Weekly Precious Metals News Articles: December 17, 2021

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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 advances as dollar retreats after Fed verdict**
    - Gold gained more than 1% on Thursday, buoyed by weakness in the dollar after the U.S. Federal Reserve sped up the withdrawal of its pandemic-era stimulus in a move largely priced in by bullion investors. The dollar slipped, making gold cheaper for holders of other currencies and helping bullion gain despite a bounce in riskier assets as the Fed prepared to tame rising prices.
    - Apart from a weaker dollar, "there are multiple supportive elements for gold, including geopolitical issues and pent-up physical demand," StoneX analyst Rhona O'Connell said.
    https://www.nasdaq.com/articles/precious-gold-advances-as-dollar-retreats-after-fed-verdict
- **Gold Price Forecast: Bulls stay in charge and eye $1,1810**
    - The Federal Reserve delivered on the expected doubling of the taper pace and said Wednesday it will begin reducing its asset purchases by $30 billion per month starting in January, up from the current $15 billion pace, amid rising inflation and continued recovery in employment. The central bank's Federal Open Market Committee said after its two-day meeting it would cut monthly Treasury securities purchases by $20 billion and agency mortgage-backed securities acquisitions by $10 billion per month.
    https://www.fxstreet.com/news/gold-price-forecast-bulls-stay-in-charge-and-eye-1-1810-202112162150
- **Gold prices end near a 2-week low, extend losses after Fed update**
    - Gold futures notched back-to-back declines Wednesday, settling at their lowest levels in about two weeks, then lost even more ground after the Federal Reserve announced plans to speed up its tapering of bond purchases and raised the potential for three interest-rake hikes next year.
    https://www.marketwatch.com/story/gold-futures-slip-ahead-of-fed-update-11639575766?siteid=msnheadlines

Semiconductor Related Articles (impacting Precious Metals electronics):

- **Semiconductor capex on pace for 34% growth in 2021, says IC Insights**
    - Worldwide semiconductor capex is on track to surge 34% in 2021, its strongest percentage gain since a 41% increase in 2017, according to IC Insights. The US$152.0 billion in outlays this year would also represent a new record high annual amount of spending, surpassing the previous high mark of US$113.1 billion set just last year, IC Insights indicated.
    - TSMC is forecast to account for 57% of the US$53.0 billion in foundry spending this year, IC Insights noted. Samsung is also making significant investments in its foundry operations, as the company continues its effort to lure more leading-edge fabless logic suppliers away from TSMC.

https://www.digitimes.com/news/a20211214PR201.html

- **Intel to build new plant in Malaysia**
    - The US chipmaker intends to invest 30 billion ringgit (US$7.1 billion) shoring up its advanced chip packaging capabilities in Penang state.
    https://www.taipeitimes.com/News/biz/archives/2021/12/14/2003769536
- **TSMC posts 10.2% increase in revenue**
    - Last month's sales were the third-highest in the chipmaker's history, as it continued to benefit from robust demand and tight global supply
    - TSMC the world's largest contract chipmaker, yesterday reported a 10.2 percent month-on-month increase in sales last month, reversing a fall in October.
    https://www.taipeitimes.com/News/biz/archives/2021/12/11/2003769371
- **FPGA industry bets on immortality. Risks suicide.**
    - Responsibility for providing timely delivery of Field Programmable Gate Arrays for use in defense applications is entrusted to a small number of civilians in the industrial base. The entire supply chain relies on an uninterrupted supply of solder columns by a single source subcontractor that provides 90% of America's solder columns. Simply stated, the defense establishment is making a high stakes gamble that a single subcontractor will be in business 5 years from now, or even 30 years from now. The Department of Defense may not agree with decisions originating with the Nation's largest chipmakers including Xilinx, Infineon, Microchip, Honeywell, Teledyne, Texas Instruments and others.
    https://www.topline.tv/MEPTEC9.html

Silver

- **Silver Demand to Surpass 1 Billion in 2021, Reaching 6-Year High**
    - The demand for silver is projected to exceed one billion for the first time in six years, with global silver demand reaching 1.29 Boz in 2021. According to the Silver Institute, demand has risen across the board, from manufacturers of solar panels and electronics to jewelers to investors in physical silver bars and coins, and is showing no signs of slowing in 2022 and beyond thanks to expanding global connectivity. Summa Silver, SilverCrest Metals Inc., First Majestic Silver,Alexco Resources, and Mag Silver Corp stand to benefit from the growing demand for silver.
    https://www.prnewswire.com/news-releases/silver-demand-to-surpass-1-billion-in-2021-reaching-6-year-high-301443764.html
- **India's solar installations more than tripled in 2021**
    - In the first nine months of 2021, India added more than 7.4 GW of solar, a 335% increase compared to the 1.73 GW installed in the same period in 2020.
    - Increased raw materials costs, "severe volatility" in module availability and price, curtailment of power in several Indian states, and high freight charges all added to difficulties for project developers, the report said.
    https://www.renewableenergyworld.com/solar/report-indias-solar-installations-more-than-tripled-in-2021/
- **Chinese PV Industry Brief: A 20 GW wafer factory under construction and more polysilicon capacity**
    - Wafer manufacturer Fuxing New Energy has begun construction on a factory in Fuyao City, Anhui province. The manufacturing facility will have an annual capacity of 20 GW and will produce n-type large-size wafers.
    - *Matt: This 20 GW of added cell capacity is a significant 12% global addition.*
    - Fuxing New Energy is building a wafer factory in Anhui Province and Tongwei is moving forward with its plan to increase polysilicon capacity to 430,000 metric tons by the end of 2023.
    https://www.pv-magazine.com/2021/12/14/chinese-pv-industry-brief-a-20-gw-wafer-factory-under-construction-and-more-polysilicon-capacity/

- **Undersupplied silver to follow base metals into deficit**
    - "The recovery in silver industrial demand from the pandemic will see this segment achieve a new high of 524 million ounces (Moz). In terms of some of the key segments, we estimate that photovoltaic demand will rise by 13% to over 110Moz, a new high and highlighting silver's key role in the green economy," states a press release that accompanied the Silver Institute's Interim Silver Market Review webcast.
    https://www.kitco.com/commentaries/2021-12-10/Undersupplied-silver-to-follow-base-metals-into-deficit.html

Precious Metals Mining:

- **Pt Supplier Amplats gets the thumbs up to pump $245M into life extension of Mototolo mine**
    - AMPLATS had received the thumbs up from its board to pump R3.9 billion ($245M) into the life extension of its Mototolo mine.
    - The project, which involves sinking a new shaft, will expand Mototolo's life beyond 30 years, with production forecast to be 250 000 PGM ounces per year.
    https://www.iol.co.za/business-report/companies/platinum-supplier-amplats-gets-the-thumbs-up-to-pump-r39-billion-into-life-extension-of-mototolo-mine-6e4e83c9-51b0-45ff-85de-cc6161307e77
- **S. African miner Sibanye cuts annual gold output target**
    - South African gold and platinum group metals (PGM) miner Sibanye Stillwater SSWJ.J has cut its yearly production target as it had to close down some operations at its mines due to fatal accidents and safety audits, it said on Wednesday.
    - The company has said that its 2021 gold production will be at the lower end of its forecast of between 884,000 ounces and 948,000 ounces with the all-in sustaining cost - a metric used to calculate overall cost of gold mining - at around $1,742 per ounce.
    - Its PGM production however will be within the forecast range despite one of the shafts at its mine being closed down to attend to safety issues, the company said.
    https://www.nasdaq.com/articles/s.african-miner-sibanye-cuts-annual-gold-output-target
- **Minimum emission standards will 'cost' (S. African Power Co.) Eskom thousands of megawatts**
    - But this is estimated to cost Eskom over R300 billion and will cost the national grid 16,000 megawatts of installed coal-fired capacity. Matt: This is 32% of the Eskom grid.
    https://www.citizen.co.za/news/south-africa/government/2943772/minimum-emission-standards-will-cost-eskom-thousands-of-megawatts/
- **Illegal gold mining continues to harm Amazon ecosystem**
    - A major intervention against a global hotspot for illegal river gold mining proved to be only narrowly effective at halting environmental degradation in the Madre de Dios region of Peru, according to new research that will be presented on Wednesday, 15 December at AGU Fall Meeting 2021.
    https://phys.org/news/2021-12-illegal-gold-amazon-ecosystem.html
- **Nornickel and Russian Platinum Kick Off Joint Operations in Norilsk**
    - Nornickel announces that the Group's entities have signed a number of service contracts with Chernogorskaya Mining Company, part of the Russian Platinum Group, to provide Chernogorskaya with power, transportation and logistics services.
    - The agreement is a follow-up to the operating partnership agreement in the Norilsk Industrial District between Nornickel and Russian Platinum signed in July 2020.
    - The service agreements are signed by a number of Nornickel's infrastructure companies for five years until late 2026, and includes the supply of electricity, gas, oil products, railway and river transport services, as well as transshipment of cargo at the ports of Dudinka, Krasnoyarsk, Lesosibirsk, Arkhangelsk and Murmansk.
    https://markets.businessinsider.com/news/stocks/nornickel-and-russian-platinum-kick-off-joint-operations-in-norilsk-1031018871

E-Waste & Precious Metals Recycle Related:

- **A hot approach to mining urban waste for precious metals**
    - The flash Joule heating process heats waste materials to 3,127° C in milliseconds with a jolt of electricity, vaporizing the precious metals. The vapors are transported from the flash chamber under vacuum to another vessel, a cold trap, where they condense into their constituent metals.
    - The process detailed in Nature Communications is also energy-conserving: it consumes about 939 kWh/ton of material processed, 80 times less energy than commercial smelting furnaces and 500 times less than laboratory tube furnaces. Over 60% of gold in a sample, and over 80% of silver, palladium and rhodium can be recovered.
    https://insights.globalspec.com/article/17775/video-a-hot-approach-to-mining-urban-waste-for-precious-metals
- **Glencore boosts gold and copper recovery from e-scrap last year**
    - Glencore harvested nearly 100,000 pounds of precious metals and 60 million pounds of copper from electronic scrap last year, according to the company's 2021 sustainability report.
    - The metals mining and refining giant recovered 27,000 metric tons of copper, 132,000 ounces of gold, 1.3 million ounces of silver, 16,000 ounces of palladium and 5,000 ounces of platinum from e-scrap in 2020, the report notes.
    https://resource-recycling.com/e-scrap/2021/12/16/glencore-boosts-gold-and-copper-recovery-from-e-scrap-last-year/?
- **E-waste recycling emits emerging synthetic antioxidants**
    - Manufacturers add synthetic antioxidants to plastics, rubbers and other polymers to make them last longer. However, the health effects of these compounds, and how readily they migrate into the environment, are largely unknown. Now, researchers have detected a broad range of emerging synthetic antioxidants, called hindered phenol and sulfur antioxidants, in dust from e-waste recycling workshops, possibly posing risks for the workers inside.
    https://www.sciencedaily.com/releases/2021/12/211215082043.htm
- **A Scrap Life: Episode 24 | Matt Watson of Precious Metals Commodity Management, LLC**
    - On this episode of A Scrap Life, Brett talks with Matt Watson, founder and president of Precious Metals Commodity Management, LLC about how solar is affecting different metals markets, the push for greener mining techniques and the importance of recycling metals already extracted.
    https://umrecycling.com/a-scrap-life/
    https://www.youtube.com/watch?v=lZ2rt4Ch4nQ
- **The Future of Mobility & Automotive Recycling: An Update on Battery Recycling & Outlook for Clean Energy Trends – By Becky Berube**
    - The bottom line is that it is a great time to be in recycling. These critical technology metals will be in demand and auto recyclers will have a continuous supply. The prices for these metals are likely to climb over the long term. Since recycling has a lower carbon footprint than mining, many OEMs get higher credits for using recycled ounces than mined ounces. This is more good news for auto recyclers.
    https://www.rpowersource.com/2021/12/the-future-of-mobility-automotive-recycling-an-update-on-battery-recycling-outlook-on-clean-energy-trends/
- **False dawn for lithium-ion battery recycling?**
    - Li-ion recycling will have a limited impact on battery supply chain pressures to 2030
    https://www.woodmac.com/news/opinion/false-dawn-for-lithium-ion-battery-recycling/Full-report/

Platinum

- **Taking charge of the future of PGMs with demand-centric Venture Building**

- That's the mission of our Market Development team, to deliver a holistic ecosystem of programmes that explore and expand on opportunities to innovate within the PGMs arena, by taking ideas and concepts, before nurturing them through commercialisation to engineering and sustained scale.
- The unique physical and chemical properties of PGMs – platinum, palladium, rhodium, ruthenium, iridium and osmium – mean they are hugely versatile and can be used in various applications, spanning multiple industries. As well as their appeal in jewellery and established role in catalytic converters for transportation, they have an important job to do when it comes to enabling the development of pioneering technologies behind key global shifts such as the clean energy transition. https://www.angloamericanplatinum.com/products-services-and-development/pgm-market-development/stories/taking-charge-of-the-future-of-pgms-with-demand-centric-venture-building

- **Global platinum production to rebound in 2021**
    - "The largest increase in platinum demand was seen within the automotive sector, at 27.1% growth. This was largely used for manufacturing autocatalysts, a system built into car exhausts that reduces dangerous exhaust pollutants. However, this growth in demand is expected to slow between 2021 and 2025, expanding at a compound annual growth rate (CAGR) of just 2.2% due to the gradual replacement of internal combustible engine (ICE) cars with electric vehicles (EVs). Jewelry fabrication was another key contributor to 2021's platinum recovery, with demand growing by 5.3%." https://www.miningreview.com/platinum-group-metals/global-platinum-production-to-rebound-in-2021/

Fuel Cells/Hydrogen Economy Related Articles:

- **Toyota pushes forward with hydrogen cars with GR Yaris**
    - Toyota (TYO stock symbol 7203) is doubling down on its commitment to hydrogen cars and other H2 powered vehicles by introducing its new GR Yaris to racing, following its Corolla Sport launch earlier this year. The GR Yaris and Corolla Sport aren't intended to be simply a faster version of Toyota's Mirai hydrogen car. Instead, they are H2 combustion vehicles, instead of being fuel cell cars like the Mirai. In this way, they are closer to traditional petroleum burning cars in that they burn their fuel, though that fuel just happens to burn without producing greenhouse gas emissions. https://www.hydrogenfuelnews.com/hydrogen-cars-gr-yaris/8550512/
- **Nikola Touts Battery-Electric, Fuel-Cell Truck Progress**
    - The first pre-series Nikola Tre battery-electric Class 8 trucks have come off the line at the company's Coolidge, Arizona, facility and will soon be delivered to customers, while its first fuel-cell-electric test trucks are shortly due to hit the streets.
    - *Matt: Finally, Nikola who has a significant order backlog for trucks in the US and EU is building seven lead beta units for testing and debugging. Big step.* https://www.truckinginfo.com/10157927/nikola-touts-battery-electric-fuel-cell-truck-progress
- **Aurizon and Anglo American partner for hydrogen powered trains**
    - Aurizon, an Australian rail freight operator, is working with the Anglo American global mining firm for the purpose of using hydrogen powered trains using the miner's H2 fuel cell technology for bulk freight. The companies have said that they're conducting a feasibility study for assessing Anglo American's H2 fuel cell and battery hybrid power units for replacing diesel engines in bulk freight rail operations. https://www.hydrogenfuelnews.com/hydrogen-powered-trains-aurizon/8550503/
- **Advent and BASF sign agreement related to manufacture of advanced fuel-cell membranes**
    - Advent Technologies and BASF New Business GmbH recently signed a Memorandum of Understanding. The agreement aims to develop and increase the manufacturing scale of advanced fuel cell membranes designed for long-term operations under extreme conditions.

BASF intends to improve the long-term stability of its Celtec membrane and to increase production capacity with advanced technical capabilities to enable further improved and competitive Advent fuel cell systems and membrane electrode assembly.
https://www.chemengonline.com/advent-and-basf-sign-agreement-related-to-manufacture-of-advanced-fuel-cell-membranes/?printmode=1

- **Cable free: work starts on pipes to ship hydrogen, not power, from Siemens Gamesa wind turbines**
    - Work has begun to develop piping for a new breed of offshore wind turbines that will pump green hydrogen rather than power as part of a wider push by Siemens Gamesa to integrate electrolysers with its technology.
    - The OEM giant will work with thermoplastic composite pipe specialist Strohm on hydrogen transfer and storage systems that can replace the power export cables currently deployed with offshore wind turbines.
    https://www.rechargenews.com/wind/cable-free-work-starts-on-pipes-to-ship-hydrogen-not-power-from-siemens-gamesa-wind-turbines/2-1-1117063
- **National Grid and Town of Hempstead (Long Island NY) to Develop One of the First Green Hydrogen Blending Projects in the Country**
    - National Grid and the Town of Hempstead, announced a joint project to build one of the first and largest clean hydrogen projects in the country, to decarbonize networks. The HyGrid Project located in Point Lookout on Long Island will blend green H_2 into the existing distribution system to heat approximately 800 homes and fuel 10 municipal vehicles.
    https://finance.yahoo.com/news/national-grid-town-hempstead-develop-180107953.html
- **Hydrogen fuel cell locomotive from Canadian Pacific to roll out before 2022**
    - Canadian Pacific announced that it will be debuting its first hydrogen fuel cell locomotive before the end of 2021. The hydrogen fuel cell locomotive consists of an SD40-2F, which was converted to run on H2 power and is therefore nicknamed the H2 0EL. The company is calling it a “hydrogen zero-emissions locomotive”, and it will be operating under its own power before the end of this month, according to Canadian Pacific CEO Keith Creel.
    https://www.hydrogenfuelnews.com/fuel-cell-locomotive-cp/8550386/
- **Lexus unveils new hydrogen engine recreational vehicle concept**
    - The H2-powered ROV is meant to be a step toward Lexus’ intention to keep up the pleasure of off-roading, but within the bounds of a low-carbon future. The 1.0-liter H2 engine works in the same way as a conventional gasoline-powered one. That said, instead of a petroleum gas tank, it features a high-pressure compressed H2 tank. This allows precision delivery of the H2 through a direct injector.
    https://www.hydrogenfuelnews.com/hydrogen-engine-lexus-rov/8550418/
- **Investment from United Airlines to purchase hydrogen-electric engines**
    - United CEO Scott Kirby says hydrogen-electric engines are “one of the most promising paths to zero-emission air travel for smaller aircraft.” While there is excitement in some quarters regarding the potential of new, lower-emission forms of aviation, some within the industry are more circumspect about how such innovations will develop over the coming years.
    https://www.cnbc.com/2021/12/14/investment-from-united-to-purchase-hydrogen-electric-engines-.html

Palladium

- **Palladium Price Analysis: 20-DMA triggers XPD/USD pullback from weekly top**
    - Palladium consolidates recent gains after four-day uptrend, refreshes intraday low at the latest.

- 10-DMA, bullish MACD signals challenge sellers, five-month-old resistance line adds to the upside filters.
  https://www.fxstreet.com/news/palladium-price-analysis-20-dma-triggers-xpd-usd-pullback-from-weekly-top-202112080655
- **OSU research pushes auto industry closer to clean cars powered by direct ethanol fuel cells**
  - To tackle those problems the research team, which also included OSU's Maoyu Wang and scientists from Southern University of Science and Technology in China and Argonne National Laboratory, developed high-performance palladium alloy catalysts that use less of the precious metal than current palladium-based catalysts.
  - "Our team showed that introducing fluorine atoms into palladium-nitrogen-carbon catalysts modifies the environment around the palladium, and that improves both activity and durability for two important reactions in the cell: the ethanol oxidation reaction and the oxygen reduction reaction," Feng said. "Advanced synchrotron X-ray spectroscopy characterizations made at Argonne suggest that fluorine atom introduction creates a more nitrogen-rich palladium surface, which is favorable for catalysis. Durability is enhanced by inhibiting palladium migration and decreasing carbon corrosion."
    https://theworldlink.com/news/local/osu-research-pushes-auto-industry-closer-to-clean-cars-powered-by-direct-ethanol-fuel-cells/article_914b8d74-56af-11ec-908e-a74398360870.html
- **Mobility Notes Monthly: December 2021**
  - A report from the International Council on Clean Transportation shows that Euro 6d regulations have significantly reduced tailpipe emissions on road, but legacy fleet and high emitters contribute disproportionately to NOx and particulates. Emissions from over 130,000 vehicles in Brussels were measured using remote sensing. It was found that Euro 6d diesels subject to RDE testing are emitting up to 74% lower NOx compared to previous Euro 6 standards. However, Euro 4 vehicles, which accounted for 12% of the vehicles measured, contributed 26% of the total NOx and 47% of PM.
    https://mobilitynotes.com/wp-content/uploads/2021/12/MobilityNews-5-Min-Monthly-December-2021.pdfx
- **Biden to Toughen Auto Emissions Limits to Counter Climate Change**
  - The Biden administration is preparing to impose more stringent limits on car and truck emissions in an effort to clamp down on a top U.S. source of the greenhouse gases fueling climate change. The standards, set to govern passenger cars and light trucks from model years 2023 through 2026, will reverse a Trump-era move to relax the mandates and are set to be issued within days, according to three people familiar with the matter.
    https://www.bloombergquint.com/business/biden-to-toughen-auto-emissions-limits-to-counter-climate-change
- **Vehicle emission declines decreased deaths, study finds**
  - In a study published Wednesday in the Proceedings of the National Academy of Sciences, the researchers also concluded that if vehicles continued to emit air pollution at 2008 levels throughout the time period, the death total in 2017 would have been 2.4 times higher.
    https://apnews.com/article/science-health-business-environment-public-health-012330c14ee7deb83907bf1e42768560

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

- **Researchers develop advanced catalysts for clean hydrogen production**
  - An active phase of a catalyst based on amorphous iridium hydroxide exhibited efficiency 150 times that of its original perovskite structure and close to three orders of magnitude better than the common commercial catalyst, iridium oxide.
    https://phys.org/news/2021-12-advanced-catalysts-hydrogen-production.html
- **Ruthenium and Platinum PVD: MRAM Related Articles:**
  - IBM to reveal the world's first 14nm STT-MRAM node
    https://www.mram-info.com/ibm-reveal-worlds-first-14nm-stt-mram-node

- Samsung improves its MRAM performance, will expand its target applications - Samsung Electronics announced that it has started to mass produce its first embedded MRAM, made using the company's 28nm FD-SOI process. The company now announced that it managed to improve the MTJ function of its MRAM, which makes it suitable for more applications. https://www.mram-info.com/samsung-improves-its-mram-performance-will-expand-its-target-applications
- Everspin reports excellet financial results for Q3 2021 - Revenues increased 46.5% from last year to reach $14.8 million, and the company reported a record net income of $880k. https://www.mram-info.com/everspin-reports-excellet-financial-results-q3-2021

Clean Energy General News (New Section)

- **Solar Ammonia for Shipping**
    - **Part 1** - Solar Ammonia In A Climate Crisis: Almost Certainly The Most Affordable Of All Low-Carbon Shipping Fuels.
        - In parts one and two of this discussion, we have delved into the environmental impacts of biofuels and ammonia. https://cleantechnica.com/2021/12/08/solar-ammonia-in-a-climate-crisis-almost-certainly-the-most-affordable-of-all-low-carbon-shipping-fuels/
    - **Part 2** - Solar Ammonia for Shipping: https://cleantechnica.com/2021/12/09/solar-ammonia-for-shipping/
    - **Part 3** – Solar Ammonia for Shipping:
        - In this third part, we will explain how to synthesize ammonia using electrolysis and continue with a discussion on capacity factors, wrapping up with a review of the main ammonia costs. https://cleantechnica.com/2021/12/11/solar-ammonia-in-a-climate-crisis-electrolysis-is-no-barrier-to-low-cost-renewable-ammonia/
    - **Part 4** – Still pending
        - We will discuss other implementation considerations of ammonia-powered ships, compare costs with biofuels and bunker fuels, and provide a high-level summary of the entire topic.
- **The Hydrogen Stream: Longi wants to reach (Alkaline) electrolyzer capacity of 2 GW by 2023, and China wants to add 1.5 GW**
    - Longi Green Energy reportedly plans to build 1.5 GW of production capacity of electrolyzers next year, up from 500 MW today, to account for 60+% of global electrolyzer installations next year.
    - U.S.-based Air Products has awarded Germany's Thyssenkrupp Uhde Chlorine Engineers a contract to supply a more than 2 GW (Alkaline) electrolysis plant for a green hydrogen project at Saudi Arabia's new city, Neom which will produce hydrogen to be synthesized into carbon-free." The start of production is scheduled for 2026. https://www.pv-magazine.com/2021/12/14/the-hydrogen-stream-longi-wants-to-reach-electrolyzer-capacity-of-2-gw-by-2023/
- **Copper demand set to double over 30 years, as majors scramble for supply**
    - The copper price has more than doubled since April last year and M&A is picking up pace as majors like BHP forecast a doubling of copper demand in the next 30 years.
    - Double demand over 30 years. When you consider prices hit all-time highs and LME stockpiles fell to 47-year lows this year, that would be a serious trend to watch. https://stockhead.com.au/resources/copper-demand-set-to-double-over-30-years-as-majors-scramble-for-supply/
- **Spain to invest 6.9 bln euros in renewables, green hydrogen, energy storage**
    - Spain will allocate 6.9 billion euros ($7.8 billion) to renewables, green hydrogen and energy storage in the next two years and aims to attract another 9.45 billion euros in private funding under its COVID-19 recovery plan, the government said on Tuesday.

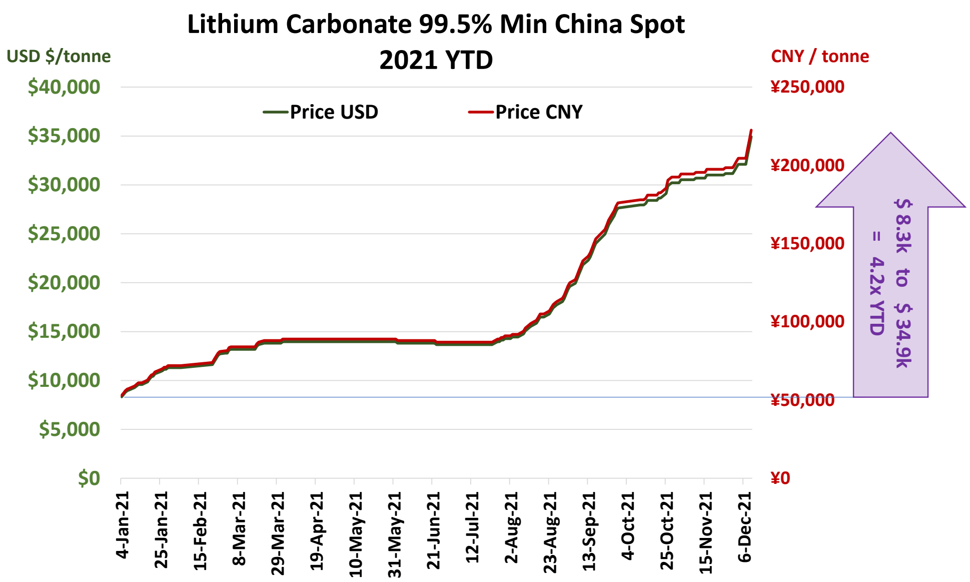
https://www.reuters.com/markets/commodities/spain-invest-69-bln-euros-renewables-green-hydrogen-energy-storage-2021-12-14/

BEV / LiB Battery Market News

- **Solid-State EV Battery Plot Thickens As GM Inks Deal With POSCO**
    - GM sharpens its lithium-ion EV battery knives with POSCO Chemical, while also taking a stab at up-and-coming solid-state technology. https://cleantechnica.com/2021/12/06/solid-state-ev-battery-plot-thickens-as-gm-inks-deal-with-posco/
- **Ford CEO says automaker needs EV batteries more than semiconductor chips as electric F-150 reservations hit 200,000 units**
    - Ford needs batteries for its electric vehicles more than semiconductor chips, CEO Jim Farley told CNBC's Jim Cramer on Thursday. His comments follow the Detroit automaker shutting down customer reservations for an upcoming electric version of the F-150 after they hit 200,000 units.
    - The electric F-150 Lightning is scheduled to go on sale in the spring. https://www.cnbc.com/2021/12/09/ford-needs-ev-batteries-more-than-semiconductor-chips-ceo-says.html
- **Tsingshan starts producing EV battery raw material nickel matte in Indonesia**
    - Making matte from stainless steel raw material nickel pig iron (NPI) and then nickel sulphate provides an alternative route to battery-grade nickel to the high-pressure acid leach (HPAL) process also being used in Indonesia. Tsingshan had said in March it planned to sell 60,000 tonnes of matte to Huayou and another 40,000 tonnes to CNGR within a year of first production. https://www.mining.com/web/tsingshan-starts-producing-ev-battery-raw-material-nickel-matte-in-indonesia/
- **Stellantis CEO says EV cost burden is 'beyond the limits' for automakers**
    - Stellantis NV Chief Executive Carlos Tavares said external pressure on automakers to accelerate the shift to electric vehicles potentially threatens jobs and vehicle quality as producers struggle to manage the higher costs of building EVs. Governments and investors want car manufacturers to speed up the transition to EVs, but the costs are "beyond the limits" of what the auto industry can sustain, Tavares said in an interview at the Reuters Next conference released Wednesday. https://www.reuters.com/business/autos-transportation/stellantis-ceo-says-ev-cost-burden-is-beyond-limits-automakers-2021-12-01/
- **A matter of class in the nickel market**
    - The primary nickel market could swing back to surplus in 2022, but a structural deficit in the Class 1 market may remain sticky. This, compounded with low exchange inventories, suggests that elevated prices may be here to stay.
    - Prices recover on supply and demand dislocation: The Ni market has rebounded strongly from its March/April lows as supply growth has been weaker-than-expected while demand has picked up. Prices tentatively broke out above US$20,000/t in 4Q21 with the continuous drawdown in reportable inventories after the market unexpectedly slipped into deficit. **This is particularly the case for the Class 1 market, which is witnessing a structural deficit.**
    - Massive supply disruptions lead to slower supply growth: Expectations of strong supply growth were misplaced chiefly due to significant disruptions. **Over the second half of the year, there has been a significant number of unexpected disturbances in ex-NPI (nickel pig iron) operations that have resulted in more than 100kt of supply losses.** Major producers, including Vale and Norilsk, both reported lower production. https://think-ing-com.cdn.ampproject.org/c/s/think.ing.com/amp/article/commodities-a-matter-of-class-in-the-nickel-market/
- **Volkswagen Group and 24M Technologies to partner on next-gen EV battery manufacturing**
    - Volkswagen Group and 24M Technologies, Inc. have announced they have entered into a strategic partnership to manufacture next-generation lithium-ion EV batteries using the 24M SemiSolid™

platform. The partnership is focused on the development of production technology for SemiSolidTM battery cells for use in VWAG electric vehicles.
https://batteryindustry.tech/volkswagen-group-and-24m-technologies-to-partner-on-next-gen-ev-battery-manufacturing/?

- **Cobalt prices expected to stabilize in 2022**
    - "We think prices are near their peak as we expect production increases in 2022, combined with weaker than expected demand from consumer electrics, due to semiconductor shortages, plus the surge in LFP demand, to weigh on prices."
    https://www.mining.com/cobalt-prices-expected-to-stabilize-in-2022-fastmarkets/
- **Lithium Prices Soar, Turbocharged By Electric-Vehicle Demand and Scant Supply**
    - The lithium price surge is setting off a scramble for supply and fueling fears about long-term battery metals shortages. Lithium prices are rising at their fastest pace in years, setting off a race to secure supplies and fueling worries about long-term shortages of a vital ingredient in the rechargeable batteries that power everything from electric vehicles to smartphones.
    https://www.wsj.com/articles/lithium-prices-soar-turbocharged-by-electric-vehicle-demand-and-scant-supply-11639334956?st=qaupgr1lf53gsjl&reflink=desktopwebshare_linkedin
    *Matt: Lithium hitting all-time highs. From $8,321/t in Jan. 2021 to $34,933 Dec 13, 2021 (**+4.2x YTD**). Nothing to see here LOL. LiB $/kWh are increasing with this level of commodity price climbs.*

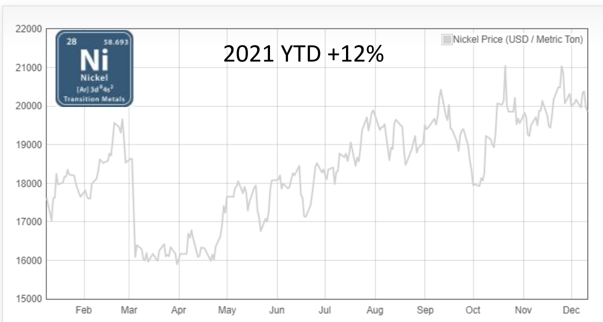


Matt: Cobalt +90%, Nickel +12% and Copper +20% YTD as well.

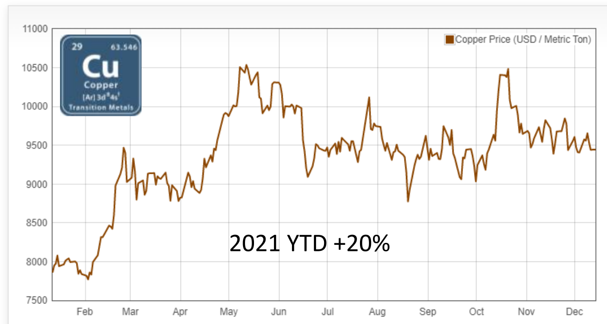
Lithium Prices for the Last Year

Cobalt Prices for the Last Year

Nickel Prices for the Last Year



Copper Prices for the Last Year



Regards –