Precious Metals Commodity Management LLC

Weekly Precious Metals News Articles: March 25, 2022

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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 dips as yields rise; heads for weekly rise on safe-haven demand**
  - Gold has gained about 1.6% this week
  - Silver also set for weekly gain
  - Palladium, platinum down more than 1% each

  https://www.nasdaq.com/articles/precious-gold-dips-as-yields-rise-heads-for-weekly-rise-on-safe-haven-demand
- **Gold steady as Ukraine concerns offset rate hike bets**
  - SPDR gold holdings highest in over a year
  - U.S. 10-year Treasury yields hover near May 2019 peak
  - UK PM says pressure could be applied to Putin's gold reserves

  https://www.nasdaq.com/articles/precious-gold-steady-as-ukraine-concerns-offset-rate-hike-bets

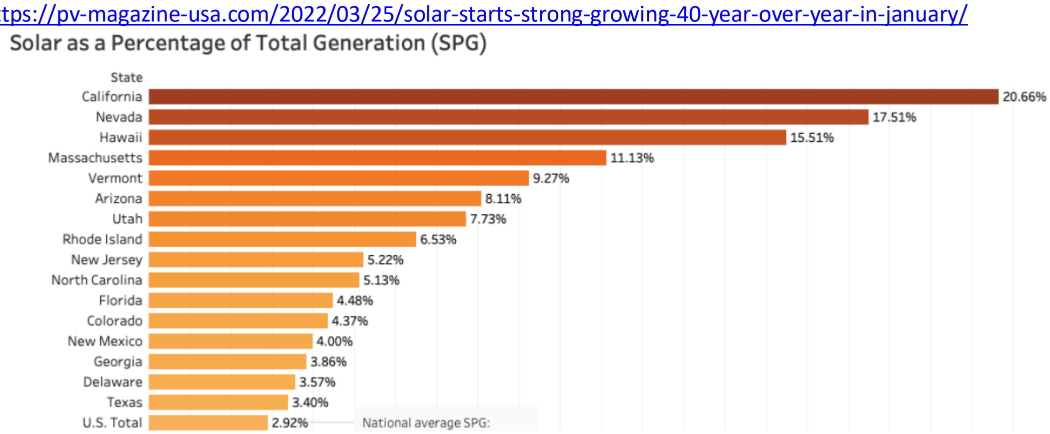
Semiconductor Related Articles (impacting Precious Metals electronics):

- **Global FAB Equipment Spending Expected to hit New High of $107 Billion in 2022, Semi**
  - Global fab equipment spending for front-end facilities is expected +18% y/y to an all-time high of US$107 billion in 2022, marking a third consecutive year of growth following a +42% in '21.
  - "Crossing the $100 billion mark in spending on global fab equipment for the first time is a historic milestone for the semi-industry."
  - "Global fab equipment spending is forecast to have another healthy year in 2023 and is expected to remain above the $100 billion mark. We expect global semiconductor capacity to maintain steady growth this year and in 2023."
    https://www.semi.org/en/news-media-press-releases/semi-press-releases/global-fab-equipment-spending-expected-to-hit-new-high-of-%24107-billion-in-2022-semi-reports
- **The Semiconductor Industry Forecast Season Will be Challenging**
  - The IC industry shipped +30% more IC units in 2022 to the auto industry. +22% y/y.. With the strong demand, it appears we have entered into a new growth era for the semiconductor industry.
    https://www.3dincites.com/2022/03/the-semiconductor-industry-forecast-season-will-be-challenging/

Silver

- **Silver Tests Support At $25.30**
  - Silver is trying to settle below the support level at $25.30, while the U.S. dollar is losing some ground against a broad basket of currencies.
    https://www.nasdaq.com/articles/silver-tests-support-at-%2425.30
- **Silver Expected To Take On Bigger Role in Precious Metals Sector as Industrial Demand Rises**
  - "The Silver Institute says industrial demand for silver will rise in 2022. They project +13% jump in photovoltaic demand (and 3x by 2030); +10% electrical/electronic; +10% brazing and solder alloy demand. Much of this demand has not yet hit the silver market, but now that the senate has passed the $1 trillion infrastructure bill, the jump in demand for silver is about to kick in.
    https://www.prnewswire.com/news-releases/silver-expected-to-take-on-bigger-role-in-precious-metals-sector-as-industrial-demand-rises-301507354.html
- **Silver Markets Trying to Stabilize**
  - Silver markets have been relatively quiet during the trading session on Monday, as the $25 level has attracted a certain amount of attention. The 50 Day EMA is sitting at the $24.40 level and is rising at this point. That of course is a bullish sign and therefore it is likely that we will see traders pay close attention to that common moving average.
    https://finance.yahoo.com/news/silver-markets-trying-stabilize-150646507.html
- **Solar starts strong, growing 40% year over year in January**
  - Solar PV as % of Total Generation (SPG)
  - Solar PV reached new heights through 2021, total global deployment at the inspiring milestone of 1TW
  - In January 2022, the USA +22 projects to commercial operation, adding 952MW of solar capacity.
  - For the month, solar PV generated 8GWh, or 2% of total (utility scale) electricity generated for the month in the US. January's generation +40% y/y. When including estimates for small-scale solar, the US generated 11.17GWh of Solar PV energy, up from 8.47GWh in the previous year, +33.5% increase.

https://pv-magazine-usa.com/2022/03/25/solar-starts-strong-growing-40-year-over-year-in-january/



Precious Metals Mining:

- **Platinum group metals miner Implats commits R50bn to five-year capital programme**
  - Platinum group metals (PGMs) mining and marketing company Impala Platinum (Implats) affirmed at the South African Investment Conference on Thursday that it would commit close to R50-billion to its Southern African capital investment programme over the next five years.
  - Implats has committed up to R12-billion over the next five years to expand its S.African and Zimbabwean smelting and refining facilities, which would, it said, benefit the region's production, reduce its environmental beneficiation capacity footprint, and bolster increased local beneficiation.

https://www.polity.org.za/article/platinum-group-metals-miner-implats-commits-r50bn-to-five-year-capital-programme-2022-03-24

- **Defiant South African Unions Stage Protest Against Sibanye**
    - Members of South Africa's National Union of Mineworkers (NUM) and the Association of Mineworkers and Construction Union (AMCU), who have been on strike at Sibanye-Stillwater's gold operations since March 9, hold placards as they stage a protest outside the company's Kloof Mine, in the southwest of Johannesburg, South Africa, March 25, 2022.
    https://www.usnews.com/news/world/articles/2022-03-25/defiant-south-african-unions-stage-protest-against-sibanye
- **Anglo American completes exit from Thungela**
    - Under pressure from investors to exit coal businesses worldwide, the owner of gold, platinum and diamond mining companies, Anglo American hived off its entire stake in its South African coal mines into Thungela and distributed most of the shares to its shareholders through an initial public offering in June, barring 8%.
    https://www.mining.com/web/anglo-american-completes-exit-from-thungela/
- **Platinum Group Metals, Ltd. (PTM) to go it alone on Waterberg palladium smelter after offtake talks with Implats stall**
    - "We don't have a solution to starting the project as yet," Implats added.
    - "We will move forward on our own," said Hallam. "The joint venture is more than 50% owned by shareholders who want to see the project developed. We don't begrudge Implats; we would love to have them [actively involved]. But if they don't want to, that's also okay."
    https://www.miningmx.com/top-story/49171-ptm-to-go-it-alone-on-waterberg-palladium-smelter-after-offtake-talks-with-implats-stall/
- **Mining Goes Critical: Russia, Ukraine and US Mineral Supply Chains**
    - The Russian invasion of Ukraine is the most dangerous realignment of global supply chains in a generation, one the United States may not be ready for.
    https://thenugget.prospectorportal.com/mining-goes-critical-russia-ukraine-and-us-supply-chains

E-Waste & Precious Metals Recycle Related:

- **Apple and other OEMs fund doorstep e-scrap pilot**
    - Some of the technology world's big names are funding an electronics collection effort in Denver, trying to boost recycling rates.
    - 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.
    https://resource-recycling.com/recycling/2022/03/22/apple-and-other-oems-fund-doorstep-e-scrap-pilot/
- **As bill nears finish line, senators urge e-scrap export ban**
    - Two U.S. senators have reintroduced the Secure E-waste Export and Recycling Act as a tactic to push inclusion of e-scrap export prohibition text in the final version of the America COMPETES Act. Sens. Sheldon Whitehouse, D-R.I., and Thom Tillis, R-N.C., reintroduced the legislation "to stop the flow of electronic waste to China and other countries that counterfeit American technology," a press release said. Versions of what is now known as the Secure E-waste Export and Recycling Act (SEERA) have been introduced in Congress five times since 2015 but have failed to move past introduction.
    https://resource-recycling.com/e-scrap/2022/03/24/as-bill-nears-finish-line-senators-urge-e-scrap-export-ban/?
- **Sims repurposes more material and grows revenue by 9%**
    - Sims Lifecycle Services, the electronics processing arm of global scrap metals giant Sims Limited, reported sales revenue of $122.4 million USD during the first half of the 2022 fiscal year (the period July 1, 2021-Dec. 31, 2021). That was +9% y/y.

- SLS reported underlying earnings before interest and taxes (EBIT) were $7.3 million, +46% y/y.
- SLS also repurposed 1.3 million units during the period, which was +44.4% y/y.
https://resource-recycling.com/e-scrap/2022/03/17/sims-repurposes-more-material-and-grows-revenue-by-9/

Platinum

- **Substitution among Platinum Group Metals**
    - Despite the significant substitution of platinum for palladium by 2003, work done to include palladium, particularly in heavy-duty vehicles, continued as by this point the palladium price had returned to below the platinum price, providing a financial incentive for automakers. In addition, the inclusion of some palladium in a platinum-dominant autocatalyst can improve its thermal stability. This is an advantage when reducing diesel PM from the exhaust. This process involves trapping the PM in a filter and then raising the temperature of the system to oxidise the matter to CO^2. At these higher temperatures, palladium improves the thermal durability of the catalyst.
    https://www.cmegroup.com/education/articles-and-reports/substitution-among-platinum-group-metals.html
- **(PtW) Catalyst for a greener future**
    - Researchers have found a way to improve the ability of catalysts made from metal-metal oxides to convert non-edible plants, such as wood, grass and corn stover -- the leaves, stalks and cobs leftover in the fields after harvest -- into renewable fuels, chemicals and plastics. Metal-metal oxide catalysts are central to reactions for upgrading petrochemicals, fine chemicals, pharmaceuticals and biomass.
    - The research team's strategy capitalized on the dynamic nature of **platinum-tungsten oxide catalysts** to convert these starting materials into products up to 10 times faster than traditional methods.
    https://www.sciencedaily.com/releases/2022/03/220316132703.htm

Fuel Cells/Hydrogen Economy Related Articles:

- **China to roll out 50,000 fuel cell vehicles by 2025, eyes related infrastructure**
    - After acing the EV mobility, China now aiming at H_2 fuel cell vehicles. China's newly released H_2 fuel cell mobility roadmap, under which it aims to rollout 50,000 fuel cell vehicles by 2025.
    - Also aiming to develop H_2 refueling infrastructure in Belt and Road countries.
    https://auto.hindustantimes.com/auto/electric-vehicles/china-to-roll-out-50-000-fuel-cell-vehicles-by-2025-eyes-related-infrastructure-41648093846714.html
- **EDF Renewables eyes 50MW solar farm to power green hydrogen development in Teesside**
    - EDF Renewables is looking to develop 50MW solar farm to power a new green H_2 production facility in Teesside. Planning to develop a 30-50MW electrolyser, which will subsequently be scaled to over 500MW in line with emerging demand.
    https://www.solarpowerportal.co.uk/news/edf_renewables_eyes_50mw_solar_farm_to_power_green_hydrogen_development_in
- **Cost of green hydrogen reduced by Hyasta electrolyzer efficiency**
    - The R&D confirmed the "capillary-fed electrolysis cell" achieved a 98% cell energy efficiency.
    - The 98% cell energy efficiency is considerably better than the IRENA's target for 2050.
    https://www.hydrogenfuelnews.com/cost-of-green-hydrogen-3/8551897/
- **Have European blue hydrogen plans ended before they could begin?**
    - As the price tag associated with natural gas in Europe continues to rise, so will the cost associated with using it to produce blue hydrogen. As a result, many are starting to ask if green H_2 might be feasible instead. The demand for H_2 is rising as decarbonization and sustainability targets continue to approach, but it is unclear whether producing it using renewable energy would be enough to meet demand.
    https://www.hydrogenfuelnews.com/blue-hydrogen-europe-plan/8551933/?
- **WPIC: Decarbonizing Trains**

- **Japan JR East -** Start commercial service 2030, with JR East intending to replace 440 diesel trains with hybrid H_2 rolling stock in due course.
- **Canada Pacific:** Ballard 14 PEM fuel cell modules, each 200 kW, to support Canadian Pacific.
- **Talgo Spain:** Ballard 8 PEM fuel cell models to Talgo, a high-speed rail operator in Spain. Trials 2022, commercial operation 2023.
- **United Kingdom:** In the UK, Alstom, H_2-powered Coradia iLint has been in service since 2018. Eversholt Rail, a British train-owner and financier, have announced a MoU for UK's first ever H_2 train fleet. Alstom to design, build, commission & support a fleet of 10 three-car H_2 multi-units. https://platinuminvestment.com/about/60-seconds-in-platinum/2022/03/23?

- **H_2Bus hydrogen-electric bus launches in Europe**
  - Fuel efficiency is the standout feature, Loop Energy says, with the H_2Bus said to require just 10.5 kg of H_2 to achieve more than 400 km (249 miles) of range.
  - The 8m minibus demonstrates the viability of H_2 fuel cell technology in transit vehicles, complete with Loop Energy eFlow technology and H_2 storage tanks. https://www.compositesworld.com/news/h2bus-hydrogen-electric-bus-launches-in-europe
- **Cummins to build fuel-agnostic R&D center in UK**
  - The facility due to open in 2023, is designed to be fuel-agnostic and will enable Cummins to develop and test a wider range of power technologies, including the latest universal engine platforms with variants able to operate on green H_2, renewable natural gas, or sustainable diesel. Installation and testing capability will also extend to H_2 fuel cell and battery electric powertrains. https://www.enginetechnologyinternational.com/news/partnerships-investments-acquisitions/cummins-to-build-fuel-agnostic-rd-center-in-uk.html
- **Ford patents hydrogen-fueled combustion engine**
  - Ford's new patent, is for turbocharged combustion engine running on H_2. The company's engine will be capable of operating across a wide range of air/fuel lambda values. https://auto.hindustantimes.com/auto/news/ford-patents-hydrogen-fueled-combustion-engine-41647764433668.html

Palladium

- **Palladium Prices Return To Earth, But Supply Concerns Remain**
  - After registering a record high earlier this month, palladium prices dropped about 17% early last week. Palladium prices had a sharp correction, as worries over shortage in its supply from major producer Russia came down several notches. Russia accounts for 40% of global palladium mine production.
  - Palladium is a crucial component in automobile catalysts. Russia is the top producer in the world, followed closely by South Africa. https://oilprice.com/Latest-Energy-News/World-News/Palladium-Prices-Return-To-Earth-But-Supply-Concerns-Remain.html
- **Palladium Price Analysis: Two-month-old support line defends XPD/USD bulls above $2,500**
  - Palladium prices fade bounce off multi-day-long support trend line.
  - Bearish MACD, failures to cross 21-DMA keep sellers hopeful.
  - Convergence of 50-DMA, 100-DMA appears tough nut to crack for bears. https://www.fxstreet.com/news/palladium-price-analysis-two-month-old-support-line-defends-xpd-usd-bulls-above-2-500-202203230633
- **What the ETF? Palladium ETF rallies on supply concerns**
  - Commodity ETFs are proving popular among investors, particularly platinum group elements (PGMs) which are essential metals in the modern world, particularly so since the Russian invasion of Ukraine.

- ETF Securities head of distribution Kanish Chugh told Stockhead palladium and platinum have been the major interest point for investors since Russia invaded Ukraine. “While obscure, they are crucial for making cars and semiconductors — two politically sensitive industries which are big employers in the US and Germany,” he said. “Russia accounts for 40% of global mined palladium and 10% of global platinum. “The biggest Pd mining company is Nornickel, the chairman of which recently had his superyacht confiscated.”
  https://stockhead.com.au/experts/what-the-etf-palladium-etf-rallies-on-supply-concerns/

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

- **Ruthenium: Extending Copper Interconnects To 2nm**
  - Transistor scaling is reaching a tipping point at 2nm, where a significant architectural change is being evaluated for copper interconnects, a move that would reconfigure the way power is delivered to transistors. This approach relies on so-called buried power rails (BPRs) and backside power distribution, leaving the front-side interconnects to carry signals.
  - Chipmakers also are likely to replace copper at some levels with ruthenium or molybdenum as soon as the 2nm node. Other, more modest changes will extend copper damascene interconnects using low-resistance via processes, alternative liners, and fully aligned via approaches.
    https://semiengineering.com/extending-copper-interconnects-to-2nm/
- **Rhodium: How to optimize precious metal usage in catalytic converters**
  - A study that tracks structural changes that deactivate and regenerate catalysts suggests ways to improve these important auto parts.
  - They exposed the catalysts to high temperatures & typical exhaust streams, which vary from oxygen rich to oxygen poor during normal engine operation. They showed that oxidizing conditions can cause rhodium nanoparticles to dissolve into the support and form rhodium aluminate, a catalytically inactive material. Reducing conditions help reverse the process. **The study suggests that rhodium usage can be optimized by chemically anchoring the nanoparticles more tightly and by using alloys that resist dissolution.**
    https://cen.acs.org/synthesis/catalysis/optimize-precious-metal-usage-catalytic/100/i10?msclkid=b6d6592ea95e11eca17bcbcc84697414

Clean Energy General News

- **Bipartisan Bill to Ban Uranium Imports from Russia**
  - “Our uranium import dependence is a case study in how our vital domestic minerals supply chains have atrophied to levels that result in a dire national security risk,” said Rich Nolan, President and CEO, National Mining Association. “We are home to the world’s largest fleet of nuclear power plants, significant uranium reserves, and yet we import virtually all of the uranium we use, half of which comes from Russia, Kazakhstan and Uzbekistan.
  - Aggressive action must be taken to address this vulnerability and immediately reinvest in American-sourced, essential mined materials produced under world-leading environmental and labor standards.
  https://stauber.house.gov/media/press-releases/stauber-colleagues-introduce-bipartisan-bill-ban-uranium-exports-russia
- **EVA the next supply chain pinch point for solar**
  - With polysilicon production capacity having been rapidly rolled out after last year’s shortages, China analyst Frank Haugwitz has suggested global manufacturing capability for the ethylene vinyl acetate used on PV panels could struggle to keep pace with what is expected to be another record year of demand for solar.
  - China set for solar demand of up to 90GW this year. The component pinch point caused by a shortage of PV panel raw material was polysilicon in 2021, now is likely ethylene vinyl acetate (EVA) in 2022.

- Global production capacity of the “EVA” material used to seal the solar cells into panels could reach 950-1,050 kilotons this year.
- *Matt: This bodes well for Acidic Acid market (a component of ethylene vinal acetate) which uses Ruthenium and Iridium. The creation of ethylene vinal acetates relies on a Palladium/Gold catalyst.*
https://www.pv-magazine.com/2022/03/17/eva-the-next-supply-chain-pinch-point-for-solar/

- **From Nickel to Cobalt, Chinese Mining Interests in Africa Face Challenges**
  - Chinese nickel giant Tsingshan Holding Group Co wagered that nickel prices would fall, but instead, Russia’s invasion of Ukraine sent the commodity’s trading prices through the roof last week, driven by concerns about disruptions to the Russian company Nornickel, one of the world’s largest suppliers.
  - Earlier this month, a DRC court ordered mining giant China Molybdnenum to suspend operations at its massive Tenke Fungurume cobalt and copper mine until a shareholder dispute is resolved. Congolese President Felix Tshisekedi vowed last year to “clean up” the mining sector and review “infrastructure-for-minerals” deals between the previous government and the Chinese.
  https://www.voanews.com/a/from-nickel-to-cobalt-chinese-mining-interests-in-africa-face-challenges/6489077.html
- **Monolithic fuel cell with power density of 5.6kW/L**
  - An international research group has developed a solid oxide fuel cell that may be used in vehicles. The monolith device has an active cell area of around 18 cm2 and was built through common manufacturing processes. It was found to achieve a high-power density of 5.6 kW/L, which the scientists said is comparable with that of the best performing fuel cells based on ceramic anodes.
  https://www.pv-magazine.com/2022/03/21/monolithic-fuel-cell-with-power-density-of-5-6kw-l/
- **China: Rare Earths Price Stabilization**
  - SMM reports that NdPr neodymium-praseodymium Noxide production capacity will increase during the year. This could also have a calming effect on price trends. However, it is unclear what this means for the export of the raw materials, as demand from Chinese industry is rising massively as a result of the expansion of renewable energies and electromobility, among other things.
  https://rawmaterials.net/china-rare-earths-price-stabilization/
- **LME Aluminum Jumped Over 4% on Low Inventory and Australian Sanctions on Russia**
  - Boosted by Australia’s announcement yesterday that it would immediately ban the export of alumina and bauxite to Russia, LME aluminum moved all the way up today, and rose by 4.69% to $3,539.5/mt as of CST 11:30. SHFE aluminum also gained 2.21% to 23,090 yuan/mt as of the noon on March 21, recording four consecutive days of increase.
  - In the spot market, the spot price of SMM A00 aluminum rose to 22,970-23,010 yuan/mt today.
  https://news.metal.com/newscontent/101782651/LME-Aluminium-Jumped-Over-4-on-Low-Inventory-and-Australian-Sanctions-on-Russia/

BEV / LiB Mineral & Battery Market News

- **LFP to dominate 3TWh global lithium-ion battery market by 2030**
  - LFP will be the dominant battery chemistry over nickel manganese cobalt (NMC) by 2028, in a global market of demand exceeding 3,000GWh by 2030. That’s according to new analysis into the lithium-ion battery manufacturing industry published by Wood Mackenzie Power & Renewables.
  - Safety advantages, long lifecycle and lower costs have led to EV makers starting to accept the trade-off of lower energy density in adopting LFP batteries.
  - *Matt: My base case has 2TWh or LiB demand by 2030. Other mineral constraints like Nd, Cu, Al, Sc, and reduced EV financial incentives in further scale should slow EV penetration further.*
  https://www.energy-storage.news/lfp-to-dominate-3twh-global-lithium-ion-battery-market-by-2030/
- **Elon Musk announces Tesla is working on new manganese battery cell**

  - The CEO reiterated that for the foreseeable future Tesla, like the rest of the industry, will focus on nickel-based chemistries for longer-range vehicles and iron-phosphate for shorter-range vehicles.
  - But Musk added a brief but interesting comment about a manganese-based battery: "I think there's an interesting potential for manganese."
    https://electrek.co/2022/03/22/elon-musk-tesla-working-new-manganese-battery-cell/
- **EU ministers reach broad consensus on batteries regulation**
  - The batteries regulation aims to regulate the entire life cycle of batteries and promote the implementation of a circular economy. The Council's general approach to the regulation retained key elements of the Commission's initial proposal: extending producer responsibility, including recycled materials, reinforcing the due diligence of supply chains, and the battery passport.
    https://www.euractiv.com/section/energy-environment/news/eu-ministers-reach-broad-consensus-on-batteries-regulation/
- **Nickel Prices are Expected to Keep Pulling Back this Week after Extreme Price Moves**
  - The shortage of nickel caused the tight supply of nickel sulphate. If the output of high-grade nickel matte can increase substantially, the tight supply of new energy products and nickel briquette will be alleviated. However, the production of high-grade nickel matte could not meet expectations last week. SHFE and LME both released a series of bearish policies, which will help nickel prices to return to the fundamentals. In this case, the most traded SHFE nickel contract is expected to keep pulling back this week. SHFE nickel prices are expected to fluctuate between 190,000-220,000 yuan/mt this week, and LME nickel prices are expected to move between $35,000-50,000/mt.
    https://news.metal.com/newscontent/101781683/Nickel-Prices-are-Expected-to-Keep-Pulling-Back-this-Week-after-Extreme%C2%A0Price%C2%A0Moves/
- **Why The EV Industry Faces A Global Nickel Shortage**
  - As the EV industry ramps up, it could be hindered by a global shortage of nickel, a key component in most lithium-ion batteries. Tesla recently signed a deal to source nickel from a proposed mine in Minnesota, though mining raises a variety of environmental concerns that EV automakers must grapple with if they want to source battery minerals responsibly. Many also hope that battery recycling technology will scale up quickly enough to make a dent in the problem.
    https://www.youtube.com/watch?v=_836ZXZcfzY
- **EV Range Test Of Various Models Shows Up To 21%-40% Drops In Cold Temps**
  - Four models evaluated
    https://insideevs.com/news/574451/ev-range-test-20-percent-drop-winter/
- **Volkswagen Group joins the Initiative for Responsible Mining Assurance (IRMA)**
  - Since 2021, Volkswagen Group has been the first automotive company to report publicly in a separate report on the group-wide measures for responsible sourcing of 16 raw materials.
    https://batteryindustry.tech/volkswagen-group-joins-the-initiative-for-responsible-mining-assurance-irma/?
- **Volkswagen Unveils Asian Ventures to Secure E-Battery Materials Supply**
  - VW will form joint ventures with Huayou Cobalt and Tsingshan Group to secure nickel and cobalt supplies for EVs in China … to slash costs at a time of surging raw material prices. It will be able to supply raw materials for 160 GWh worth of EV batteries. This corresponds to an annual output of around 120,000 mt of nickel and 15,000 mt of cobalt.
  - *Matt: This agreement is enough for huge ~2.1M EV's/year from a questionable supply chain.*
    https://money.usnews.com/investing/news/articles/2022-03-21/volkswagen-china-says-will-form-ventures-with-huayou-cobalt-tsingshan-group
- **Nickel expert calls on Musk, Farley, others to demand Nickel sourcing in North America**
  - **Elon Musk:** "Well, I'd just like to reemphasize, any mining companies out there, please mine more nickel, OK?" Musk said on the call. "Wherever you are in the world, please mine more nickel, and don't wait for nickel to go back to some long — some high point that you experienced some five years ago or whatever. Go for efficiency, as environmentally friendly, nickel mining at high volume. Tesla will give

you a giant contract for a long period of time if you mine nickel efficiently and in an environmentally sensitive way. So hopefully, this message goes out to all mining companies."
https://www.teslarati.com/nickel-expert-calls-on-musk-farley-demand-nickel-sourcing-in-north-america/

- **Tsingshan inks deals to swap nickel products for LME delivery - state media**
  - Tsingshan Holding Group, the world's second-largest nickel producer, has reached a standstill agreement with banks that they will not close out or make further margin calls on its existing positions on the LME. Tsingshan will reduce the existing positions in a reasonable and orderly manner as soon as market conditions return to normal. It did not mention the length of the standstill period.
  - The company has been at the center of a commodities maelstrom during which both the LME and the Shanghai Futures Exchange halted nickel trading on March 8 because of wild price swings. Nickel futures soared almost three-and-a-half times to USD $101,365/mt in London on March 8, while Shanghai's most-traded nickel contract soared to CNY228,810 (USD $35,882)/mt the same day.
  - Tsingshan has been struggling to pay margin calls to its banks and brokers and it is at risk of losing as much as USD $12 billion should it close out its 200,000-tonne short positions, according to calculations based on extreme pricing, Securities Daily reported on March 9.
  - *Matt: 200ktons, or $12B USD is twice the hedge size as I saw previously reported, and represents 9.5% of global nickel mining output/year. Huge. Who is their trader? Stupid move with Russia invasion risk.*
    https://www.yicaiglobal.com/news/china-tsingshan-reaches-deal-with-banks-not-to-close-out-nickel-positions-rise-margins
- **Battery news roundup: New plants, partnerships**
  - Nth Cycle gets NSF grant, Princeton startup, Wistron Greentech working on new recycling method, Retriev Technologies acquires Battery Solutions, Ascend Elements will handle SK Battery America production scrap, Primobius and Mercedes-Benz partner, Li-Cycle facilities moving forward.
    https://resource-recycling.com/e-scrap/2022/03/24/battery-news-roundup-new-plants-partnerships/
- **Growth area of battery recycling: Aurubis starts test operation in new pilot plant in Hamburg**
  - Processing of black mass from lithium-ion batteries begins in pilot plant
  - Lithium, nickel, cobalt, manganese, and graphite recovered in hydrometallurgical processes
  - Aurubis CEO Roland Harings: "We want to play a leading role in battery recycling"
  - Matt: Aurubis is the copper and e-waste recycle behemoth of the industry, getting into the LiB Recycle industry now as well.
    https://www.aurubis.com/en/media/press-releases/press-releases-2022/growth-area-of-battery-recycling-aurubis-starts-test-operation-in-new-pilot-plant-in-hamburg

Regards –