



Issue 491

25th January 2023

Metals Focus

Precious Metals Weekly

Gold

Gold eases back, but still remains well supported by a weak dollar.

Silver

Despite gold and base metal gains, silver has lost ground, sending the gold:silver ratio back up to around 82.

Platinum

South Africa has experienced 141 hours of stage 6 load shedding so far this year, compared to 199 hours for all of 2022.

Palladium

Nornickel is forecasting a 10% decline in palladium output in 2023, the company however has a track record of exceeding guided production.

Hydrogen PGM demand to increasingly gain traction this year

Our team recently attended the Hydrogen India Summit 2023 in Delhi. One of the key talking points at the conference was India's recently approved National Green Hydrogen Mission, a \$2.4Bn incentive plan to promote green hydrogen. This will help to make India a global hydrogen hub, and encourage key industrial sectors to decarbonize. As covered in our latest Hydrogen Economy report, this is broadly in-line with progress made in other key economies' policies throughout 2022, unveiling a key theme for the industry and providing an indication of the prospects for the hydrogen market this year.

It is worth remembering that, in January 2020, the European Commission had announced their European Green Deal, which provided the platform for all subsequent European policies. However, the bulk of recent investment in the hydrogen economy only emerged following the pandemic amid a wider shift towards a greener (carbon-neutral) global economy. The European Green Deal was followed up with the Commission's Fit-For-55 package, which increased the EU's greenhouse gas reduction target by at least 55% by 2030 with climate neutrality by 2050.

China released their 14th Five-Year Plan in early 2021 which included hydrogen energy as a cutting-edge technology that requires a plan to incubate and accelerate the industry; this has been followed up this year with more tangible goals and investments at the provincial-level. In the US, investment came in the form of the Bipartisan Infrastructure Law



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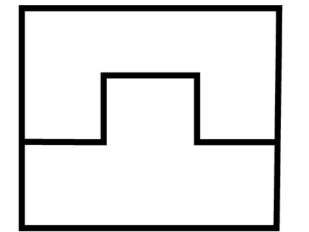
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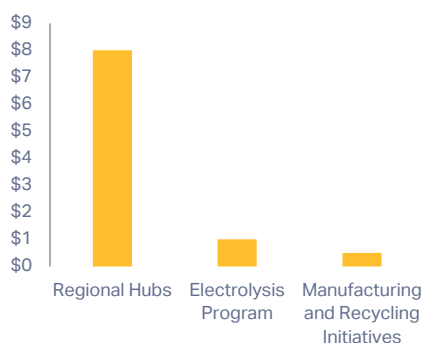


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US Bipartisan Infrastructure Law's Clean Hydrogen Spending Allocation (\$Bn)



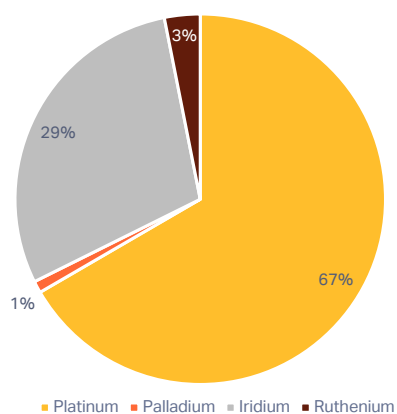
Source Metals Focus, Hydrogen Report

(BIL) towards the end of 2021, which included \$9.5Bn of spending on hydrogen development and infrastructure.

However, in early 2022, following Russia's invasion of Ukraine, the western need for energy security shifted political focus again towards hydrogen as part of a long-term solution, resulting in a fresh wave of public investment. For Europe, this came in the form of REPowerEU in May 2022. This has seen numerous legislative follow-ups benefiting hydrogen, including Hy2Tech and Hy2Use, frameworks that will inject €5.4Bn and €5.2Bn respectively of public funding into the industry's development. In August 2022, the US passed the Inflation Reduction Act, which included \$739Bn of investment, over half of which will be on energy security and climate change (how this figure will be split and how much will be hydrogen-specific is currently unknown).

A hydrogen hub is a centralised location for the production, storage, distribution, and potential use of hydrogen. This year, under the Regional Clean Hydrogen Hubs (H2Hubs) program (part of the US' BIL), between six and ten hydrogen hubs will be announced in the US. Similar regional hubs are being announced and developed globally, which will channel private investment to specific locations, allowing investors to benefit from external economies of scale further catalysing industry growth.

Total PGM Hydrogen Demand by Metal



Source Metals Focus, Hydrogen Report

Much of this development and investment will resonate in 2023, both for the industry and for PGM demand. Total PGM offtake in the hydrogen economy grew by around one-third year-on-year in 2022 to an estimated 48koz, however, this year, we expect the industry to double in size. This mostly benefits platinum which makes up around two-thirds of PGM's total usage in hydrogen. This leads to platinum hydrogen demand growing to a similar magnitude as electronics, and eclipsing this sector within a few years. More important, investors' bullish attitude towards the sector, coupled with persistently strong Chinese platinum imports and a deepening physical deficit will keep the price supported. This is forecast to increase 6% on last year's average to \$1,020 in 2023.

In contrast, palladium will reap little benefit, consuming less than 2koz this year in the green hydrogen space, while rhodium does not feature at all. Part of platinum's allure over these two metals is its outstanding oxidation and corrosion resistance, especially at high temperatures, which is particularly useful in electrolyzers and fuel cells. However, palladium and rhodium's relative price points also discourage their use. Palladium, for example, was originally more extensively used as a catalyst for liquid organic hydrogen carrier (LOHC) technology in the hydrogenation and dehydrogenation stages, yet lost share to lower priced platinum. While green hydrogen production will take



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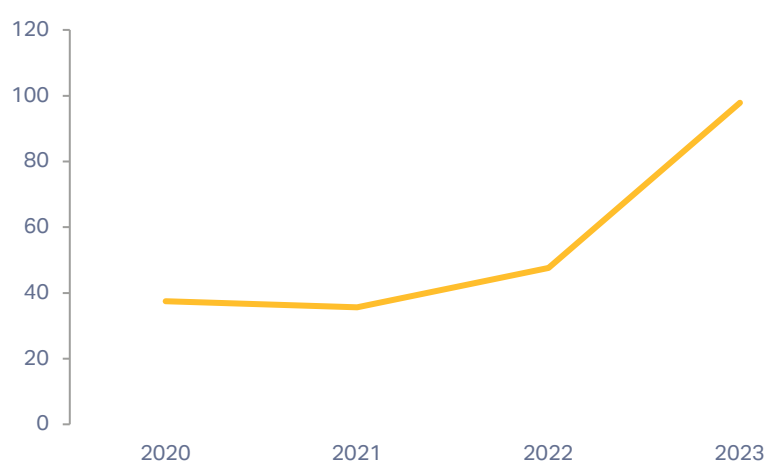
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some time to ramp-up, we expect that grey and blue hydrogen may be more widely used. In these cases, we could see increased demand for palladium purification membranes.

However, developments in the industry are moving at an unprecedented pace. One year ago, the term 'hydrogen combustion engine' was unfamiliar, despite the technology being around since the 1800s. Today, Cummins, Toyota and Porsche all have prototypes in development as more OEMs also look towards fuel agnostic engines as part of the wider auto market electrification effort. This is just one example of where the industry can go. While hydrogen combustion may be CO₂ free, inefficient combustion will generate NOx. Given both palladium and rhodium's NOx reduction capabilities, these metals could still benefit from this nascent industry. However, their price levels would likely have to fall to encourage development.

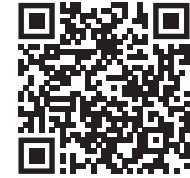
A further boost for platinum producers stems from the growing use of iridium and ruthenium within the hydrogen sector. With a revenue contribution of around 6%, they provide a meaningful contribution to the profitability of mines. While we mostly focus on platinum, palladium and rhodium, the growth in demand for the minor PGMs has led us to cover both their supply and demand aspects in greater depth across a ten-year horizon in our Hydrogen Economy report.

Total PGM Hydrogen Demand (koz)





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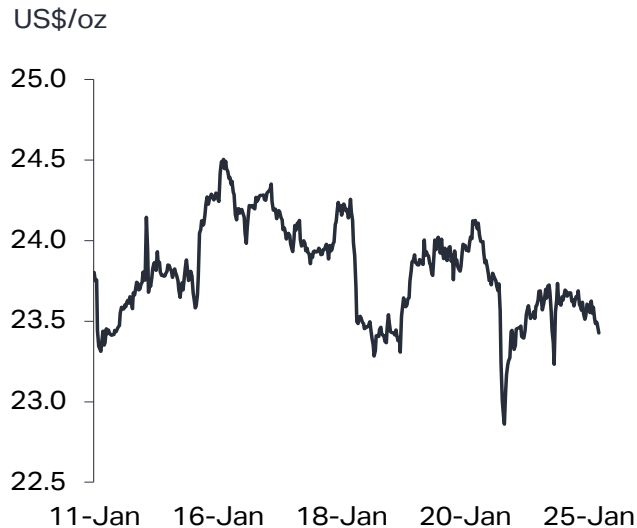
Charts - Precious Metal Prices, US\$/oz

Gold



Source: Bloomberg

Silver



Source: Bloomberg

Platinum



Source: Bloomberg

Palladium



Source: Bloomberg



2023

WINTER MEETING

FEBRUARY 28 - MARCH 2



IPMI 
FOUNDATION

The 2023 IPMI Winter Meeting will take place between February 28th - March 2nd 2023 at the Hyatt Regency Grand Cypress Resort in Orlando, Florida.

[Register Now](#)

Agenda:

Tuesday, February 28th

Security and Anti Money Laundering Day (SECAM)

Wednesday, March 1st

PGM Refining Day (PGMRC)

Thursday, March 2nd

Sampling and Analytical Day (SAC)

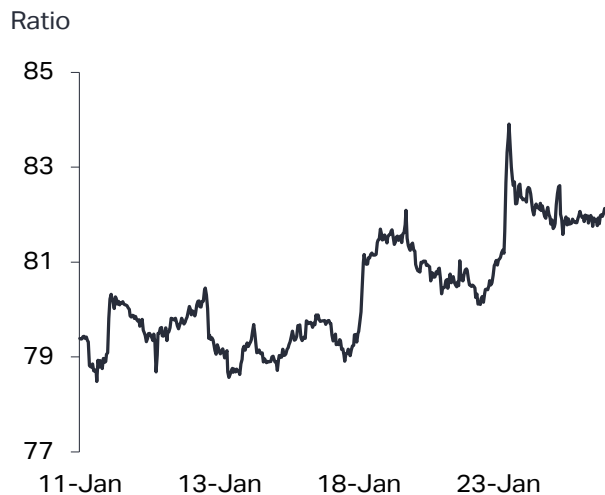
[Click here to view the full preliminary agenda for the meeting](#) - Including Wilma Swarts of Metals Focus, as one of the Speakers and Panelists for our PGM Market Session on Wednesday March 1st

Sponsorships Are Available

If you are interested in being a sponsor during the Winter Meeting, please contact Sandra Arrants at mail@ipmi.org

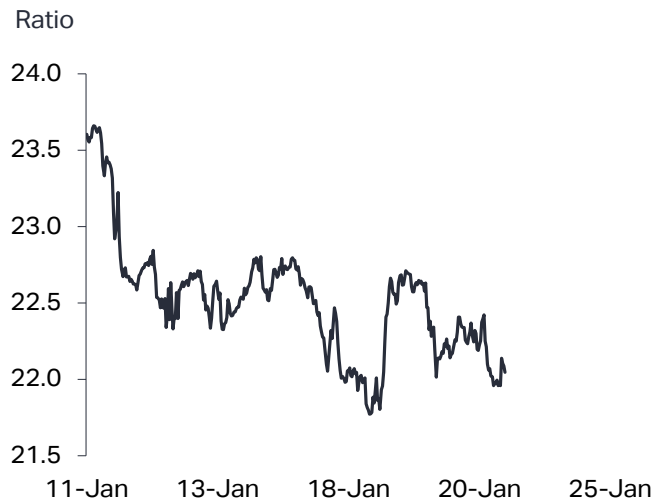
Charts - Ratios & Spreads

Gold:Silver Ratio



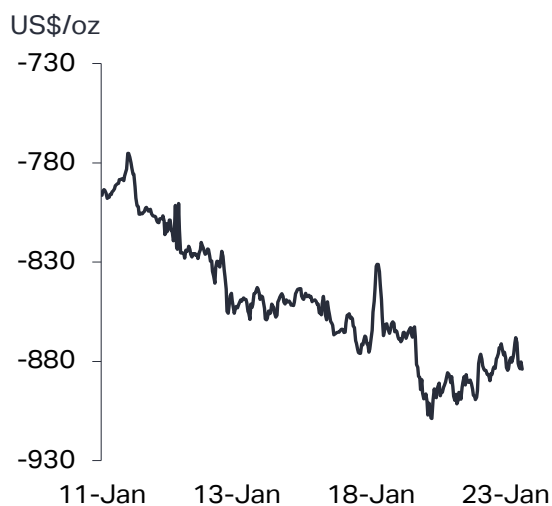
Source: Bloomberg

Gold:Oil (Brent) Ratio



Source: Bloomberg

Platinum-Gold Discount, US\$/oz



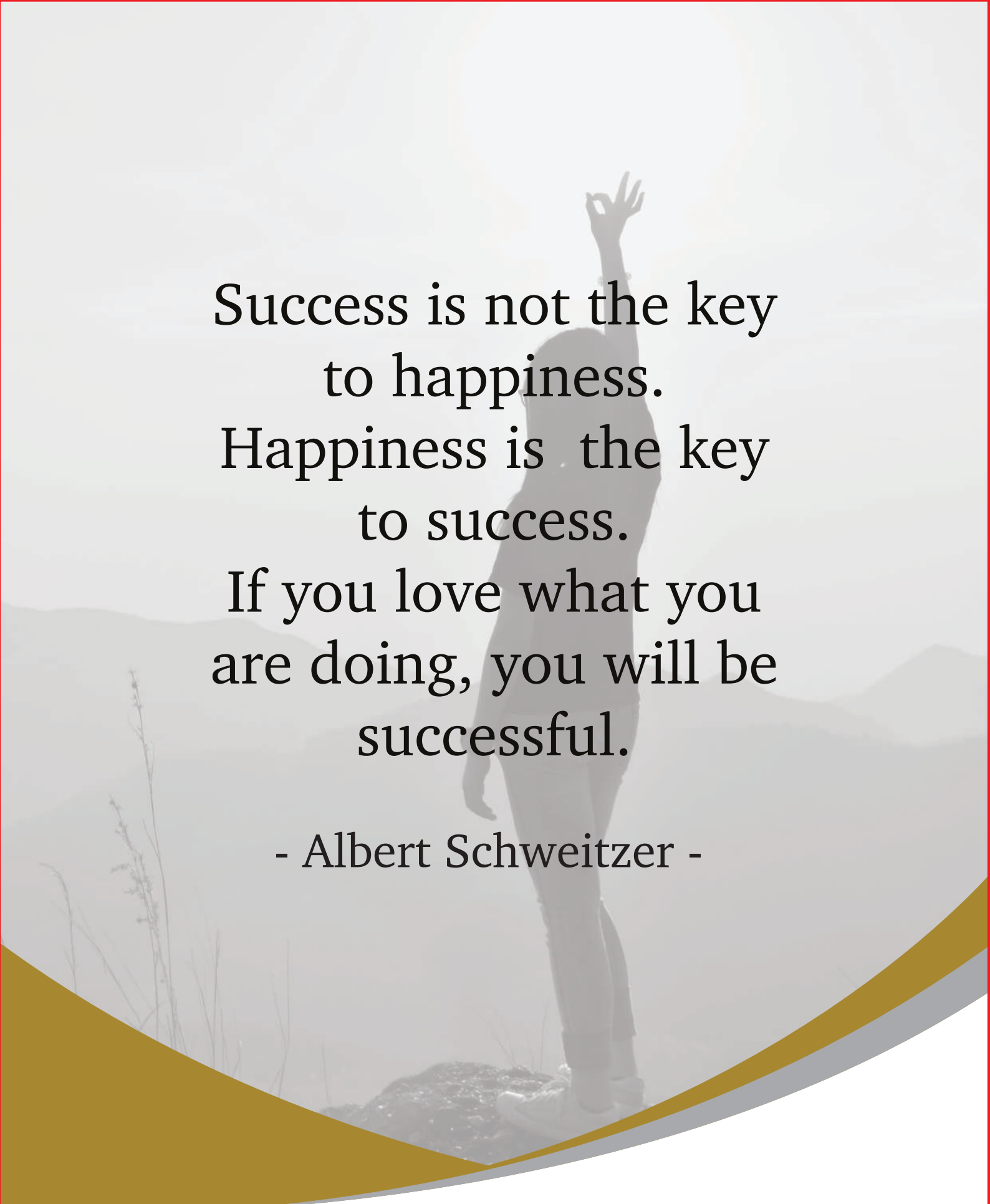
Source: Bloomberg

Platinum-Palladium Discount, US\$/oz



Source: Bloomberg



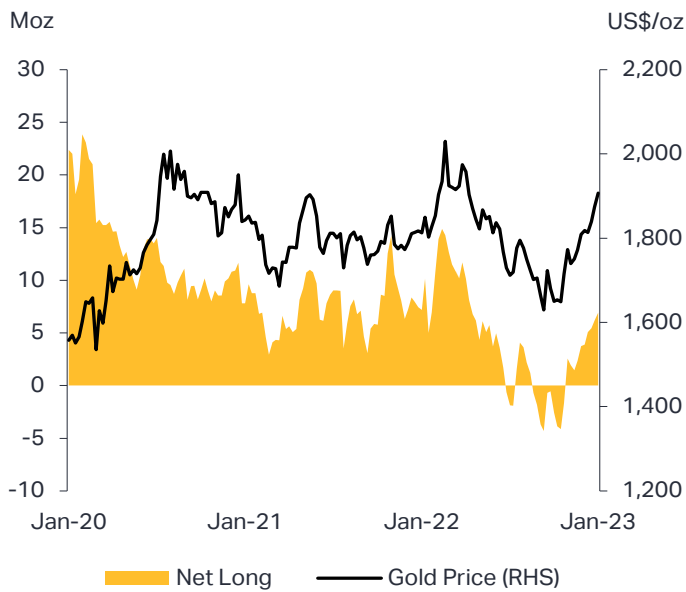


Success is not the key
to happiness.
Happiness is the key
to success.
If you love what you
are doing, you will be
successful.

- Albert Schweitzer -

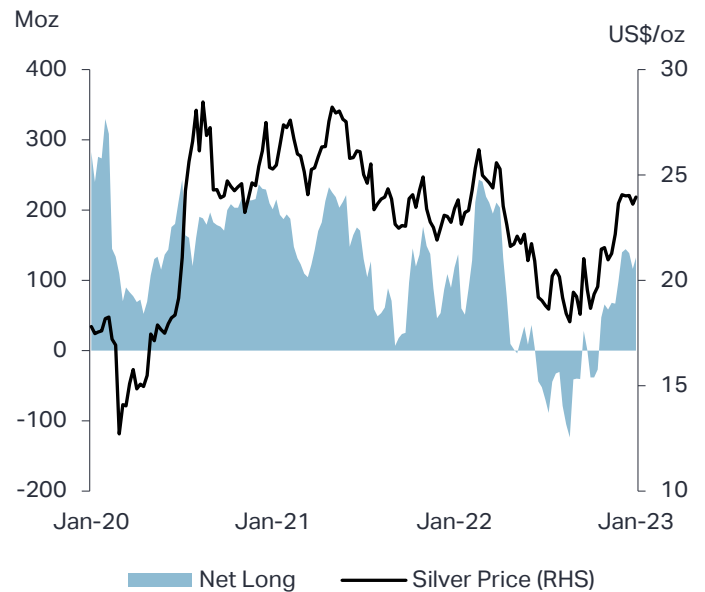
Charts - CME Futures Net Positions*

Gold



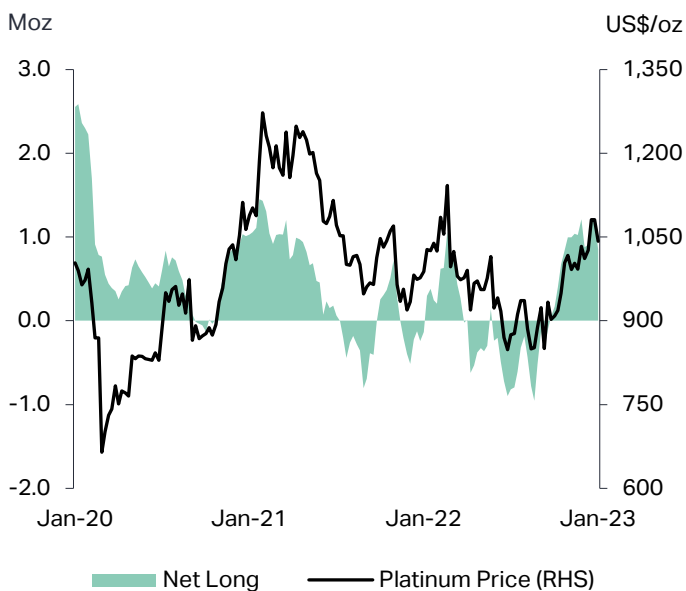
*Managed money positions; Source: Bloomberg

Silver



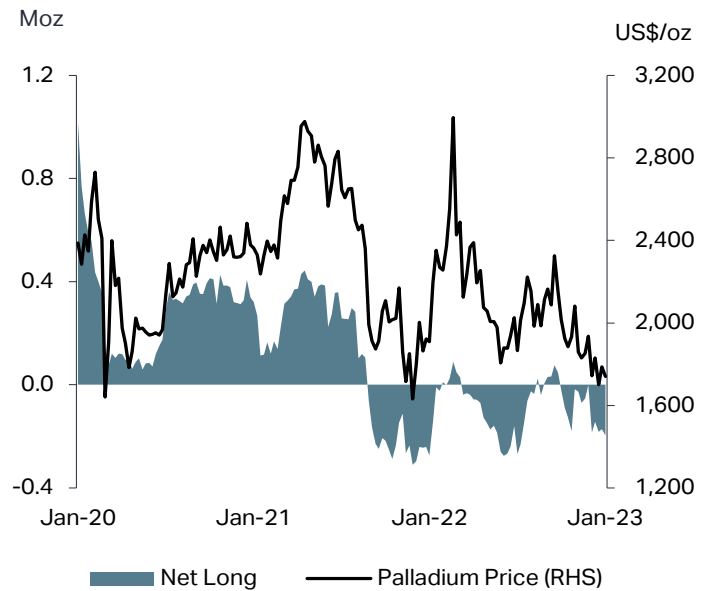
*Managed money positions; Source: Bloomberg

Platinum



*Managed money positions; Source: Bloomberg

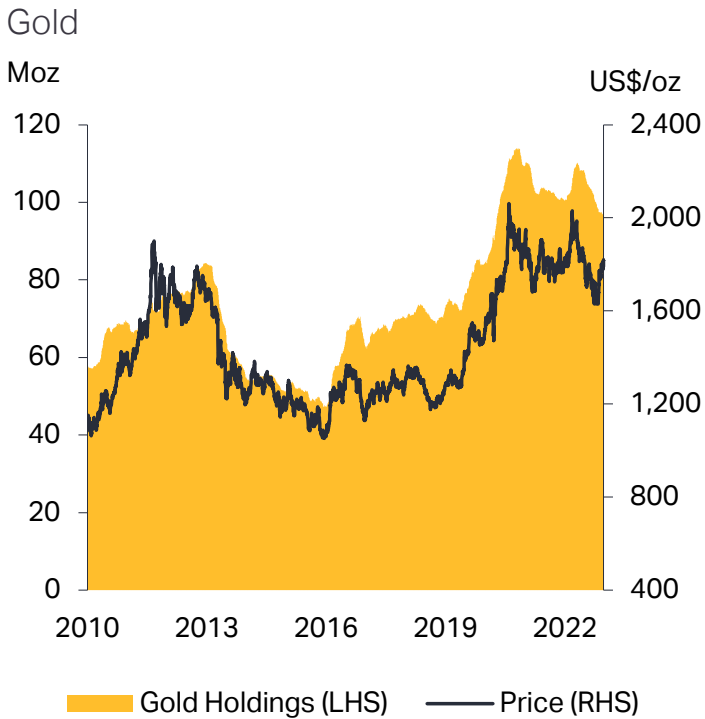
Palladium



*Managed money positions; Source: Bloomberg



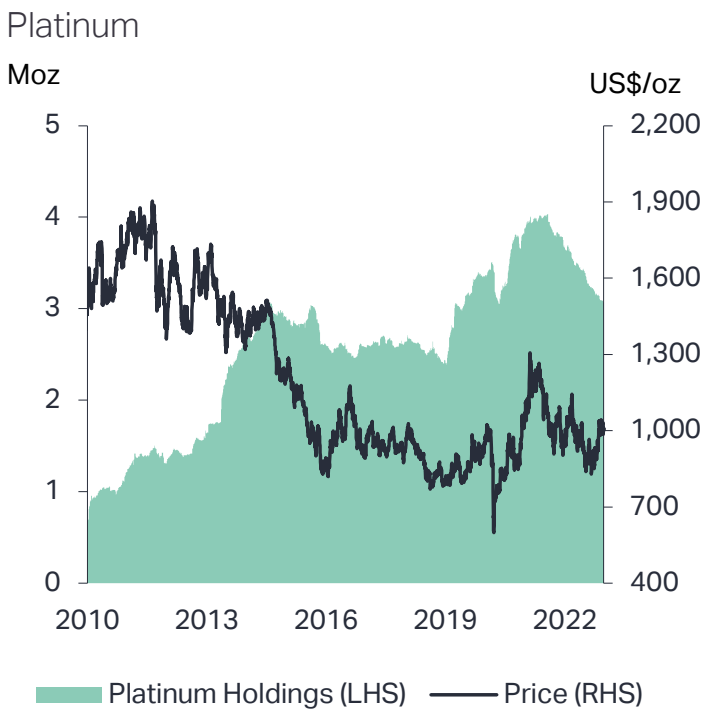
Charts - ETP Holdings



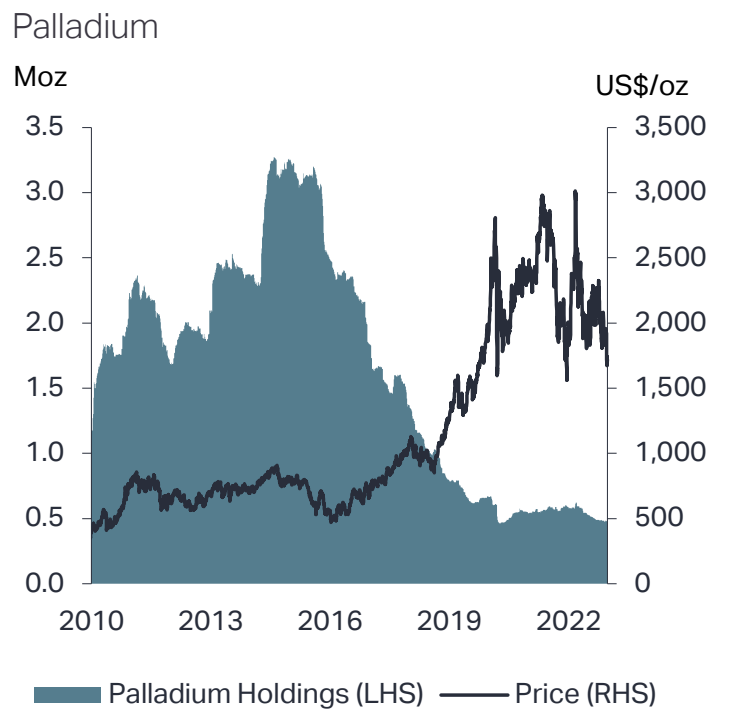
Source: Bloomberg



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