



Weekly Precious Metals News Articles: February 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 Prices Whipsaw Falling Following an Initial Surge**
 - Gold prices moved higher but here unable to hold on to gains. Geopolitical risks continue to help buoy the yellow metal. The attack by Russia on Ukraine sent shock waves around the globe, but safe-haven products seemed to brush off those risks, following word from the White House that they would levy sanctions but not cut Russia off Swift.
 - Jobless claims were stronger than expected and totaled 232,000 for the week ended February 19, below the 235,000 expected. Bond yields whipsawed and moved lower, following the jobless claims data and softer than expected Personal Consumption Expenditures information released on Thursday's GDP report released by the U.S. Commerce Department.
 - It appears that President Biden and the EU are holding a few cards in their hands to escalate the sanctions and eventually crush the Russian economy.
<https://www.fxempire.com/forecasts/article/gold-prices-whipsaw-falling-following-an-initial-surge-911567>
- **Gold Price Analysis: Falls back under \$1,900 after setting fresh multi-month highs near-\$1,910**
 - Gold hit fresh multi-month highs near the \$1,910 on Monday but has since dropped back under the \$1,900 handle. Geopolitics remains the wildcard that could stoke surprise volatility in either a bullish or bearish direction.
<https://www.fxstreet.com/news/gold-price-analysis-xau-usd-fells-back-under-1900-after-setting-fresh-multi-month-highs-near-1910-202202211352>
- **States consider holding gold as geopolitical and inflation fears rise**
 - Metals markets jumped on inflation data and geopolitical concerns centering on Russia. It's possible that the latest bout of Russia fear-mongering will once again turn out to be overblown. The Russian invasion of Ukraine said likely to take place this week by Biden administration officials hasn't happened as of this recording.
<https://www.fxstreet.com/analysis/states-consider-holding-gold-as-geopolitical-and-inflation-fears-rise-202202181803>
- **Gold consumption soars during Lunar New Year**
 - During the Spring Festival break in the first week of February, gold jewelry consumption in Shanghai reached 1.1 billion yuan (US\$171.8mil or RM718.66mil), up 12% year-on-year. As it is the Year of the Tiger, tiger-themed gold products and heritage gold jewelry were popular, the Shanghai Gold Jewelry Association said. In the first 15 days of the first month of the Chinese lunar calendar, consumption of gold in China went up by 12% year-on-year, the council said.

<https://www.thestar.com.my/business/business-news/2022/02/18/gold-consumption-soars-during-lunar-new-year>

Semiconductor Related Articles (impacting Precious Metals electronics):

- **Unimicron warns of tight capacity**
 - Unimicron, a critical player in making semiconductors, said demand for high-performance computing chips is so strong that production capacity would be strained for the next 5-years.
 - “Customers are now talking to us about orders for 2027, 2028, 2029 and 2030,” Shen said. “Lead time for new equipment now can be two to three years.”
<https://www.taipeitimes.com/News/biz/archives/2022/02/25/2003773714>
- **Chip shortage won't end in 2022, says AMD CEO Lisa Su**
 - The semiconductor shortage roiling industries from automakers Ford and GM to industrial products maker 3M is unlikely to end in 2022, hints one of the foremost minds in the space.
 - "There's tremendous investment that's happening across the semiconductor industry, whether you're talking about on the wafer side or on some of the substrates or the back-end assets. So we are making progress. I do believe that the first half of this year will continue to be quite tight. But the second half of this year, I think things will get a little bit better," AMD CEO Dr. Lisa Su said on Yahoo Finance Live.
<https://www.msn.com/en-us/money/markets/chip-shortage-wont-end-in-2022-says-amd-ceo-lisa-su/ar-AATSJTC?ocid=BingNewsSearch>
- **Global semiconductor sales jump amid shortage**
 - Global computer chip industry sales reached the highest-ever annual total of \$555.9 billion last year, the Semiconductor Industry Association (SIA) reported this week. The figure represents an increase of 26.2% compared to the 2020 total of \$440.4 billion.
 - The association went on to report that the industry shipped a record 1.15 trillion units in 2021 in response to high demand.
<https://www.bisnow.com/national/news/industrial/chip-shortage-spurs-explosive-growth-in-industrial-space-demand-112002>

Silver

- **Dramatic price swings: Gold price sheds \$90, silver price sees sharp reversal as analysts warn of more volatility to come**
 - The precious metals market saw strong gains for most of the day following Russia's full-scale invasion of Ukraine. Gold hit a 1.5-year high of \$1,976.50, and silver saw seven-month highs of \$25.67.
 - However, both metals ended up losing ground and closing the session lower on the day as traders reassessed the situation. April Comex gold futures were last at \$1,903.80, down 0.35% on the day, and March silver was at \$24.21, down 1.40% on the day.
<https://www.kitco.com/news/2022-02-24/Dramatic-price-swings-Gold-price-sheds-90-silver-price-sees-sharp-reversal-as-analysts-warn-of-more-volatility-to-come.html>
- **Here's Why Silver Should Keep Climbing Higher in 2022**
 - It's been a volatile start to the start for most asset classes, with the Nasdaq 100 Index down more than 10% year-to-date, and most growth stocks also remain deep in negative territory. However, among violent correction, precious metals have been giving up ground grudgingly, with gold and silver in positive territory year-to-date. This relative strength is a great sign because both metals tend to perform better when they are above their monthly moving averages and outperform the major market averages.
<https://www.entrepreneur.com/article/419202>
- **Silver Institute February 2022 Newsletter**
 - Global Silver Demand Forecast to Reach a Record 1.112 billion Ounces in 2022
 - Some Silver Deposits Owe Their Formation to Ancient Bacteria

- Five Companies Recently Joined the Silver Institute
- Were 5,000-Year-Old Silver Tubes Really Drinking Straws?
- Silver Helps Connect 'Stretchy' Electronic Components
- Silver and Mussels Team up for Dental Health
- New Laser Method Expands Use of Silver Nanowires
- US Mint Women's Suffrage Coin Wins "Most Historically Significant Coin" Award
<https://www.silverinstitute.org/wp-content/uploads/2022/02/SNFeb2022.pdf>

Precious Metals Mining:

- **Gold mining blast in Burkina Faso kills 59, injures more than 100**
 - Authorities said that the explosion happened in the village of Gbomblora and was believed to be caused by chemicals used to treat gold that were stocked at the site.
 - "The limited regulation of the artisanal and small-scale mining sector contributes to increased risks that can be very dangerous, including the use of explosives which are often smuggled into the country and used illegally," said Marcena Hunter, Sr. Analyst at Swiss think tank Global Initiative.
<https://www.msn.com/en-xl/africa/other/gold-mining-blast-in-burkina-faso-kills-59-injures-more-than-100/ar-AAU9d6b?ocid=BingNewsSearch>
- **Amplats CEO Natascha Viljoen keeps market guessing on Mogalakwena PGM expansion**
 - Amplats' Mogalakwena expansion could deliver about 300,000 ounces a year of platinum group metals (PGMs) – the low end of guidance set down in the project's original scope.
 - Yet there's little certainty on when production will be delivered or indeed if it will be exceeded; or even how CapEx will be phased to develop it. It's a situation that had analysts looking for answers.
<https://www.miningmx.com/top-story/48845-amplats-ceo-natascha-viljoen-keeps-market-guessing-on-mogalakwena-pgm-expansion/>
- **Anglo American Platinum 2021 Net Profit Doubled, Boosted by Higher Prices, Production**
 - The company refined over 5.1 million ounces of platinum group metals during the year compared with 2.7 million in 2020.
 - *Matt: Due to 1) Multiple ACP concentration plant failures & rebuilds, & 2) catch up on the mining WIP that was accumulated, creating a surge in PGM shipments Q2-4, 2021, & 3) high PGM basket prices.*
<https://www.morningstar.com/news/dow-jones/20220221695/anglo-american-platinum-2021-net-profit-doubled-boosted-by-higher-prices-production>
- **Tharisa consolidates mine cash flow after issuing \$25.6m in shares to BEE partners**
 - THARISA, the platinum group metals (PGM) and chrome miner, has bought a 26% stake in subsidiary Tharisa Minerals from its black economic empowerment partners in return for 13.9 million new shares worth \$25.6m (R388m).
<https://www.miningmx.com/trending/48770-tharisa-consolidates-mine-cash-flow-after-issuing-25-6m-in-shares-to-bee-partners/>

E-Waste & Precious Metals Recycle Related:

- **Heraeus Precious Metals developing next-generation recycling technologies for H₂Giga initiative to support hydrogen ramp-up**
 - As part of the H₂Giga flagship project and as a partner of consortium leader Siemens Energy, Heraeus is developing technology for recovering the precious metals iridium and platinum from components of industrial electrolyzers; a key technology for generating green hydrogen
 - Heraeus is participating in two subprojects of H₂Giga, which are funded by the German Federal Ministry of Education and Research
https://www.heraeus.com/en/hpm/hpm_news/2022_hpm_news/h2giga.html
- **In My Opinion: Support a sustainable precious metals supply chain**

- Tanaka, a precious metals company leader explains how recycling companies can build a sustainable supply-chain through consumer awareness.
https://resource-recycling.com/e-scrap/2022/02/24/in-my-opinion-support-a-sustainable-precious-metals-supply-chain/?utm_medium=email&utm_source=internal&utm_campaign=Feb+24+ESN
- **Data shows e-scrap disposal increase in one state**
 - As COVID-19 took hold and e-scrap collection opportunities were canceled, the public began trashing a lot more of their electronics in Washington state, according to recently reported figures.
<https://resource-recycling.com/e-scrap/2021/12/23/data-shows-e-scrap-disposal-increase-in-one-state/>
- **Precious metals market drives Umicore 2021 growth**
<https://resource-recycling.com/e-scrap/2022/02/24/precious-metals-market-drives-umicore-2021-growth/>
- **Catalytic converters: Which vehicles are most at-risk for theft?**
 - According to the American Automobile Association, vehicles that sit higher off the ground, or high-clearance vehicles, are common targets as they allow thieves easier access to converters. These types of vehicles include trucks, SUVs and vans, although buses and delivery vehicles are also at risk.
 - Hybrids, and Toyota Priuses in particular, are also a “major target” as their converters tend to be less worn than those of traditional automobiles, the NICB said. AAA also reported that Priuses carry more “hefty amounts” of precious metals than many other models.
<https://newsnationnow.com/us-news/catalytic-converters-which-vehicles-are-most-at-risk-for-theft/>

Platinum

- **WPIC: NYMEX stock outflows continue to respond to physical market tightness from strong China imports**
 - Physical demand for platinum in China is creating an arbitrage opportunity resulting in stocks flowing away from NYMEX. While this may at first look like negative investment demand it reflects real demand for metal to meet significant platinum imports into China.
[https://platinuminvestment.com/files/937226/WPIC_Platinum_Perspectives_February_2022%20\(Platinum%20China%20imports%20and%20NYMEX\).pdf](https://platinuminvestment.com/files/937226/WPIC_Platinum_Perspectives_February_2022%20(Platinum%20China%20imports%20and%20NYMEX).pdf)

Fuel Cells/Hydrogen Economy Related Articles:

- **Platinum-containing fuel cell bus developments on the rise – WPIC**
 - The WPIC points out that China is at the forefront of the growing hydrogen fuel cell bus market, with a fleet of 5 290, giving it an almost 94% share of the market.
<https://www.miningweekly.com/article/platinum-containing-fuel-cell-bus-developments-on-the-rise-wpic-2022-02-25>
- **Platinum & Ruthenium Catalyst: ADD develops methanol reforming technology for submarine hydrogen fuel cells**
 - South Korea's defense technology development agency has developed the technology of methanol-reforming plant for hydrogen fuel cells that can enhance the operational performance of submarines. It directly produces high-purity hydrogen that can be produced in submarines by reforming methanol.
<https://www.ajudaily.com/view/20220222123548617>
- **Mitsubishi Power to Establish Hydrogen Power Demonstration Facility “Takasago Hydrogen Park” at Takasago Machinery Works -- In-house Structure for Systematic Validation of Hydrogen Value Chain from Production to Power Generation --**
 - Mitsubishi Power, a power solutions brand of Mitsubishi Heavy Industries, Ltd. (MHI), will establish a Takasago Hydrogen Park, the world’s first center for validation of hydrogen-related technologies, from hydrogen production to power generation. The center will be co-located at the gas turbine development and manufacturing facility of MHI’s Takasago Machinery Works in Hyogo Prefecture, to support the commercialization of hydrogen gas

turbines using hydrogen as fuel. The Takasago Hydrogen Park will be successively expanded and developed going forward. Mitsubishi Power has already announced its 30% hydrogen co-firing for large frame gas turbines and will use Takasago Hydrogen Park to commercialize small and large frame gas turbines on a path to 100% hydrogen firing starting in 2025.

- *Matt: Recall one way to burn Green H2 is to run a blend of Natural Gas and Green H2 into next generation grid power turbines. Mitsubishi targets 30% mix for large scale demo, enabling them to optimize their hybrid turbine designs.*
<https://www.mhi.com/news/22022202.html>
- **East Japan Railway unveils hydrogen-powered train**
 - JR East plans to carry out test runs for the new train from late March 2022 and commission it in 2030. These tests will be carried out on the Nanbu Line. Toyota Motor has developed the fuel cell system for the train while the hybrid drive system is provided by Hitachi.
<https://www.railway-technology.com/news/japan-railway-hydrogen-train/>

Palladium

- **Gold, palladium dip as Ukraine conflict triggers volatility**
 - Precious metals off highs scaled on Thursday
 - Palladium down about \$350 from Thursday's peak
 - Gold's upside limited by possible U.S. rate hike- analyst
 - Palladium most exposed amongst the precious complex- analyst
<https://www.reuters.com/markets/europe/gold-rises-with-russia-ukraine-situation-focus-2022-02-25/>
- **Palladium Price Surge Ahead? Russia-Ukraine Crisis Stokes Supply Risks**
 - Russia-Ukraine tensions continue to escalate - will sanctions be imposed?
 - Eastern European giant is the largest producer and exporter of palladium
 - XPD/USD is up over 20% YTD - are markets overpricing future demand?
https://www.dailyfx.com/forex/fundamental/article/special_report/2022/02/18/Palladium-Price-Surge-Ahead-Russia-Ukraine-Crisis-Stokes-Supply-Risks.html

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

- **Rhodium for NOx Emissions: All eyes on the Euro 7 proposal - Mobility Notes**
 - On the (Euro 7) timing, the proposal is still not out and is now expected in summer this year. The final rule could then be expected to be published a year later (so 2023) after stakeholder feedback. The European Automobile Manufacturers Association has submitted that it will require at least a 3-year lead time before the new standards are applied, which suggests model year 2026 at the earliest for Euro 7 application, more likely 2027.
 - NOx Limits Comparison: Euro 6 Gas 60mg/km, Euro 6 Diesel 80mg/km, Euro 7 20-30mg/km
<https://mobilitynotes.com/all-eyes-on-the-euro-7-proposal/>
- **The Hydrogen Stream: CPV-powered PEM electrolyzers for 1.2MW demo in Portugal**
 - Green hydrogen business Fusion Fuel Green and Portuguese self-consumption energy project developer KEME Energy have agreed to install a green hydrogen plant in Sines, Portugal. "The project, which is expected to require a capital investment of €2.54 million, would have an equivalent electrolysis capacity of 1.22MW and produce an estimated 77 tons of green hydrogen per annum,
<https://www.pv-magazine.com/2022/02/22/the-hydrogen-stream-concentrating-solar-powered-pem-electrolyzers-for-1-2mw-demo-in-portugal/>
- **Ir/Pt Catalyst: Energie Steiermark to produce renewable hydrogen PEM electrolyzers**
 - Energie Steiermark has announced that it will be using a PEM Electrolyzer ME450/1400 from H-TEC SYSTEMS for renewable H₂ production as a part of the Renewable Gasfield development project. The electrolyzer itself will begin construction as soon as mid 2022.

https://www.hydrogenfuelnews.com/renewable-hydrogen-energie/8551436/?awt_a=1jpsU&awt_l=LyQiC&awt_m=g3o1jvS4J85DlsU

- **Interaction with a Biomolecule Facilitates the Formation of the Function-Determining Long-Lived Triplet State in a Ruthenium Complex for Photodynamic Therapy**
 - TLD1433 is the first ruthenium (Ru)-based photodynamic therapy (PDT) agent to advance to clinical trials and is currently in a phase II study for treating nonmuscle bladder cancer with PDT.
<https://www.docwirenews.com/gu-oncology-now/interaction-with-a-biomolecule-facilitates-the-formation-of-the-function-determining-long-lived-triplet-state-in-a-ruthenium-complex-for-photodynamic-therapy/>

Clean Energy General News

- **White House Fact Sheet: Securing a Made in America Supply Chain for Critical Minerals**
 - **Nd Neodymium/NdFeB Magnets:** The US Department of Defense's Industrial Base Analysis and Sustainment program has awarded MP Materials \$35 million to separate and process heavy rare earth elements at its facility in Mountain Pass, California, establishing a full end-to-end domestic permanent magnet supply chain.
 - **Lithium Brine S. California Extraction Demonstration Facility:** Berkshire Hathaway Energy Renewables will announce that this spring, they will break ground on a new demonstration facility in Imperial County, California, to test the commercial viability of their sustainable lithium extraction process from geothermal brine as part of a multibillion-dollar investment in sustainable lithium production over the next five years.
 - **LiB Recycle/Nevada Pilot:** Redwood Materials will discuss a pilot, in partnership with Ford and Volvo, for collection and recycling of end-of-life lithium-ion batteries at its Nevada based facilities to extract lithium, cobalt, nickel, and graphite.
 - **Coal Ash Tailings REE Extraction Feasibility:** \$140 million demonstration project funded by the Bipartisan Infrastructure Law to recover rare earth elements and critical minerals from coal ash and other mine waste, reducing the need for new mining.
<https://www.whitehouse.gov/briefing-room/statements-releases/2022/02/22/fact-sheet-securing-a-made-in-america-supply-chain-for-critical-minerals/>
- **Biden voices support for new U.S. mines, if they don't repeat past sins**
 - Joe Biden on Tuesday touted progress by government and private industry to boost American production of minerals used to make electric vehicles and other renewable energy products, but stressed that new mines must benefit host communities and not damage the environment.
<https://www.reuters.com/business/energy/biden-set-tout-us-progress-critical-minerals-production-2022-02-22/>
- **Copper prices could rise to \$20,000 a ton within three years if inventories dry up, BofA says**
 - If copper inventories run out, the metal could exceed \$20,000 a ton by 2024, Bank of America said.
 - Copper prices have surged recently and topped \$10,000 for the first time in a decade last week.
 - Commodities prices have been accelerating, leading to debate about a new 'supercycle'.
<https://markets.businessinsider.com/news/stocks/copper-price-outlook-commodities-supercycle-bank-of-america-2021-5-1030385823>
- **LME Zinc Inventory Dropped to 19-Month Low**
 - The latest LME zinc inventory stood at 147,350 mt, a new low in 19 months.
<https://news.metal.com/newscontent/101756987/LME-Zinc-Inventory-Dropped-to-19-Month-Low/>
- **LME Aluminum Reached a New High in more than 13 Years due to Tense Ukrainian-Russian Geopolitics**
 - Due to the tense Ukrainian-Russian geopolitics, aluminium futures in both domestic and overseas markets rose sharply in early trading today. LME aluminium reached a new high of \$3,342/mt in more than 13 years.

<https://news.metal.com/newscontent/101756723/LME-Aluminium-Reached-a-New-High-in-more-than-13-Years-due-to-Tense-Ukrainian-Russian-Geopolitics/>

- **Demand for High-grade NdFeB Has Been Growing**
 - *Matt: Rare Earth Element Nd. Neodymium-Iron-Boron is the core alloy technology for magnets used in Wind Turbines, EV Motors, motors of all types, and electronics including hard disc drives.*
 - The output of sintered NdFeB raw magnets stood at 207,100 mt, and the output of bonded NdFeB raw magnets was 9,400 mt in 2021. The combined output of NdFeB raw magnets totalled 216,500 mt throughout the year, a year-on-year increase of 16.4%

<https://news.metal.com/newscontent/101755599/Demand-for-High-grade-NdFeB-Has-Been-Growing/>

BEV / LiB Mineral & Battery Market News

- **Chinese EV Battery Giant CATL Looks at Producing in US**
 - CATL has communicated with its US clients, including both new energy and traditional auto manufacturers, on possible modes of co-operation including localized production, according to an investor research note released yesterday in which CATL spoke with 50 investors including Hillhouse Capital, Sequoia Capital and Singaporean sovereign fund Temasek.
- <https://www.yicai.com/news/chinese-ev-battery-giant-catl-looks-at-producing-in-us>
- **Could ESG requirements in the Phosphoric acid supply chain pressure LFP supplies?**
 - LFP expansion will pressure the supply chain, coupled with the increasing ESG focus of battery users, is likely to put extreme pressure on different aspects of the supply chain going forward.
 - We see bottlenecks emerging in at least four different raw and intermediate materials in the LFP supply chain. Phosphoric acid is just one of the areas where we have ID'd a potential major issue.
- <https://www.batterymaterialsreview.com/ourblogs/could-esg-requirements-in-the-phosphoric-acid-supply-chain-pressure-lfp-supplies/>
- **New project to investigate if California's Lithium Valley is world's largest brine source of lithium**
 - Researchers at the Lawrence Berkeley National Laboratory, UC Riverside, and Geologica Geothermal Group have launched a project to both quantify and characterize the lithium resource in the Salton Sea geothermal field in California. (This is just south-east of Palm Springs)
 - .. It is possible to estimate that there's somewhere between 1 and 6 million metric tons of lithium in the so-called Lithium Valley. *Matt: USGS today states global Lithium Known Reserves as 12 Mt, so this is 8% to 50% of today's known global reserves if they can demonstrate low cost extraction tech.*
- <https://www.mining.com/new-project-to-investigate-if-californias-lithium-valley-is-the-worlds-largest-brine-source-of-lithium/>
- **China Starts to Build a New Hydrometallurgy Project with Nickel Production Capacity above 50,000 mt in Indonesia**
 - The construction of GMB hydrometallurgy project of laterite nickel ore undertaken by China MCC 20 Group was started on January 21.
 - This project is located in Tsingshan Industrial Park, Central Sulawesi, Indonesia. It is a hydrometallurgical smelting plant with a production capacity of not less than 50,000 mt of nickel metal and 4,000 mt of cobalt metal.
- <https://news.metal.com/newscontent/101755462/China-Starts-to-Build-a-New-Hydrometallurgy-Project-with-Nickel-Production-Capacity-above-50000-mt-in-Indonesia/>
- **Indonesia to the rescue as nickel supply set to surge - Indonesia set for five-fold increase in battery nickel supply**
 - This week the first shipment of more than 9,500 mt of nickel and cobalt hydroxide (MHP) products left Indonesia's Morowali Port for the port of Ningbo. The shipment from the Huayue project in Indonesia marks the start of what is expected to be a rapid increase in supply of nickel for batteries from the country this year. That's expected to alleviate the rising demand for nickel in electric vehicle

batteries. Demand for more powerful nickel-containing batteries is set to grow by 42% this year, according to Benchmark, as sales of electric vehicles accelerate.

<https://www.benchmarkminerals.com/membership/indonesia-set-for-five-fold-increase-in-battery-nickel-supply/?li>

- **Nickel Mining ESG: Red seas and no fish: Nickel mining takes its toll on Indonesia’s spice islands**

- Fishermen in Indonesia’s Obi Islands blame the nickel mining and smelting industries for the depletion of fish in their traditional fishing grounds. Researchers say the pollution has turned the coastal waters into a “mud puddle” because of the high levels of heavy metal contamination.
- One of the main mining companies there had previously proposed dumping 6 million tons of waste a year into the sea, but backed down following protests.
- Known as deep-sea tailings disposal (DSTD), this type of dumping is already practiced by copper and gold miners in Indonesia — with devastating impacts on local ecosystems, activists say.
- Aris also warned against eating fish harvested from the polluted waters. “The people of Obi Island could die ... from eating the contaminated fish,” he said. “Does it have to take a high mortality rate or mass fish die-off to realize this? We must be aware now and not let it happen.”

<https://news.mongabay.com/2022/02/red-seas-and-no-fish-nickel-mining-takes-its-toll-on-indonesias-spice-islands/>

- **Charts: Copper project pantry bare from 2025**

- Bank of America Global Research analysts say they expect the copper market to flip back to a deficit from 2025 onwards following the completion of the current wave of project buildouts.
- While global copper output is set to grow by 7.7% in 2023, following an expected deficit in 2022, the risks are skewed to the downside, the bank says, given the underperformance of new copper mine builds in recent years.

<https://www.mining.com/in-charts-copper-project-pantry-bare-from-2025/>

- **Nickel Market – Matt’s thoughts**

- Benchmark Minerals thinks Indonesian national Nickel mining to grow 5x in 2022. In a different article they also stated December 2021 the Nickel market flipped to a surplus.
- According to USGS, Indonesia mined 1 Mt Ni last year, so 5Mt this year according to BM. This would more than double global mined Nickel in one year.
- With 21Mt of Known Reserves in Indonesia, this would cut their national production outlook to just 4-years more worth of mining, exhausting known reserves by 2025 without further exploration, or upgrading Indonesian Inferred Resources to Known Reserves. This all seems very unlikely to me.

<https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-nickel.pdf>

	Mine production		Reserves ⁵
	2020	2021 ^e	
United States	16,700	18,000	⁶ 340,000
Australia	169,000	160,000	⁷ 21,000,000
Brazil	77,100	100,000	16,000,000
Canada	167,000	130,000	2,000,000
China	120,000	120,000	2,800,000
Indonesia	771,000	1,000,000	21,000,000
New Caledonia ⁸	200,000	190,000	NA
Philippines	334,000	370,000	4,800,000
Russia	283,000	250,000	7,500,000
Other countries	373,000	410,000	20,000,000
World total (rounded)	2,510,000	2,700,000	>95,000,000

Regards –