

PRECIOUS APPRAISAL



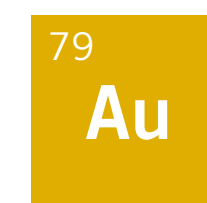
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20th November 2023

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PRECIOUS METALS REVIEW

Gold



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	1,981	2.15%	1,993	17/11/2023	1,932	13/11/2023
€/oz	1,821	0.19%	1,836	17/11/2023	1,803	14/11/2023

Festival gold demand appears to have been strong in India. Preliminary import data show that gold imports in October may have risen by ~50% year-on-year during the month to ~115 tonnes, suggesting that festive demand for gold was stronger this year than in 2022. The Hindu festivals of Dhanteras and Diwali, held earlier this month, tend to be drivers for gold purchases so dealers stocked up in October. In the first nine months of the year, Indian gold demand was 3% lower year-on-year at 481 tonnes (source: World Gold Council). To match last year's level of gold consumption, Q4'23 will have to be the strongest quarter for demand in two years. When adding October's imports to year-to-date demand this looks possible, though not probable, as without the demand catalysts of the November festivals, the persistently high gold prices in India may crimp demand to the end of the year.

The gold price rose by 2.15% last week following an easing in dollar strength. By the end of the week's trading gold stood just below \$2,000/oz.

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Silver



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	23.73	6.21%	24.15	17/11/2023	21.88	13/11/2023
€/oz	21.82	4.16%	22.21	17/11/2023	20.50	13/11/2023

Record industrial silver demand is expected this year, according to The Silver Institute's latest figures. The industry body's industrial demand forecast for 2023 has been revised 10% higher to 632 moz, primarily as a result of the faster than expected deployment of solar photovoltaics this year. China has added 129 GW of solar capacity this year (source: China National Energy Agency), more than any other year. Silver mine supply is now expected to fall 2% year-on-year, having initially been forecast to rise 2%. The reduction is mostly due to the temporary closure of Newmont's Peñasquito mine earlier in the year. This closure is estimated to have erased 16 moz from forecast silver production in 2023. In addition, based on production guidance, silver output from KGHM (the world's second-largest silver miner) is predicted to fall by 2% year-on-year to 41.8 moz, though there is a chance that the company will beat this target by the end of 2023.

Outperforming smartphone sales also help to boost silver demand.

Worldwide smartphone shipments fell just 0.1% year-on-year in Q3'23 to 303 million units. Consumer electronics sales have been relatively weak this year which has not helped silver demand for electronic components (~40% of total industrial demand). However, the higher smartphone sales are a sign that a recovery may be underway following a period of destocking by retailers in H1'23. Additionally, the share of 5G handsets (generally with higher silver content than 4G) reached 60%. The fourth quarter is typically the strongest for smartphone sales, and shipments are expected to rise year-on-year. The risk is that next year economic weakness will impact consumer spending and sales will dip, and if not offset by a rising 5G market share, associated silver demand could also slip.

Silver outperformed gold last week as it pushed past \$24/oz intraday Friday. Friday's close was the highest weekly close since the end of August, and the gold:silver ratio fell to 83.4.

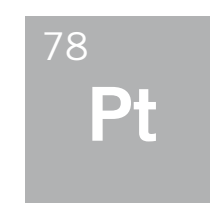
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Platinum



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	898	6.11%	911	17/11/2023	846	13/11/2023
€/oz	825	4.03%	838	17/11/2023	791	13/11/2023

Europe's critical minerals law emphasises recycled PGMs. Last week, the European Commission established the framework of the upcoming Critical Raw Materials Act (CRMA). The Act aims to improve the availability of "critical materials" by speeding up project permitting and boosting recycling mandates for metals used in the EU. PGMs are included in the Act and once it is enacted, 40% of PGMs consumed must be processed inside the bloc. The latest development has raised recycling requirements from 15% to 25% for scrapped critical materials. For PGMs this will not be a large hurdle; for example, 60% of PGMs processed by Heraeus were secondary in 2022, and other PGM refiners are increasing recycled PGM content. What may prompt some platinum supply chain adjustment is the clause that states: "no third country may supply >65% of a critical material". Currently, South Africa produces 75% of global primary platinum, though this proportion is higher for rhodium, iridium and ruthenium. The impact of this clause may be reduced if "supply" includes recycled material, but this cannot be confirmed until the full text of the Act is released.

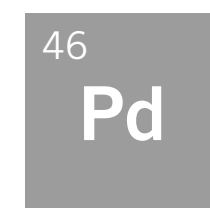
Zimbabwe has reached peak platinum production. Platinum supply from the country is expected to reach a record high this year of 503 koz, and then begin to tail off. Production of other PGMs in Zimbabwe is not forecast to reach a peak until at least 2024. Zimplats' latest results for Q3'23 show that platinum output is 19% higher year-on-year at 76 koz, owing partly to a low base effect following smelter maintenance last year and also the subsequent commissioning of the new concentrator. Zimbabwe's platinum production is estimated to be 0.3% lower (-2 koz) in 2024 at 501 koz. Despite increases to concentrator capacity at Zimplats and the completion of other debottlenecking projects, supply from Zimbabwe is likely to fall gradually owing to lower head grades and mine depletion if no new projects or expansion are initiated.

The platinum price also rose last week after a significant decline the week before. By the end of Friday, platinum stood at \$898/oz.

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PRECIOUS METALS REVIEW

Palladium



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	1,051	6.69%	1,064	17/11/2023	951	13/11/2023
€/oz	966	4.74%	979	17/11/2023	893	13/11/2023

Vehicle sales stay hot as temperatures drop. Chinese vehicle sales showed double-digit growth in October (+12% year-on-year), with the healthiest growth coming from the plug-in hybrid sector (+79% year-on-year). US sales still posted growth of 1.8% to 1.2 million units, even with strike action hampering production, though this was lower than expected. Affordability risk is rising in the US following the reinstatement of student loan repayment requirements for up to 43 million Americans. As auto selling rates have stayed high this year, palladium autocatalyst demand is expected to grow across most major markets in 2023, in spite of the ground gained by electric vehicles in the last 12 months. Globally, palladium autocatalyst demand in 2023 is forecast to reach 8.2 moz – the highest level since the start of the pandemic.

The palladium price bounced back above \$1,000/oz last week, having found support following the rout in precious metals in which palladium reached oversold levels. A weaker dollar and likely covering of some short positions contributed to the rapid price recovery, though the low price also probably tempted some buyers to take positions as the metal looked cheap having reached its lowest price in five years.

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Rhodium, Ruthenium, Iridium



	RHODIUM	RUTHENIUM	IRIDIUM
Reporting Week	\$5,000/oz	\$475/oz	\$5,500/oz
Previous Week	\$4,800/oz	\$475/oz	\$5,450/oz

Heraeus and Sibanye-Stillwater's ruthenium-based PEM catalyst releases pressure on iridium market. The new catalyst formulation offers significantly lower iridium loadings while retaining process efficiency. At present, iridium loadings present a potential bottleneck to the scaling up of proton exchange membrane (PEM) electrolyzers. Iridium supply is heavily concentrated in South Africa and highly inelastic to demand as it is a byproduct of other PGM mining. By substituting some iridium for ruthenium, constraints related to iridium supply can be alleviated. In addition, cost pressure from high iridium prices may ease, which has also been a sticking point for electrolyser manufacturers.

Ruthenium is yet to show any price movements this quarter, whereas iridium and rhodium prices have been more volatile. Last week the latter two metals moved higher in tandem.

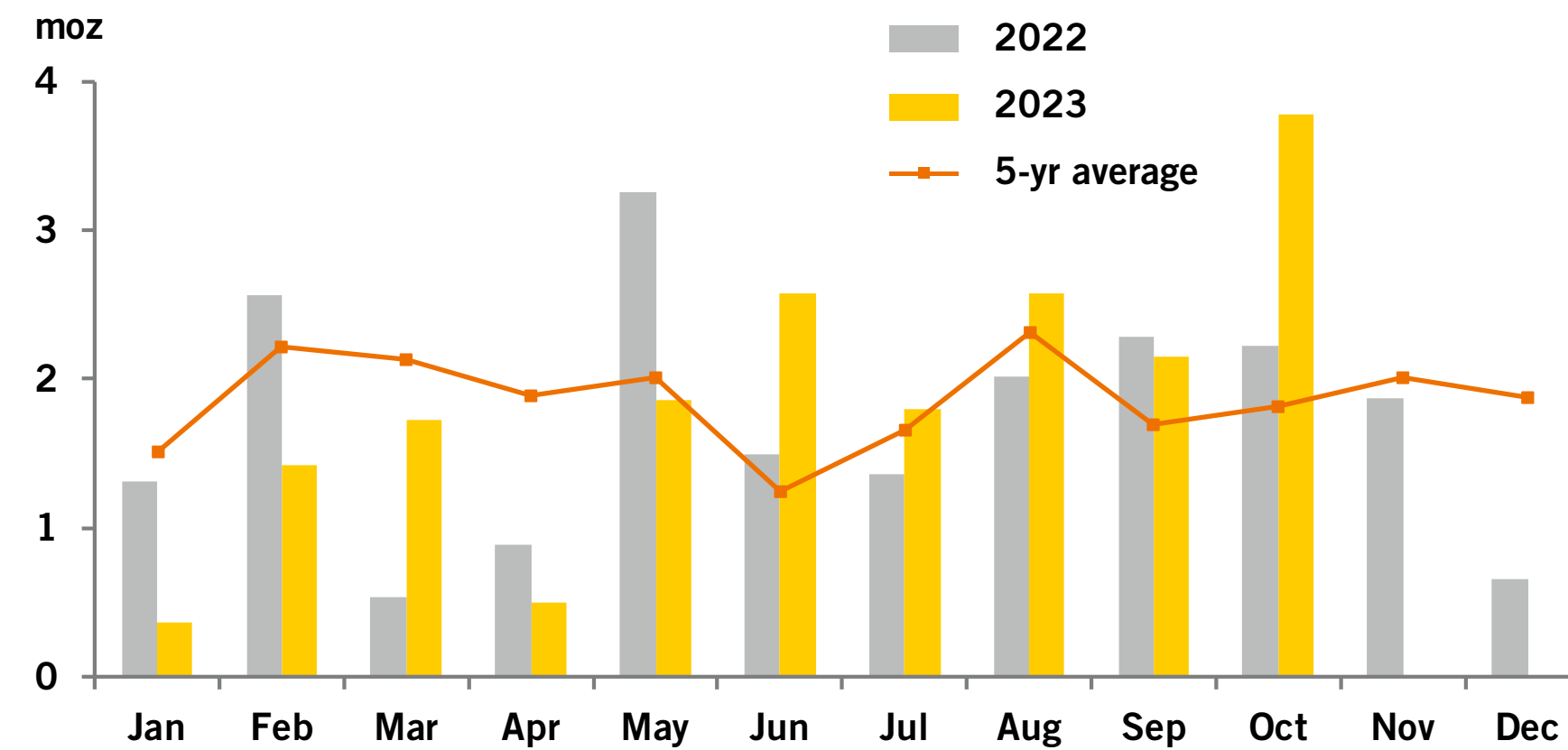
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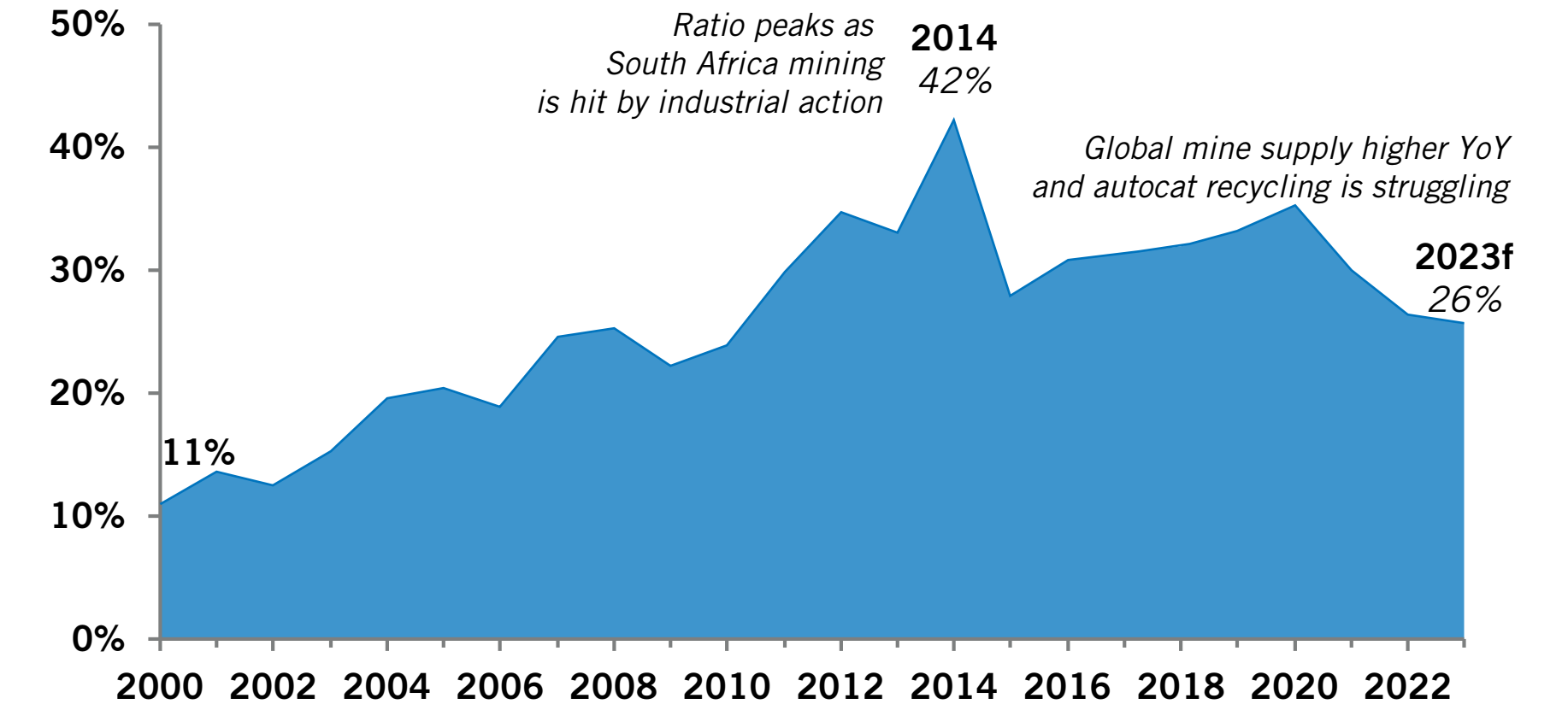
TRENDS AND INVESTMENTS

India gold imports



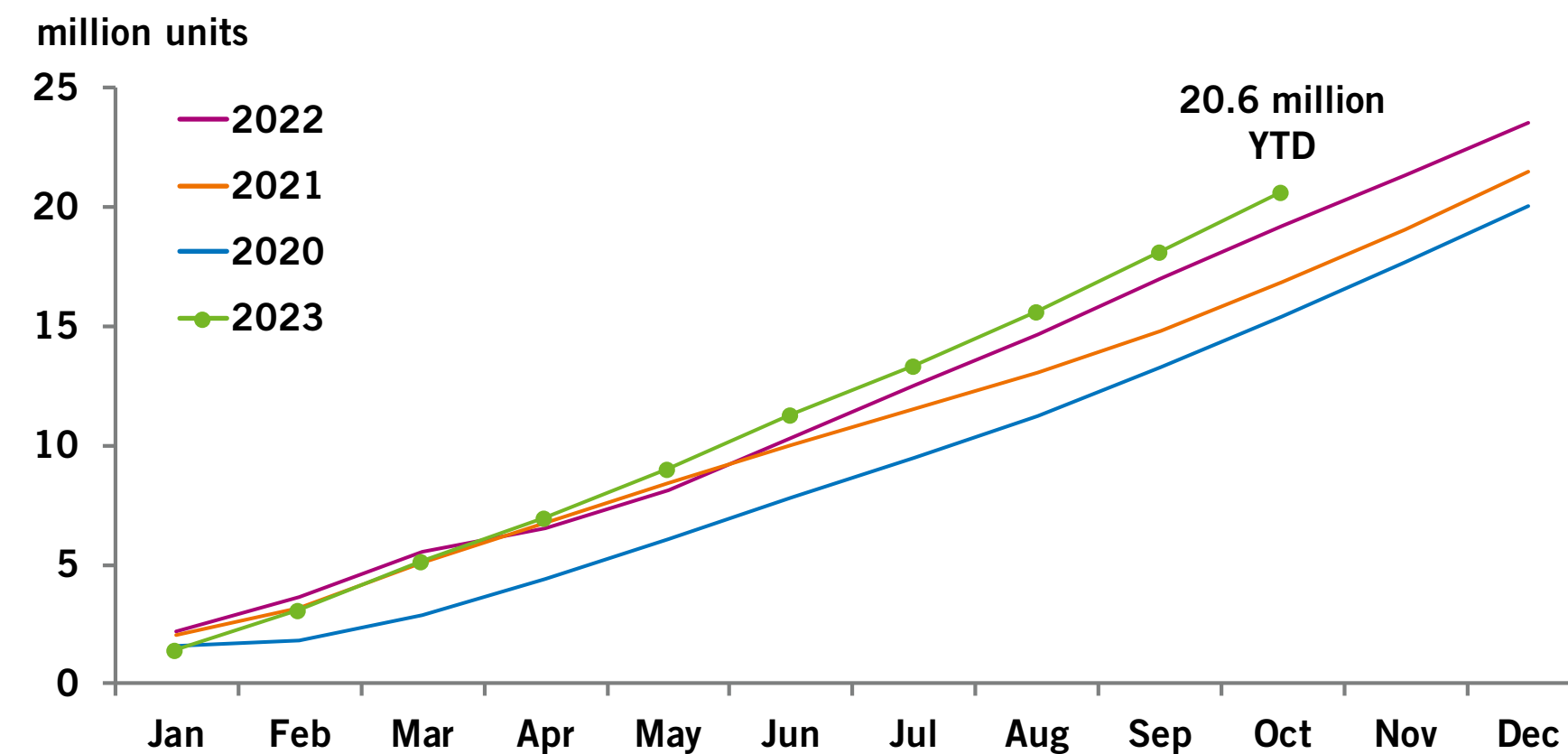
Source: SFA (Oxford), Bloomberg

Platinum secondary supply ratio



Source: SFA (Oxford)

Cumulative China light-vehicle sales



Source: SFA (Oxford), Bloomberg

EU CRMA objectives for 2030 for PGMs

<p>Extraction</p> <p>At least 10% of the EU's annual consumption from EU extraction</p>	<p>Processing</p> <p>At least 40% of the EU's annual consumption from EU processing</p>
<p>Recycling</p> <p>At least 25% of the EU's annual consumption from domestic recycling</p>	<p>External sourcing</p> <p>Not more than 65% of the Union's annual consumption of each strategic raw material at any relevant stage of processing from a single third country</p>

Source: SFA (Oxford), European Council

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Heraeus Precious Metals is globally leading in the precious metals industry. The company is part of the Heraeus Group and covers the value chain from trading to precious metals products to recycling. In addition to gold and silver, it also has extensive expertise in all platinum group metals.

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