Weekly Precious Metals News Articles: Feb 23, 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 – Friday pm ↑ 2,036.30/toz

Silver – Friday pm ↓ $23.01/toz

- **Gold at $3,000 and oil at $100 by 2025? Citi analysts don't rule it out**
  - There's an off chance that gold prices could soar to $3,000 per ounce, and oil to $100 per barrel within the next 12 to 18 months, according to Citi.
  - Central bank aggressive purchases, stagflation, and a global recession are catalysts that could drive the price of the yellow metal almost 50% higher, Citi analyst said.
- **Cureus | Gold Nanoparticles in Parkinson's Disease Therapy: A Focus on Plant-Based Green Synthesis**
  - In recent years, gold nanoparticles (AuNPs) have been studied with increasing interest due to their intrinsic nanozyme activity. They can mimic the action of superoxide dismutase, catalase, and peroxidase. The use of 13-nm gold nanoparticles (CNM-Au8®) in bicarbonate solution is being studied as a potential treatment for Parkinson's disease and other neurological illnesses. CNM-Au8® improves remyelination and motor functions in experimental animals.
- **Gold set for weekly gain on safe-haven inflows, softer dollar**
  - Gold prices on Friday were set for their first weekly gain in three, supported by a softer dollar and safe-haven buying, as investors awaited further clues on when the U.S. Federal Reserve is likely to begin cutting its interest rates.
- **Central banks bulk up on bullion**

- Central banks continued to buy gold at a blistering pace last year, with purchases reaching 1,037 tonnes, the second highest on record and short by just 45 tonnes from the record set in 2022, the World Gold Council (WGC) says in its latest report on gold demand trends.
- The People's Bank of China (PBoC) reclaimed the crown for the largest single gold buyer as it reported an increase of 225 tonnes in its gold reserves over the year. The move made 2023 the country's highest single year of reported additions since at least 1977. Its gold reserves now stand at 2,235 tonnes.

- **Researchers capture strange behavior of laser-excited gold**
  - New research, conducted at the Department of Energy's SLAC National Accelerator Laboratory, illuminates the strange behavior of gold when zapped with high-energy laser pulses.
  - When certain materials, such as silicon, are subjected to intense laser excitation, they quickly fall apart. But gold does the opposite: it gets tougher and more resilient. This is because the way the gold atoms vibrate together – their phonon behavior – changes.
  - "Our findings challenge previous understandings by showing that, under certain conditions, metals like gold can become stronger rather than melting when subjected to intense laser pulses," said Adrien Descamps, a researcher at Queen's University Belfast who led the research while he was a graduate student at Stanford and SLAC. "This contrasts with semiconductors, which become unstable and melt."

Semiconductor Related Articles (impacting Precious Metals electronics):

- **IC production value to surge 15.4% this year: TSIA - Taipei Times**
  - The nation's IC industry's production value is forecast to rise 15.4% to NT$5.12 trillion (US$163.1 billion) this year, the Taiwan Semiconductor Industry Association (TSIA) said yesterday.
  - The increase is expected to outpace the global semiconductor industry's annual growth of 13.1 percent, the TSIA said in a report commissioned by the Industrial Economics and Knowledge Center of the Industrial Technology Research Institute.
- **Nvidia's surge ripples across stock market — lifting AI, tech and semiconductor ETFs**
  - "We think the near-term momentum in AI-related stocks is likely to continue," said Solita Marcelli, chief investment officer for the Americas at UBS Global Wealth Management, in a note Thursday. "To position, we maintain our preference for semiconductors and software, and see opportunities in beneficiaries of AI edge computing, big tech, and their partners."
  - Shares of Nvidia's soared 16.4% on Thursday to an all-time high after the semiconductor company released its latest quarterly earnings results following the U.S. stock market's close on Wednesday. The megacap chip maker's big gains made it the best-performing stock in the S&P 500 on Thursday, propelling the large-cap index to a fresh record closing peak and fueling a sharp jump in its information-technology sector, in particular.
- **Taiwan Semi Spurs Semiconductor Investment Frenzy in Japan, Boosting Local Economy and Banking Sector**
  - TSMC has catalyzed a surge in interest from Taiwanese and Southeast Asian investors looking to tap into Japan's semiconductor market, particularly in Kumamoto, known for its semiconductor incentives.
  - The trend also coincided with the U.S. sanctions on China's cutting-edge semiconductors.
- **EVs Need The Power Of A.I And Customized Semiconductors To Reach The Finish Line**
  - It's a well-known fact that Tesla Inc is much more than an EV company. Moreover, it could even challenge the AI chip leader someday in the future. Despite its mind-blowing results, even the leadership of Nvidia Corporation is threatened by the fact its clients such as Microsoft Corporation are running to make AI semiconductors in-house. The EV king, Tesla Inc is also among those who flexed its innovative muscle to make its customized A.I. chips in-house. Last year, Elon Musk stated that Tesla plans to spend $2 billion to build its A.I. supercomputer. Morgan Stanley stated in September that with its new supercomputing power, Tesla could position itself as a strong rival even to Nvidia.

Silver

- **Synthesis and Characterization of Silver Nanoparticles: A Breakthrough in Medicine and Health**
  - Recent scientific research has shed light on the synthesis of silver nanoparticles (AgNPs) using an aqueous extract of R. discolor, a plant with medicinal properties. This study, which forms the foundation for our discussion, is notable for its exploration of the optical, structural, and biological properties of these AgNPs. The reduction of silver ions to AgNPs was visually indicated by a color change from pale yellow to dark brown. This was further confirmed through UV-Visible spectroscopy, which revealed localized surface plasmon resonance (SPR) at 456.01 nm, a characteristic of AgNPs.
- **BloombergNEF says global solar installations could hit 574 GW this year – pv magazine International**
  - BloombergNEF says in a new report that developers deployed 444 GW of new PV capacity throughout the world in 2023. It says new installations could reach 574 GW this year, 627 GW in 2025, and 880 GW in 2030.
- **Germany's largest solar module plant faces shutdown as company shifts focus to U.S. market**
  - Swiss solar module maker Meyer Burger has announced its intention to wind up panel production in Germany, citing "grave market distortion" and better investment conditions in the U.S. as the main reasons. "In absence of political measures to ensure fair competition conditions, the aim is to eliminate unsustainable losses," the company said. Overcapacity of solar panel production in China that leads to dumping prices as well as trade restrictions imposed by India and the U.S. had created unacceptable distortion on the European market that thwarted the company's strategy and "made full-scale production no longer possible," Meyer Burger said. According to the company, its plant in Saxony - the largest solar module production site in Europe, employing about 500 people - should be closed as early as April this year.
- **Navigating the development of silver nanoparticles based food analysis through the power of artificial intelligence - ScienceDirect**
  - AgNPs excel in food analysis offering unique properties for biosensing.
  - AgNPs are underused in this field and their potential is overshadowed by other NPs.
  - Artificial intelligence (AI) enhances food analysis for better performance.
  - AgNPs and AI integration in biosensors holds potential to improve food monitoring.
- **Utility-scale solar had a record year in 2023. It's set to double in 2024 – pv magazine USA**
  - The Energy Information Administration (EIA) projects nearly 63 GW of utility-scale electric capacity additions, most of which are solar and batteries.

Precious Metals Mining:

- **Sibanye flags $2.58bn write-down on PGMs prices rout - MINING.COM**
  - The company said it expects to report in March a loss per share for 2023 of 12.68 rand to 14.01 rand, compared with a profit of 6.51 rand a share the previous year. This is equivalent to an eye-popping 91% drop in annual profit.
  - The announcement comes only two months after the South African miner announced it would lay off 1,500 workers from its gold mines. It also said at the time it had begun talks that could affect 4,000 more employees at its platinum group metals (PGMs) operations, including those in the United States.
- **Northam Platinum "pauses, defers, curtails" projects as sales fall 25% - Miningmx**
  - Commenting in a trading statement ahead of its interim results, scheduled for March 1, Northam said it had curtailed, deferred or paused certain capital projects. These included Zondereinde's Western Extension and the development of declines at the Booysendal. At its Eland mine, development of decline systems had been temporarily paused. The capital project adjustments might have a negative impact on Northam's medium-term production targets, according to a report by UBS.
- **Anglo American Platinum Restructuring Could Affect Around 4,300 Jobs**

- Anglo American Platinum said more than 4,300 jobs could be affected in a restructuring as it grapples with lower prices, rising costs and an uncertain outlook.

- **Anglo's Wanblad says "nothing off the table" in portfolio review**
  - The asset-by-asset review with consider its plans, the timing of the market cycle in which it operates, and any "frictional cost of change" that might be extracted as part of an efficiency drive that was also announced today. Wanblad said operational costs savings of $1bn has been targeted for the year-end – of which half had already been extracted in a now completed head office review – and a further $1.5bn would be taken out of Anglo American's capital expenditure allocation. Earlier this week, jobs cuts to permanent employees of up to 470 and 3,700 were announced at Kumba Iron Ore and Amplats respectively.

E-Waste & Precious Metals Recycle Related:

- **A Green Method to Clean Copper Slag and Rapidly Recover Copper Resources via Reduction-Sulfurizing Smelting and Super-Gravity Separation at Low Temperature - ScienceDirect**
  - Waste coke and gypsum were used to clean the copper slag via reduction-sulfurizing
  - The copper lost in chemical was transformed and enriched into the matte droplets
  - The separation and recovery of matte droplets were enhanced via supergravity
  - The recovery ratio of Cu was up to 99.56% at a low temperature of 1200 ℃
  - The migration and distribution behavior of heavy metal elements were analyzed
- **Canadian rare earth magnet recyclers awarded grants**
  - Canadian industry-led nonprofit NGen awarded 86.7 million Canadian dollars ($64.2 million US dollars) in grants for 15 advanced manufacturing projects in Canada, including two rare-earth magnet recyclers.
- **Sims resells more devices, driving higher profits**
  - SLS reported repurposing 2.5 million devices during the 2024 fiscal half-year, up 39% from 1.8 million units during the same period a year earlier. It's nearly double the 1.3 million units the company processed during that period in 2022. The growth in device volume contributed to SLS operating profits (earnings before interest and taxes) growing 18.6% year-over-year to hit $5.4 million U.S.. In a media release on the financial results, the company noted "effective cost control measures" also helped drive profit during the period.
- **Company plans $344 million Georgia factory to make recycled glass for solar panels**
  - A company that recycles solar panels announced Thursday that it would build a $344 million factory in northwest Georgia, for the first time expanding to making new glass for panels.
  - Solarcycle was founded in 2022 and opened its first recycling facility in Odessa, Texas. Earlier this month, the company opened a HQ, research lab & 2nd recycling facility in Mesa, Arizona.
  - *Matt: Where EU and US based solar PV guys break down clean solar PV glass panels into glass cullet used ~25% with new glass materials in the production of new glass flat panels. Problem is you get roughly 1% of the original value of the new glass panel vs the resulting broken up cullet material. Making your own replacement flat panel glass can yield a much higher value proposition for its recycled glass.*

Platinum

Platinum - Friday pm ↓ $909/toz **Palladium - Friday pm ↑ $996/toz**

- **Platinum rises from ashes of 'dieselgate' to outperform palladium. What's next.**
  - The return of platinum's traditional premium to palladium is the "conclusion of a structural move that has been in process over the past five years," said David Holmes, senior vice president, trading and sales, at Heraeus Metals NY. Strong demand had fueled high prices for palladium, prompting car manufacturers to seek out a cheaper substitute in catalytic converters — platinum.
- **PGMs a key role in energy transition, demand remains uncertain**
  - The PGM basket price dropped by 30% in 2023 due to oversupply and a global economic slowdown. However, the future of PGMs is not bleak, as they have a key role to play in the energy transition and are essential for new applications in various sectors.
- **Platinum (PL) In Bottoming Process**
  - Platinum (PL) is still in the process of forming a bottom and the metal is trading sideways since 2021 peak at 1348.2. The metal still needs to break above 1348.2 to confirm that the next leg higher has started. Below we updated the Monthly and Daily Elliott Wave chart for the metal.

Fuel Cells/H_2 Economy Related Articles:

- **EU greenlights €4.6 billion in German state support for hydrogen projects**
  - The European Union has given Germany and six other EU countries the green light to provide a total of 6.9 billion euros in state support to companies for 33 projects along the hydrogen value chain. German states and the federal government will make available 4.6 billion euros for infrastructure in the country under the umbrella European "IPCEI Hy2Infra", the economy ministry said in a press release.
- **'Green H_2 is too expensive to use in our EU steel mills, even though we've secured billions in subsidies' | H_2 news and intelligence**
  - Steel giant ArcelorMittal has said it cannot operate its European plants using green hydrogen, despite being granted billions of euros of EU subsidies to install equipment to do so, because the resulting green steel would be unable to compete on international markets.
- **H_2 refuelling in Europe - 60 Seconds in Pt - World Platinum Investment Council – WPIC®**
  - According to the most recent data from H2Stations.org, 921 hydrogen refuelling stations were in operation worldwide as at the end of 2023, a year-on-year increase of 13 per cent. Of these, 265 were located in Europe. Last month, Air Liquide and TotalEnergies launched TEAL Mobility to build a network of 100 hydrogen refuelling stations on major European corridors over the next decade. Their approach is intended to further stimulate growth in the hydrogen value chain, from truck manufacturers to transport operators, accelerating the deployment of FCEV heavy-duty trucks.
- **Honda begins mass-production of affordable fuel cell system**
  - The fuel cell created by Honda and GM replaced some precious metals, such as platinum and gold, with more affordable materials. The battery's manufacturing process was automated to rein in costs.
- **Evolution of Raw Materials in Green Hydrogen Production: A Comparative Analysis of Current Trends and Technologies**
  - The current state of H_2 production is dominated by fossil fuel-based methods, in almost 900 million metric tons of CO_2 annually. Steam methane reforming (SMR) and coal gasification are the primary methods, both being energy-intensive and highly polluting. On the other hand, electrolysis, a cleaner but less developed technology, contributes only 2% to total production. The limited use of electrolysis is largely due to its inefficiency; 180 MJ of energy is required to produce 1 kg of H_2, which has an energy content of 143 MJ. However, with the use of renewable energy sources, there is the potential to produce hydrogen with no carbon footprint.
- **Calif. commission prioritizes hydrogen trucks over cars in $1.9B spending plan**
  - A California agency will use a $1.9 billion zero-emissions vehicle infrastructure plan to help fund hydrogen trucks, school buses and public transit but not hydrogen-powered cars.

- Approved Feb. 14, the California Energy Commission's four-year spending plan allocates $1.14 billion to medium- and heavy-duty vehicle infrastructure, including hydrogen fueling stations and electric vehicle chargers. More than $600 million would support light-duty EV infrastructure and at-home charging, according to the lead commissioner's report.

- **What does EU's new 90% emissions reduction target for 2040 mean for green hydrogen? | Hydrogen news and intelligence**
  - A 605-page impact assessment spells out what such an energy system would look like in 2040 and the roles for renewable H2 and e-fuels
- **Bloom Energy adds variable load ability to its (SOFC) fuel cells**
  - Fuel cell provider Bloom Energy has given its Energy Servers the ability to follow loads, so they can adjust to variable demand and supply in microgrids and utilities. Bloom claims to have more than 1GW of its SOFC systems in use, which Bloom says are suitable for applications including AI data centers, and Bloom's systems are used at AWS and Equinix among others
- **H_2 storages important foundation for solar PV expansion in Europe – German govt scenarios**
  - The construction of H_2 storage facilities beyond the existing caverns is crucial for the energy system of the future, especially as a basis for solar PV expansion, according to energy scenarios for 2045 commissioned by the German economy ministry, reported Tagesspiegel Background. "As the amount of energy generated by PV fluctuates greatly depending on the season, H_2 storage systems are used to shift the amount of energy from summer to winter," says a presentation on the so-called "long-term scenarios," which have become an industry standard for assumptions about the most efficient decarbonisation of the entire energy system. Europe would have a storage capacity of only 42 TWh if just existing cavern facilities were used, compared to total capacity of 278 TWh with additional facilities. This would mean that only around 1,600 GW of solar PV capacity would be built, instead of 1,900 GW. "A development with very little hydrogen storage is very risky and partly outside the realistic solution space," says the document.
- **A New Horizon in CO_2 Reduction: Integrating H_2 Oxidation Reaction for Enhanced Efficiency**
  - The increasing level of CO_2 in the atmosphere is a significant concern, leading researchers to explore innovative ways of reducing CO_2 emissions. A promising approach involves the direct coupling of CO_2 electrolysis with hydrogen oxidation reaction (HOR) in a single electrochemical cell. This novel method, integrating H_2 with CO_2 reduction reaction (CO_2RR), demonstrates a significant decrease in total energy consumption, opening up new possibilities in sustainable energy practices.
- **WinGD and Mitsubishi Shipbuilding Agree Ammonia Fuel Supply System Design**
  - Engine manufacturer WinGD and Mitsubishi Shipbuilding report they have reached a key milestone in the development of ammonia-fueled propulsion. The two companies have finalized the basic design for an ammonia fuel supply system for an ammonia-fueled large, low-speed 2-stroke marine engine.
- **Topsoe technology selected for ammonia-to-hydrogen conversion project in South Korea - Chemical Engineering**
  - Topsoe A/S has signed an engineering agreement with Approtium to convert low-carbon ammonia into hydrogen using its H2RETAKE technology. Approtium plans to build an ammonia cracking plant to produce 75,000 mt's of low-carbon H_2 annually. The plant will be built in Ulsan, South Korea, and production is expected to start in 2027.
  - Topsoe, a global leader in carbon emission reduction technologies, has signed an engineering agreement with Approtium, a leading South Korean industrial supplier of hydrogen, to deliver its proven ammonia cracking technology, H2RETAKE, converting low-carbon ammonia, also referred to as blue ammonia, back into hydrogen.
- **Construction Order Placed for Ammonia-Powered Containership**

- Plans to launch the world's first ammonia-powered containership are moving forward with CMB.TECH reporting that the construction order for the vessel has been executed and that it is expected to be delivered by mid-2026. Yara Clean Ammonia, North Sea Container Line, and Yara International announced the project last year as one of several supported by the Norwegian Government through its Enova investment fund to decarbonize shipping.
- *Matt: I put ammonia items often in this H_2 section, since Ammonia (NH_3) is the twin sister to H_2*

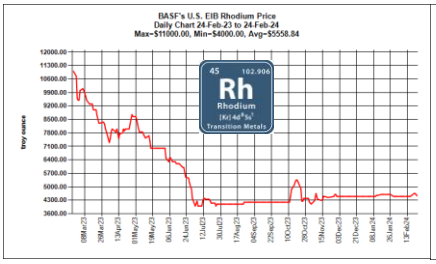
- **Recovering hydrogen from ammonia at large scale**
  - Making ammonia from nitrogen and H_2 via the Haber-Bosch process has been critical to fertilizing the world's crops for more than a century, but there's been little need to run the reaction in the opposite direction. "Until recently, ammonia has been a nitrogen carrier for the fertilizer market, which is feeding the world," says Elena Stylianou, global head of KBR's ammonia-cracking technology business. "That has been an amazing market, and it has been really good to KBR. But what we've been seeing in the last 2-3 years is this huge interest in ammonia as a hydrogen carrier."

Palladium

- **New applications with palladium for hydrogen explored**
  - Heraeus Precious Metals and Sibanye-Stillwater are partnering to explore new applications for platinum-group metals (PGM) in the hydrogen economy, specifically how existing or new applications could profit from the unique traits of palladium.
- **US new vehicles sales set to rise in February, report shows**
  - U.S. new vehicle sales are expected to rise 1.4% in February from a year earlier, driven by robust demand and a better supply of vehicles, according to a joint report by industry consultants J.D. Power and GlobalData on Thursday.

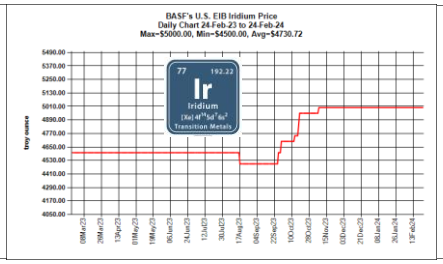
PGM Minor Metals (Rhodium, Iridium, Ruthenium, Osmium)

Rhodium Prices for the Last Year



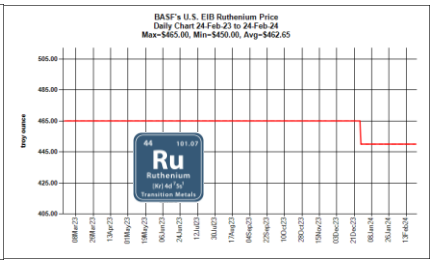
EIB US Friday: Rhodium ↑ $4,525/toz

Iridium Prices for the Last Year



Iridium EIB Friday → $5,000/toz

Ruthenium Prices for the Last Year



EIB US Friday Ask: Ruthenium → $450/toz

- **Revolutionizing Nitric Acid Production: The Power of Ruthenium Catalysts**
  - A groundbreaking study reveals the potential of ruthenium (Ru) catalysts to improve nitric acid production efficiency by 15%. The catalyst's unique properties make it an invaluable tool for creating a more sustainable and less energy-consuming method of production.
- **Physicists Synthesize New Isotopes of Osmium and Tungsten**
  - In the new study, Dr. Yang's team carried out the experiment at the gas-filled recoil separator-Spectrometer for Heavy Atoms and Nuclear Structure (SHANS) in Lanzhou, China.
  - Using the fusion evaporation reaction, the researchers synthesized two new isotopes: osmium-160 and tungsten-156.

- **An Ir (III) complex with multiphoton absorption in the near-infrared region as a probe for mtDNA-specific recognition and mitochondrial imaging**
  - A novel cyclometallated iridium complex has been synthesized.
  - The complex was studied by single crystal and multi-photon emission spectra.
  - The mechanism of specific binding of the complex to mtDNA was revealed.
  - mtDNA-specific recognition and two-photon bioimaging of complex were investigated
- **An energy-efficient H2 production based on urea-aided water splitting enhanced by Ru induced in-situ speciation of NiO nansheets on porous Ni**
  - Highlights: Replacing OER with UOR is apparently energy-saving for hydrogen production.
  - Ru activates NiO nanosheets grown in-situ on porous Ni to obtain more active sites.
  - Electron transfers of Ru and Ni species significantly promotes HER/OER/UOR.
- **Acetylene ligands stabilize atomically dispersed supported rhodium complexes under harsh conditions**
  - Atomically dispersed supported metal catalysts are an emerging class of catalysts.
    - Maintaining atomic dispersion is a main challenge.
    - Ligands play a crucial role in this regard, but at the expense of loss in activity.
    - Carbonyl ligands were replaced with acetylene on supported rhodium complexes.
    - Acetylene ligands maintain atomic dispersion and do not inhibit hydrogenatio
- **Development of an ultra-thin electrode for the oxygen evolution reaction in proton exchange membrane water electrolyzers**
  - Noble metal electrocatalysts are highly preferred for the oxygen evolution reaction (OER) in a proton exchange membrane water electrolysis cell due to their exceptional catalytic activity and stability. This study proposes a novel thin electrode design to enhance the performance of noble metal electrocatalysts for the OER in PEMWE. The NTE utilizes a thin porous transport layer for the direct deposition of Iridium (Ir). Unlike conventional gas diffusion electrodes with deep porous structures that underutilize the catalyst due to limited triple-phase boundary conditions, the flat NTEs with straight-through pores overcome this restriction. The paper compares two deposition methods, electroplating and sputter coating.

Clean Energy Market News

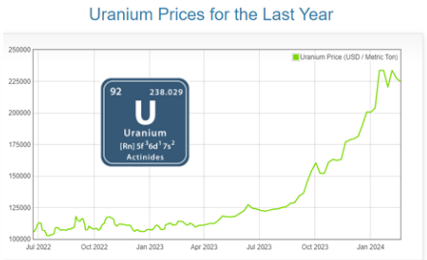
Copper ↑ $ 8,495/mt

Aluminum ↓ $ 2,155/mt

Neodymium: → $68,110/mt

Zinc: ↑ $2,355/mt

Tin: ↑ $ $29,296/mt



Uranium: ↓ $224,761/mt

- **Global demand growth could trigger lasting higher prices for energy transition minerals – BlackRock | Clean Energy Wire**
  - The raw material needs of the energy transition for building millions of renewable power installations, introducing battery-electric vehicles, and laying thousands of kilometres of new powerlines are expected to result in fierce competition for some materials. Besides growing the number of possible suppliers and improving domestic processing capacities, better recycling methods for raw materials already available in the economic cycle has been identified as key measure for better supply safeguarding. Several major EU economies, including France, Germany and Italy, have announced steps to better coordinate their critical raw material supply, including the creation of state-controlled joint purchases of resources needed in European economies.
- **California plans to add nearly 60 GW of renewables, storage by 2035**
  - The preferred portfolio is powered primarily by solar and wind farms, and lithium-ion battery storage. It includes the addition of 19 GW of large-scale solar resources by 2035, more than the 18.5 GW of CAISO-connected solar as of Feb. 1. The preferred plan also calls for 15.7 GW of four-hour batteries and 2.8 GW of eight-hour batteries by 2035. That compared with roughly 7.3 GW of battery power storage capacity on the CAISO system as of Feb. 7, according to the grid operator.
- **Mobility Notes – January 2024**
  - ICCT European Light-Duty Market Update – All forms of electrification on the rise
  - European HD Electric Share in Q1 – Q3 2023
  - State of China's auto market
  - Euro 7 nears final rulemaking
  - Driving range reduction in winter
- **Fragmentation of critical mineral markets would slow the shift to clean energy**
  - Even without the added complication of geopolitically motivated export controls, countries will need unprecedented supplies of critical minerals to stave off the worst effects of climate change and reach net zero emissions. The International Energy Agency predicts that demand for copper will need to grow by a factor of 1.5, for nickel and cobalt to double, and for lithium to increase six times by 2030 (Chart 1). This will drive up prices and could make these minerals as important as crude oil for the world economy over the next two decades (Boer, Pescatori, and Stuermer, forthcoming).
- **Utilities weigh power demand from AI amid clean energy transition**
  - Utilities say AI and large data centers demand a high level of energy and reliability
  - In southeast Wisconsin, Microsoft plans to invest around $1 billion to develop data centers on 1,400 acres it has purchased in Racine County. We Energies, which is owned by Milwaukee-based WEC Energy Group, plans to spend $100 million on a project to serve Microsoft's data complex. The project is being built on land originally intended for Foxconn as part of its failed plans to create 13,000 high-tech jobs.
  - "This is a major race between highly sophisticated tech companies. They need reliability, and they need speed to market. We're trying to accommodate both," said Bert Garvin, an EVP with WEC Energy Group.
- **China's Dual Energy Paradox: Coal Expansion and Cobalt Dominance Reshape Global Markets**
  - In the global pursuit of sustainable development, China faces a paradox between coal expansion and cobalt dominance. The nation's push for coal-fired power stations contradicts its commitment to green energy, while its control over cobalt production positions it as a key player in the energy transition. This duality influences energy investments, climate change efforts, and critical minerals markets worldwide.
- **US Bid to Loosen China's Grip on Key Metals for EVs Is Stalling**
  - A senior official in the administration of President Joe Biden, who spoke on condition of anonymity to discuss internal deliberations, admits that Beijing's decision to limit exports of gallium and germanium sent a jolt through the White House, adding to already urgent calls for Washington to confront China's dominance of the global metals supply chain. A lack of gallium and germanium—which are mined in tiny

volumes alongside aluminum and zinc—would potentially affect production of everything from military satellites to missiles and night-vision goggles

- **'Renewables started the energy transition but only fusion can finish it'**
  - Renewables can only take the world so far in its race to net zero, says Fusion Industry Association chair Christofer Mowry, who argues that the energy transition's nuclear weapon has now "emerged from the shadows" to finish the job. "This is a very interesting time for the fusion sector," said Mowry. "A time where the focus is shifting from proving that the science of fusion works to the real endgame, which is commercialising a viable and practical fusion energy technology."
- **Extraction of raw materials could rise 60% by 2060, and making mining 'greener' won't stop the damage**
  - The United Nations' flagship Global Resources Outlook report is the portrait of a juggernaut. Due to be published later this month by the UN's International Resource Panel, it highlights how global consumption of raw materials, having increased four-fold since 1970, is set to rise by a further 60% by 2060.
  - Producing this volume of stuff is a major contributor to global heating and ocean acidification, and the rapidly accelerating extinction of plants and animals.
  - As the UN report spells out, the extractive activities that lie behind the concrete, metal and other materials we use are disrupting the balance of the planet's ecosystems. The mining industry requires the annexation of large tracts of land for extraction and transportation; its energy consumption has 3x+ since the 1970s.

BEV / LiB Mineral & Battery Market News

Friday: Lithium ↓ $13,275/mt

Friday: Nickel ↑ $17,120/mt

Friday: Cobalt → $28,550/mt

- **The Boom in Battery Metals for EVs Is Turning to Bust – WSJ**
  - The high-tech project from Charlotte, N.C.-based Albemarle was designed to process different sources of lithium, including from recycled batteries, and serve as a supplier of the critical mineral for South Carolina's burgeoning electric-vehicle industry.
  - Less than a year later, those plans have been hobbled by a crash in battery metal prices, undercut by a slowdown in electric-vehicle sales growth in the U.S. and China. Albemarle has deferred spending on the project, amid companywide cost-cutting that includes layoffs and delays to other investments as well.
- **CATL has announced an international patent application for a sodium-ion battery**
  - Recently, CATL announced an international patent application for "Sodium-ion Battery Electrolyte, Secondary Battery, Battery Module, Battery Pack, and Electric Device." The patent application number is PCT/CN2022/108955, and the international publication date is February 1, 2024.
- **Once the darling of the EV world, the electric truck-maker Rivian is reeling**
  - Rivian Automotive Inc. emerged as a darling of investors — a brand with promise of bringing the "cool" factor to the once-red-hot market for electric vehicles. But the Irvine-based company hit the brakes Wednesday, announcing a 10% cut to its workforce and lower production expectations. The news sent its stock plummeting. The 25% drop in stock price that it notched Thursday was its worst day in its history.
- **Graphite producers push for return of Trump-era tariffs**

- The group, which includes hardrock miners in Canada and producers of synthetic graphite in the U.S., argued that reinstating the tariffs — initially imposed during the Trump administration — is needed to counter China when it comes to graphite, the single-largest mineral component of any EV battery. As it stands, China dominates the market and produces almost 70 percent of the world's natural and synthetic graphite, according to Benchmark Mineral Intelligence. China also makes more than 90 percent of the world's anodes for lithium-ion batteries.

- **EV startups Rivian and Lucid adjust 2024 production forecasts amid market challenges**
  - Electric vehicle (EV) startups Rivian and Lucid have adjusted their production forecasts for 2024, citing challenges in the market landscape and persistent borrowing costs hindering consumer adoption of battery-powered cars
- **Gecamines plans overhaul of mining JVs in world's top cobalt supplier**
  - The Democratic Republic of Congo's state miner is broadening a push to extract more from its copper and cobalt joint ventures, seeking to negotiate for higher stakes across the board to gain leverage in management of some of its biggest mines. Gecamines is also leveraging existing shareholding in mines to negotiate off-take contracts for the purpose of trading copper and cobalt on its own.
- **US to soften tailpipe rules, slow EV transition through 2030 | Nasdaq**
  - U.S. President Joe Biden's administration is set to ease proposed yearly requirements through 2030 of its sweeping plan to aggressively cut tailpipe emissions and ramp up electric vehicle sales, two sources told Reuters on Sunday. Automakers and the United Auto Workers had urged the Biden administration to slow the proposed ramp-up in EV sales. They say EV technology is still too costly for many mainstream U.S. consumers and that more time is needed to develop the charging infrastructure.
- **Unlocking The Potential of Li||S Batteries: A Deep Dive Into Polysulfide Concentration**
  - A study, as revealed in an article on Nature.com, investigates the influence of polysulfide concentration on Li||S battery performance. The research focuses on the solvation free energy of electrolytes, a metric used to formulate solvation property relationships in various electrolytes and their impacts on solvated lithium polysulphides. The study finds that solvation free energy plays a significant role in influencing the Li-S battery voltage profile, lithium polysulphide solubility, Li-S battery cyclability, and the Li metal anode. Weaker solvation leads to lower 1st plateau voltage, higher 2nd plateau voltage, lower lithium polysulphide solubility and superior cyclability of Li-S full cells and Li metal anodes.

Regards – Matt

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