



Weekly Precious Metals News Articles: March 4, 2022

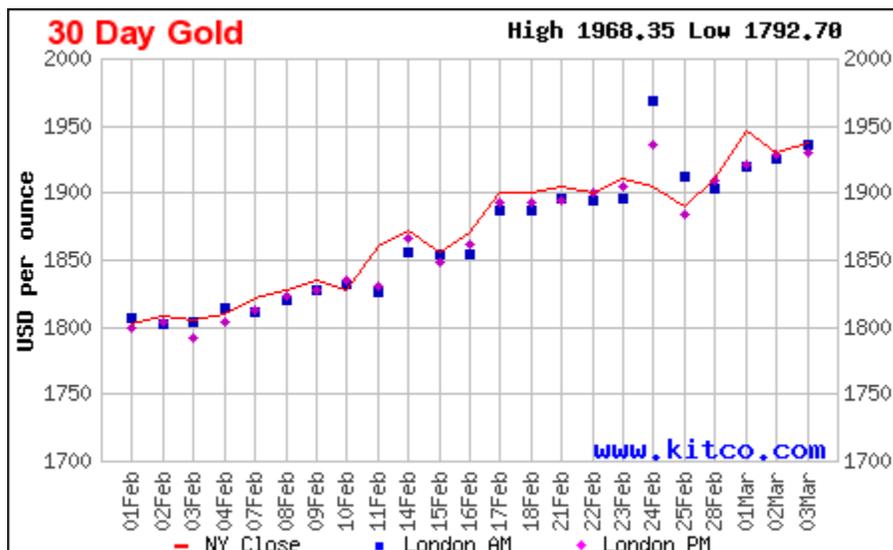
Distribution: If you no longer wish to be on this mailing list, send me a note. If others want to be added to distribution, again let me know.

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 ask price Friday March 4 @ 2:22 PST: \$1,973.90

- **Gold Set for Biggest Weekly Gain Since 2020 as War Boosts Havens**
 - Gold headed for its biggest weekly gain since July 2020 as the war in Ukraine fueled demand for haven assets.
https://finance.yahoo.com/news/gold-climbs-haven-demand-gains-014136804.html?fr=sychnp_catchall
- **Recovery in western jewelry demand remains strong - Metals Focus**
 - MF, a leading independent precious metals consultancy, reported today that the recovery in western jewelry demand during 2021 gathered pace, with early indicators for 2022 show strength persisting.
<https://www.kitco.com/news/2022-03-02/Recovery-in-western-jewelry-demand-remains-strong-Metals-Focus.html?>
- **Physical Gold Investing Drops on Ukraine-Invasion Price Jump**
 - Gold investing loves dreadful news, writes Adrian Ash at BullionVault. Or so you might think looking at the precious metal's price spike on Russia's invasion of Ukraine last week.

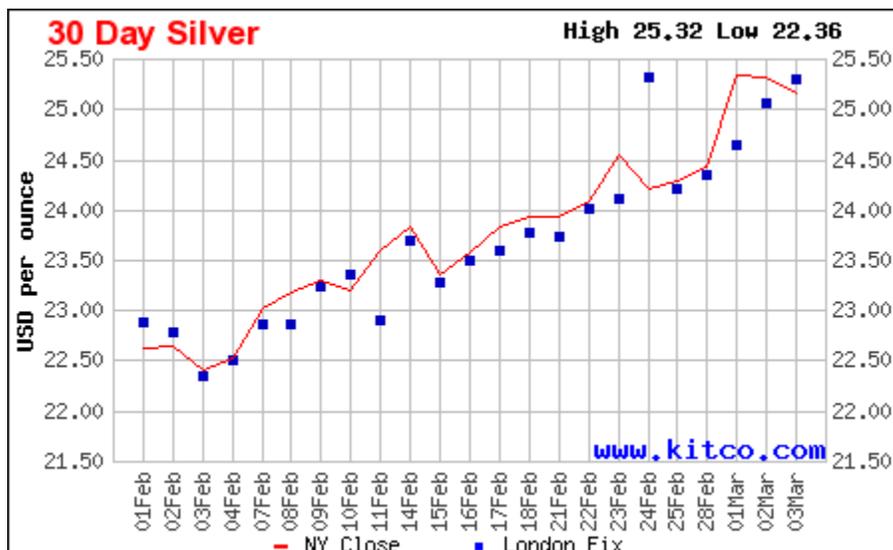
- Speculative trading in gold derivatives has jumped, physical investing says that the market has got ahead of its underlying trend. Rather than spurring a rush for gold among Western investors in fact, the jump in gold prices has seen net demand for physical bullion fall to the lowest since mid-2019.
- Putin's invasion, together with falling stock markets & fresh multi-decade highs in inflation, saw gold's month-average price +2.1% in February, reaching the highest since Jan 1, 2021 at \$1856/Toz.. <https://www.bullionvault.com/gold-news/gold-investing-030120221>
- **Chart: Who Holds Russia's Central Bank Reserves?**
 - Russia 21.7%, China 13.8%, France 12.2%, Japan 10.0%, Germany 9.5%, USA 6.6%, International Institutions 5.0%, U.K. 4.5%
<https://www.statista.com/chart/26940/russian-central-bank-foreign-currency-and-gold-reserves-by-holder/>

Semiconductor Related Articles (impacting Precious Metals electronics):

- **Semiconductor Concerns Rise Amid Ukraine-Russia Conflict**
 - Ukraine and Russia produce a large amount of the gases used in semiconductors, including neon and xenon — the most critical, Wincel says — as well as C4F6, titanium, helium, palladium and scandium.
<https://www.ismworld.org/supply-management-news-and-reports/news-publications/inside-supply-management-magazine/blog/2022/2022-03/semiconductor-concerns-rise-amid-ukraine-russia-conflict/>
- **Semiconductor industry capex to surge 24% in 2022**
 - After surging 36% in 2021, semiconductor industry capital spending is forecast to jump 24% in 2022 to a new all-time high of US\$190.4 billion, according to IC Insights.
 - If the industry capital spending increases by 10% or more in 2022, it would also mark the first three-year period of double-digit spending increases in the semiconductor industry since the 1993-1995 period, IC Insights said.
<https://www.digitimes.com/news/a20220301VL207/ic-manufacturing-semiconductor-capex-semiconductor-industry.html>
- **TSMC R&D Chief: There's Light at the End of the Chip Shortage**
 - The IEEE award recipient talks about the next generation of chips.
 - "Right now, the industry is investing a tremendous amount of capital into building extra capacity to solve this chip shortage problem," Mii says. "We have a much clearer picture of future demand today than we had two years ago."
<https://spectrum.ieee.org/tsmc-exec-on-chip-shortage>
- **Japan says sanctions on chips to Russia planned**
 - Japan would impose sanctions on Russia targeting semiconductor exports and financial institutions, Japanese Prime Minister Fumio Kishida said yesterday after G7 leaders agreed to punish Moscow economically for invading Ukraine.
<https://www.taipeitimes.com/News/biz/archives/2022/02/26/2003773784>
- **Matt's Notes: Russian Sanctions/Ukraine Impact On Semiconductor**
 - Matts Thoughts: Two key materials concerns for Semiconductor: 1. Palladium, 2. Neon
 - Pd: Worlds largest Pd miner Norilsk is NOT on any sanctions list so far. They also are a unique Russian company that does all of their banking with US Banks, so the SWIFT has no impact on their transactional abilities. What is disrupted is their logistics and air and sea transport. Air flights out of Russia limited, Norilsk have success shipping with carriers like Air Emirates, but getting hurt by flight restrictions from Russia on many other airlines. Look for Norilsk to find good shipping work arounds in the next few days. A ship with a Pd shipment also pinned down in Ukraine ports. Look for bulk metal shipments from Russia to be more severely hampered than Pd air over the medium term.

- Neon and other specialty semiconductor gasses: Inside track from semiconductor materials analysts' firms indicate the Semi Fabs have worked diligently on diversifying neon gas supply because of the Ukraine 2014 event. Semi leaning more on China and Korea to pick up production share.

Silver



Silver ask price Friday March 4 @ 2:22 PST: \$25.83

- **Silver Markets Break the Barrier**
 - Silver markets have broken above a barrier slightly during the trading session on Friday, as we continue to see a lot of money looking for safety. <https://www.fxempire.com/forecasts/article/silver-markets-break-the-barrier-923796>
- **Big tech companies may buy silver miners soon says Keith Neumeyer**
 - Becoming more vertically integrated throughout the entire supply chain would be logical, and it's only a matter of time before these tech companies begin acquiring miners of strategic metals, according to Keith Neumeyer, CEO of First Majestic Silver. <https://www.kitco.com/news/2022-03-02/Big-tech-companies-may-buy-silver-miners-soon-says-Keith-Neumeyer.html>
- **Silver price forecast: industrial and safe-haven demand to sustain breakout**
 - Russian attack on Ukraine has boosted silver price to a 6-month high.
 - Prior to the breakout, it was lagging behind other precious metals.
 - Bullish forecasts on its industrial demand in 2022 will further sustain the breakout. <https://invezz.com/news/2022/02/24/silver-price-forecast-industrial-safe-haven-demand-sustain-breakout/>

Precious Metals Mining:

- **Anglo American CEO talks future-facing metals strategy**
 - "Our portfolio is increasingly tilted towards future enabling products, being those that we need to decarbonize energy and transport and meet consumers' needs – from home appliances, electronics and infrastructure to food and luxury goods. We see a material opportunity for Anglo American to continue to set itself apart in terms of the performance of our diversified business, further enhanced through sector-leading 25% volume growth over the next four years, led by copper and the platinum group metals (PGMs)," said Cutifani. <https://www.mining.com/anglo-american-ceo-talks-future-facing-metals-strategy/>

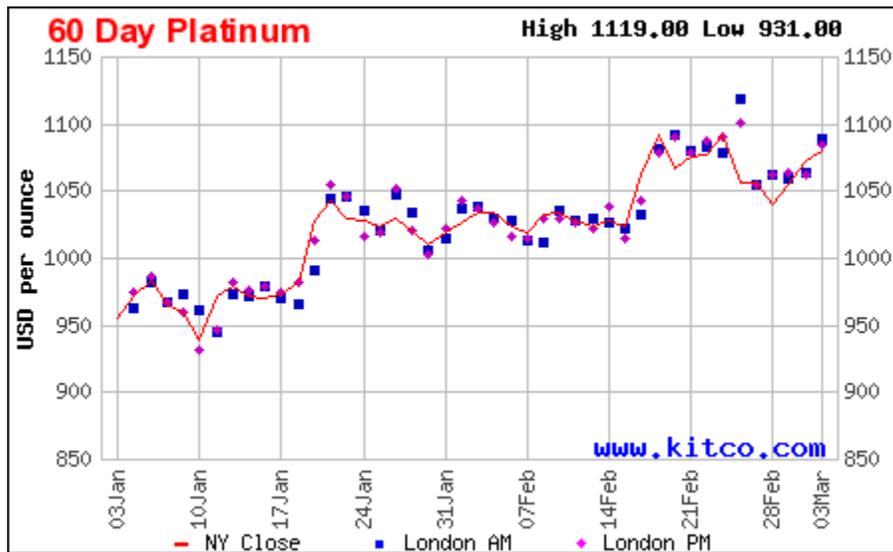
- **Sibanye-Stillwater Sees Ukraine Crisis Disrupting Automotive Supply Chains**
 - Disruptions to automotive supply chains in the wake of Russia's invasion of Ukraine could impact demand for platinum group metals (PGMs), the chief executive of South African miner Sibanye-Stillwater said on Thursday.
 - CEO Neal Froneman said supply chain disruptions were his biggest concern as carmakers - key consumers of PGMs - warned they were struggling to obtain crucial wire harnesses normally produced in western Ukraine.
<https://www.ibtimes.com/sibanye-stillwater-sees-ukraine-crisis-disrupting-automotive-supply-chains-3422283>
- **Implats to strengthen PGM processing power with aggressive R8bn project rollout**
 - IMPALA Platinum (Implats) today unveiled a new raft of capital projects totalling \$521m (R8bn) aimed at boosting its processing capability in Zimbabwe and South Africa, as well putting more mined ounces of platinum group metals (PGMs) into the market.
 - All in all, Implats' PGM production would be increased 300,000 oz a year.
<https://www.miningmx.com/news/platinum/48906-implats-to-expand-pgm-processing-reach-in-new-r8bn-project-rollout-and-promises-to-lift-dividends/>
- **Implats cuts PGM forecast owing to refined inventory build, exacerbating metal supply worries**
 - Implats cut PGM production guidance for its 2022 financial year to no more than 3.2 million ounces, about 300,000 oz less than previous forecast following a build in refined metal inventory.
 - They said last month that "excessive wear" of a refinery, partly owing to the stresses imposed by the Covid related lockdown in 2020, would require an entire rebuild of the facility.
<https://www.miningmx.com/top-story/48896-implats-cuts-pgm-forecast-owing-to-refined-inventory-build-exacerbating-metal-supply-worries/>

E-Waste & Precious Metals Recycle Related:

- **Diamond Materials To Arrest Increasing E-Waste Methane Emissions**
 - This past November, in an effort to reduce the production of greenhouse gases, Joe Biden's Environmental Protection Agency began to place emphasis on reducing methane emissions. Research shows that in 2021 the amount of greenhouse gases in the atmosphere continued to rise, methane concentrations in particular.
 - One sector where we can see major methane mitigation is in the materials used to make up our favorite electronics and devices, like phones, tablets and laptops. The components that make up our devices result in a massive amount of electronic waste (E-waste), which is a major contributor to methane emissions. Today, most electronics are made from silicon and thus are not easily recyclable. Also, because silicon is an extremely poor conductor of heat, it requires tremendous cooling, which means our electronic devices require plastic cooling fans and complex packaging materials. Because of silicon's inefficiencies, when the life of our electronics comes to an end, they either end up in the landfill, which we already know is a huge methane emitter, or are incinerated, which also releases greenhouse gases into the atmosphere.
<https://www.ibtimes.com/diamond-materials-arrest-increasing-e-waste-methane-emissions-3420177>
- **Apple and other OEMs fund doorstep e-scrap pilot**
 - Google, Apple, Amazon, Dell Technologies and Microsoft launched an electronics collection pilot program in Denver, with doorstep collection service Retrievr in charge of managing the project.
 - Retrievr CEO Kabira Stokes said the pilot has two goals: to see how much Retrievr can improve Denver's electronics recycling rate and to change the way people think about recycling.
 - "It's really a paradigm shift in the way people think about electronics recycling," she said. "It seems out of reach and hard. We can make it easy."
https://resource-recycling.com/e-scrap/2022/03/03/apple-and-other-oems-fund-doorstep-e-scrap-pilot/?utm_medium=email&utm_source=internal&utm_campaign=March+3+ESN

- **Eco-R Japan – creating innovations in auto recycling**
 - Hiromichi Ishii, Director of Eco-R Japan, a total automobile recycle solution company speaks to Auto Recycling World about the company’s success in Japan, their development of an innovative ELV recycling system and the benefits it could bring to the industry.
<https://autorecyclingworld.com/eco-r-japan-creating-innovations-in-auto-recycling/>
- **US – bill to combat catalytic converter theft passes Senate Ways and Means Committee**
 - In the US, a bill to crack down on catalytic converter theft cleared a key legislative hurdle on 7th February as it passed the Senate Ways and Means Committee for Washington State.
<https://autorecyclingworld.com/us-bill-to-combat-catalytic-converter-theft-passes-senate-ways-and-means-committee/>

Platinum



Platinum ask price Friday March 4 @ 2:53 PST: \$1,132

- **WPIC: On Board With Platinum**
 - Markets for hydrogen fuel cell buses are developing rapidly
 - According to the International Energy Agency Advanced Fuel Cells Technology Collaboration Programme, 5,648 hydrogen fuel cell buses were in deployment globally as at the end of 2020. Hydrogen fuel cell buses are equipped with fuel cells that use proton exchange membrane (PEM) technology, which relies on a platinum catalyst. China is at the forefront of the growing hydrogen fuel cell bus market, with a fleet of 5,290, giving it alone an almost 94 per cent share.
https://platinuminvestment.com/files/sixtysecs/WPIC_60seconds_On_board_with_platinum_022422.pdf

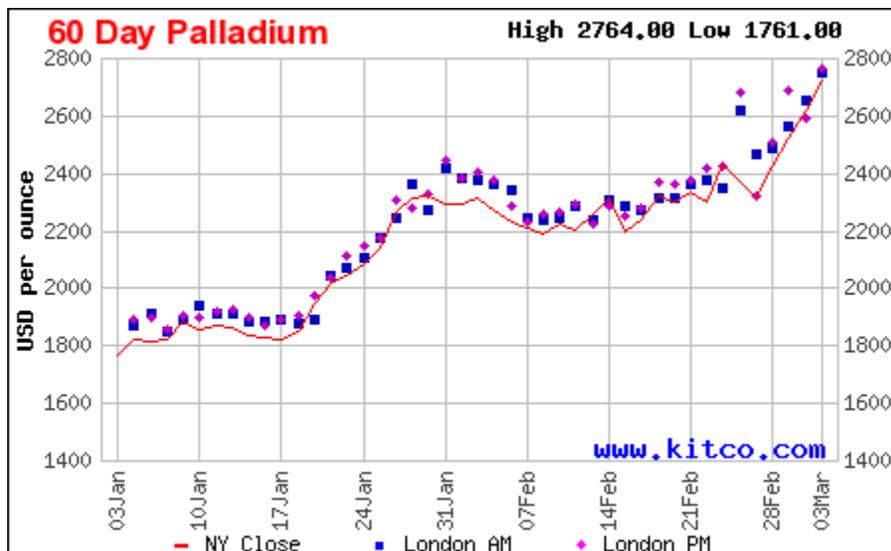
Fuel Cells/Hydrogen Economy Related Articles:

- **Hydrogen production market to reach \$1 trillion, says Goldman Sachs**
 - H₂ production is expected to be an important part of global decarbonization and could develop into a market with a value greater than an annual \$1 trillion, said Goldman Sachs.
 - “If we want to go to net-zero we can’t do it just through renewable power,” said Goldman Sachs commodity equity business unit leader for the EMEA region Michele DellaVigna in a recent CNBC interview. “We need something that takes today’s role of natural gas, especially to manage seasonality and intermittency, and that is hydrogen.”
<https://www.hydrogenfuelnews.com/hydrogen-production-world/8551596/?>

- **Hydrogen fuel cell performance can be improved using semiconductor manufacturing technology**
 - Hydrogen fuel cell performance can be drastically improved according to a team of scientists from Korea who have developed metal nanoparticles using a physical method rather than the existing chemical reactions by using the sputtering technology, which is a thin metal film deposition technology used in semiconductor manufacturing.
 - The KIST research team synthesized a platinum-cobalt-vanadium alloy nanoparticle catalyst using this technology and applied for the oxygen reduction reaction in hydrogen fuel cell electrodes. As a result, the catalyst activity was 7 and 3 times higher than those of platinum and platinum-cobalt alloy catalysts that are commercially used as catalysts for hydrogen fuel cells, respectively. Furthermore, the researchers investigated the effect of the newly added vanadium on other metals in the nanoparticles. They found that vanadium improved the catalyst performance by optimizing the platinum–oxygen bonding energy through computer simulation. <https://www.mvdemocrat.com/hydrogen-fuel-cell-performance-can-be-improved-using-semiconductor-manufacturing-technology/>
- **Volkswagen unit to spend up to \$555m to become 'world-leading player' in hydrogen electrolyzers**
 - Engine and turbine maker MAN Energy Solutions will build its H-TEC Systems subsidiary into a 'mass-producer' of PEM machines — despite VW opposition to fuel-cell cars <https://www.rechargenews.com/energy-transition/volkswagen-unit-to-spend-up-to-555m-to-become-world-leading-player-in-hydrogen-electrolysers/2-1-1177835>
- **Cummins grant seeks clean replacement fuel for heaviest of big rigs**
 - Engine manufacturer Cummins Inc. is up for a \$2 million state grant to demonstrate two zero-emission, fuel cell electric heavy trucks capable of delivering bulk cargo cryogenic gas.
 - The aim of the demonstration project from the California Energy Commission is to replace the heaviest class of diesel trucks, called Class 8, which are capable of hauling loads in excess of 33,001 pounds. <https://www.bizjournals.com/sacramento/inno/stories/news/2022/03/01/cummins-grant-zero-emission-electric-truck.html>
- **ADD develops new submarine hydrogen fuel cell technology**
 - The Agency for Defense Development (ADD) in South Korea has developed a new submarine hydrogen fuel cell technology using methanol reforming. The H₂ used by the submarine fuel cell technology would be produced using methanol reforming within the vessel itself. Fuel cells in submarines use high-purity H₂ to boost the amount of time they can spend underwater. A propulsion system powered in this way and that is air-independent can therefore raise a vessel's diving depth, endurance underwater and efficiency as a whole. <https://www.hydrogenfuelnews.com/fuel-cell-technology-add/8551506/>
- **'The cheapest way to ship green hydrogen is via e-methane — we will help wean Germany off Russian gas'**
 - Ambitious project to import five million tonnes of H₂ a year as synthetic green CH₄, and convert it back to hydrogen, is accelerated in response to Ukraine crisis.
 - Tree Energy Solutions now aims to complete a new “green gas” terminal at the port of Wilhelmshaven, northwest Germany, to accept deliveries of its “carbon-neutral” liquified e-methane before the winter of 2025, having previously targeted a 2027 start.
 - This CH₄ which would be produced by combining captured CO₂ with low-cost renewable hydrogen using the well-established Sabatier methanisation process, would then be converted back to H₂ or, in some cases, used as methane with carbon capture. <https://www.rechargenews.com/energy-transition/the-cheapest-way-to-ship-green-hydrogen-is-via-e-methane-we-will-help-wean-germany-off-russian-gas/2-1-1177575>

- **Hydrogen is key to weaning ourselves off Russian fossil fuels**
<https://www.hycapgroup.com/hydrogen-is-key-to-weaning-ourselves-off-russian-fossil-fuels/>
- **First hydrogen fuel cell waste truck in the UK to roll out on Aberdeen streets**
 - The vehicle will be powered by Green H₂ instead of the diesel or gas used by the rest of the fleet.
<https://www.hydrogenfuelnews.com/hydrogen-fuel-cell-waste/8551502/>
- **EKPO to build FC stacks for logistics vehicles**
 - EKPO Fuel Cell Technologies, the joint venture between ElringKlinger and Plastic Omnium, has signed a development and supply agreement with Globe Fuel Cell Systems for fuel cell stacks to power logistics vehicles.
 - Starting in 2023, EKPO will exclusively supply the stack modules for Globe’s fuel cell system, according to the company. The term of the development and supply agreement is initially four years. The basis for the development is to be EKPO’s “NM5-evo” stack. EKPO is not disclosing the financial scope of the agreement.
<https://www.electrive.com/2022/03/03/ekpo-to-build-fc-stacks-for-logistics-vehicles/>
- **The Hydrogen Stream: Hydrogen-fuelled V8 engine for automobiles from Toyota, Yamaha**
 - Toyota commissioned Japanese automotive company Yamaha Motor to develop a hydrogen-fueled V8 engine for automobiles. “The unit is based on the 5.0-liter engine in the Lexus RC F luxury sport coupe, with modifications made to the injectors, cylinder heads, intake manifold, and more, and delivers up to 450 hp at 6,800 rpm and a maximum 540 Nm of torque of at 3,600 rpm,” the company said in a statement. Last year, Kawasaki Heavy Industries, Subaru Corporation, Toyota Motor Corporation, Mazda Motor Corporation, and Yamaha Motor announced their intention to team up to research fuel options for internal combustion engines.
<https://www.pv-magazine.com/2022/03/04/the-hydrogen-stream-hydrogen-fuelled-v8-engine-for-automobiles-from-toyota-yamaha/>
- **Airbus demonstrator hydrogen airplane to be ready in handful of years**
 - Airbus will be prepared for a hydrogen airplane technology demonstrator by mid-decade. The airline is working with CFM International engine makers to ensure the tech is ready.
<https://www.hydrogenfuelnews.com/hydrogen-airplane-airbus/8551513/?>

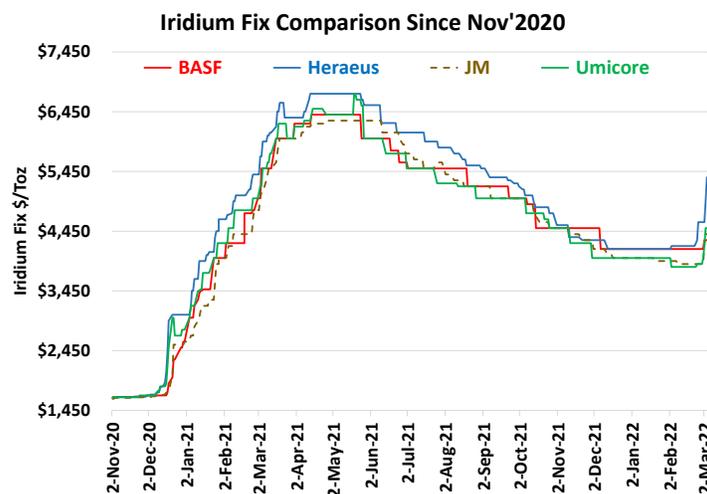
Palladium



Palladium, ask price Friday March 4 @ 2:53 PST: \$3,080

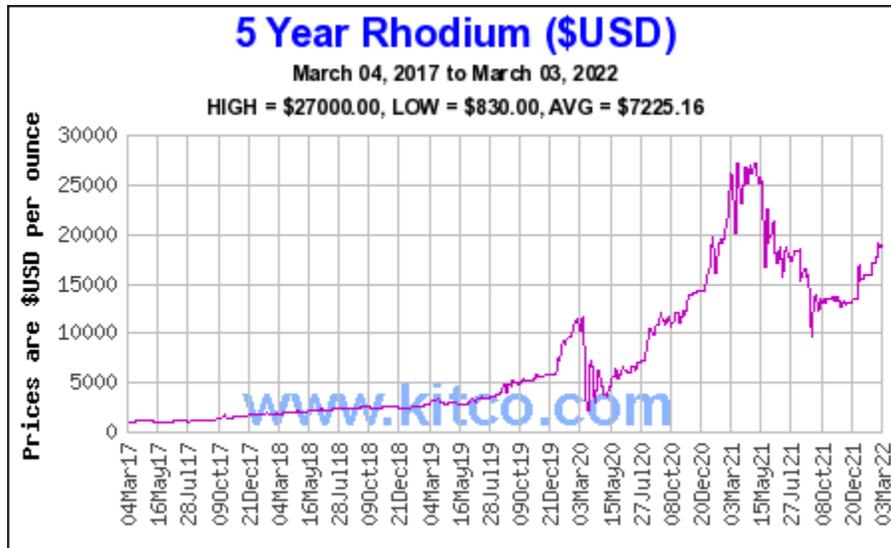
- Russia’s palladium exports face disruption from flight bans**
 - Palladium supplies from top producer Russia face disruption from widespread flight bans, with companies looking to find alternative means to export the precious metal.
 - The metal that’s mostly used in catalytic converters is almost always transported by passenger planes. With most of Europe’s airspace closed to flights from Russia, miners like MMC Norilsk Nickel PJSC are examining alternative routes to supply customers, according to a person familiar with the matter.
<https://www.mining.com/web/russias-palladium-exports-face-disruption-from-flight-bans/>
- Palladium Dilemma: Russian Crisis Greater Than Auto Manufacturing’s Slow Output?**
 - The rally has been underpinned by concerns over top palladium producer Russia’s political and financial future after a raft of sanctions piled on Moscow in recent days by Western states responding to President Vladimir Putin’s invasion of Ukraine.
 - Longs in the metal are betting there will either be disruption in Russia’s palladium production due to the conflict or that the sanctions will squeeze exports—along with other commodities, out of Russia.
 - But a continued slowdown in automobile production since the 2020 COVID-19 outbreak will likely limit some of the upsides for palladium.
<https://www.investing.com/analysis/palladium-dilemma-russian-crisis-greater-than-auto-manufacturings-slow-output-200619009>
- Mobility Notes: Key news surrounding emissions globally**
 - 5-Min Monthly Read - February 2022
 - The date for releasing the Euro 7/VII proposal has been postponed again, this time to July 20th, 2022. This will likely push out the implementation date as well to sometime after model year 2025.
 - The US Dept. of Energy has published a supply chain deep dive assessment which has a lot of valuable information on a wide range of technologies critical to decarbonization (energy storage, CO2 capture, batteries, nuclear energy, solar/PV, etc.) The reports highlight the changing demand for the critical materials used in these technologies and the implications of a global market dependent on few countries with very high shares of natural reserves or production. For automotive, PGM demand is expected to peak later in this decade due to electrification, but demand for Pd continues to be strong due to its need for H2 production
https://mcusercontent.com/23b16fd0afc4a15543b1e5b53/files/2ed78214-0376-4365-84d9-cf678e99f924/MobilityNews_5_Min_Monthly_February_2022.pdf

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



*Iridium surge in supply from Anglo ACP Recovery Complete – Demand will take it higher
All four major PGM processors showing climb in past week, Furuya Metals also higher.*

Chart by Matt Watson – Data source processor websites.



Rhodium ask price Friday March 4 @ 2:53 PST: \$21,000

- **World's largest green hydrogen project unveiled in Texas, with plan to produce clean rocket fuel for Elon Musk**
 - The 60GW Hydrogen City project, announced by local start-up Green Hydrogen International, will be powered by wind and solar, with an on-site salt cavern for H2 storage
 - US start-up Green Hydrogen International (GHI) has announced a 60GW renewable H2 project in a sparsely populated area of South Texas, to be powered by wind and solar, with its own salt cavern for storage and a plan to produce clean rocket fuel for Elon Musk's SpaceX.
<https://www.linkedin.com/pulse/worlds-largest-green-hydrogen-project-unveiled-texas-pankaj/>
- **Ru & Pt PVD: MOEA, ITRI and UCLA to Collaborate on World-Leading Memory Technology Development'**
 - As chip sizes continue to shrink, high-performance Magnetic Random Access Memory (MRAM) technology has become the mainstream. To advance the development of next-generation MRAM, Industrial Technology Research Institute and University of California, Los Angeles have jointly signed a Voltage Control Magnetic RAM cooperation project. With the support from Taiwan's Department of Industrial Technology, Ministry of Economic Affairs and the US Defense Advanced Research Projects Agency, this collaboration aims to leverage the technical expertise and innovative capacity from both parties to apply material components to memory chips for computing and storage.
<https://menafn.com/1103793332/MOEA-ITRI-and-UCLA-to-Collaborate-on-World-Leading-Memory-Technology-Development>

Clean Energy General News

- **China's Rare Earth Metals Consolidation and Market Power**
 - Rare earth metals or "rare earths," a collection of 17 elements that are valued for their conductive and magnetic properties, have made headlines again. Over the past year and a half, their prices have risen to levels not seen since their peak in 2011. What's more, in December 2021, Beijing approved the merger of three of China's biggest rare earth metals state-owned enterprises, China Minmetals Rare Earth, Chinalco

Rare Earth & Metals, and China Southern Rare Earth Group, along with two other companies, Ganzhou Zhonglan Rare Earth New Material Technology and Jiangxi Ganzhou Rare Metal Exchange. The merger created the world's second largest rare earths producer, accounting for 30% of China's total rare earth metals production and 60-70% of its heavy rare earth metals production.

<https://www.fpri.org/article/2022/03/chinas-rare-earth-metals-consolidation-and-market-power/>

- **Corporate Clean Energy Buying Tops 30GW Mark in Record Year**

- Corporations bought a record 31.1 gigawatts of clean energy through power purchase agreements, or PPAs, in 2021, up nearly 24% from the previous year's record of 25.1GW according to research firm BloombergNEF (BNEF). Over two thirds of this purchasing (65%) occurred in the U.S. However, also underpinning the strong growth is a surge in activity from the largest technology companies, who collectively signed over half of the deals.
- Clean energy contracts were publicly announced by more than 137 corporations in 32 different countries in 2021, according to BNEF's 1H 2022 Corporate Energy Market Outlook. Total signed volumes were equivalent to more than 10% of all the renewable energy capacity added globally last year, showing the impact corporate sustainability pledges are having on clean energy build.

<https://about.bnef.com/blog/corporate-clean-energy-buying-tops-30gw-mark-in-record-year/>

- **Copper price pops to all-time high on supply disruption, historically low stockpiles**

<https://seekingalpha.com/news/3809811-copper-price-pops-to-all-time-high-on-supply-disruption-historically-low-stockpiles>

- **Gold futures up over 4% for week; palladium, copper at record highs**

- Futures prices for both copper and palladium also settled at their highest levels on record, based on the front-month contracts, buoyed by supply risks, as Russia is among the world's biggest producers of the metals. The attack on the nuclear plant is raising fears that Moscow's invasion of Ukraine is taking a more perilous turn in Eastern Europe.

<https://www.msn.com/en-us/money/markets/gold-futures-up-over-4-for-week-palladium-copper-at-record-highs/ar-AAUBy8I?ocid=BingNewsSearch>

- **Clean Energy Transition Metals – Russia Sanctions Risks**

- Matt: I have assembled these statistics:
- Russia global supply percentages:
 - **Lithium Battery Metals:**
 - 3.5% Lithium
 - 4% Cobalt
 - 10% Nickel ... but 17+% of Class 1 iron free battery grade Ni
 - **Electrification Metals**
 - 1% Silver
 - 3.5% Copper
 - 6% Aluminum
 - **Platinum Group Metals**
 - 9% Platinum (of Mined + Secondary Recycle total supply)
 - 29% Palladium
 - 6% Rhodium
 - 8% Iridium
 - 4% Ruthenium

BEV / LiB Mineral & Battery Market News

Today's Prices:

- Lithium Carbonate \$78,071 USD / mt
- Nickel \$30,400 / mt

- Cobalt \$75,800 / mt

- **Disruption to nickel supplies likely, as Russia is world's third largest producer**

- Russia is a major player in the production of base and precious metals.
- Russia was the world's third largest nickel producer in 2020, the last year for which data has been compiled. During 2020, it produced 270,000 mt, or roughly one tenth of total global production.
<https://www.proactiveinvestors.co.uk/companies/news/975027/disruption-to-nickel-supplies-likely-as-russia-is-world-s-third-largest-producer-975027.html>

- **Nickel market eyes fate of Siberian metal as sanctions bite**

- The biggest risk in battery materials from Russia's increasing economic isolation centers on supplies of top-notch Arctic nickel controlled by the country's richest man.
- Russia is a major producer of the metal that will be needed in huge quantities as the world's auto fleet goes battery-powered. That means the electric-vehicle industry has much at stake as global businesses rejig ties in the wake of the invasion of Ukraine. Mining giant BHP Group on Monday warned of nickel supply shocks.
- The key lies with giant mines in far northern Siberia that were first dug in Stalin's time and which are now run by MMC Norilsk Nickel PJSC. Norilsk makes 17% of the world's so-called "Class 1" nickel, a high-purity form that's more suitable for batteries and can be sourced in large quantities from only a few other locations. The company is controlled by multi-billionaire Vladimir Potanin.
<https://www.mining.com/web/nickel-market-eyes-fate-of-siberian-metal-as-sanctions-bite/>

- **Lithium Prices Skyrocket As China Cements Leadership Position**

- Lithium prices are through the roof, and they're not going down any time soon. As an essential component of electric cars and solar power, the demand for lithium-ion batteries is going to keep on climbing as the world tries to make good on its decarbonization pledges. In fact, according to estimates from the International Energy Agency, global demand for the "white gold" is projected to increase by a stunning 4,000 percent by just 2040 if global climate goals are met.
- As Argentina and China cozy up, lithium prices have hit an all-time high at \$78,000 USD per tonne, more than quadruple its price four years ago.
<https://finance.yahoo.com/news/lithium-prices-skyrocket-china-cements-220000173.html>

- **BASF picks Canada to expand supplies for booming EV battery market**

- BASF SE secured land for a planned battery materials facility in Canada, and the country's industry minister said on Friday it would be the "first pillar" of the country's drive to ensure the future of the electric vehicle manufacturing sector.
- The German company said the facility in Becancour, Quebec, will produce and recycle cathode active materials (CAM), starting in 2025, to serve electromobility markets in Canada, the United States and Mexico, according to a statement. It did not disclose financial terms. Cathodes are the most complex and costly chemical component of an electric vehicle battery.
<https://www.mining.com/web/basf-picks-canada-to-expand-supplies-for-booming-ev-battery-market/>

- **Responsible Minerals Initiative Announces Next Steps on ASM Cobalt Sourcing**

- A new memorandum of understanding (MOU) between the RMI and the Global Battery Alliance (GBA) was signed in February 2022 to define the next phases of the work that was initially undertaken by the GBA's Cobalt Action Partnership (GBA CAP). The new agreement recognizes the need for greater market clarity regarding artisanal and small-scale mined (ASM) cobalt sourcing expectations and the roles of initiatives working in this space. The MOU outlines the RMI's specific role in developing clear sourcing expectations for ASM cobalt that promotes improved conditions at mining sites and acceptance into global supply chains.
https://www.csrwire.com/press_releases/738237-responsible-minerals-initiative-announces-next-steps-asm-cobalt-sourcing

- **Nickel market eyes fate of Siberian metal as sanctions bite**
 - Russia is a major producer of the metal that will be needed in huge quantities as the world's auto fleet goes battery-powered. That means the electric-vehicle industry has much at stake as global businesses rejig ties in the wake of the invasion of Ukraine. Mining giant BHP Group on Monday warned of nickel supply shocks.
 - The key lies with giant mines in far northern Siberia that were first dug in Stalin's time and which are now run by MMC Norilsk Nickel PJSC. Norilsk makes 17% of the world's so-called "Class 1" nickel, a high-purity form that's more suitable for batteries and can be sourced in large quantities from only a few other locations. The company is controlled by multi-billionaire Vladimir Potanin.
<https://www.mining.com/web/nickel-market-eyes-fate-of-siberian-metal-as-sanctions-bite/>
- **Nickel Tops \$30,000 for First Time Since 2008 Amid Short Squeeze**
 - Nickel futures jumped sharply in London to trade above \$30,000 a ton for the first time since 2008 as surging prices created a short squeeze in an already tight market. Nickel rose as much as 13% to \$30,295 a ton before settling at \$28,919 on the London Metal Exchange on Friday. The metal surged 19% this week for the biggest weekly jump since 2009.
<https://finance.yahoo.com/news/nickel-spikes-breach-30-000-145454947.html>

Regards –