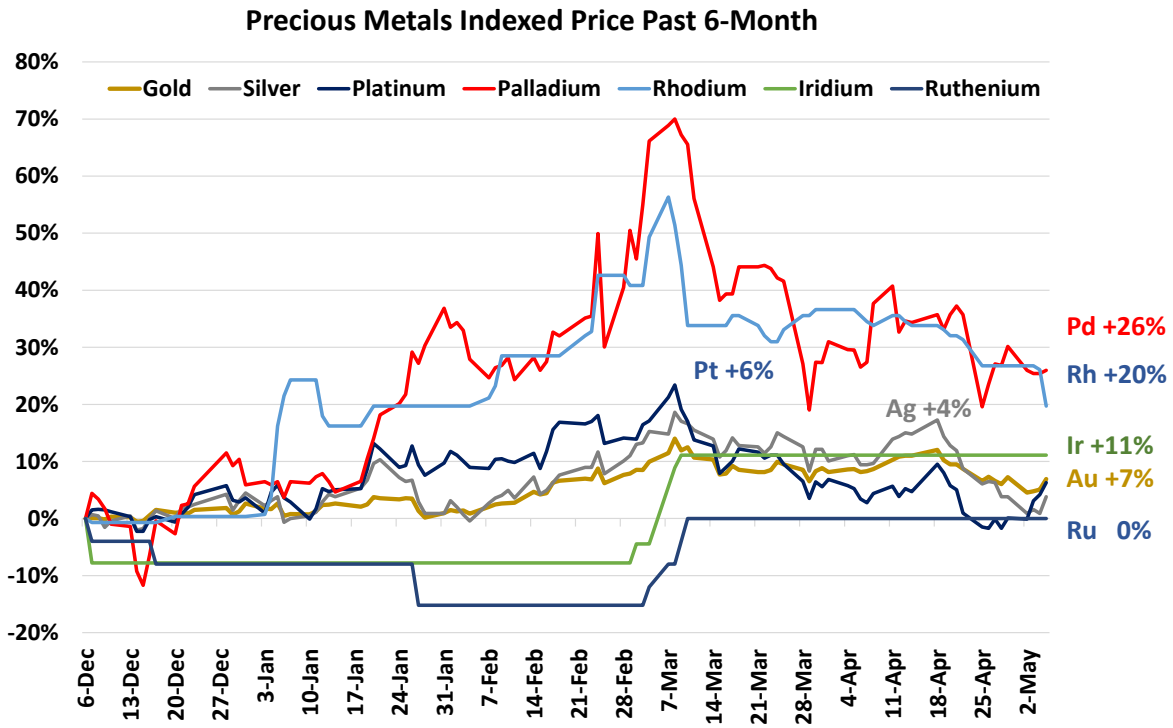
Weekly Precious Metals News Articles: May 6, 2022

Distribution: If you no longer wish to be on this mailing list, send me a note. If others want to be added to distribution, again let me know.

Below is a cross section of relevant news article to the world of Precious Metals:

Markets, Supply & Demand, Investment, and Industrial Applications.

Printable PDF version attached. Enjoy-



Gold

- **Gold prices rise, but set for 3rd weekly fall on Fed rate hike prospects**
  - The dollar was headed for a fifth winning week as benchmark U.S. Treasury yields held near their highest levels since November 2018.
  - There are several opposing catalysts at play for gold in the likes of a tight monetary outlook driving bond yields and a stronger dollar, and that is being pitted against stagflation risks boosting its safe-haven status and appeal as an inflation hedge, said Yeap Jun Rong, a market strategist at IG.
- **Gold and Silver ETFs Register Growth as Recession Fears Loom**

- Investors seeking respite from market volatility during the first quarter found refuge in gold and silver exchange-traded funds (ETFs) and products (ETPs), with both categories seeing increased inflows.
- Gold demand increased +34% y/y in the first three months of 2022 as inflation and Russia's invasion of Ukraine pushed energy prices to record highs and disrupted fragile supply chains.
- As gold ETFs recouped and surpassed 2021's losses during Q1, silver ETFs continued a trend of new inflows from January to March. This came after silver demand grew across all segments in 2021 for the first time since 1997.

- **Gold rises 1% after Fed flags inflation, tones down hawkish bets**
  - Gold prices climbed on Thursday, as the Federal Reserve expectedly raised interest rates by 50 basis points to tackle inflation, which the U.S. central bank highlighted as a risk to the economy while also ruling out larger hikes for the year.
- **New rapid virus test uses gold particles and is 150 times more accurate than standard tests**
  - University of Texas at Dallas researchers have developed a rapid virus test using gold particles and lasers that promises to deliver results as accurate as lab tests in a fraction of the time.
  - The technology, called digital plasmonic nanobubble detection, or Diamond for short, is 150 times more accurate than standard rapid tests, according to a study published in Nature Communications last month. Its accuracy is comparable to polymerase chain reaction tests, which take hours to perform.

Semiconductor Related Articles (impacting Precious Metals electronics):

- **Intel CEO now expects chip shortage to last into 2024**
  - Intel's Pat Gelsinger now expects the semiconductor industry supply shortages until 2024.
  - The CEO told CNBC the extended timeline for the chip crunch is now due to a lack of manufacturing equipment.
  - Intel on Thursday reported weaker-than-expected guidance for its fiscal second quarter.
- **Chipping In For Equipment Suppliers: The Equipment Multiplier Effect On The Chip Shortage**
  - According to the SEMI World Fab Forecast, 86 new fabs or major fab expansions are expected to come online between 2020 and 2024 (see figure 1), representing 20% growth in total 200mm fab capacity and 44% growth for 300mm capacity over this period. Longer delivery times for equipment mean a slower ramp-up of planned chip production capacity, potentially prolonging the shortage.
- **Global Semiconductor Sales Increase 23% in Q1 2022 Compared to Q1 2021**
  - SIA today announced worldwide sales of semiconductors totaled $151.7 billion during the first quarter of 2022, +23.0% over the first quarter of 2021, but +0.5% less than the fourth quarter of 2021. Global sales for the month of March 2022 were $50.6 billion, an increase of +1.1% compared to the previous month. Monthly sales are compiled by the World Semiconductor Trade Statistics organization and represent a three-month moving average. SIA represents 99% of the U.S. semiconductor industry by revenue and nearly two-thirds of non-U.S. chip firms.
- **Worldwide Silicon Wafer Shipments Edge Higher to New Record in First Quarter 2022, SEMI**
  - Worldwide silicon wafer area shipments in Q1'2022 surpassed the previous record high set in A3'2021, +1% q/q to 3,679 million square inches. First-quarter 2022 silicon wafer shipments saw +10% growth from the 3,337 million square inches reported during the same quarter last year.
  - "This new silicon shipping milestone points to continued growth in all areas of the semiconductor market. Silicon wafer supply remains tight and may stay constrained with many new announced semiconductor fab investments."

Silver

- **Silver Prices Fell Following Less Hawkish Fed Announcement**
  - Silver prices pulled back as yields surged.

- Treasury yields surge to four-year highs following the FOMC meeting.
- Oil prices extended gains as the EU laid out plans for an embargo on Russian oil in six months.

- **Thinner cells, more busbars and gigawatt manufacturing capacity: Inside Risen's heterojunction plans**
  - Matt: HJT Solar PV technology has roughly 2x higher silver loadings, with much higher electrical efficiency.
  - "HJT requires low-temperature paste, which includes conductive metals such as silver and some high polymer materials. Such materials cannot be pyrolysed at 200℃ [and] remain in the paste, resulting in poorer conductivity compared to high-temperature paste," Yang explained, highlighting a critical area of development for HJT.
  - To plug this gap and address that conductivity issues, more busbars have been added at the module design stage. Simulations and testing conducted by Risen found that 24 busbars was the most cost-efficient solution for HJT modules.
- **Investment demand rises for silver bars and coins during 2021**
  - Total global demand for silver surged in calendar year 2021 by 19% to 1.05 million ounces, reaching its highest level since 2015, according to World Silver Survey 2022 released by the Silver Institute.
- **Silver Has Worst Month In Seven In April, Lags Far Behind Gold**
  - In Friday's Asian trading, silver's front-month futures on New York's COMEX were hovering at under $24/Toz, after opening the year at $22.84.
  - While that left the price just slightly in the positive for the year, the 7% drop for all of April would be silver's biggest for a month since the 8% slump in September 2021.

Precious Metals Mining:

- **AMCU to demand 40% wage hike of PGM miners following year of high-flying metal prices**
  - Citing a document drawn up by the Association of Mineworkers and Construction Union (AMCU) detailing the wage demands, the Daily Maverick said that the entry-level minimum wage for all underground workers should be R20,000 a month.
  - This compares to the basic pay component of R14,500/mo. agreed by Sibanye-Stillwater in terms of a 3-year wage deal agreement in 2019. The proposed increase for skilled workers such as artisans is 15%.
- **Northam's Zondereinde mine reaches record-breaking depth**
  - Northam achieved another major project milestone with the completion of drilling of its No 3 Shaft, at a world record depth of 1 382 metres at the group's Zondereinde mine in the western bushveld.
  - Zondereinde's Western extension is a quality resource block containing 21 Moz of PGM within the high-grade Merensky and UG2 orebodies. The addition of the Western extension improves operational flexibility at Zondereinde and will permit annual PGM output to increase to 350 000 ounces 4E by 2026. It also extends the remaining life of the operation to over 30 years.
- **Sibanye-Stillwater gold strike set for third grim month after unions reject latest final offer**
  - Sibanye-Stillwater amended its previous final offer to an increase of R850 more per month for entry-level Category 4 miners for each of the three years of the proposed agreement. The offer amounted to a 7.8% increase to the basic wage in year one, 7.2% in year two and 6.8% in year three.
- **Implats CEO urges production stability amid volatile market and "rampant inflation"**
  - Implats kept PGM output at stable levels for its 3rd quarter despite continued difficulties in the sector's operating environment including inflation which CEO Nico Muller described today as "rampant".

E-Waste & Precious Metals Recycle Related:

- **European firms invest in Midwest e-scrap recycling companies**

- Exurban USA, which is connected to U.K. electronics recycling company Exurban, has purchased 76 acres from a public agency in Indiana in anticipation of a $300 million e-scrap recycling plant, according to several news reports.
- The Fort Wayne Redevelopment Commission approved a land sale agreement with Exurban USA, which plans to build a facility to process circuit boards, wires and other scrap from electronics, according to Inside Indiana Business. The plant, which is still years away, is planned for the Adams Township Industrial Park in the Fort Wayne area of northeast Indiana.

- **Sunrun signs on to recycle solar panels with Solarcycle**
  - Solarcycle, based in Northern California, was founded this year by industry experts from leading institutions such as Solaria, NEXTracker, Sierra Club, and the University of New South Wales. The company offers solar asset owners a process for recycling retiring solar panels and technologies and repurposing them for new uses.
  - Solarcycle's first partner, Sunrun, is a home solar, battery storage and energy services provider. According to Suvi Sharma, CEO of Solarcycle, Sunrun has >4GW under management and already has several megawatts of end-of-life panels. Recycling and repurposing used panels from Sunrun will pave the way for a scalable solution that will be available to the entire industry by year's end, Solarcycle reports.
- **Catalytic converter thieves can get hundreds of dollars at scrap yards**
  - The skyrocketing value of the precious metals inside catalytic converters has launched a massive black market industry where thieves are cashing in on a fairly unregulated world of buyers. Records provided by police departments in Denver and Boulder show more than 4,000 catalytic converter thefts in the two cities since the beginning of 2021.
- **Spent Autocatalysts As A Raw Material To Produce New Ones – The Cebra Project**
  - Iakovos V. Yakoumis, CEBRA Co-ordinator and CEO, Monolithos Catalysts & Recycling Ltd discusses the Cebra project and its focus on recycling platinum group metals (PGMs) from end of life autocatalysts.

Platinum

- **BASF to wind down activities in Russia and Belarus except for business that supports food production**
  - BASF's board has decided to also wind down all business activities in Russia and Belarus by the beginning of July, except those needed to support food production. The company said that the decision was driven by the recent developments in the war in Ukraine and international law, including the fifth sanctions package by the EU.
  - BASF has 12 sites in Russia, where it employs ~700 people, and owns a majority of oil and gas firm Wintershall Dea. It employs 684 in Russia and Belarus, which accounts for ~1% of sales.
- **Platinum Price Analysis: XPT/USD teases falling wedge breakout ahead of Fed, $975 in focus**
  - Platinum stays firmer around fortnight top, pokes resistance line of a bullish chart pattern.
  - Oscillators favor buyers but 200-DMA acts as an additional upside filter.
  - Multiple supports around $900 could challenge bears during further downside.
- **Technology reduces heavy-duty diesel emissions to meet stringent CARB 2027 NOx requirements**
  - CAT-DEF, which stands for Catalyzed Diesel Exhaust Fluid, is an SwRI-developed catalyst- and surfactant-modified diesel exhaust fluid (DEF) solution. Today's diesel engines use selective catalytic reduction (SCR), an advanced emissions control system, to abate NOx emissions. DEF is injected into the exhaust stream and ideally decomposes to form ammonia,

Fuel Cells/Hydrogen Economy Related Articles:

- **Western Australia to host green hydrogen project powered by 5.2 GW of wind, PV**

- Investors have applied for an environmental assessment for about 5 GW of wind and solar in Australia, which will support plans to produce green H_2 and ammonia at a massive new facility. That will then be converted to an est. 2 Mtpa of green ammonia for domestic use and export.
- The facility will be equipped with about 3 GW of electrolyzers while a purpose-built water treatment and desalination plant will generate about 6 giga-liters of "demineralised water" a year for use in the production process. The PtX plant will be coupled with 250 to 350 MW of battery storage with a two-hour duration that will be used to regulate the renewable energy prior to distribution to the electrolysers.

- **Johnson Matthey - JM, Bekaert, TNO and Schaeffler partner to boost the efficiency of renewable hydrogen production**
  - The consortium's goal is to accelerate Proton Exchange Membrane (PEM) technology development, by optimising the most important components of the electrolyser stack. This will ultimately support the development of the next generation of PEM electrolysers, enabling lower electricity consumption, cheaper hydrogen production and smaller footprint. The team will also investigate more efficient use of scarce critical elements and components which offer increased efficiency over today's electrolysers.
- **China's 2025 hydrogen targets trail market trajectory as Beijing eyes more innovation, technology breakthroughs, experts say**
  - China is the world's largest hydrogen producer, churning out 33 Mtpa. Around 80% is generated using coal and natural gas, and the balance as a by-product of industrial production, with "green hydrogen" only accounting for a fraction, according to the NDRC.
  - Domestic hydrogen demand, currently estimated at 20 Mtpa, will reach 35 MTPA by 2030 and 60 Mtpa by 2050, according to forecasts by the China Hydrogen Alliance.
- **Ambani, Adani in India's green hydrogen rush but hurdles remain**
  - The Modi government has announced a national green hydrogen policy with a target of producing 5 Mtpa by 2030. It provides tax breaks and allots land to set up plants.
  - Water and cheap power are the two important resources needed to become a global green H_2 player. India has a large coastline with access to seawater and ample sunlight for solar power.
  - Green H_2 industry is still in its infancy and pilot plants to study the technology and costs will take at least 5 years to show results.
- **Texas hydrogen fuel project to become a massive hub**
  - The passing of last fall's bipartisan infrastructure law gave the DOE a May 14 deadline to provide a minimum of four regional hydrogen fuel projects a funding opportunity totaling $8 billion in available funding. That said, it now looks as though the DOE could be looking into the approval of as many as 10 of these H2 hubs. While there will be more of them, this does mean that there will be less per-hub federal funding.
- **ArcelorMittal successfully tests use of green hydrogen at Canadian plant**
  - ArcelorMittal has successfully tested the use of green H_2 to reduce iron ore at one of its industrial sites in Canada, in what the world's second-largest steelmaker claims is a milestone for the industry.
  - Engineers at the company's operations at Contrecoeur in Quebec replaced about 7% of the natural gas typically used to reduce iron ore with hydrogen made from renewable electricity during the 24-hour test earlier this month. .

Palladium

- **Car industry slashes 2022 sales forecast by 9% due to chip shortage**
  - The UK car industry has downgraded its forecast for the number of cars it expects to sell this year by 9 per cent, after figures for April revealed another disappointing month of registrations.

PGM Minor Metals (Rhodium, Iridium, Ruthenium, Osmium)

- **Pt Ir Ru: Shortage of Materials Threatens Planned Green Hydrogen Production**
  - The Netherlands is fully committed to developing the hydrogen economy: replacing fossil fuels with (green) H_2 from sustainable sources such as sun and wind. However, an important aspect remains underexposed in the plans: there is a threat of a major shortage of the raw materials needed for the electrolysers that produce the H_2.
  - A threat is looming of a major shortage of the raw materials needed for the electrolysers that produce the H_2. Because the availability of those scarce raw materials such as iridium and platinum will become acute in the short term, there is a growing problem for the energy transition. By 2050, H_2 production in the EU alone will require much more iridium than is currently produced worldwide annually.
  - Iridium Atomic Layer Deposition (ALD) for thin film deposition is key to future loadings reductions.
- **Ir Crucibles: Streetlights Offer Path to Rapid mmWave 5G**
  - The mmWave smart repeater that plugs into a streetlight's photocell socket in minutes, and is said to be compatible with 360 million existing streetlights worldwide.
  - mmWave is the second phase of 5G with direct line of site technology enabling improved performance.
- **Process aims to strip ammonia from wastewater**
  - Engineers have developed a high-performance nanowire catalyst that pulls ammonia and solid ammonia from nitrate, a common contaminant in industrial wastewater and polluted groundwater.
  - A dash of ruthenium atoms on a mesh of copper nanowires could be one step toward a revolution in the global ammonia industry that also helps the environment. The researchers knew from previous studies that ruthenium atoms are champs at catalyzing nitrate-rich wastewater. Their twist was combining it with copper that suppresses the hydrogen evolution reaction, a way to produce hydrogen from water that in this case is an unwanted side effect.

Clean Energy General News

- **Europe urgently needs an accelerator in critical metals race: Andy Home**
  - "The global energy transition is progressing faster than the mining project pipeline, with copper, cobalt, lithium, nickel, and rare earths all at risk of a disruptive demand pull between now and 2035," said the study by Belgium's KU Leuven University.
  - The problem is that a new mine needs 15 years to move through the planning, permitting and construction stages, Mikael Staffas, Eurometaux president and CEO of Swedish metals group Boliden, told the panel discussion accompanying the release of the report. Given the collective aim is to hit carbon neutrality by 2050, such extended time-lines mean "we need to work on it now".
- **The Importance of a Domestic Supply Chain for Critical Minerals**
  - Questions about pricing and security of supply abound, not only for major, foundational resources such as oil, gas and coal, but also for a broad range of commodities, from food crops to fertilizer to metals. And all this is occurring against the backdrop of inflation rates not seen in decades.
  - The minerals and materials identified as critical to electrification and sustainability have been particularly impacted by these macro factors, pushing them to the forefront of prominence for governments and investors alike. Both Canada and the US have defined their own lists of critical minerals, a term that describes resources that have been identified as essential to either national security or green energy, and are sourced primarily internationally. The most noteworthy common thread between the two lists is that both heavily feature battery and platinum group metals (PGMs).
- **Rejection of Anglo's Chile copper project is a sign the operating environment is getting tougher**
  - "Permitting delays and preventative decisions across the global mining industry are highly relevant for the long-term outlook of new metals supply," said O'Kane. Significantly extended timelines for project

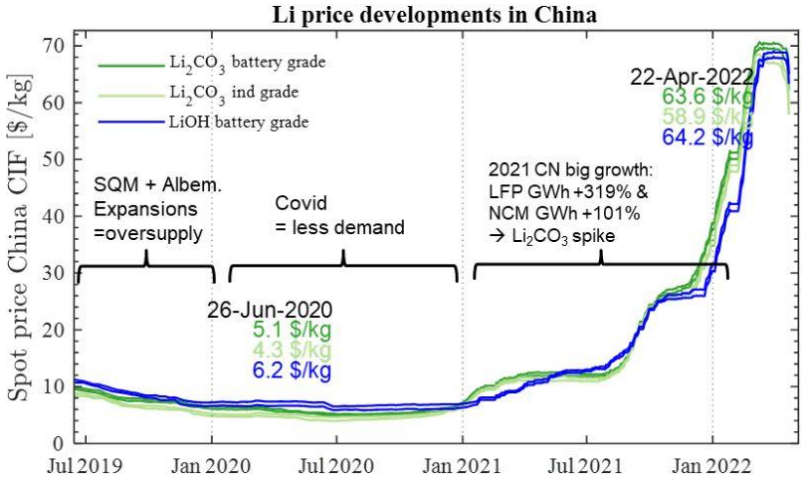
approvals and development "… are likely to be a key factor for tightness in long dated physical metal supply," he added in a report.

- **View: Energy storage is key to unlocking renewable power's full potential**
  - At the grid-scale level, energy storage is needed to efficiently manage the dynamics of demand and supply. This includes managing the short duration peak power requirement and maintaining the frequency when the grid is under stress

BEV / LiB Mineral & Battery Market News

- **Nickel Miners News For The Month Of April 2022**
  - Spot prices were slightly lower last month and LME inventory was about the same.
  - Biden invokes Defense Production Act to boost EV battery production.
  - Canada to spend C$3.8 billion to support the EV battery supply chain.
  - Vale nickel off-take deal with Northvolt, also a rumored deal with Tesla, max 500m shares buyback.
  - Norilsk Nickel: Putin to remove overseas listed Russian stocks.
- **Ford and GM Need Battery Metals to Avert Another Supply Shock**
  - Echoing his crosstown counterpart, General Motors Chair Mary Barra, Ford said his company had secured enough supply of battery metals including lithium, cobalt and manganese to make 2 million EVs a year by 2026. But beyond that, the U.S. industry needs to grow a domestic business because America just plain doesn't make enough of the raw materials that go into EV batteries.
  - Lithium is the biggest piece of the problem. The lightweight metal is essential to the Li-Ion batteries that power not only EVs, but iPhones and other contemporary devices. The element itself is plentiful, but there isn't enough mining going on globally, and precious little production happens in the U.S.
- **Enough nickel, lithium for 14 mln EVs in 2023 - European climate group**
  - Data shows there is enough nickel and lithium to produce up to 14 million electric vehicles (EVs) globally in 2023, so Europe should secure more raw materials to shift away from oil faster, campaign group Transport and Environment (T&E) said on Tuesday.
- **Li-Cycle and Glencore Announce Global Strategic Partnership; Glencore to Make a $200 Million Investment in Li-Cycle**
  - Li-Cycle and Glencore Enter into a Long-Term Battery Supply Agreement; Glencore Designates Li-Cycle as a Preferred Global Lithium-ion Battery Recycling Partner
  - Li-Cycle and Glencore will Create an Integrated Network to Supply Primary and Secondary Lithium-ion Battery Materials
  - Li-Cycle and Glencore will also Enter into Arrangements for Black Mass Supply and Off-take, Hub End-Products and By-Products Off-take and Key Reagent Supply
- **Three battery energy storage trends for the electrification of everything**
  - The demand is growing more urgent for disclosure of scope 3 emissions tied to energy storage systems. For batteries, this disclosure includes data on their GHG, energy, water, and volatile organic compound footprints. Fortunately, up-to-date research now helps users make quantitative comparisons across battery chemistries. In energy-heavy industries such as data centers, where facilities race to showcase their sustainability, this offers a key opportunity to stand out by reducing scope 3 emissions through battery choices.
- **China battery maker CATL suffers profit fall as costs soar**
  - CATL, the world's largest electric vehicle (EV) battery manufacturer, reported a 23.6% drop in the first quarter profit on Friday, its first fall in two years, as it battles soaring raw material costs and a resurgence of COVID-19 in China.
  - CATL, whose clients include Tesla, Volkswagen and BMW, booked a net profit of 1.49 billion yuan ($226.69 million), a filing on the Shenzhen Stock Exchange showed.

- **Lithium Price Climbs Stagnate**
  - Li-prices relax the last 1.5 weeks after stagnation at high prices for over 3weeks and the huge price increases over the last year. This even despite an enormous Li demand from battery production being an insane 39.1 GWh in March in China alone.



Regards –