

# Market Overview

as of: 3<sup>th</sup> January 2022




- Copper:** The year 2021 on the commodities market was exceptional in many respects. The market has once again experienced problems with strained and/or broken supply chains and subsequent coronavirus variants, but also - and at the same time - with a very dynamic demand growth. Successive government stimulus provided a lot of liquidity into the market, which not only resulted in physical demand boost, but also led to an inflation increase. Historically, the capital was allocated in the commodities sector as a perfect hedge. There was no different with copper last year. The metal, closely related to the world's irreversible green revolution, was in the center of investors' attention throughout the year, reaching the highest nominal price in the history (*page 2*).
- Precious metals:** Researchers from the University of South Australia have developed a dressing that only releases silver nanoparticles when an infection occurs. The system detects changes in acidity and temperature as signs of infection and releases silver into the wound. This prevents over-application that would be toxic (*page 5*).
- USA:** In November the goods trade deficit widened by 17.5% to \$97.8 billion from \$83.2 billion in October, US Census Bureau data showed. That exceeds the previous record deficit set in September of \$97 billion and may damp optimism that trade might finally add to U.S. economic growth this quarter for the first time in more than a year (*page 6*).

## Key market prices

	Close price	2w chng.
<b>LME (USD/t)</b>		
▲ Copper	9 692.00	1.8%
▲ Nickel	20 925.00	5.5%
<b>LBMA (USD/troz)</b>		
▲ Silver	23.09	1.9%
▲ Gold (PM)	1 820.10	0.7%
<b>FX</b>		
▼ EURUSD	1.1326	0.0%
▼ EURPLN	4.5994	-0.7%
▼ USDPLN	4.0600	-0.7%
▼ USDCAD	1.2678	-1.3%
▼ USDCLP	844.69	-0.6%
<b>Stocks</b>		
▼ KGHM	139.40	-2.0%

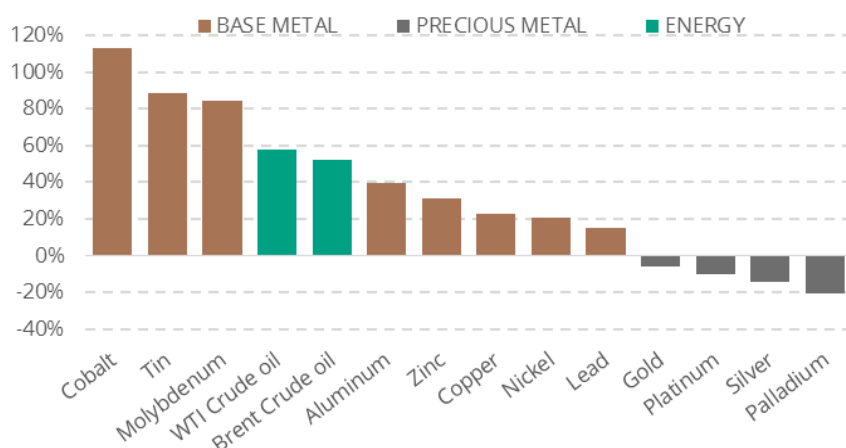
Source: Bloomberg, KGHM Polska Miedź S.A.; (*more on page 9*)

## Important macroeconomic data

Release	For		
 Industrial profits (yoy)	Nov	9.0%	▼
 Copper production (mt)	Nov	485 716	▲
 Industrial prod. (yoy)	Nov	15.2%	▲
 Durable goods orders	Nov	2.5%	▲
 Consumer confidence	Dec	- 8.3	▼

Source: Bloomberg, KGHM Polska Miedź S.A.; (*more on page 7*)

## Commodity performance in 2021



Source: Reuters, KGHM Polska Miedź S.A.

## Market Risk Unit

marketrisk@kgm.com

## Base and precious metals | Other commodities

### Copper

#### 2021 copper market summary

**The year 2021 on the commodities market was exceptional in many respects. The market has once again experienced problems with strained and/or broken supply chains and subsequent coronavirus variants, but also - and at the same time - with a very dynamic demand growth. Successive government stimulus provided a lot of liquidity into the market, which not only resulted in physical demand boost, but also led to an inflation increase. Historically, the capital was allocated in the commodities sector as a perfect hedge. There was no different with copper last year. The metal, closely related to the world's irreversible green revolution, was in the center of investors' attention throughout the year, reaching the highest nominal price in the history.**

The green revolution thesis and the role that copper will play in it, promoted by a number of institutions, has called attention on the red metal. At the beginning of the year, it wasn't clear the price rally from 2020 will carry on. However, the unabated demand, investor interest and subsequent carbon neutrality statements made not only by the governments of some countries, but also by large enterprises, rang the bell for further price increases. It is interesting that the decarbonisation party has been joined by China, which has been standing in the opposition to pro-climate trends for many years and, surprisingly, has declared its intention to be an emissions-neutral economy by 2060 with an emissions peak in 2030. In addition, the US President J. Biden has also declared an over 50% reduction in greenhouse gases by the United States by 2030. The important breakeven point was reached, as both countries have been in the forefront of carbon dioxide emissions for decades.

There was an excess of exciting events in the red metal market throughout the year both politically and fundamentally. The lack of a holiday break related to the Chinese New Year built a narrative for the following months, because exceptionally, there was no stocks build-up for the post-holiday return of the Chinese economy to full production, as the material was reworked on a regular basis. In the meantime, the demand for copper returned with doubled strength, and not only in China. The grist to the mill were the reports issued by Goldman Sachs, Bank of America Merrill Lynch and Citigroup, in which analysts competed with each other who was more bullish for the following years. A similar approach was adopted by commodity traders, similarly aggressive when it comes to forecasting the copper price in the future.

The soaring price, however, concerned Chinese authorities with the growth sustainability and the cost of higher commodities prices for the second economy in the world. Therefore, after numerous verbal interventions, the Chinese authorities took action and decided to release some of the stored metal from the

Strategic Reserve Bureau (SRB). It has been an extremely rare event so far. Despite the lower than expected volume of the sold metal volume, the holding of several sales auctions allowed to slow down the increase in the price of red metal and balance the market, mainly the domestic one. The metal shortage faced by market participants can be seen in the piece of work provided by the International Copper Study Group, which estimated 160 000 tonnes deficit in the copper market after three quarters of 2021. It should be mentioned, however, that these data are based on apparent China demand, i.e. taking into account net imports with production, but excluding changes in warehouses. It means the result might be even underestimated. On the other hand, many financial institutions and the metals market experts do consider a similar 125 000 tonnes deficit.

Taking into account the portfolio of mining projects, analysts expect a surplus in the next 2-3 years. The majority of mining production are supposed to be placed on the market in the near future from the firm projects, which are at the very last stage of completion. However, there are a few facts that may change the situation dramatically in the second half of the decade. Political changes in several jurisdictions responsible for the largest copper reserves in the world, such as Peru and Chile, might be a pivotal point for raising the uncertainty for miners in the coming years. The leftists elected in these countries can introduce a less predictable investment climate and a willingness to increase fiscalism to offset social welfare. It should also be noted that the desire to impose higher taxes on the mining industry is global now. Additionally, the climate policy trends do not support finishing the already built in progress mines, because more and more stakeholders are trying to gain benefits at an early stage of project development. It generates considerable costs and trouble to increase the capital commitment for the miners. The new projects take years to transform into a "fully-fledged" mine, and any delays in the process of granting the approvals or prolonged negotiations with stakeholders may extend the entire project timeline. The new commodity supercycle thesis expressed by some investment banks is based on the fact that current price must stay on the high level in order to incentivize mining companies to start new investments and boost recycling.

The strong demand for copper led to a significant drain on inventories in the fourth quarter of 2021. LME inventories fell to their all-time low, which caused a turmoil on the forward curve and the massive backwardation (over 1000 USD/mt on the intraday scale). The market condition in which price in the following months is lower than the spot price. Such a shape of the market resulted from material availability concerns, hence the conviction the red metal was/is worth more "today" than "tomorrow". In the following weeks, the situation calmed down on the market. Thanks to the LME exchange authorities intervention and introduced limits. Nevertheless, inventories remain well below their historical average and the forward continued to reflect market participants' concerns until the yearend.

The average price for copper in 2021 was established on 9,317 USD/mt (cash settlement on the LME exchange). It is the highest nominal annual average price in history. From the beginning of the year, it increased by over 24% reaching the

all-time high level at 10 724 USD/mt in May. There are many events in the financial market that may be decisive in whether the price will remain a record-high or whether the new record will be established. After all, from the second half of 2021 we had to deal with a slowdown in China and serious problems of one of the leading real estate company in the world – The Evergrande Group. The growing issues in the real estate sector are certainly a big blow to the copper demand, as this sector accounts for nearly 25% of the total China demand. Moreover, a dramatic rise in the electricity and gas prices in fourth quarter must be mentioned as a valid obstacle to industrial production growth in many places around the world and hit not only the copper market. Looking at the sophisticated relationship in the global financial system, it should be expected that the dynamics of the upcoming known and unknown events will not disappoint market participants.

### Other important information on copper market:

- Environmental authorities in northern Chile have approved a \$3.2 billion investment at the giant Collahuasi copper mine. To maintain production at current levels for the next 20 years, the project would expand the sulfide ore processing capacity at the mine to 210,000 mt/day from current levels of 170,000 mt/d while adding a bioleaching line capable of processing 35,000 mt/d of mixed oxide and sulfide ores. The investment also includes the construction and operation of a seawater desalination plant to reduce the open pit operation's reliance on natural sources of fresh water. The Collahuasi mine produced 629,100 mt of copper in 2020. Anglo American and Glencore each own 44% of Collahuasi, while Japan's Mitsui & Co. owns the balance of shares.
- China's refined copper output in November rose 0.3% from October, reaching 877,000 mt. Production slightly rose in November as fewer smelters went on a maintenance downtime while power restrictions also eased during the month, according to sources. China's refined copper output is expected to rise in December from November levels, with some smelters planning to ramp up production in December to reach this year's output target. China's refined copper output totaled 9.53 million mt in the first 11 months of 2021, up 8.1% from a year earlier, according to data.
- The global refined copper market swung into a 57,000 tonne deficit in September from a surplus of 56,000 tonnes in August, the International Copper Study Group (ICSG) said in its latest monthly bulletin. For the first nine months of the year, the market was in a 161,000 tonne deficit compared with a 239,000 tonne deficit in the same period a year earlier, the ICSG said. World refined copper output in September was 2.064 million tonnes, while consumption was 2.121 million tonnes.
- Chilean President-elect Gabriel Boric said on Sunday he will oppose mining initiatives that "destroy" the natural environment, including the controversial \$2.5 billion Dominga iron, copper and gold mining project. A regional Chilean environmental commission in August had approved Andes Iron's Dominga

project after years of wrangling in the country's courts and after the body had previously rejected the proposal. The mining project would be located about 500 km (310 miles) north of the capital Santiago, and near ecological reserves. Critics say its proximity to environmentally sensitive areas would cause undue damage. Andes Iron, a privately held Chilean company, has long rejected that assertion. During a speech after his electoral victory, he said his government will also expand social rights but will do so with fiscal responsibility and taking care of the economy in the world's top copper producing nation.

## Precious Metals

### Australian Scientists Develop an On-Demand Silver Delivery System for Burn Dressings

**Researchers from the University of South Australia have developed a dressing that only releases silver nanoparticles when an infection occurs. The system detects changes in acidity and temperature as signs of infection and releases silver into the wound. This prevents over-application that would be toxic.**

The use of silver-laced dressings for wounds has been shown to be effective at not only reducing infection but accelerating healing. And, because it is accepted practice among the best healthcare providers to deliver medicine only when necessary a research team at the University of South Australia's Future Industries Institute, has developed a hydrogel-coated dressing, aimed at children, that only releases silver nanoparticles when an infection is present. The treatment relies on a delivery system that senses a change in acidity and temperature, which are signs of infection, and releases silver to the wound site. Lead researcher Dr. Zlatko Kopecki said in a prepared statement: "Wound infection and sepsis are daily problems for children with burn injuries. Silver-based wound care products can inhibit the growth of bacteria, but they can also cause toxicity when they deliver too much silver to wounds. In Australia, approximately 50,000 burn-related hospital admissions are recorded per year, with young children particularly at risk.

## Global economies | Foreign exchange markets

### U.S. goods trade gap hits record; pending home sales slip











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**November imports rose by 4.7% with industrial supplies leading the way with an increase of \$5.7 billion, followed by consumer goods rising by \$2.9 billion**

As Reuters informs the U.S. trade deficit in goods mushroomed to the widest ever in November as imports of consumer goods shot to a record ahead of the second straight COVID-distorted holiday shopping season along with industrial supplies, while exports slipped after a historic gain in October. The goods trade gap reported by the Commerce Department is likely to remain historically high as long as the coronavirus pandemic continues. The emergence of the fast-spreading Omicron variant of COVID-19 may exacerbate it further in the near term if it limits American consumers' spending on services and restores demand for imported goods. Omicron also stands as a downside risk in the housing market. A reading of pending home sales showed an unexpected drop in November, and while that data largely predated Omicron's ascendance in the United States, the highly contagious new variant could further limit home sales in the near term. In November the goods trade deficit widened by 17.5% to \$97.8 billion from \$83.2 billion in October, Census Bureau data showed. That exceeds the previous record deficit set in September of \$97 billion and may damp optimism that trade might finally add to U.S. economic growth this quarter for the first time in more than a year. Imports rose by 4.7% with industrial supplies leading the way with an increase of \$5.7 billion to \$63.2 billion, followed by consumer goods rising by \$2.9 billion to just shy of \$67 billion as retailers rushed to fill store shelves ahead of Christmas. Goods exports, meanwhile, declined 2.1%, with weakness across the board outside of a 4.3% increase in food exports. The drop was led by declines of \$1.4 billion in industrial supplies and \$1.3 billion in capital goods. The economy grew at a 2.3% annualized rate in the third quarter, a step-down from earlier in the year but activity has rebounded in the fourth quarter with a consensus among economists building around a growth rate of 6% to 7% in the final three months of 2021. Earlier this month, the Commerce Department reported a sharp reduction in the overall trade deficit - including services - for October, which had generated some optimism that trade may contribute to the improvement in output in the final quarter of the year. The big reversal to a record goods trade gap in November may prompt a rethinking of that. Economists at Action Economics have dialed back their fourth-quarter GDP growth estimate to 6.5% from 7.0%, with exports now seen subtracting from growth rather than adding to it as had been previously expected. Economists at JPMorgan and Goldman Sachs, meanwhile, left their estimates intact at 7%.

## Macroeconomic calendar

### Important macroeconomic data releases

Weight	Date	Event	For	Reading <sup>1</sup>	Previous	Consensus <sup>2</sup>
<b>China</b> 						
⊗⊗	27-Dec	Industrial profits (yoy)	Nov	9.0% ▼	24.6%	--
⊗⊗⊗	31-Dec	Official manufacturing PMI	Dec	50.3 ▲	50.1	50.0 ▲
<b>Poland</b> 						
⊗⊗⊗⊗	20-Dec	Sold industrial production (yoy)	Nov	15.2% ▲	7.8%	8.2% ▲
⊗⊗	20-Dec	Producer inflation PPI (yoy)‡	Nov	13.2% ▲	12.0%	13.0% ▲
⊗⊗⊗	21-Dec	Retail sales (yoy)	Nov	21.2% ▲	14.4%	16.1% ▲
⊗	22-Dec	M3 money supply (yoy)	Nov	10.1% ▲	8.6%	9.0% ▲
⊗⊗	23-Dec	Unemployment rate	Nov	5.4% ▼	5.5%	5.4% ○
<b>US</b> 						
⊗⊗⊗⊗⊗	22-Dec	GDP (annualized, qoq) -	3Q	2.3% ▲	2.1%	2.1% ▲
⊗⊗⊗⊗	23-Dec	Consumer spending inflation PCE (mom)‡	Nov	0.5% -	0.5%	0.4% ▲
⊗⊗⊗⊗	23-Dec	Consumer spending inflation PCE (yoy)‡	Nov	4.7% ▲	4.2%	4.5% ▲
⊗⊗	23-Dec	Durable goods orders - preliminary data‡	Nov	2.5% ▲	0.1%	1.8% ▲
⊗⊗	23-Dec	Personal income (sa, mom)	Nov	0.4% ▼	0.5%	0.4% ○
⊗⊗	23-Dec	Personal spending (sa, mom)‡	Nov	0.6% ▼	1.4%	0.6% ○
⊗⊗	23-Dec	University of Michigan confidence index - final data	Dec	70.6 ▲	70.4	70.4 ▲
⊗	27-Dec	Dallas Fed manufacturing activity	Dec	8.1 ▼	11.8	13.5 ▼
⊗	28-Dec	Richmond Fed manufacturing index‡	Dec	16.0 ▲	12.0	11.0 ▲
<b>Eurozone</b> 						
⊗	21-Dec	Consumer confidence - estimation	Dec	- 8.3 ▼	- 6.8	- 8.3 ○
⊗	29-Dec	M3 money supply (yoy)	Nov	7.3% ▼	7.7%	7.6% ▼
<b>Germany</b> 						
⊗⊗	21-Dec	GfK consumer confidence‡	Jan	- 6.8 ▼	- 1.8	- 2.7 ▼
<b>France</b> 						
<i>No major data in the period</i>						
<b>Italy</b> 						
<i>No major data in the period</i>						
<b>UK</b> 						
⊗⊗⊗⊗⊗	22-Dec	GDP (yoy) - final data	3Q	6.8% ▲	6.6%	6.6% ▲
⊗⊗⊗⊗⊗	22-Dec	GDP (qoq) - final data	3Q	1.1% ▼	1.3%	1.3% ▼
<b>Japan</b> 						
⊗⊗⊗⊗	24-Dec	Consumer inflation CPI (yoy)	Nov	0.6% ▲	0.1%	0.5% ▲
⊗⊗⊗⊗	28-Dec	Industrial production (yoy) - preliminary data	Nov	5.4% ▲	-4.1%	2.9% ▲
<b>Chile</b> 						
⊗⊗⊗	31-Dec	Total copper production (metric tons)	Nov	485 716 ▲	474 881	--
⊗⊗⊗	31-Dec	Manufacturing (yoy)	Nov	5.0% ▲	1.5%	5.0% ○

Weight	Date	Event	For	Reading <sup>1</sup>	Previous	Consensus <sup>2</sup>
<b>Canada</b> 						
🔔🔔🔔🔔	23-Dec	GDP(yoy)	Oct	3.8% ▲	3.4%	3.6% ▲

<sup>1</sup> Reading difference to previous release: ▲ = higher than previous; ▼ = lower than previous; = = equal to previous.

<sup>2</sup> Reading difference to consensus: ▲ = higher than consensus; ▼ = lower than consensus; ○ = equal to consensus.

mom = month-on-month; yoy = year-on-year; qoq = quarter on quarter; ytd year-to-date; sa = seasonally adjusted; wda = working days adjusted; ‡ = previous data after revision.

Source: Bloomberg, KGHM Polska Miedź



## Key market data

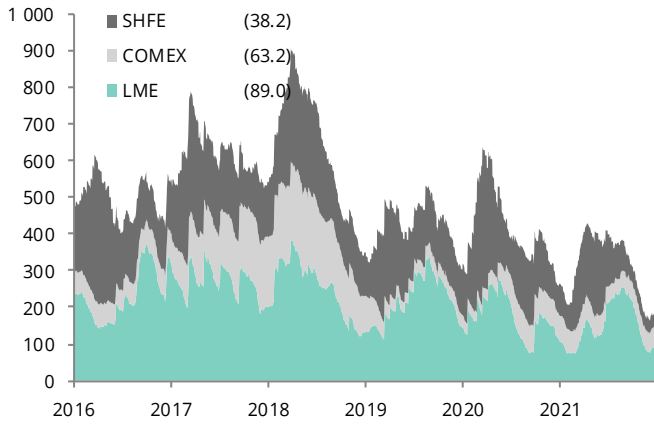
### Key base & precious metal prices, exchange rates and other important market factors

<i>(as of: 31-Dec-21)</i>		Price change <sup>1</sup>					From year beginning <sup>2</sup>		
	Price	2W	QTD	YTD	1Y	Average	Min	Max	
<b>LME (USD/t; Mo in USD/lbs)</b>									
Copper	9 692.00	▲ 1.8%	▲ 7.2%	▲ 25.2%	▲ 25.2%	9 317.49	7 755.50	10 724.50	
Molybdenum	18.68	▲ 0.8%	▼ -0.3%	▲ 86.2%	▲	15.94	9.95	20.05	
Nickel	20 925.00	▲ 5.5%	▲ 15.1%	▲ 26.5%	▲ 26.5%	18 487.78	15 907.00	21 135.00	
Aluminum	2 806.00	▲ 4.2%	▼ -1.6%	▲ 41.9%	▲ 41.9%	2 479.62	1 951.50	3 180.00	
Tin	39 635.00	▲ 0.2%	▲ 8.3%	▲ 93.0%	▲ 93.0%	32 678.16	20 965.00	41 000.00	
Zinc	3 630.00	▲ 5.8%	▲ 20.4%	▲ 33.3%	▲ 33.3%	3 007.38	2 539.00	3 815.00	
Lead	2 328.50	▲ 0.2%	▲ 10.1%	▲ 18.1%	▲ 18.1%	2 206.23	1 896.00	2 504.00	
<b>LBMA (USD/troz)</b>									
Silver	23.09	▲ 1.9%	▲ 7.2%	▼ -12.8%	▼ -12.8%	25.14	21.53	29.59	
Gold <sup>2</sup>	1 820.10	▲ 0.7%	▲ 4.4%	▼ -3.8%	▼ -3.8%	1 798.65	1 683.95	1 943.20	
<b>LPPM (USD/troz)</b>									
Platinum <sup>2</sup>	962.00	▲ 2.9%	▼ -0.1%	▼ -10.5%	▼ -10.5%	1 089.73	911.00	1 294.00	
Palladium <sup>2</sup>	1 928.00	▲ 8.4%	▲ 1.5%	▼ -18.6%	▼ -18.6%	2 396.42	1 576.00	3 000.00	
<b>FX <sup>3</sup></b>									
EURUSD	1.1326	▼ 0.0%	▼ -2.2%	▼ -7.7%	▼ -7.7%	1.1827	1.1206	1.2338	
EURPLN	4.5994	▼ -0.7%	▼ -0.7%	▼ -0.3%	▼ -0.3%	4.5670	4.4541	4.7210	
USDPLN	4.0600	▼ -0.7%	▲ 1.7%	▲ 8.0%	▲ 8.0%	3.8647	3.6545	4.1893	
USDCAD	1.2678	▼ -1.3%	▼ -0.5%	▼ -0.4%	▼ -0.4%	1.2535	1.2040	1.2942	
USDCNY	6.3561	▼ -0.3%	▼ -1.4%	▼ -2.6%	▼ -2.6%	6.4498	6.3443	6.5718	
USDCLP	844.69	▼ -0.6%	▲ 5.1%	▲ 18.8%	▲ 18.8%	760.19	693.74	868.76	
<b>Money market</b>									
3m LIBOR USD	0.209	▼ 0.00	▲ 0.08	▼ -0.03	▼ -0.03	0.161	0.114	0.241	
3m EURIBOR	-0.572	▲ 0.01	▼ -0.03	▼ -0.03	▼ -0.03	-0.549	-0.605	-0.529	
3m WIBOR	2.540	▲ 0.19	▲ 2.31	▲ 2.33	▲ 2.33	0.548	0.210	2.540	
5y USD interest rate swap	1.370	▲ 0.10	▲ 0.32	▲ 0.94	▲ 0.94	0.949	0.416	1.459	
5y EUR interest rate swap	0.017	▲ 0.15	▲ 0.21	▲ 0.48	▲ 0.48	-0.264	-0.485	0.043	
5y PLN interest rate swap	3.740	▲ 0.51	▲ 1.86	▲ 3.13	▲ 3.13	1.703	0.583	3.740	
<b>Fuel</b>									
WTI Cushing	76.99	▲ 8.7%	▲ 2.6%	▲ 58.7%	▲ 58.7%	68.09	47.62	84.65	
Brent	77.46	▲ 7.4%	▼ -1.7%	▲ 51.4%	▲ 51.4%	70.60	50.02	85.70	
Diesel NY (ULSD)	239.59	▲ 8.0%	▲ 2.3%	▲ 62.1%	▲ 62.1%	206.93	146.07	259.61	
<b>Others</b>									
VIX	17.22	▼ -4.35	▼ -5.92	▼ -5.53	▼ -5.53	19.66	15.01	37.21	
BBG Commodity Index	99.17	▲ 2.8%	▼ -1.6%	▲ 27.1%	▲ 27.1%	92.75	78.64	105.84	
S&P500	4 766.18	▲ 3.1%	▲ 10.6%	▲ 26.9%	▲ 26.9%	4 273.41	3 700.65	4 793.06	
DAX	15 884.86	▲ 2.3%	▲ 4.1%	▲ 15.8%	▲ 15.8%	15 209.81	13 432.87	16 251.13	
Shanghai Composite	3 639.78	▲ 0.2%	▲ 2.0%	▲ 4.8%	▲ 4.8%	3 539.66	3 357.74	3 715.37	
WIG 20	2 266.92	▲ 3.3%	▼ -1.9%	▲ 14.3%	▲ 14.3%	2 176.03	1 876.85	2 472.33	
KGHM	139.40	▼ -2.0%	▼ -11.6%	▼ -23.8%	▼ -23.8%	180.40	133.10	223.80	

° change over: 2W = two weeks; QTD = quarter-to-day; YTD = year-to-date; 1Y = one year. <sup>1</sup> based on daily closing prices. <sup>2</sup> latest quoted price. <sup>3</sup> central banks' fixing rates (Bank of China HK for USD/CNY). <sup>4</sup>

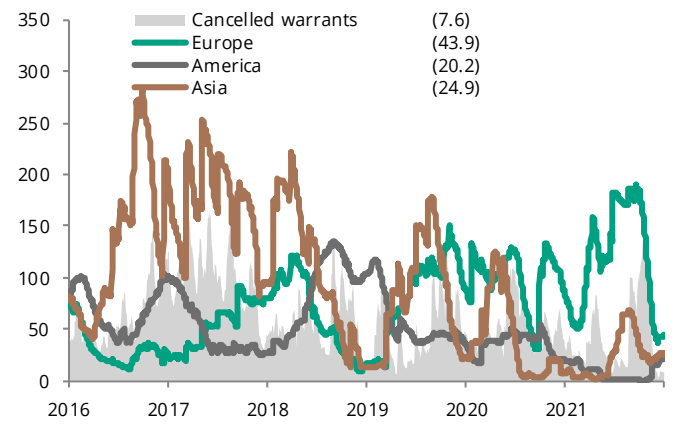
Source: Bloomberg, KGHM Polska Miedź

**Copper: official exchange stocks (thousand tonnes)**



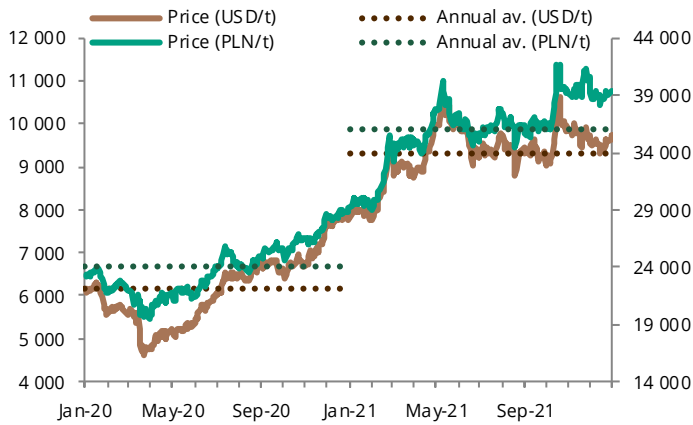
Note: Latest values in brackets. Source: Bloomberg, KGHM

**Copper: official LME stocks (thousand tonnes)**



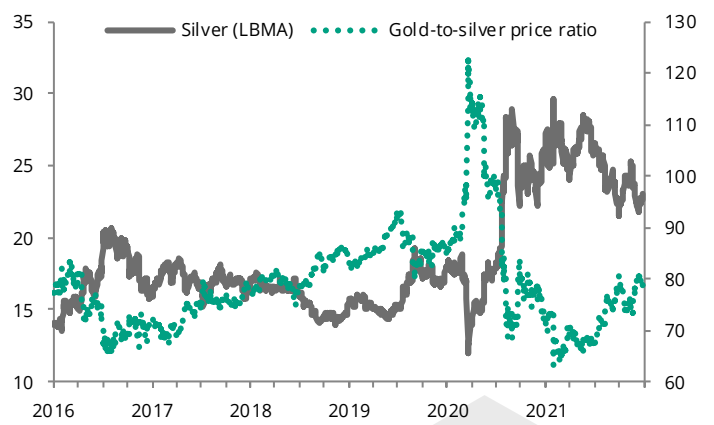
Note: Latest values in brackets. Source: Bloomberg, KGHM

**Copper: price in USD (lhs) and PLN (rhs) per tonne**



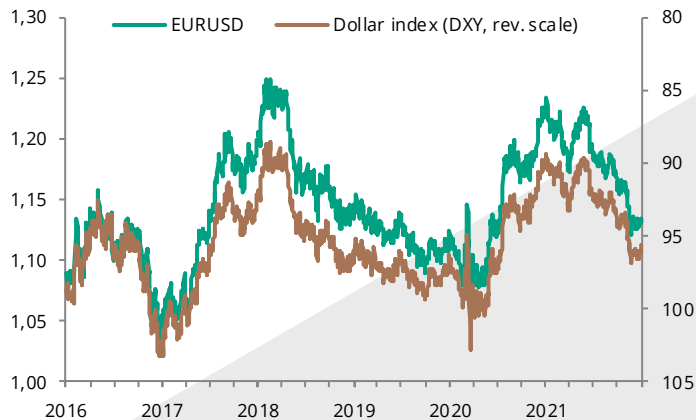
Source: Bloomberg, KGHM Polska Miedź

**Silver: price (lhs) and gold ratio (rhs)**



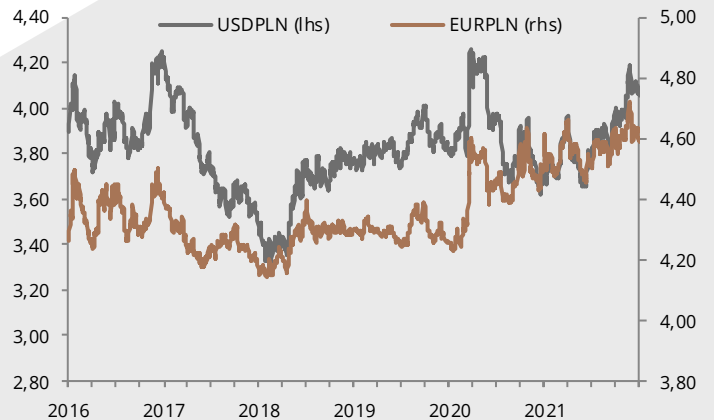
Source: Bloomberg, KGHM Polska Miedź

**USD: dollar index (lhs) and ECB-based EURUSD (rhs)**



Source: Bloomberg, KGHM Polska Miedź

**PLN: NBP-fixing based rate vs. USD (lhs) and EUR (rhs)**



Source: Bloomberg, KGHM Polska Miedź

## Legal note

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**20 December 2021 – 2 January 2022.**

- Barclays Capital, ▪ BofA Merrill Lynch, ▪ Citi Research, ▪ CRU Group, ▪ Deutsche Bank Markets Research,
- GavekalDragonomics, ▪ Goldman Sachs, ▪ JPMorgan, ▪ Macquarie Capital Research, ▪ Mitsui Bussan Commodities,
- Morgan Stanley Research, ▪ SMM Information & Technology, ▪ Sharps Pixley.

Moreover, additional information published here was acquired in direct conversations with market dealers, from financial institution reports and from the following websites: ▪ thebulliondesk.com, ▪ lbma.org.uk, ▪ lme.co.uk, ▪ metalbulletin.com, ▪ nbp.pl, , also: Bloomberg and Thomson Reuters.

Official metals prices are available on following websites:

- base metals: [www.lme.com/dataprices\\_products.asp](http://www.lme.com/dataprices_products.asp) (charge-free logging)
- silver and gold: [www.lbma.org.uk/pricing-and-statistics](http://www.lbma.org.uk/pricing-and-statistics)
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