether to scrap the Environmental Protection Agency's (EPS) methodology to utilise a "fleet average" when determining an automaker's compliance with emission standards. The EPA's Tier 4 emission standards (published in 2024), set targets for the fleet average NOx limit to decline from 30 mg/mile for model year (MY) 2026 down to 15 mg/mile by MY 2032. The EPA estimated that to meet fleet emission limits by 2032, zero emission BEVs would require a market share range of 30-56% for LDV and 20-32% for LCV.

In a proposed revised approached for which each vehicle must comply to emission limits, BEVs would no longer lower the fleet wide average emissions. Accordingly, even if the threshold remains at 30 mg/mile for NOx, vehicles which currently emit above threshold are likely to require higher PGM loadings to become compliant. As with the proposed testing changes in China, upside to US automotive PGM demand is not included in our base case estimates.

### Jewellery uplift

The gold jewellery market has seen costs rise along with the rally in gold prices over the past two years. The widening price differential between gold and platinum has led to white-gold retail jewellery prices rising above platinum prices despite platinum jewellery's higher fabrication costs. The Platinum Guild International (PGI) estimates that there is an incremental long-term opportunity of 1.0 Moz per annum for platinum jewellery from switching away from white-gold. The PGI estimates that the US and Europe are the largest white-gold markets globally at 2.5 Moz and 1.3 Moz respectively, albeit much of this is sub 14 carat jewellery which is entry level everyday jewellery.

The widening price differential between gold and platinum is supporting some switching amongst jewellery fabricators who value platinum's lower price.





Source: World Gold Council, Metals Focus, WPIC Research

Chinese platinum jewellery fabrication has witnessed a turnaround during the start of 2025. In China, the increasing gold price has weighed on purchasing volumes, with demand declining 32% in Q1 2025 (Fig. 12). The Chinese jewellery industry has used the opportunity of higher gold prices and weaker demand to liquidate some inventory and increase their exposure to lower priced platinum. Ten new platinum jewellery showrooms have opened in Shuibei, Shenzhen so far in 2025, which would represent an effective tripling in the number of platinum showrooms. Shuibei represents around 90% of China's wholesale platinum market and is the conduit into jewellery retail channels. Should we see sustained wholesale interest in platinum jewellery in China over the next couple of quarters it would be indicative that consumer demand for platinum jewellery in China is increasing.

WPIC has previously highlighted opportunities for switching from gold to platinum jewellery (*link*). This trend was evident in Q1 data, increasing our conviction that the switching trend is occurring and we have now incorporated some platinum jewellery market share gains. We have revised our platinum jewellery demand higher by an average of 163 koz or 8% from 2026f to 2029f.

Platinum jewellery fabrication estimates have been revised higher by 163 koz on average from 2026f to 2029f.



Figure 13. Platinum jewellery demand forecasts have been increased by 163 koz on average in our medium-term outlook

Source: Metals |Focus (2019-2025f), WPIC Research

### Industrial demand facing minor downgrades

Industrial PGM demand serves a diverse set of end markets and has increased by a 4.2% CAGR between 2013 and 2024 (Fig. 14), which is ahead of global GDP growth over the same period. As many industrial applications use but do not consumer platinum, the commissioning of new plant capacity is a core driver of platinum demand linked to industrial applications. Accordingly, with trade disputes underpinning an uncertain economic overlay, prospects have weakened for new investment into expanding industrial capacity. In our view, large investment decisions are likely to face deferrals which will weigh on industrial platinum demand.

#### Chemical, petroleum and glass

For historical context, 2020 (i.e. a COVID affected year) could be assessed to try quantifying the impact of abrupt disruptions to investments and project commissioning's. We note that during 2020, industrial platinum demand decreased by 5% year-on-year (or -19% year-on-year if glass demand was excluded). To reflect our expectations for delayed investment decisions, we have applied a project deferral probability factor to our 2026f to 2028f industrial platinum demand forecasts for the chemical, petrochemical and glass segments. We have used a 10% deferral probability for 2026f and a 5% deferral probability in 2027f and 2028f respectively. Our assumptions differ from COVID in that lockdowns were an immediate impact followed by a sharp recovery while we expect trade uncertainties will have a more drawn-out effect.





Economic uncertainty is likely to stall new investment into expanding industrial capacity.

Electrical, medical and hydrogen demand are expected to increase over the medium despite broader macroeconomic challenges.

Source: SFA Oxford (2013-2018), Metals Focus (2019-2025f), WPIC Research

#### Electrical, medical and hydrogen stationary and other

We have not adjusted platinum demand forecasts from all industrial end markets due to tariffs. Platinum demand linked to electrical applications (namely hard disk drives) should continue its mild recovery as aggressive investment in artificial intelligence and datacentres appears to be progressing unabated. Medical demand should not be impacted by tariffs since it is more aligned to demographic trends around an aging population albeit there is a risk that aggressive tariffs raising prices in the US could negatively impact drug affordability and thereby demand. Our forecasts for "other" industrial platinum demand reflect automotive (i.e. spark plugs) and defence spending trends and therefore show demand being resilient.





Source: Metals Focus, WPIC Research

#### Sectoral developments within Industrial applications

Beyond the macroeconomic factors impacting the medium-term growth prospects of industrial platinum demand, sector specific developments for glass and hydrogen have emerged.

Platinum is at risk of being substituted with palladium in bushings used in the fibreglass industry. Nornickel is funding research into the viability of replacing 30% of platinum with palladium. The advantage of substituting palladium for platinum would be to decrease the weight of the bushing since palladium has a lower density than platinum. Because PGMs are priced by weight, a lighter bushing would reduce the cost of the bushing with platinum and palladium at similar price levels and a substitution ratio if 1:1. Nornickel are said to be presenting prototypes to Chinese producers during 2025, with the sample palladium-platinum bushings weighing ~7% less than platinum bushings.

WPIC notes that some direct feedback from glass producers in China has highlighted that palladium has different high-temperature performance in relation to oxidation and evaporation. This is limiting palladium to use in thicker sections of the bushing or to use in more commoditised applications. Moreover, the recycling and reprocessing of palladium-platinum alloys are said to require more costly separation and purification steps during recycling off-spec used bushings. This may reduce if not eliminate the economic incentive to substitute platinum with palladium, unless a wide enough price differential emerges.

The use of palladium in glass fibre bushings is in an experimental stage. While the academic findings may not be reflecting real world outcomes, WPIC expects some palladium for platinum substitution to occur since some Chinese producers are beginning to test palladium-platinum alloys and they are being supported by the R&D backing of Nornickel. For forecasting purposes, WPIC estimates between 20 koz to 35 koz of platinum demand is lost in glass applications from 2026f to 2029f, with industrial palladium demand gaining 11 koz to 17 koz annually.

Replacing platinum with palladium in fibreglass bushings is at an early stage amongst Chinese producers. If successful, material impacts to platinum demand may only occur beyond our forecast horizon of 2029f. Figure 16. We expect North America to have a 4% market share of the globes 123 GW of installed electrolysis capacity by 2029f.



123 GW global electrolysis capacity by 2029f

Source: IEA, The Orange Company, WPIC Research

Turning to hydrogen, the US is looking to repeal the 45V tax credit for clean hydrogen production. Introduced under the 2022 Inflation Reduction Act, the 45V tax credit offers up to US\$3/kg of hydrogen over ten years to incentivise large-scale green hydrogen production. If repealed, projects beginning construction after 2025 would no longer be eligible for 45V credits.

Industry leaders, including Air Products and CF industries, have warned that the loss of 45V support could render many projects financially unviable, particularly in key hubs such as Louisiana. While state-level and blue hydrogen initiatives continue, the national outlook for green hydrogen has weakened, with several projects paused pending greater policy clarity. Hydrogen policy uncertainty is being further compounded by US tariffs on steel and aluminium imports which will drive inflationary pressures on project capex, thereby further reducing the economic competitiveness of the US as a major green hydrogen hub.

The United States currently accounts for 63% of North America's low-carbon hydrogen capacity within our outlook to 2029f, firmly positioning it as the regional leader, albeit significantly lagging China and Europe (Fig. 16).

We have revised our assumptions for electrolyser deployment in North America, where the US was forecast accounts for 63% of clean hydrogen production. We forecast a 33% decline in projected North American capacity by 2030f, from approximately 9.5GW to 6.4GW. While the impact on platinum demand is negligible at <5 koz annually, it again highlights some of the challenges facing the roll out of the hydrogen economy. By 2029f, we expect "hydrogen stationary and other" platinum demand to reach ~160 koz, up from ~60 koz in 2025f.

## **Investment demand**

We continue to use the same conservative methodology as before for projecting future platinum investment demand. By category, for bar and coin demand (<500g) we use seven year rolling averages. For China Bars (≥500g) we use the previous year's number as the pace of growth has been so significant over recent years. ETF demand is based upon a 10-year rolling

We have reduced our expectations for US electrolyser start-ups by 30%.

average, and we assume that exchange stock movements are net zero in any given year from 2026 onward.

Whilst the short-term fundamentals reported in Q1 are tracking for the 2025 full-year forecasts on a net basis, the strong interest that has emerged in the second quarter of this year could provide a tailwind to bar and coin and ETF investment interest, which may be partially offset by a draw of metal out of exchange stocks to meet market shortages.

### Mine supply - movement on Platreef

WPIC continues to follow the practice of using the mid-point of aggregated public production guidance ranges for mine supply, rather than applying a critical overlay on company production plans. New production is only included in forecasts if the project has the equivalent of a Definitive Feasibility Study and has a defined path to financing and project development.

For much of 2024, price led restructuring has underpinned downward revisions to the medium-term mine supply outlook. Miners rationalised headcounts and cut capex guidance which impacted both mining replacement and growth projects. In aggregate, our five-year outlook for South Africa refined platinum production was reduced by ~200 koz or 5% for 2028f between Jan'24 and Feb'25 due to restructuring announcements.

During Q1 2025, the trend of lowering our guidance based medium-term outlook was reversed when Ivanplats released an Integrated Development Plan (IDP) for its Platreef project which outlined the more details of the mine's Phase 2. We consider this to be comparable to, or possibly even more rigorous than, a DFS.

Platreef is an underground project located on the Northern Limb of the Bushveld Igneous Complex in South Africa. Phase 1 of the project is expected to be commissioned in Q4 2025 with a target of an annual operating rate of 770 Mtpa or ~100 koz 4E over around two-years. Mining will scale during Phase 2 as Ivanplats commissions a second concentrator with design capacity of 3.3 Mtpa by Q4 2027f. The IDP indicates that production will ramp up to 4.1 Mtpa design capacity (450-550 koz 4E) for Phase 1 + 2 by around 2029f (Fig. 17). Ivanplats estimates project capex for Platreef's Phase 2 at US\$1.25bn.

Ivanhoe has published an Integrated Development Plan (IDP) for the Platreef mine, where it expects to commission Phase 1 and Phase 2 in 2025f and 2027f respectively.





With the IDP in place, construction well advanced, and Ivanhoe being fully financed, WPIC believes it is appropriate to now include Phase 2 of Platreef into our medium-term mine supply forecasts (Phase 1 was previously included in modelling) given the publication of the IDP and updated Phase 2 project capex guidance of between US\$180-210M in 2025f and between US\$350-380M in 2026f. The inclusion of Platreef's Phase 2 into our South African mine supply forecasts supports a broadly stable production profile of around 3.9 Moz pa out to 2029f (Fig. 18).



Figure 18. Platinum mine supply forecasts remain well below pre-pandemic levels of ~6,000 koz

7,500

Source: SFA Oxford (2015-2018), Metals Focus (2019-2025f), Company data, WPIC Research

As already noted, WPIC's refined mining supply outlook is strictly based on each company's public guidance for future production. With this this in mind, including Phase 2 of Platreef into our mine supply forecasts is not without uncertainties. Notably, Ivanplats will not be a mine to market producer and has entered purchase of concentrate agreements with Northam for all of Phase 1's output and Sibanye-Stillwater for around 35% of Phase 2's output. Therefore, if Ivanplats does not enter into any further offtake agreements for the remaining concentrate output of Phase 2, Platreef's production would be capped and our supply forecasts negatively impacted by ~250 koz 4E pa (110 koz Pt). Given SA platinum supply has, in general, been in structural decline

WPIC's refined mining supply outlook is strictly based on each company's public guidance for future production. over the past decade, WPIC believes there is likely to be sufficient third-party smelting and refining capacity to process unallocated Phase 2 production from Platreef, thereby warranting its inclusion in our supply forecasts.

# Recycling supply not recovering to pre-pandemic levels

In our latest Platinum Quarterly (link), we highlight that recycled automotive platinum supply is expected to increase by 3.8% year-on-year in 2025f. This is second consecutive year of automotive supply growth, albeit supply remains well below 2018 to 2022 levels where supply averaged 1.5 Moz pa.

COVID negatively impacted new vehicle production which, in turn led to higher used vehicle demand and lower automotive scrap autocatalyst supply. We expect trade uncertainties to have a similar impact on used vehicle markets, thereby slowing the rate of recycled automotive supply growth. We note that the reduction in our new vehicle production forecasts (~2M LDVs pa.) translate into lower expected used vehicle scrapping. This has reduced our recycled automotive platinum supply by ~40 koz pa from 2026f to 2029f (Fig. 19).

In addition to a reduction in expected scrap vehicle supply due to trade uncertainties, we have reduced our longer-term outlook for recycled automotive platinum supply growth due to poor industry economics. The recycling value chain is experiencing over capacity and low PGM prices have weighed on margins. Notably, the rally in platinum prices since May 2025 is unlikely to illicit a swift supply response since platinum only accounts for around 10% of the PGMs in an average light duty vehicle's autocatalyst.



Figure 19. Automotive PGM recycling is expected to increase going forward although platinum volumes are unlikely to return to pre-pandemic peaks 4,000

Source: SFA Oxford (2013-2018), Metals Focus (2019-2025f), WPIC Research

Our automotive palladium recycling supply forecasts have recorded similar relative downward revisions as our platinum forecasts. However, we highlight that the growth outlook for recycled palladium automotive supply will exceed platinum since the automotive sector moved to increase palladium loadings in autocatalysts and reduce diesel vehicles over the 2010s.

Note, that should the shortage of end-of-life vehicles and/or the palladium and rhodium prices remain depressed, and thereby weighing on recycling economics, there is a significant risk of ongoing downward revisions to

Our platinum market deficits are expected to average 651 koz from 2026f to 2029f.

recycling supply growth. Should this manifest, it would deepen the platinum market deficits and push back the palladium surplus.

## Conclusion

Despite the uncertain economic outlook, key revisions to our platinum supply demand projections are broadly offsetting when considering the resulting market balance forecast. Accordingly, our projected market deficits are reduced by a modest average of only 6 koz per annum over our forecast period from 2026f to 2029f.

Following expectations from our Platinum Quarterly (forecasts to 2025f) that platinum is entering its third consecutive year of market deficit, our two- to five-year outlook forecasts that deficits will continue to at least 2029f. We expect deficits to average 651 koz from 2026f to 2029f.

To meet the supply shortfall of consecutive platinum market deficits, the industry is drawing down on above ground stocks (AGS). From 2023 to 2029f, platinum market deficits are expected to cumulatively reach 5,500 koz which we estimate will completely draw down all of platinum's AGS during 2029f (Fig. 20). In our view, the drawdown of AGS supports the investment case for platinum.

Figure 20. Platinum market deficits appear set to deplete above ground stocks during 2029f



Source: Metals Focus (2019-2025), WPIC Research

Palladium functionally shares many of platinum's supply demand themes. Although we expect palladium demand to moderate by 6% from 2024 to 2029f, due to its higher relative exposure to drivetrain electrification, supply is forecast to increase 10% over the same period due to recycling. Accordingly, palladium market deficits are expected to transition to surpluses by 2026f.

As noted in the previous section, the forecast of palladium going into surplus is entirely contingent on recycling supply growth. If this does not materialise then palladium could remain in a deficit for the foreseeable future.

Notably, the deteriorating outlook for palladium market fundamentals, inherently reinforces the subdued outlook for platinum supply. PGMs are sourced in a basket whether from primary mining or autocatalyst recycling,

Above ground platinum stocks could fully deplete during 2029f.

hence the spectre of supply side risks remains prominent despite the recent uptick in platinum prices from May 2025.

#### WPIC aims to increase investment in platinum

World Platinum Investment Council - WPIC- was established by the leading South African PGM miners in 2014 to increase investment ownership in platinum. This is done through both actionable insights and targeted development. We provide investors with information to support informed decisions e.g. through *Platinum Quarterly, Platinum Perspectives* (monthly) and *Platinum Essentials* (now monthly). We also analyse the platinum investment value chain by investor, product, channel and geography and work with partners to enhance market efficiency and increase the range of costeffective products available to investors of all types.

WPIC is not regulated to provide investment advice: see *Notice and Disclaimer*.

## Appendix I – Risks to forecasts

- Small changes can have significant impacts on supply/demand balances. For example, a 5% change in total mine supply moves the supply/demand balance by an average of 275 koz p.a. over the years 2026-2029.
- The most significant risks to our outlook derive from macroeconomic factors which would similarly impact the demand for all commodities. Principally the risks that the combination of slowing economic growth and inflation bring to bear on consumer demand for goods that either contain platinum or for which the manufacturing process uses platinum.
- The evolution of the drivetrain in transport remains uncertain. Accelerating battery vehicle market share gains would negatively impact platinum demand. We think battery vehicle market share gains will decelerate versus the period between 2020 to 2023 given base effects and headwinds such as costs, slow charging infrastructure rollouts and a lack of feature parity (e.g. range).
- The impact of a recessionary environment on industrial and jewellery demand could be more severe than we have allowed for.
- Investment demand is potentially where the greatest risks lie. We are most confident in our projections for bar and coin demand and exchange stocks, but the risk of a return to ETF disinvestment is potentially significant US policies drive a return to inflation and result in a sustained higher interest rate environment.

## Appendix II – WPIC outlook methodologies

#### Preamble

The WPIC's platinum supply and demand model is intended to complement the one year out forecast published in our *Platinum Quarterly*, but to look further into the future to provide the basis for longer-term scenario analysis of particular aspects of supply and demand. The *Platinum Quarterly* report and data are prepared independently for the WPIC by Metals Focus.

The WPIC's palladium supply and demand model is a standalone piece of research, using WPIC's own data assessment to drive forecasts for the current year forwards. Historical data is sourced from Metals Focus.

WPIC's research is predominantly desk based and not focussed on developing in-country and in-industry relationships to obtain fresh/incremental data. The information and sources used to develop our supply/demand model are all in the public domain.

Despite us having granular views of each demand segment, we have chosen, to use a simplified and conservative approach to forecasting. This provides us with our best current base case to allow scenario analysis while we increase modelling detail and publish more granular results in future reports.

#### Different methodologies in different segments

## The WPIC's platinum supply/demand methodology is built up as follows for the years 2025-2028:

**Refined mining supply:** Our refined mining supply outlook is strictly based on each company's public guidance for future production. This applies for WPIC members and non-members alike. Companies typically only change longer-term guidance once a year, usually with their financial year end, or during annual investors days (often in December). We use the aggregate of the mid-point of public published company guidance for setting our supply outlook, however, the infrequency with which longer-term guidance is updated means that the longer-term outlook may not reflect more recent events.

The guidance published by the PGM mining companies is usually provided for the combination of PGMs contained in the ore bodies mined by the respective companies, and expressed on a six-, four-, or two-element basis (6E, 4E or 2E respectively) including either: platinum, palladium, rhodium, ruthenium, iridium and gold; platinum, palladium, rhodium and gold; or platinum and palladium. Where guidance excludes specific reference to platinum or palladium, we have calculated refined platinum or palladium guidance by using the historical production ratios of these metals as published by the specific company. Where individual PGM mining companies do not provide refined mine supply guidance or where such guidance does not cover the period to 2026, we forecast that platinum mining supply remains at the level of the final year for which guidance, or production, is available. We have remained impartial to: the extent of mineral reserves and resources, the ability to extend mine lives, any potential smelter, precious or base metal refinery capacity constraints, the technical hurdles or timelines to complete capital projects, and the impact a change in PGM prices might have on mined supply.

**Recycling supply:** Automotive recycling can be determined by purchasing consecutive annual global vehicle registration data and determining detailed regional scrappage rates to apply to average vehicle platinum loadings, when manufactured, per region. We have not chosen to fund this high-cost exercise and have used a simplified approach using the published average vehicle life across all regions and determining the portion of annual platinum demand in the year of manufacture that reflects as recycled supply at the end of that average life. We use the average of this ratio over the past 20 years to calculate our forecast. Jewellery and industrial recycling rates are projections based upon historical ten-year trends, modified with by regional economic projections.

Automotive demand: Automotive demand projections are a function of the WPIC's drivetrain outlook in combination with estimated autocatalyst platinum loadings and engine sizes for different vehicle categories in different geographies. Automotive production and the drivetrain estimates are based upon historical production numbers and trends as well as announced future regulations and WPIC's view of the pace of electrification and the phasing out of internal combustion engines. Future platinum loadings in autocatalysts are based upon historical loadings that are available in the public domain or can be calculated from published data, adjusted for WPIC's estimates of the impact of regulatory changes in different geographies, such as tightening emissions standards, as well as the rate of substitution of platinum for palladium in gasoline engines. FCEV demand for platinum is included in the automotive demand outlook as a separate demand component.

**Jewellery demand:** The outlook for jewellery is predicated on recent historical trends by geography, projected into the future.

**Industrial demand:** Industrial demand projections are based upon a combination of sub-sector research, historical trends and macroeconomic expectations. This results in relatively steady trend projections, whereas in

practice industrial demand is more volatile, depending upon the timing of capacity additions. While industrial demand can be volatile, the multi-year trends have been very consistent offering a good guide to the future, added to which the annual volatility seen within each industrial sub-category tends to even each other out when totalled up. Platinum industrial demand is the demand segment most closely correlated to global economic growth over the long term. Despite the compound annual growth of platinum industrial demand over the past 30 years significantly exceeding global growth, our forecast, is for medium-term demand stability given recent demand growth.

**Investment demand:** While we have granular insight into investment demand due to the views of our many product partners around the world and our regular interaction with investors, we have chosen to use a ten-year historic average of investment demand as the basis for our forecasts. This is to reduce the dramatic positive impact of extremely strong global ETF demand in 2019 and 2020 and similarly strong bar and coin demand in 2020 and 2021.

An exception to our investment demand forecasting methodology is China large bar demand ( $\geq$  500g). The nascent segment is expected to record demand growth of 63% CAGR between 2019 to 2024e. Accordingly, using average demand, presents an unrealistic forecast for a demand segment which has delivered consistent growth. Until a longer time-series is established or demand stabilises, we believe it is prudent for our two- to five-year outlook to match the one-year demand outlook from the *Platinum Quarterly* report.

Elsewhere, we have not included the likely impact on investment demand of any material changes in price. For example, if the market is expected to have successive deficits, as we are projecting, then it is likely that investors might expect the platinum price to move higher to reflect the shortage of metal available to the market and consequently increase their exposure by purchasing platinum metal or ETFs. This would in turn accentuate future deficits. We do not attempt to capture this iterative process and rather choose to maintain future investment demand at a level based on a ten-year historic average. We have assumed a net change in stocks held by exchanges of zero each year over the forecast period as those flows are typically short-term in nature to address atypical developments in the physical market and furthermore, primarily reflect the movement of metal between visible and nonvisible inventories. **IMPORTANT NOTICE AND DISCLAIMER**: This publication is general and solely for educational purposes. The publisher, The World Platinum Investment Council, has been formed by the world's leading platinum producers to develop the market for platinum investment demand. Its mission is to stimulate investor demand for physical platinum through both actionable insights and targeted development: providing investors with the information to support informed decisions regarding platinum; working with financial institutions and market participants to develop products and channels that investors need.

This publication is not, and should not be construed to be, an offer to sell or a solicitation of an offer to buy any security. With this publication, the publisher does not intend to transmit any order for, arrange for, advise on, act as agent in relation to, or otherwise facilitate any transaction involving securities or commodities regardless of whether such are otherwise referenced in it. This publication is not intended to provide tax, legal, or investment advice and nothing in it should be construed as a recommendation to buy, sell, or hold any investment or security or to engage in any investment strategy or transaction. The publisher is not, and does not purport to be, a broker-dealer, a registered investment advisor, or otherwise registered under the laws of the United States or the United Kingdom, including under the Financial Services and Markets Act 2000 or Senior Managers and Certifications Regime or by the Financial Conduct Authority.

This publication is not, and should not be construed to be, personalized investment advice directed to or appropriate for any particular investor. Any investment should be made only after consulting a professional investment advisor. You are solely responsible for determining whether any investment, investment strategy, security or related transaction is appropriate for you based on your investment objectives, financial circumstances and risk tolerance. You should consult your business, legal, tax or accounting advisors regarding your specific business, legal or tax situation or circumstances.

The information on which this publication is based is believed to be reliable. Nevertheless, the publisher cannot guarantee the accuracy or completeness of the information. This publication contains forward-looking statements, including statements regarding expected continual growth of the industry. The publisher notes that statements contained in the publication that look forward in time, which include everything other than historical information, involve risks and uncertainties that may affect actual results. The logos, services marks and trademarks of the World Platinum Investment Council are owned exclusively by it. All other trademarks used in this publication are the property of their respective trademark holders. The publisher is not affiliated, connected, or associated with, and is not sponsored, approved, or originated by, the trademark holders unless otherwise stated. No claim is made by the publisher to any rights in any third-party trademarks

#### WPIC Research MiFID II Status

The World Platinum Investment Council -WPIC- has undertaken an internal and external review of its content and services for MiFID II. As a result, WPIC highlights the following to the recipients of its research services, and their Compliance/Legal departments:

WPIC research content falls clearly within the Minor Non-Monetary Benefit Category and can continue to be consumed by all asset managers free of charge. WPIC research can be freely shared across investment organisations.

- 1. WPIC does not conduct any financial instrument execution business. WPIC does not have any market making, sales trading, trading or share dealing activity. (No possible inducement).
- 2. WPIC content is disseminated widely and made available to all interested parties through a range of different channels, therefore qualifying as a Minor Non-Monetary Benefit under MiFID II (ESMA/FCA/AMF). WPIC research is made freely available through the WPIC website. WPIC does not have any permissioning requirements on research aggregation platforms.
- 3. WPIC does not, and will not seek, any payment from consumers of our research services. WPIC makes it clear to institutional investors that it does not seek payment from them for our freely available content.

More detailed information is available on the WPIC website: http://www.platinuminvestment.com/investment-research/mifid-ii