PRECIOUS APPRAISAL

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MARKET SPOTLIGHT

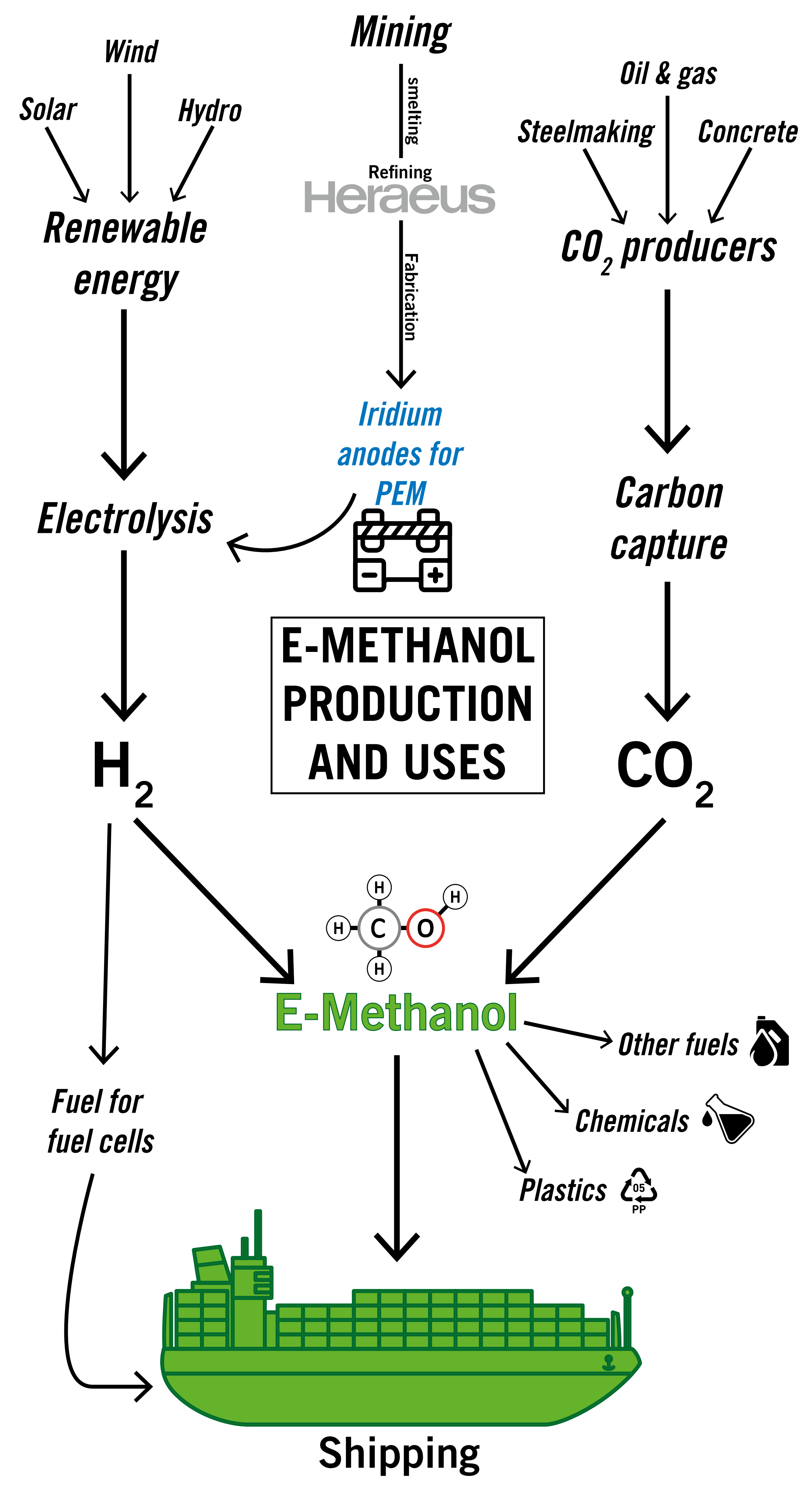
Hydrogen electrolyser capacity expansion essential to supply clean fuels

Decarbonisation of transport is not just about the road. Shipping accounts for 2-3% of global CO_2 emissions through the burning of fuel oil. To meet global emission goals, a transition to low- and zero-carbon fuels is needed. Methanol is currently the most suitable alternative and can be a net-zero fuel. To be net zero, hydrogen used in e-methanol synthesis must be “green” – produced using water electrolysis powered by renewable energy. This can be done by alkaline or PEM electrolysis (current share 50:50); only PEM technology uses significant quantities of PGMs.

Shipping companies have ambitious targets for alternative fuels. The companies have set their own decarbonisation goals, some centred on hydrogen-based fuels. Maersk is the first large shipping company to place orders for e-methanol powered ships, with 13 on order and the first due for delivery in 2023. The first vessel will be based in Denmark where a new e-methanol production facility will be constructed. The ship will run on standard synthetic methanol until this plant is operational. Once the first 12 of these ships are working in 2024, they will require 500 kt of e-methanol fuel per year. This is equivalent to 63 kt of pure hydrogen, more than double world green hydrogen production in 2020 (source: IEA). If the expected demand cannot be met, methanol can be blended with diesel fuel to achieve lower emissions than 100% fossil fuels.

Fuel diversity is the medium-term outcome. According to the International Council on Clean Transportation (ICCT) as of 2021, there were >16 hydrogen-powered (fuel cell and combustion engine) maritime projects underway. These are mostly short distance, point-to-point vessels whose fuel type varies by application and availability of the required infrastructure. Currently, just 0.4% of the global fleet is capable of running on non-LNG alternative fuels, while 5.4% of ships on order are being built with this capability (source: Clarksons Research). An ICCT study found that liquid (green) hydrogen in fuel cells could be feasible for transpacific shipping routes, but until most major ports have the infrastructure needed, hydrogen vessels will need to be within range of a home port where they can refuel.

Iridium use for hydrogen production currently represents a small portion of total demand. The sticking point for expansion is the refuelling infrastructure of the world’s ports, currently designed for fossil fuels. Alternative fuel initiatives are likely to take off in the next five years, potentially accounting for tens of thousands of ounces of iridium demand in fuel production each year. To accommodate this demand, iridium thrifting in electrolysers will be necessary as supply is small compared to other PGMs and relatively inelastic.



Source: SFA (Oxford)

PRECIOUS METALS REVIEW

Gold

79 Au

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
$/oz	1,827	-0.77%	1,852	20/06/2022	1,817	24/06/2022
€/oz	1,734	-1.38%	1,755	22/06/2022	1,727	24/06/2022

Gold investors favoured coins over bars in May. The United States Mint sold 147,000 oz of gold American Eagle (22 karat) and 56,000 oz of gold American Buffalo (24 karat) coins in May. This represents a 67% and 107% increase in demand for Eagles and Buffalos respectively compared to April, although that was the month with the lowest sales this year. Gold Eagle sales this year to May totalled 661,500 oz, which is significantly higher than the long term average of 218,000 oz for the same five-month period each year. This puts estimated annualised US gold coin demand on track for the best year since 1999 when total sales surpassed 2,000,000 oz. That year, the gold price was below $400/oz and a long bear market was ending. In contrast, gold ETFs posted net outflows in all regions for the month of May totalling 47 tonnes, the first monthly decrease in global ETF holdings this year. Despite last month's outflows, total holdings of gold by funds (3,271 t) are just 2.5% below the all-time high of 3,355 t, reached in November 2020.

A stock bear market may not be a bad thing for gold. The S&P 500 has closed down more than 20% from its recent highs, the common definition of a bear market. Gold is less volatile than stocks and a useful hedge when equities are in a bear market. The risk is that if a financial crisis develops, as a liquid asset, gold is sold off to cover other funding needs. Gold outperformed other precious metals in three of the last four stock bear markets. Real interest rates will likely be negative until the end of the year, and quite possibly longer, providing a good investment environment for gold. The gold price has been trading in a broad price range for two years and will eventually break out. On the upside, the price will need to climb above $1,900/oz to give an initial sign that the rally has resumed. Alternatively, if the price falls below support from $1,800/oz to $1,780/oz, then further decline is likely.

PRECIOUS METALS REVIEW

Silver

47
Ag

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
$/oz	21.18	-2.17%	21.94	21/06/2022	20.61	24/06/2022
€/oz	20.09	-2.81%	20.78	21/06/2022	19.60	24/06/2022

The seventh largest silver producer cannot get its metal to market. Polymetal, the owner of the world's third largest silver mine, has confirmed that its silver bullion inventory is building up as export channels to the West and Japan dry up. The miner's Russian and Kazakh assets produced 636 tonnes of silver in 2021, and 140 tonnes in Q1 – equal to 560 tonnes on an annualised basis. The UK imported significant amounts of silver from Russia and Kazakhstan in 2021, the Russian portion of which has likely halted following sanctions on the country and the removal of Russian refineries from the LBMA's good delivery list. Output from Polymetal's mines accounts for 2% of global silver supply.

Silver fell a monthly low of $20.61/oz last week, as rising interest rates across world economies appear to have deterred investors. This sentiment has spread to the precious metal funds, as seen by the reductions in holdings. Global holdings of silver in ETFs reached an 18-month low of 886 moz in May. Silver is also being removed from the vaults of London. The City is a historic centre for precious metal trading and one of the main physical bullion storage locations for investors and banks alike. The amount of silver stored in London vaults declined 5.6% month-on-month in May to 31,758 tonnes – an amount approximately equivalent to global demand for 2022. This sharp decline in metal in storage takes current levels to the lowest since February 2017 (source: LBMA) when silver was trading 16% lower than last week at around $17.77/oz. The decline is in contrast to London's gold in storage which has remained stable at around 9,600 tonnes since October 2020. The failure of the silver price to hold above $22/oz is a concern for bulls and the price could weaken further.

PRECIOUS METALS REVIEW

Platinum

78
Pt

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
$/oz	908	-3.20%	955	21/06/2022	904	23/06/2022
€/oz	860	-3.04%	908	21/06/2022	856	24/06/2022

Demand for oil refining catalysts is slowing. China's refinery capacity is at only around 70% utilisation at present owing to Covid and export limitations. The country is planning on increasing its refining capacity by 2.5 mbpd by 2025, so new expansion is being undertaken to supply domestic markets. This will mean more demand in China as refining capacity is growing. Global petroleum refining platinum demand is predicted to decrease by 10% this year to 175 koz as global refinery capacity growth slows from 2021 when projects delayed from 2020 boosted demand. High gasoline prices at the pump in the US are partly the result of a lack of domestic refining capacity constraining supply. Utilisation rates are around 90% at US refineries but new capacity is slow to come online. Platinum petroleum demand comes from a combination of new capacity builds and top-up for existing plants when catalysts are refreshed.

PRECIOUS METALS REVIEW

Palladium

46
Pd

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
$/oz	1,879	2.87%	1,910	21/06/2022	1,817	20/06/2022
€/oz	1,783	2.24%	1,812	23/06/2022	1,709	21/06/2022

Automotive demand in China could recover as spending incentives kick in. Vehicle production in the world's largest palladium market was heavily impacted by strict Covid measures in Shanghai particularly in April, falling to 1.20 million units from 2.24 million units month-on-month. May saw production rebound by 60% to more than 1.9 million units as Covid outbreaks were brought under control and Shanghai was released from strict lockdown. Nonetheless, this is still below the production figure of 2 million units in May 2021. Sales figures are likely to grow in the following months as inventories are restocked and the cut in the vehicle purchase tax from 10% to 5% comes into effect, supporting PGM demand. Despite this, forecasts of automotive palladium demand from China have been revised down to around 2.5 moz, as a result of Covid lockdowns and component shortages, which would result in a small year-on-year contraction in demand. The support measures in China may not be sufficient to reverse the current downward price trajectory as auto sales could struggle in other regions in the weaker economic environment.

Speculators bet heavily on a falling palladium price. The speculative futures positions in palladium on NYMEX have reached the largest ever net short position of 435 koz. This suggests that these market participants think palladium could fall further, even after the 38% price decline since its all-time high in March. The current price is still much higher than the long-term real average price of $552/oz. It also leaves open the possibility that a small rally in the price could lead to a significant short-covering rally.

Stillwater mine will remain closed for at least a month. Recent flooding around Sibanye-Stillwater's Montana PGM operations left mine infrastructure untouched, but roads and bridges providing access to the mine have been impacted. The company confirmed late last week that the mine will remain closed for 4-6 weeks while repairs take place. Excluding East Boulder (currently unaffected) Stillwater is expected to produce 509 koz Pd, 148 koz Pt and 4 koz Rh in 2022. The impact of the expected closure is estimated to be 25 to 38 koz lost production of palladium plus more than 10 koz platinum. This will somewhat tighten the palladium market which is expected to be in surplus this year, and palladium rallied nearly $20/oz Friday afternoon to finish the week up 2.87%.

PRECIOUS METALS REVIEW

Rhodium, Ruthenium, Iridium

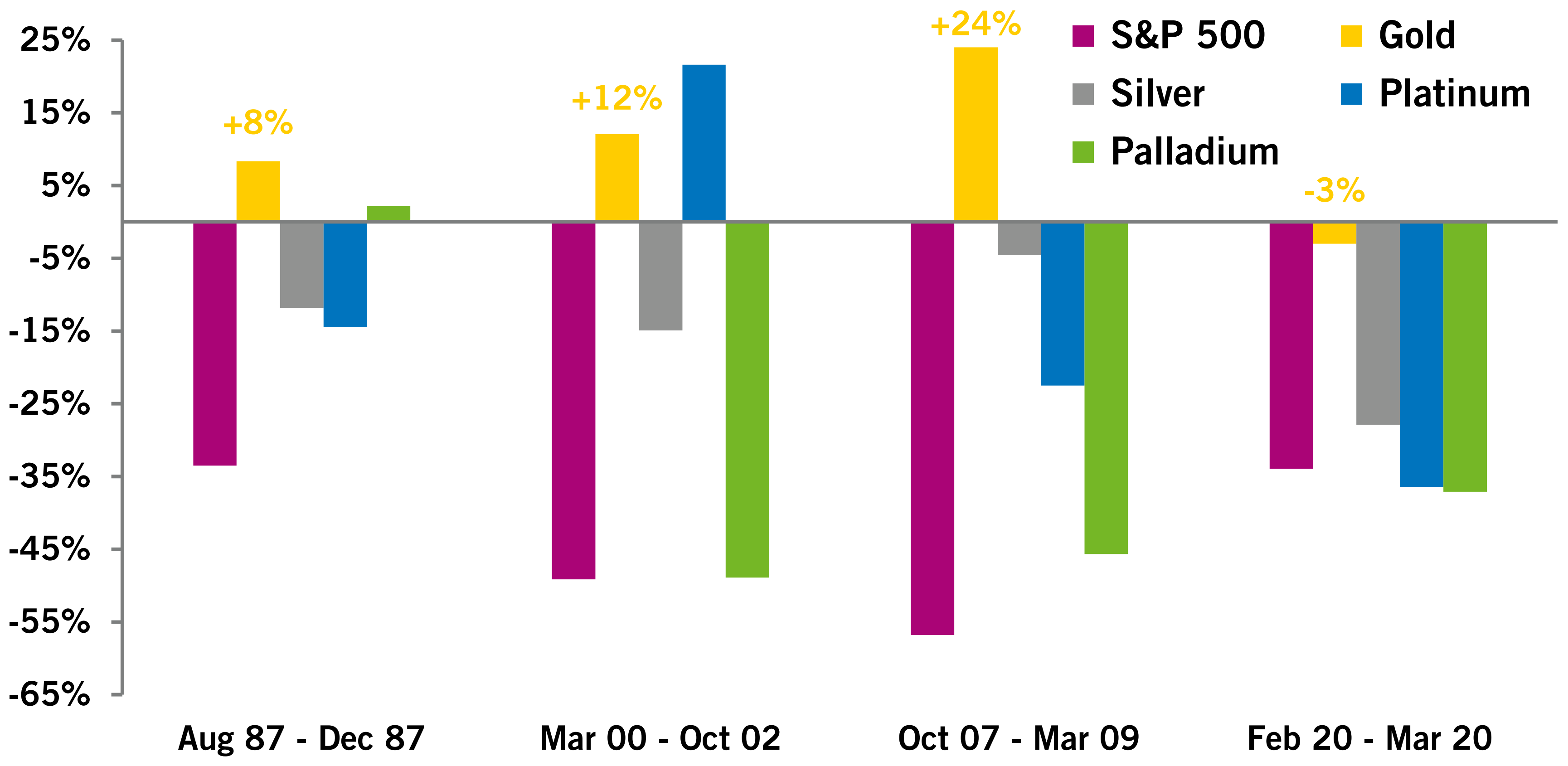
	RHODIUM	RUTHENIUM	IRIDIUM
Reporting Week	$15,600/oz	$645/oz	$5,150/oz
Previous Week	$15,100/oz	$645/oz	$5,150/oz

Fuel cell powered trucking could be the answer to poor EV charging infrastructure. Last week, Volvo unveiled a fuel cell freight truck with a range of 1,000 km. Fuel cell demand currently forms just a few percent of the million ounce ruthenium market but is forecast to grow as hydrogen power proliferates. Fuel cells are suitable for heavy duty applications and are already being used to drive a variety of vehicles from trains to a mine haul truck at Anglo American Platinum's Mogalakwena mine. The advantage for trucking is the range and quick refuelling time compared to charging an EV. With a 1,000 km range, Volvo's test truck is able to drive much further than announced electric equivalents. This is useful for regions where electric charging infrastructure is sparse. Furthermore, it takes minutes to refill with hydrogen, compared to an hour or more for battery electric trucks. The trucks are planned to be introduced in the second half of the decade, so the benefit to ruthenium demand is some way off. However, mass adoption could generate significant ruthenium demand in the future.

Both the ruthenium and iridium prices stayed flat at $645/oz and $5,150/oz respectively last week after dropping the previous week. Rhodium rallied Friday, finishing the week up 3.3% at $15,600/oz.

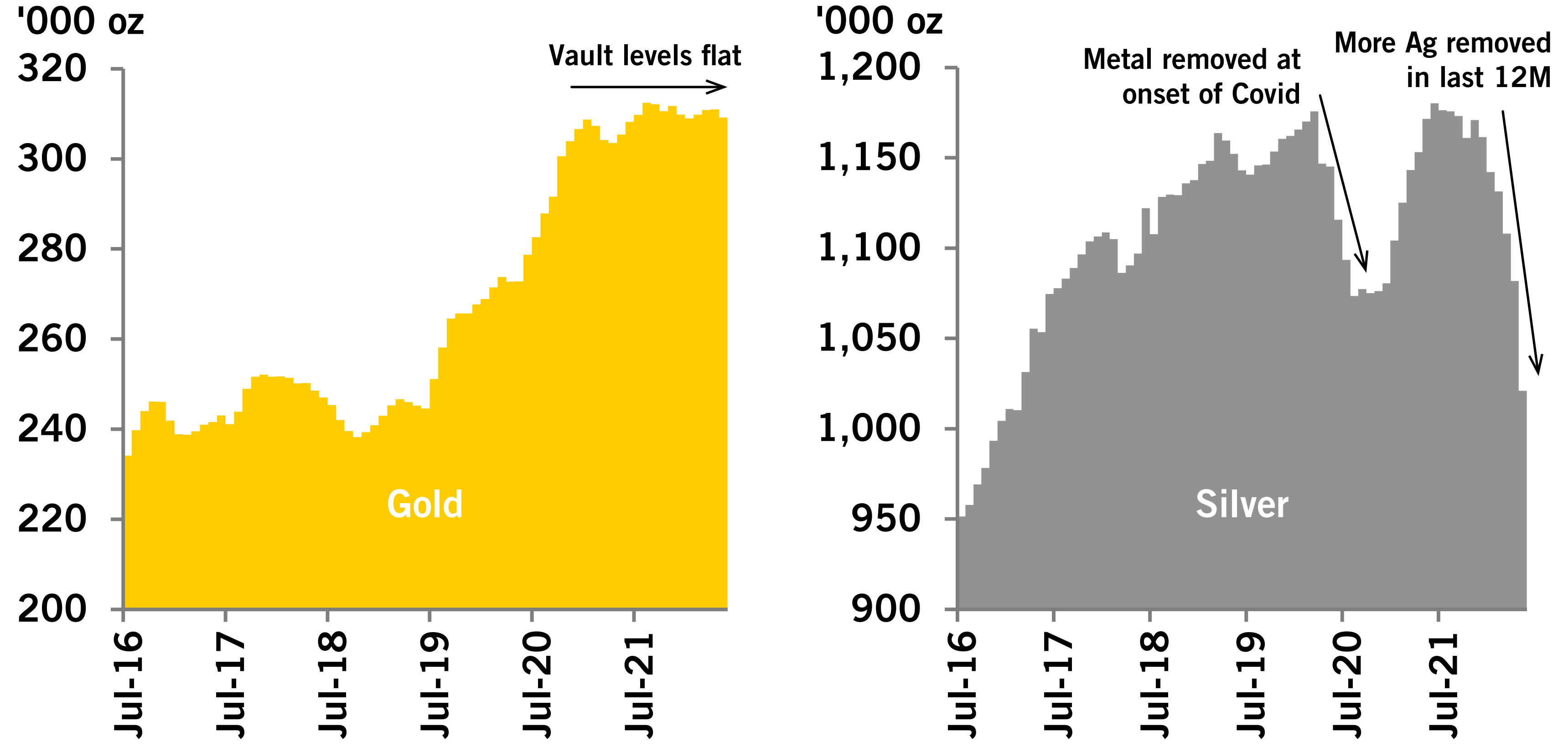
TRENDS AND INVESTMENTS

Gold's performance in bear markets



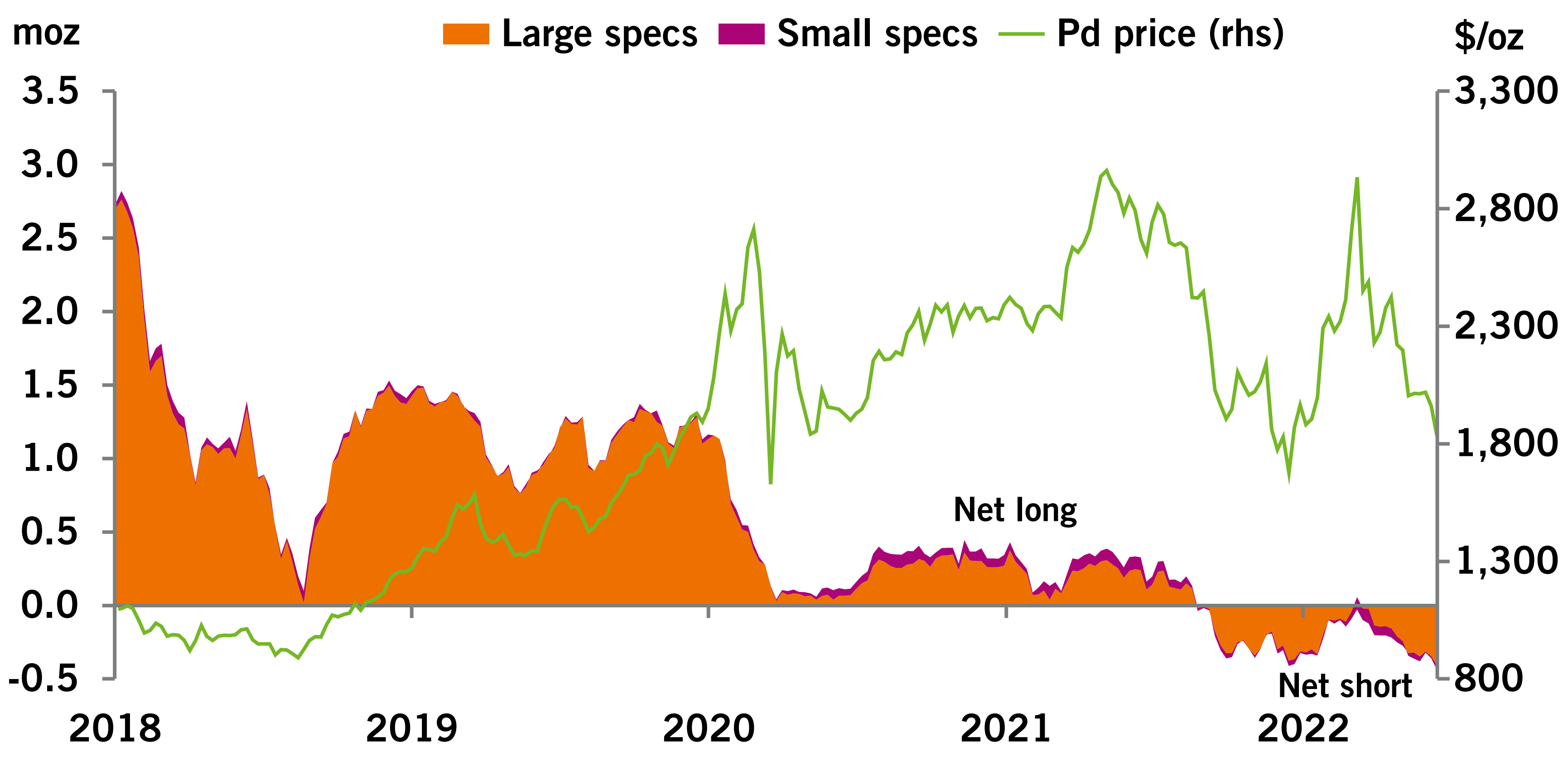
Source: SFA (Oxford), Bloomberg

London vaults gold and silver stocks



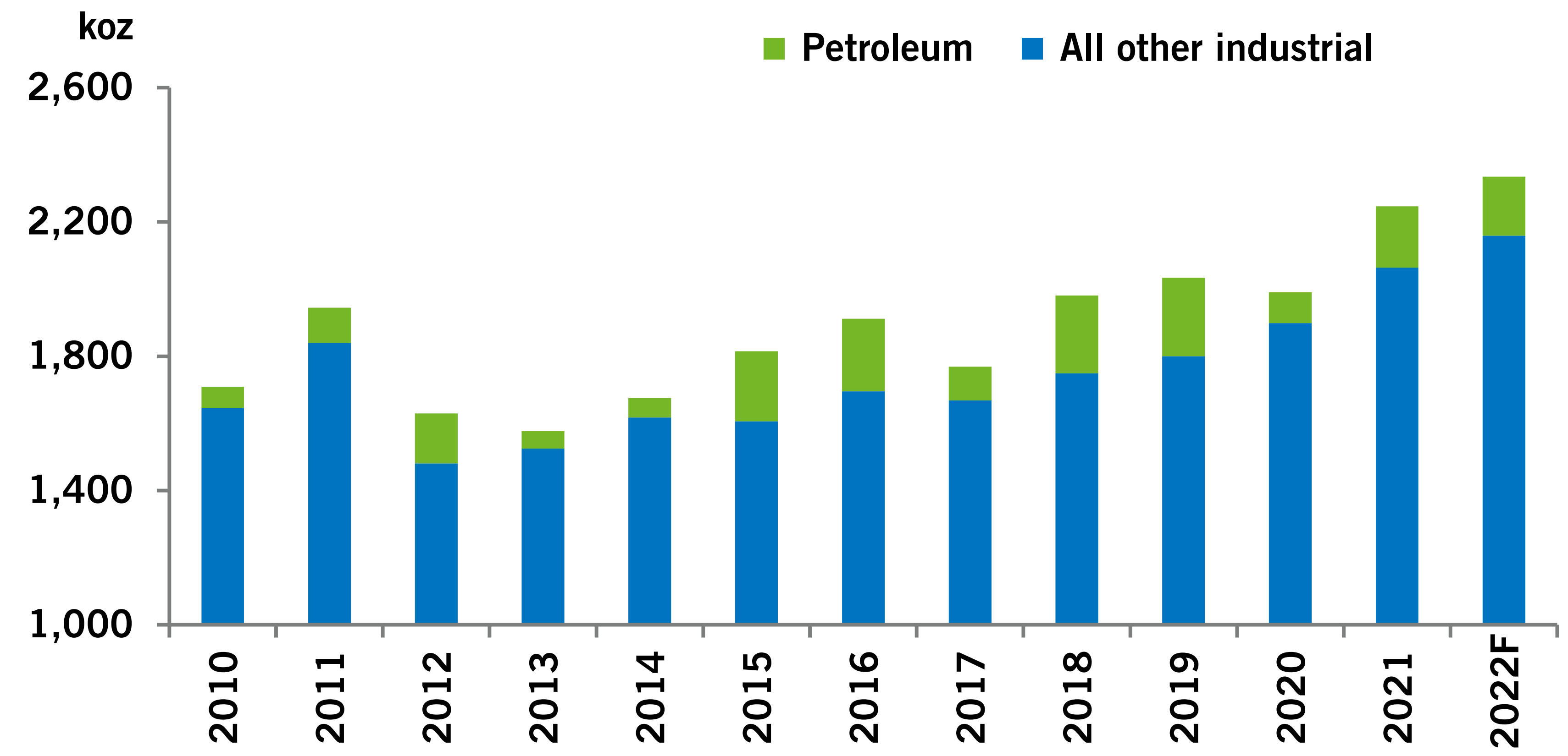
Source: LBMA

Palladium net speculators' position



Source: SFA (Oxford), Bloomberg. Note: palladium weekly average price used.

Industrial platinum demand



Source: SFA (Oxford)

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