

Silver News

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Global Silver Industrial Demand Forecast to Reach New High In 2023

Another Sizable Structural Silver Market Deficit is Expected

Industrial demand for silver is expected to grow 8% to a record high of 632 million ounces (Moz) this year, driven mainly through investment in photovoltaics, power grid and 5G networks, growth in consumer electronics, and rising vehicle production, according to a presentation at the Silver Institute's Annual Silver Industry Dinner in New York City in November.

is expected to see a sizable physical deficit in 2023 for the third consecutive year. At 140 Moz, this will be 45% lower than 2022's all-time high, which is still high by historical standards. Metals Focus believes the deficit will persist in the silver market for the foreseeable future.

Excluding India, which is normalizing from a surge in 2022, global jewelry demand is expected to rise slightly in 2023, while silverware is expected to decline by as much as 12%.

As for physical investment in silver coins and bars, Metals Focus forecasts a 21% drop in 2023 to 263 Moz. Losses have been concentrated in India and Germany. In India, record-high local prices led to profit taking, resulting in a 46% decline. In Germany, investor sentiment was diminished by the Value Added Tax hike on some silver coins at the start of 2023. On the plus side, the resilience of the United States market kept the global total historically high.

Record outflows were predicted for Exchange Traded Funds (ETFs) for the second straight year due to monetary tightening and a boost in yields. Outflows are expected to drop by 40 Moz, about one-third of 2022's record outflows.

On the supply side, global mined silver is anticipated to fall by 2% year-on-year to 820 Moz, driven by lower output from operations in Mexico and Peru. Mexican production is expected to fall by 16 Moz due to a labor strike during the second and third quarters at the Peñasquito mine. Even so, overall production from primary silver mines will still rise this year, driven by the expected ramp-up at the Juanicipio mine in Mexico.

For more information go [here](#).

Silver Supply and Demand

Million ounces	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023E	Year on Year 2022	Year on Year 2023E
Supply													
Mine Production	845	882	897	900	864	851	837	783	829	837	820	1%	-2%
Recycling	179	160	147	146	147	149	148	166	175	179	181	2%	1%
Net Hedging Supply	0	11	2	0	0	0	14	8	0	0	0	na	na
Net Official Sector Sales	2	1	1	1	1	1	1	1	2	2	2	13%	-4%
Total Supply	1,026	1,054	1,047	1,046	1,012	1,000	959	1,006	1,018	1,002	1,002	1%	-2%
Demand													
Industrial	460	450	457	489	526	524	523	509	559	584	632	4%	8%
Photography	44	41	38	35	32	31	31	27	28	27	26	-1%	-4%
Jewelry	187	193	203	189	196	203	202	151	182	235	182	29%	-22%
Silverware	46	53	58	54	59	67	61	31	41	74	39	80%	-47%
Net Physical Investment	301	283	309	213	156	166	187	205	274	333	263	21%	-21%
Net Hedging Demand	29	0	0	12	1	7	0	0	4	18	0	409%	na
Total Demand	1,067	1,021	1,065	992	971	999	1,004	923	1,087	1,270	1,143	17%	-10%
Market Balance	-41	34	-19	55	40	2	-4	36	-81	-253	-140	212%	-45%
Net Investment in ETPs	5	0	-17	54	7	-21	83	331	65	-126	-40	-294%	-68%
Market Balance less ETPs	-46	34	-1	1	33	23	-87	-295	-146	-127	-100	-13%	-21%
Silver Price (US\$/oz, London price)	23.79	19.08	15.68	17.14	17.05	15.71	16.21	20.55	25.14	21.73	23.10	-14%	6%

Source: Metals Focus

Gains in industrial applications will be offset by losses in other key segments, with total silver demand expected to drop by 10% to 1.14 billion ounces. However, total demand remains historically elevated, making the 2023 figure the second highest, according to statistics from research consultancy [Metals Focus](#), whose Managing Director Philip Newman and Director of Mine Supply Sarah Tomlinson presented their findings on the 2023 silver market at the dinner.

Still, despite weaker demand and a slight drop in supply, the silver market

Nanosilver Added to Aluminum Alloy Improves its Industrial Properties

Engineers are always seeking new metal alloys for applications that offer properties such as improved elasticity, lower densities, and higher strength. One of the most popular of these is Metal Matrix Compositions (MMC), a combination of copper, manganese, and aluminum. This alloy also has good machinability, which allows it to be used more easily in industrial fabrication.

However, researchers at two Egyptian universities — [Minia University](#) in Minia and [Higher Technological Institute at 10th of Ramadan City](#), Ramadan — have discovered that by adding nanosilver to this alloy, they not only improve the metal’s strength but also add silver’s antibacterial abilities.

By adding as little as 2% by weight of nanosilver, the researchers found that they saw a 25.8% increase in maximum compression strength. Moreover, they observed a 20.9% increase in firmness. The silver was added by sintering which was a factor in the improved properties.

The action is taking place on the atomic level, the researchers noted in their journal report, [Characterization Of Aluminum Composite Reinforced By Silver Nanoparticles](#). “Silver nanoparticles’ sizes and dislocation distributions have a great effect on sample strength as they form barriers to dislocation movements that result in improved mechanical properties . . . The formation of intermetallic bonding spots has a positive contribution to the strengthening mechanism of mechanical properties.”

Although silver is the world’s most electrically conductive metal, aluminum is fourth behind copper and gold which promises a wider scope of applications for Metal Matrix Compositions that include silver.

Report Forecasts Silver Demand in Key Sectors

Industrial, Jewelry and Silver Expected to See Robust Future

Silver industrial demand is forecast to increase 46 percent through 2033, while jewelry and silverware demand is projected to rise 34 and 30 percent respectively, with all three sectors already accounting for nearly three-quarters of the world’s demand for silver in 2022. The investment sector comes in with a healthy 27 percent of overall silver demand last year, according to a report from [Oxford Economics](#), a London-based economic advisory and consultancy firm.

Their report, *Fabrication Demand Drivers for Silver in the Industrial, Jewelry and Silverware Sectors Through 2033*, was commissioned by the Silver Institute to forecast the growth rates of key sectors of global silver manufacturing demand, and to gain insight into how demand will change over the next decade.

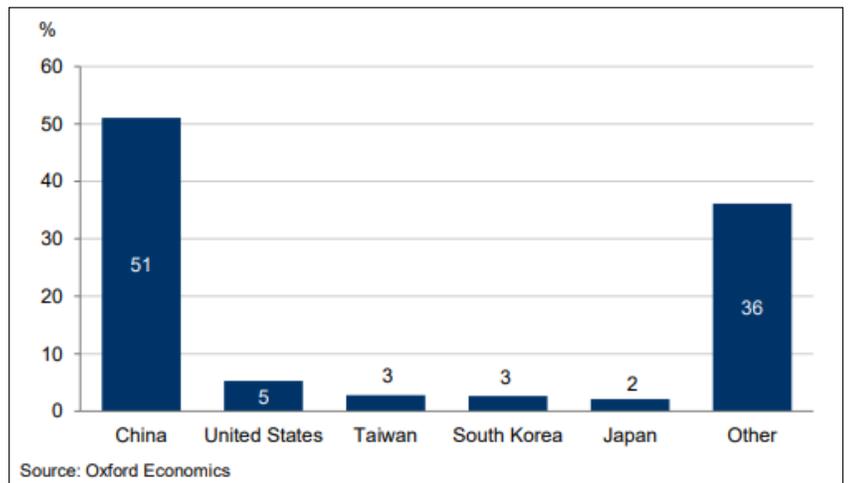
One of the main drivers of industrial demand will come from the electrical and electronics applications industry, which is forecast to grow by 55% over the decade, the report noted. Also expected to grow is jewelry fabrication: 34% in real terms between 2023 and 2033. Moreover, silverware fabrication is forecast to increase by 30% over the next decade.

“Combined, the output of industrial, jewelry and silverware fabricators is forecast to increase by 42% between 2023 and 2033. This is roughly double the rate of growth of their demand for silver over the previous decade,” the report stated.

As for specific countries, Oxford noted that India will lead the world in jewelry demand over the next ten years but that it may lose some of its silver jewelry dominance to China. India will continue to lead silverware demand but perhaps with a lower market share than it recorded in 2022. “We expect demand from India will contribute 43% of the growth in the demand for silver to be turned into silverware. This is less than their existing share of consumption at 73%,” the report noted.

The report concluded that long-term forecasting for the silver production industry, “should help them decide how best to target growing industries and where to locate their logistics, marketing, and sales efforts. There may however be unforeseen challenges to these forecasts,” the report warned. “This may occur if the different fabricator industries undergo structural change (such as thrifting) or there are unforeseen economic shocks.”

To download the complimentary report, please click [here](#).



Between 2023 and 2033, the output of end users of industrial silver is forecast to increase by 46 percent with China dominating the sector.

Silver May Replace Expensive Platinum Group Metals for Use in Fuel Cells

Breakthrough Could Mean Everyday Use of These 'Green' Batteries

Hydrogen fuel cells have long been touted as one of the greenest ways to produce electricity without pollution. They don't need recharging and will work as long as fuel is supplied. The idea goes back as far as the early 1800s, and relies on two electrodes that are fed with hydrogen and oxygen from the air. The chemical reaction produces electricity with water as the only waste product. In fact, several space missions used fuel cells and the astronauts drank the resulting water.

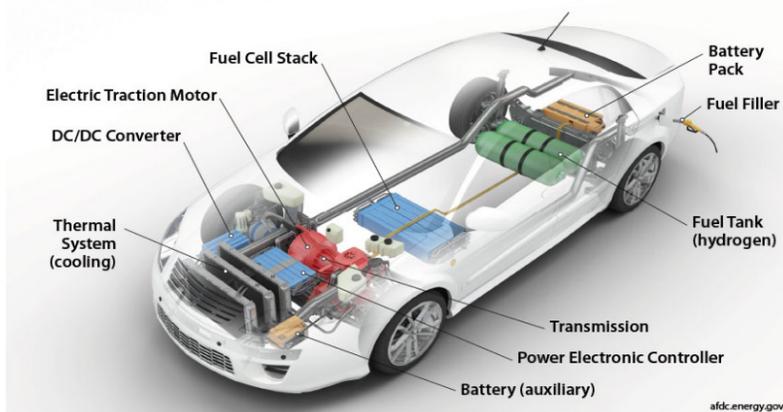
While fuel cells are fine for space travel, they come at a high cost, because they require expensive platinum group metals (PGM) to act as catalysts.

With a bit of ingenuity, though, a consortium of scientists from [Stanford University's Department of Energy's SLAC National Accelerator Laboratory](#), [Toyota Research Institute \(TRI\)](#), and [Technion-Israel Institute of Technology](#) have discovered how to replace PGM with less expensive silver without sacrificing the benefits and efficiency of hydrogen fuel cells.

It's not that researchers haven't tried for years to find alternatives to PGMs. The problem was what worked in the laboratory didn't work under real-world conditions. And while silver had always been considered an alternative catalyst it wasn't until they used a vacuum chamber for getting the silver catalyst onto the cell's electrodes in an extremely controlled way that they saw success. "This high-vacuum tool is a very 'what you see is what you get' type of method," said Tom Jaramillo, director of [SUNCAT](#), which made the collaboration possible. (The SUNCAT Center for Interface Science and Catalysis is a partnership between [Stanford School of Engineering and SLAC National Accelerator Laboratory](#).) "As long as your system is calibrated well, in principle, people can reproduce it readily."

By letting Technion do the real-world testing, the researchers were able to show that the fuel cells with silver catalysts worked outside of the laboratory setting. "We could try going entirely PGM-free," said Jaramillo. He added: "Fuel cells are really looking exciting and interesting for heavy-duty transportation and clean energy storage, but it's ultimately going to come down to lowering cost, which is what this collaborative work is all about."

Hydrogen Fuel Cell Electric Vehicle



Fuel cell electric vehicles produce no tailpipe emissions, only water vapor and warm air. They can travel 300 to 400 miles on a tank of hydrogen and can refuel in three to five minutes.

Silver Helps Bring Potable Water to the Navajo Nation

Many people living in the [Navajo Nation](#) in the Southwest United States do not have access to clean drinkable water, but a team of scientists at [The University of Texas at Austin](#) is using silver technology mixed with native pottery to change that.

Although using silver in clay pottery to produce potable water is not a new idea (see [Tata Improves its Non-Electric, Silver-Based Water Purifier](#), April, 2014 *Silver News*), the researchers are combining ancient and sacred pottery-making techniques with local pine tree resins as well as silver to purify water.

Historically, the Navajo Nation has a distrust of outsiders so introducing new technology was a challenge, the scientists noted. The key factor to acceptance was for the researchers to work with a third-generation potter to produce the vessels. "Navajo pottery is at the heart of this innovation because we hoped it would bridge a trust gap," said Lewis Stetson Rowles III, now a faculty member at [Georgia Southern University's Department of Civil Engineering and Construction](#), in a prepared statement. "Pottery is sacred there, and using their materials and their techniques could help them get more comfortable with embracing new solutions," he added. The device itself is simple to use. Water is poured through clay pots and the coated pottery kills bacteria, making the water safe to drink.

That wasn't enough, though. The researchers needed a way to control the release of particles so the device would continue working for a longer time. They learned that using locally-found pine tree resin modulated the release of silver particles.

Each device cost about US\$10 to produce, but the developers are not interested in commercializing or making money from the vessels. "This is just the beginning of trying to solve a local problem for a specific group of people," said professor Navid Saleh, one of the leaders on the project. "But the technical breakthrough we've made can be used all over the world to help other communities."

This research was published in [Environmental Science & Technology](#), a journal of the American Chemical Society.



Rowles and Saleh worked closely with Tso, a third-generation potter from Arizona, to create water filtration tools that are simple for the users.

Silver Particles Added to Natural Fabric Dyes Enhances Color Fastness and Vibrancy

Natural fabric dyes are generally superior to man-made dyes because they are more environmentally friendly, plentiful, and lower in cost. However, they have a downside. Natural dyes do not hold as fast nor do they exhibit robust colors compared to synthetic dyes. Some natural dyes include turmeric, saffron, and red peanut skins, substances which are also used to color food.

By adding silver to natural dyes such as extract of red peanut skins, and applying them to cotton, scientists found that the color not only lasted longer, exhibited more robust hues but also showed antibacterial and even ultraviolet (UV) protection for the cloth.

In addition, the scientists working at the Textile Research and Technology Institute, National Research Centre in Giza, Egypt, along with one researcher at [Helwan University in Cairo](#), suggested that these silver-enhanced dyes could be added to protective clothing as well. In their research [paper](#) they noted: "... protective textiles could be identified as clothing materials that could successively protect the customer body from any of external threatening agents such as biological agents, bullet and chemical agent, firing, coldness, and heating. The protective textile materials could cover at least thirty percent of the whole body that could be exploited in sporting, military, and industrial purpose."

They concluded: "From the represented data it could be declared that, the samples treated with metal precursors (they also tested palladium) prior to dyeing were exhibited with the highest color strength, very good–excellent color fastness, very good UV blocking (97.4 percent) and excellent biocidal potency (microbial reduction percent was ranged in 93.01–99.51%)."



ICAR

This shirt was dyed with extracts from red peanut skins.

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