



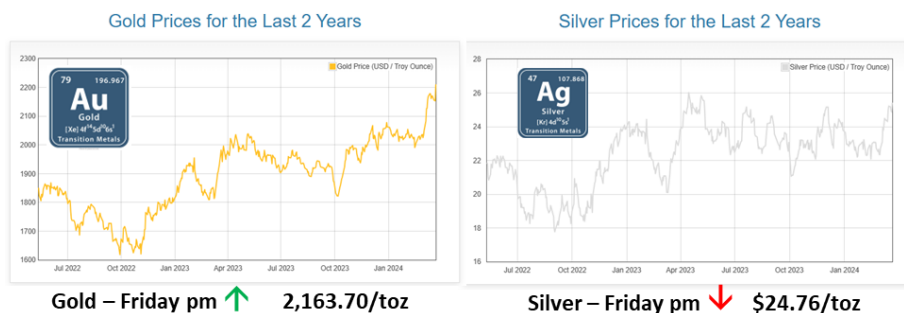
Weekly Precious Metals News Articles: March 22, 2024

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Below is a cross section of relevant news article to the world of Precious & Critical Metals: This markets, supply & demand shifts, investment, mining, recycle and industrial applications.

A printable PDF version with more embedded graphics is attached. Enjoy-

Gold



- [Gold Price in Yen Hits New Record as Bank of Japan Finally Quits Negative Interest Rates](#)
 - The price of gold held little changed for Western investors on Tuesday, but the 'safe haven' precious metal made a new all-time high in Japanese Yen after the central bank in Tokyo finally ended its negative interest rate policy in the face of rising inflation. With the US Federal Reserve due tomorrow to unveil its first set of economic, inflation and interest-rate 'dot plot' forecasts since December's 2024 rate-cut surprise, gold priced in Dollars slipped \$10 per Troy ounce on Tuesday to \$2153 in London trade. But the gold price in Yen rose to new all-time highs, trading 1.5% higher from this time last week at a peak of 10,442 per gram.
- [Gold nanocatalysts cross blood-brain barrier aided by unique protein corona composition](#)
 - A groundbreaking study published in ACS Pharmacology & Translational Science ("Protein Corona Composition of Gold Nanocatalysts") has shed new light on the mechanisms by which a specific type of gold nanocrystals, known as CNM-Au8®, a registered trademark of Clene Nanomedicine, Inc., can effectively traverse the blood-brain barrier and target human brain tissue for treating neurodegenerative disorders. Developed by Clene Nanomedicine, Inc., CNM-Au8 represents the first gold nanocrystal suspension being actively explored as a therapeutic drug for conditions such as multiple sclerosis, amyotrophic lateral sclerosis, and Parkinson's disease.
- [Gold Nanoclusters Lead Breakthrough in Eco-Friendly Water Purification](#)
 - Key Takeaways: Innovative Wastewater Treatment – Flinders University devises a UV-driven process using gold nanoclusters to swiftly degrade toxic dyes like azo in wastewater.

- Accelerated Degradation – Gold clusters enhance efficiency, reducing degradation time sixfold and converting pollutants into harmless water and carbon dioxide.
- Environmental Impact – Addressing a global concern, this sustainable method shows promise in effectively removing hazardous contaminants from wastewater, aiding environmental remediation effort
- [Gold prices are at lifetime high. Let's decode the major triggers](#)
 - Rising hopes of US rate cuts have aided gold prices. In addition, the weak global economic outlook, escalating geopolitical tensions, unpredictability surrounding the US presidential election, and higher central bank purchases have offered support to the yellow metal.

Semiconductor Related Articles (impacting Precious Metals electronics):

- [Tech war: ASML's threat to expand outside the Netherlands is watched with interest in China](#)
 - As ASML threatens to expand outside the Netherlands, Chinese social media users are quick to point their finger at US-led export curbs. Rather than China, the most likely reason behind ASML's expansion plan is concerns over Dutch immigration policies, according to analysts
- [Exclusive-TSMC considering advanced chip packaging capacity in Japan, sources say](#)
 - One option the chipmaking giant is considering is bringing its chip on wafer on substrate (CoWoS) packaging technology to Japan, according to one of the sources who was briefed on the matter.
 - CoWoS is a high-precision technology that involves stacking chips on top of each other, boosting processing power while saving space and reducing power consumption.
 - Currently, all of TSMC's CoWoS capacity is in Taiwan.
- [Larger US chip subsidy to help Samsung compete with TSMC in foundry business](#)
 - The U.S. Department of Commerce will soon announce that it will provide Samsung with sizable subsidies, as part of Washington's chip subsidy program known as the CHIPS and Science Act, according to Bloomberg. The act was enacted in 2022 to support semiconductor companies with federal subsidies for constructing factories and producing chips on American soil.
 - Samsung plans to invest \$17 billion to build a foundry plant in Taylor, Texas, and is currently constructing that facility. This news is encouraging for Samsung if confirmed, as it was widely expected that the company would receive a lower-than-expected subsidy.
- [Nvidia Unveils Blackwell, Its Next GPU](#)
 - A big boost in AI training performance, an even bigger one for AI inference
- [Nvidia's latest AI chip will cost more than \\$30,000, CEO says](#)
 - Nvidia's next-generation graphics processor for artificial intelligence, called Blackwell, will cost between \$30,000 and \$40,000 per unit, CEO Jensen Huang told CNBC's Jim Cramer.
 - The price suggests that the chip, which is likely to be in hot demand for training and deploying AI software such as ChatGPT, will be priced in a range similar to that of its predecessor, the H100.
- [TSMC to build 2 advanced IC packaging plants in Chiayi](#)
 - Construction of the first Chiayi plant is expected to be completed by the end of 2026 with mass production scheduled to begin in 2028 and expected to create about 3,000 jobs, Cheng said.
- [DOJ sues Apple over iPhone monopoly in landmark antitrust case](#)
 - The Justice Department sued Apple in an antitrust case, saying that the iPhone maker has a monopoly over the phone market that harmed consumers, developers, and rival companies.
 - Apple's ecosystem, from the Apple Watch to Apple Pay, supports that monopoly, prosecutors said.
 - The challenge strikes at the core of Apple's walled-garden model and comes as regulators worldwide scrutinize tech companies.
- [Intel wins almost US\\$20bn in incentives](#)

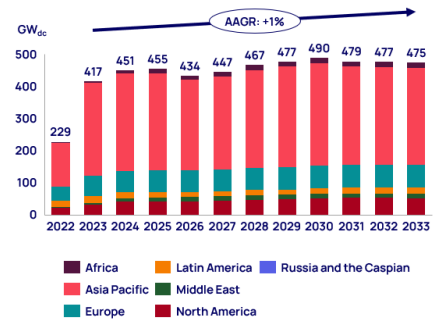
- The US is to award Intel US\$8.5 billion in grants and as much as US\$11 billion in loans to help fund an expansion of its semiconductor fabs, the US Department of Commerce announced yesterday, marking the largest award from a program designed to reinvigorate the nation's chip industry.

Silver

- **Global solar PV installed capacity will more than triple in the next ten years**

- The world will have 5.7 TWdc of solar by 2033, largely driven by China
- Global solar PV annual installations grew by over 80% in 2023 compared to 2022, reaching 417 GWdc of grid-connected installed capacity. Ultra-low solar PV module prices intensified the rate of deployments in Europe and China. China remains the top market by a large margin, contributing over 60% of global installed capacity last year.
- *Matt: How much Solar does the world need? A flatter CAGR in New PV Installations will be more than offset by Silver Design Thrifting CAGR of -5 to -7% YoY. Aggregate silver demand should decline from this year's peak if this WoodMac ramp is accurate.*

Annual solar PV installations by region, 2022-2033



Source: Wood Mackenzie

- **Is gold or silver a better investment when inflation cools?**

- Silver can be a better investment than gold in some scenarios, largely due to its industrial uses.
- "If industrial demand increases, such as in current applications for electronics, solar energy, automotive manufacturing (electric vehicles), and healthcare, and if demand for these applications grows over the long term, silver's price will increase," says Ebkarian.
- He adds, "As of recent, silver appears to be benefiting more from industrial demand than from inflation, and unlike gold, it is not at an all-time, record high. This, when coupled with the lower valuation, makes silver significantly more attractive to investors, even if inflation cools off."

FREEPORT OF THE WEST

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Precious Metals Mining:

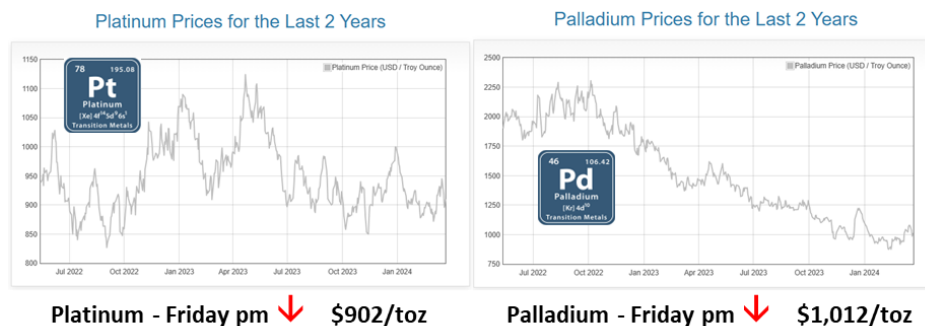
- [Platinum miners fear bloodbath as prices fall](#)
 - Zimbabwe's major PGM producers are reeling under severe headwinds underpinned by plummeting prices, which have induced firms to embark on widespread retrenchments, the Zimbabwe Independent can report.
- [Zimbabwe's platinum miner Zimplats plans job cuts](#)
 - Zimplats is a subsidiary of South African mining giant Impala Platinum and operates in Ngezi, Mashonaland West Province. This decision follows a similar move by Mimosa, another platinum miner in the Midlands Province, which laid off 33 managers & supervisors in March to manage costs given declining PGM prices.
- [Sibanye-Stillwater suspends PGM shaft after conveyor damaged](#)
 - Sibanye-Stillwater on Wednesday suspended its Siphumelele shaft following an accident in which a conveyor belt was damaged at the platinum group metals operation. There were no injuries.
 - Siphumelele comprises 3.5% of Sibanye-Stillwater's annual PGM production, the group said in an announcement to the Johannesburg Stock Exchange.
- [Sibanye-Stillwater open to JV on Burnstone gold project](#)
 - Sibanye-Stillwater was prepared to sell its Burnstone gold project or bring it out of mothballs if a joint venture partner could be found for it, said CEO Neal Froneman.
 - "We do want to develop it rather than sell," he said in an interview on Mar. 5. "But like everything if someone with the right price came long we would consider selling it or a partnership."
- [Dundee's cyanide-free tech cuts gold leaching time by 90%](#)
 - Quebec-based Dundee Sustainable Technologies is slashing leaching time and extracting more gold without using toxic cyanide in a new process geared for mining's future.
 - The trademarked process, called Clevr, uses a 2% bleach solution in leaching kinetics, the chemical reaction that separates gold from ore, to release gold within a couple of hours versus 36 hours or more in traditional cyanide leaching.

E-Waste & Precious Metals Recycle Related:

- [AICHE Selected by DOE to Lead New Hydrogen Electrolyzer and Fuel Cell Recycling Consortium](#)
 - H₂CIRC includes partners across the value chain of electrolyzers and fuel cells: **Accelera by Cummins**; Delaware State University; General Motors, LLC; **Heraeus Precious Metals**; **Johnson Matthey**; National Renewable Energy Laboratory; **Nel Hydrogen**; Oak Ridge National Laboratory; **Plug Power**; The Chemours Company; University of Delaware; University of Houston; and Worcester Polytechnic Institute. AIChE and its consortium partners will establish a blueprint across the industry for recycling electrolyzer and fuel cell systems and components, aimed at securing long-term supply chain security and environmental sustainability. Project list also includes IPMI members: De Nora, the Colorado School of Mines
- [Funding Selections for Clean Hydrogen Electrolysis, Manufacturing, and Recycling Activities under the Bipartisan Infrastructure Law](#)
 - On March 13, 2024, the U.S. Department of Energy (DOE) announced \$750 million in funding for 52 projects across 24 states to dramatically reduce the cost of clean hydrogen and reinforce American leadership in the growing hydrogen industry. These projects will advance electrolysis technologies and improve manufacturing and recycling capabilities for clean hydrogen systems and components.
- [Sibanye-Stillwater closes purchase of metals recycler Reldan](#)
 - Reldan reprocesses waste streams such as industrial waste, including semiconductor scrap, plating waste and electronic waste such as mobile phones and tablets, to extract precious metals.
 - The company reported production figures for the 2022 financial year that included 145 koz of gold, 1.9 Moz of silver, 22 koz of palladium, 25 koz of platinum and 3.4 million pounds of copper.
- [UN issues 'immediate call' for greater e-scrap recovery](#)

- A global analysis from the United Nations found that electronics and electrical equipment are reaching end of life at a quantity and speed that is far outpacing the recycling sector's capacity to collect and process that material. Still, the global collection rate is on the rise.
- The new report estimates 62 million metric tons of end-of-life electronics and electrical appliances were generated in 2022, while the collection rate in documented formal collection systems totaled 22.3%, with 13.8 million metric tons collected. Those figures compare to 53.6 million metric tons in 2019, when the collection rate was 17.4% with 9.3 million metric tons collected.
- [Sibanye-Stillwater concludes \\$155.9m Reldan recycling deal](#)
 - Reldan processes industrial and electronic waste. It produced 145,000 ounces of gold in its 2022 financial year as well as 22,000 oz of palladium, 25,000 oz of platinum and 3.4 million pounds of copper. For 2022, Reldan generated revenue of \$39m in earnings and \$28m in free cash flow.
 - Sibanye-Stillwater currently recycles PGMs from the Columbus Metallurgical Complex near its Montana-based Stillwater mine. Combined with Reldan, the group will produce 170,000 oz of secondary gold and 400 to 450,000 oz of PGMs.
- [pH7 Technologies Awarded \\$850,000 from BC's Innovative Clean Energy \(ICE\) Fund](#)
 - With \$850,000 from the Province's Innovative Clean Energy (ICE) Fund, pH7 will conduct a pilot project to process 5,000 kilograms per day of raw materials into approximately 2,500 kg of extracted platinum group metals per year. This method results in significantly less greenhouse gas emissions, electricity and water usage compared to mining or other recycling methods.

Platinum



- [WPIC: Demand for platinum thin film coatings is growing as semiconductor and sensor applications proliferate](#)
 - Due to their flexibility and durability, platinum sputtering targets are used to produce thin films in the manufacture of sensors for the fast-growing and rapidly evolving market for wearables, such as smartwatches and fitness and health trackers, that provide continuous, non-invasive monitoring of vital signs like glucose levels and blood pressure.
 - Last year, Bosch, a pioneer and market leader in sensors, announced plans to invest three billion euros in its semiconductor business and in sensor development and manufacturing by 2026.
- [Johnson Matthey to sell medical device components unit for \\$700M](#)
 - JM will sell its medical device components business to Montagu Private Equity for \$700 million in cash.
 - The segment makes components for medical devices, including nitinol metal tubing used in stents and metallic coatings. *Matt: They also make Pt/Ir Marker Bands, and materials for stents and retrievers.*
 - The sale, announced Wednesday, is expected to close in the third quarter following regulatory approval.

Fuel Cells/H₂ Economy Related Articles:

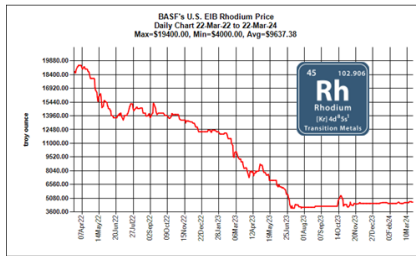
- ['Nobody wants to pay for it' | ExxonMobil and Aramco CEOs say green hydrogen is too expensive to replace fossil fuels](#)
 - Green hydrogen is too expensive to replace fossil fuels, the chief executives of oil supermajors ExxonMobil and Saudi Aramco told a conference in Houston, Texas, yesterday.
 - Exxon CEO Darren Woods went so far as to suggest that the US would not meet its net-zero emissions target for 2050, partly due to the high cost of renewable H₂, he said during an appearance at energy conference CERAWeek, according to energy website E&E News.
- [H₂ Green Steel's world-leading Hydrogen-based steel project at risk after grid connection 'illegally' denied](#)
 - The Boden facility, which will site 1GW of electrolyzers to produce renewable hydrogen for direct iron reduction, is meant to start producing 2.5 million tonnes of green steel a year from 2027, with a ramp-up to five million tonnes starting as early as 2028.
- [Chevron Plans 5-MW Hydrogen Project In California](#)
 - Chevron New Energies, a division of Chevron USA Inc., is developing a 5-MW hydrogen production project in California's Central Valley. The project aims to create hydrogen utilizing solar power and non-potable produced water from Chevron's existing assets at the Lost Hills Oil Field in Kern County.
 - Lost Hills represents the first Chevron-only commercial electrolytic H₂ project. Hydrogen production is slated to begin in early 2026. The plant is expected to be capable of producing 2.2 mt per day.
- [Supercharging fuel cells with caffeine](#)
 - However, the presence of water affects the performance of the fuel cell. It reacts with the platinum catalyst, forming a layer of platinum hydroxide (PtOH) on the electrode, which obstructs the efficient catalysis of the oxygen reduction reaction (ORR), leading to energy losses. To maintain efficient operation, fuel cells require a high Pt loading, which significantly increases the costs of fuel cells.
 - Now, in a study published in the journal Communications Chemistry on February 3, 2024, Professor Nagahiro Hoshi, along with Masashi Nakamura, Ryuta Kubo, and Rui Suzuki, all from the Graduate School of Engineering at Chiba University, Japan, have found that adding caffeine to certain platinum electrodes can increase the activity of the ORR. This discovery has the potential to reduce platinum requirements, making fuel cells more affordable and efficient.
- [Airbus to choose between hydrogen engines and fuel cells this decade for first H₂ planes: report](#)
 - Both technologies are being tested in parallel, with flight tests scheduled to begin in late 2026
- [Water's Role in Producing Sustainable Green Hydrogen Power](#)
 - Renewable hydrogen is a sustainable fuel that can provide a significant source of clean energy, but there are five key things providers should first consider.
 - According to the Rocky Mountain Institute, to produce the same amount of energy, green hydrogen production consumes less than half the water of other large-scale water consuming processes such as coal or nuclear electricity production. Because the need for high purity water is necessary, realistic assessment of water supply and quality are essential when developing green hydrogen projects.
- [MITSUI reworks its ME-GI gasoline engine to use hydrogen fuel](#)
 - The two-stroke engine has been adapted to function on 100% H₂
- [Ballard wants to build new fuel cell plant in Texas](#)
 - Ballard Power Systems is planning a new "Gigafactory" in Texas for the production of fuel cell components and systems. Ballard plans to invest around 160 million dollars in the new factory called Ballard Rockwall Giga 1 in Rockwall, Texas.

Palladium

- **Green Rush Episode #2: [Less critical metals - Matt Watson on why palladium and rhodium 'are really going to be challenged'](#)**
 - The PGM basket is under strain, but that's due more to a decline in aggregate car sales rather than a shift toward electrification, says Matt Watson, founder of Precious Metals Commodity Management LLC., and host of Green Rush, a program that focuses on precious and critical minerals as they impact the clean energy transition.
 - In mid-March Watson spoke to Jonathan Butler, head of business development at Mitsubishi Corporation.
- **[New-Vehicle Sales Hit Double-Digit Increase](#)**
 - **Takeaway:** The new-vehicle market had a strong (recovery) year in 2023 and ended on a high note. December surprised on the upside with over 1.4 million sales, the best-selling month of the year, and +13% increase over last December. For the year, 2023 finished with nearly 15.5M sales, a strong +12% increase over 2022's inventory-constrained market. Retail new-vehicle sales finished at 12.7 million units.
 - **What's next:** With higher supply and lower prices, new-vehicle sales in 2024 are expected to gain <+2% expected and the market new-vehicle market reaching sales of 15.7M sales.
- **[Biden-Harris Administration finalizes strongest-ever pollution standards for cars that position U.S. companies and workers to lead the clean vehicle future, protect public health, address the climate crisis, save drivers money](#)**
 - Final standards will expand consumer choice in clean vehicles and build on historic progress in U.S. auto manufacturing under President Biden's Investing in America agenda
- **[Palladium tumbles 3.7% on demand woes](#)**
 - The price of palladium and platinum dropped on Monday as fears over the metal's demand rocked investors' confidence. Palladium shed 3.72% to trade at \$1,033.76 at 10:39 am ET. At the same time, platinum decreased by 1.73% to sell at \$917.38.
- **[The tide may be turning for unwanted PGM](#)**
 - Palladium is heading south again after two bursts this month took the metal's price firmly through \$1,000 per ounce. At last count it was trading at \$979.02/oz, a price decline of 4.5% during Tuesday.
 - "Something is going on and we not a 100% sure on drivers," said one market source of the recent rally. "Probably a combination of less Russian supply, short covering and uptick in economic confidence outlook."
 - Certainly light auto buying played a role in early March, according to Stone X analyst Rhona O'Connell. "It set off a lot of short covering," she said.
- **[Platinum metals face structural hit to demand from electric vehicle revolution](#)**
 - Analysts expect palladium and rhodium prices to decline by 2028
 - Price backdrop will mean a major shift for PGMs mining sector
 - Platinum prices expected to rise due to better fundamentals
 - Hydrogen economy will take years to develop into major demand
- **[Palladium: A potential game changer in the energy transition](#)**
 - The use of palladium could potentially help solve this problem. Although palladium does not have optical properties like the alloys traditionally used in the industry, the recently discovered compound of palladium and selenium has the unique property of converting sunlight into electrical energy.
 - Experts believe that in the near future solar panels using palladium will be developed that will be significantly more efficient than existing ones.

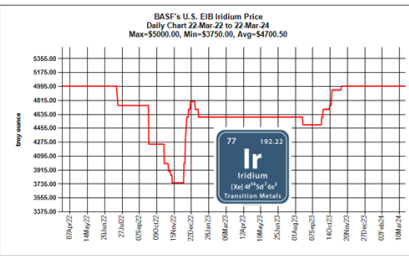
PGM Minor Metals (Rhodium, Iridium, Ruthenium, Osmium)

Rhodium Prices for the Last 2 Years



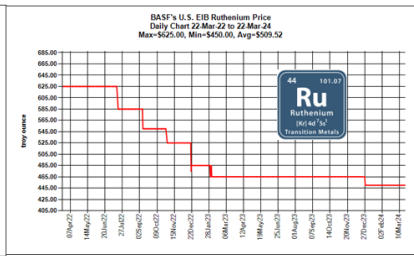
EIB US Friday: Rhodium ↓ \$4,650/toz

Iridium Prices for the Last 2 Years



Iridium EIB Friday → \$5,000/toz

Ruthenium Prices for the Last 2 Years



EIB US Friday Ask: Ruthenium → \$450/toz

What Is Rhodium, More than Two Times the Price of Gold?

- The most precious and expensive metal in the world is not gold but a rare and hard metal called rhodium, a name derived from the Greek 'rhodon,' meaning rose-colored. The value of rhodium is far higher than the price of gold, which is currently at \$2,161 per ounce. Rhodium, which sells for \$4,750 per ounce, now holds the distinction of the most costly and rarest metal in the world.
- Locking the lattice oxygen in RuO₂ to stabilize highly active Ru sites in acidic water oxidation**
 - Ruthenium dioxide is presently the most active catalyst for the oxygen evolution reaction (OER) in acidic media but suffers from severe Ru dissolution resulting from the high covalency of Ru-O bonds triggering lattice oxygen oxidation. Here, we report an interstitial silicon-doping strategy to stabilize the highly active Ru sites of RuO₂ while suppressing lattice oxygen oxidation.
- Zero Emissions of Carbon Dioxide! New Method Produces Ammonia-Based Clean Hydrogen**
 - To generate pure hydrogen from ammonia, the decomposition of ammonia is carried out at a temperature above 600°C using a ruthenium (Ru) catalyst, followed by the purification of hydrogen through pressure swing adsorption (PSA) technology. While carrying out this method, a residual gas mixture of nitrogen and hydrogen is formed and repurposed as a heating element for the ammonia decomposition reactor.
- New breakthrough technology promises to change the future of transportation: 'We can ... make a significant impact'**
 - The innovation uses temperatures of around 1,112 degrees Fahrenheit to decompose the ammonia, according to TechXplore. To eliminate the need for fossil fuels, the team uses ruthenium, a platinum metal, as a "catalyst" during a process called pressure swing adsorption. It's a complex mix of elements, compounds, and technology that can create high temperatures and, ultimately, hydrogen fuel.
- Recyclable Reagent and Sunlight Convert Carbon Monoxide Into Methanol**
 - Their work describes the details of the second step, as the reaction proceeds through a series of intermediates, including a ruthenium-bound carbon monoxide (Ru-CO₂⁺) group, a ruthenium formyl (Ru-CHO⁺) moiety, a ruthenium hydroxymethyl (Ru-CH₂OH⁺) group, and finally, light-induced methanol release.

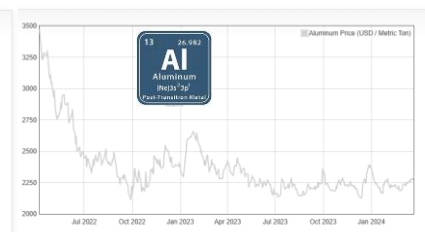
Clean Energy Market News

Copper Prices for the Last 2 Years



Copper ↓ \$ 8,719/mt

Aluminum Prices for the Last 2 Years



Aluminum ↑ \$ 2,247/mt

Neodymium Prices for the Last 2 Years



Neodymium: ↓ \$60,506/mt



- **Green Rush Pilot Episode: [Mining the Energy Revolution with Matt Watson: Wild swings in critical mineral prices have a root cause: relatively small supply](#)**
 - There is a disconnect between policy makers desire to go green and the amount of critical minerals needed to make it happen, noted Matt Watson, Founder, Precious Metals Commodity Management LLC. On Thursday Watson recorded an episode of Green Rush with guest Paul Harris, Kitco correspondent.
- **[Global wind turbine orders break records as Chinese giant takes top spot](#)**
 - Big increase in demand for onshore machines made up for dip in offshore orders caused by troubles in Chinese market, says Wood Mackenzie. Global wind turbine order intake hit new highs last year with 155GW of capacity snapped up and both the Chinese and Western markets breaking records. The capacity ordered represents a 16GW increase from 2022, while annual investment reached an estimated \$83bn, the energy consultancy said in its report released today (Monday).
- **[Giving up oil is a 'fantasy', says Saudi Aramco chief](#)**
 - Ditching oil and gas is a “fantasy” amid increasing demand, one of the world’s most powerful oil and gas bosses has said. Amin Nasser, chief executive of Saudi Aramco, said the transition to net zero is “visibly failing” with oil demand set to rise for “some time to come”.
 - “The current discourse on energy transition ignores this reality,” he told the CERAWEEK conference in Texas. “The world should abandon the fantasy of phasing out oil and gas.”
 - Rising demand from developing economies could feed oil demand growth through 2045, he said.
- **[Japan's JERA, IHI to test ammonia as fuel at coal power plant](#)**
 - The country's largest power generator, JERA, and engineering company IHI are preparing for a world-first attempt to generate electricity by burning a mix of coal and ammonia at JERA's coal plant in Aichi prefecture, in central Japan. A key benefit of the technology is its potential to supply cleaner power while still utilizing existing coal-fired plants. Tackling climate change requires that these plants be phased out, but doing so economically could take decades. Japan hopes its ammonia fuel technology will attract customers in developing Asian countries, which depend on newer coal plants than those in the West, to meet rising energy demand.
- **[Boliden's Swedish Copper Smelter Set for \\$463 Million Investment](#)**
 - Boliden has made a strategic decision to invest \$463 million USD in constructing a new tank house at Rönnskär. This investment aims to gradually increase the production of copper cathodes and precious metals to full capacity by the second half of 2026. Commencing in 2024, the investment will kickstart the construction process, partially funded by a potential insurance payout capped at \$412 million USD. The new plant, operating at a capacity of 230 kt, aligns with previous capabilities and falls under existing environmental permits.
- **[America's Grid Isn't Ready for the Green Transition](#)**
 - Recent warnings: To start, the grid has suffered from under-investment for decades and improvements can be hard to permit. At the same time, demand for electricity is growing much faster than expected, in large part driven by data centers and growing electrification of the economy. Wind and solar energy have created additional challenges (with increasing variable renewables).

- The integrity of the entire system is at stake, meaning that it may grow more difficult to keep the lights on consistently. A December report from North American Electric Reliability Corporation warned that huge swathes of the country face elevated or high risk of inadequate electric generation capacity.
- [US must improve copper mine permitting process, Freeport CEO says](#)
 - The U.S. must improve its mine permitting process if it hopes to boost domestic supplies of critical minerals to power the clean energy transition, the CEO of copper giant Freeport-McMoRan said on Monday.
 - "The U.S. government needs to stop giving lip service to permitting," Richard Adkerson told Reuters on the sidelines of the CERAWEEK energy conference in Houston.
- [Amazon Data Centers](#)
 - The 960 MW data center Amazon will deploy, with a 10-year agreement to purchase nuclear power from the nearby nuclear plant owned also by Talen Energy, is a wake-up call for the industry that will need more and more reliable energy to power the AI revolution.
 - *Matt: Some color: 960MW is massive energy requirement, the size of a full 1GW reactor, just to drive an massive AI based data center. Who's the polluter now? All of us.*
- [Jimmy Carter Killed This \(Nuclear Recycling\) Technology 50 Years Ago. Congress Is About To Fund Its Revival.](#)
 - Nuclear waste recycling involves extracting usable energy from used uranium fuel, which contains enough energy to power the U.S. for nearly two centuries.
 - Countries like China, France, Japan, Russia, and the UK have developed recycling capabilities, and India will join this year while the U.S. has lagged behind, lacking a clean strategy for its used nuclear fuel.
 - Nuclear waste recycling will contribute to a sustainable energy future and reduce dependence on foreign energy sources. It also solves potential geopolitical risks, particularly in light of Russia's invasion of Ukraine and the subsequent energy market disruptions.
- [The U.S. Is Betting Big on Small Nuclear Reactors](#)
 - This month, the House approved legislation aimed at developing U.S. nuclear power capacity in the coming years, with a vote of 365 to 36. The Atomic Energy Advancement Act was widely approved by both the Democrat and Republican parties as it is expected to help reduce greenhouse gas emissions while also bolstering the country's energy security. Unlike other energy sources, there is not an ideological divide on nuclear energy, which has become increasingly popular in recent years.
- [Biden Set to Crack Down on Auto Emissions to Accelerate EV Sales](#)
 - The Biden administration is preparing to roll out the toughest-ever limits on pollution from the nation's cars and light trucks after making changes likely to mollify some automakers.

BEV / LiB Mineral & Battery Market News



- [As Electric-Vehicle Shoppers Hesitate, Hybrid Sales Surge - WSJ](#)
 - Automakers have been working for years to transcend the image of hybrid cars as stodgy fuel sippers, remaking them with sportier designs and extra pep. The once-niche hybrid is the hottest car on the lot.
- [Top Miner BHP Stands Down 25% of Nickel Project Workforce: AFR](#)

- BHP Group Ltd., the world's largest miner, has stood down around a quarter of the workers constructing its West Musgrave nickel and copper project in W. Australia, according to the Australian Financial Review.
- [American automakers are back to hybrids — big time](#)
 - Companies are following the money, and hybrids are where the money is
- [Nickel's Role in the Critical Energy Transition](#)
 - Nickel's role in the energy transition could bring immense investment opportunities.
- [Battery Sustainability: Insights on Environmental Impact and LCA](#)
 - Key Takeaways: Sustainability should be a key criterion in the design and use of batteries. However, it is rarely considered in decision-making during battery pack programs because ESG data on batteries are sparse, unverified, or inconsistent.
 - The chemical composition of batteries is a key factor in determining the amount of embedded carbon, but this information is often not transparent. Providing this data would enable more sustainable decision-making for downstream users.
 - The lifetime of a battery significantly impacts its carbon footprint, as the carbon emitted during manufacturing and production is amortized over its lifetime.
 - *Matt: For EV advocates to so massively declare the CO2 footprint on EV's/LiB's vs ICE, I still claim is small single digits gain at best, with questionable LCA's (10-20% green washing) that are completed too soon (EVs at 200k km expected lifetime vs ICE which routinely hits 400k km lifetime). Vehicle scrap is part of the rollup and reflecting true lifetime characteristics is very important. Doubling the grid with charging infrastructure not accounted for in this emissions comparison FYI.*
- [Struggling nickel miners press for alternative pricing mechanisms](#)
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- [US explored adding more cobalt to defense stockpiles](#)
 - The US looked into buying cobalt for defense stockpiles last year, three sources with knowledge of the matter said, adding the Defense Logistics Agency could consider purchases in future despite deciding against them in its latest plan. Any increase in cobalt holdings would be aimed at reducing reliance on China, which dominates the processing of the material used to make missiles, aerospace parts, magnets for communication, and radar and guidance systems.
- [LG Energy Solution sets up new R&D center for future technologies](#)
 - Managed directly by the battery maker's CEO Kim Dong-myung, LG Energy Solution Future Technology Center aims not only to study cutting-edge technologies but also to develop commercialization processes in the field of batteries. "The center will study comprehensive energy solutions in various fields including secondary batteries for vehicles, light lithium-sulfur for planes and lithium-metal batteries," the company said in a press release.

Regards – Matt

44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver
76 Os Osmium	77 Ir Iridium	78 Pt Platinum	79 Au Gold

Matt Watson, President

Precious Metals Commodity Management LLC.

1694 Cairo Street, Livermore, CA 94550

(925) 321-2686

Email: MatthewWatsonJr@Yahoo.com

URL: <https://www.PreciousMetalsCommodityManagement.com/>