![KGHM Polska Miedź]

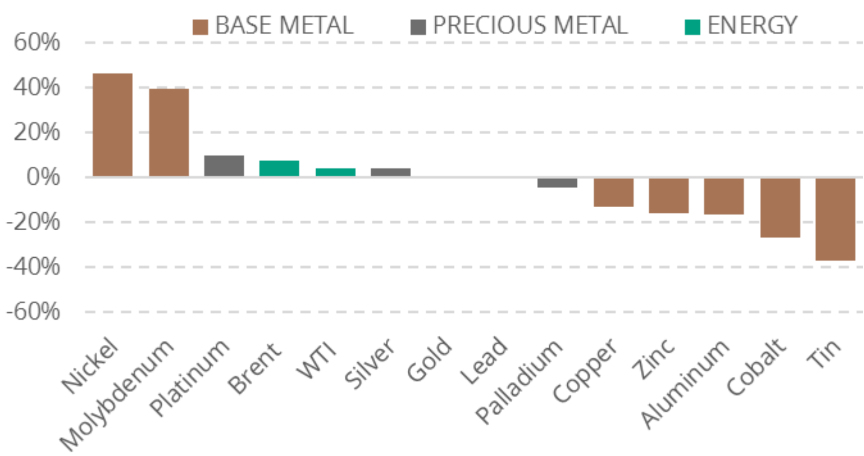
KGHM
POLSKA MIEDŹ

Market Overview

as of: 2nd January 2023

- **Copper:** 2022 was another difficult year. After the pandemic, hardly anyone expected a full-scale armed conflict to break out right outside the EU border. And as the Western world began to deal successfully with the problems of Covid-19, the virus hit the global economy again through China, which follows a different health policy. The events beyond Poland's eastern border had a considerable impact on the shape of the global commodity market, in particular on energy sector. Much of the global increase in price growth is due to rising energy prices, which are often inseparable costs across the economy, including mining and metal processing *(page 2)*.
- **Precious metals:** Russian bullion worth a total of $2.2 billion was removed from funds accounts between July and November. Funds storing gold have shrunk as rising interest rates triggered disinvestment from bullion. But the data, compiled, shows Russian gold being removed at a significantly faster pace than that from other countries *(page 5)*.
- **China:** The National Bureau of Statistics (NBS) said 56.3% of surveyed manufacturers reported that they were greatly affected by the epidemic in December, up 15.5 percentage points from the previous month. The official purchasing managers' index (PMI) fell to 47.0 from 48.0 in November *(page 7)*.

Commodity performance in 2022



Source: Bloomberg, KGHM Polska Miedź S.A.

Key market prices

		Close price	2w chng.
	LME (USD/t)		
▲	Copper	8 387.00	1.9%
▲	Nickel	30 425.00	5.5%
	LBMA (USD/troz)		
▲	Silver	23.95	4.9%
▲	Gold (PM)	1 812.35	1.1%
	FX		
▲	EURUSD	1.0666	0.4%
▼	EURPLN	4.6899	-0.1%
▼	USDPLN	4.4018	-0.5%
▼	USDCAD	1.3544	-1.0%
▼	USDCLP	859.51	-1.8%
	Stocks		
▲	KGHM	126.75	1.9%

Source: Bloomberg, KGHM Polska Miedź S.A.; *(more on page 11)*

Important macroeconomic data

	Release	For		
China	Official manuf. PMI	Dec	47.0	▼
USA	Durable goods orders	Nov	-2.1%	▼
EU	Consumer confidence	Dec	- 22.2	▲
Poland	Average salary (yoy)	Nov	13.9%	▲
Chile	Copper production (mt)	Nov	459 229	▼

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

Market Risk Unit

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Base and precious metals | Other commodities

Copper

2022 copper market summary

2022 was another difficult year. After the pandemic, hardly anyone expected a full-scale armed conflict to break out right outside the EU border. And as the Western world began to deal successfully with the problems of Covid-19, the virus hit the global economy again through China, which follows a different health policy. The events beyond Poland's eastern border had a considerable impact on the shape of the global commodity market, in particular on energy sector. Much of the global increase in price growth is due to rising energy prices, which are often inseparable costs across the economy, including mining and metal processing.

The first months of 2022 were very dynamic for the copper price. Expectations of a growing demand for metals related to the broadly understood energy transformation (renewable energy sources, EVs and modernization/expansion of energy infrastructure), which have been increasingly pronounced in recent years, have raised concerns about the shortage of the red metal in the long term (end of this decade). The very positive foundations of the copper market were also noticed in detail by some research, trading and financial institutions, which resulted in price forecasts for the coming years, set significantly higher then recent all-time price highs.

The first reaction to the Russian military invasion of Ukraine was the increase in commodity prices, in fear to a drop in availability and potential supply disruptions. In particular, the disruption of raw material supplies from Russia and Ukraine has a noticeable impact on the market of selected raw materials (mainly nickel, aluminium and palladium, but also copper). Concerns over supply of Russian material translated into an increase in copper prices and the all-time price highs in March 2022 (10,800 USD/t).

High energy prices that have been maintained for several months, mainly as a result of their shortage caused by the sanctions imposed on Russia, turned out to be a threat to the global economy. Rising inflation provoked a reaction of the world's largest central banks and a 180-degree shift in monetary policy rhetoric. As a consequence, there was a dynamic increase in the cost of money in the world in order to limit the price spiral. High inflation readings and interest rate increases led to the expectation of an economic slowdown or even recession in selected regions of the world.

Europe has been affected to a greater extent by the conflict in Ukraine and the energy crisis after Russia turned off the gas tap. As a consequence, the European currency clearly depreciated against the US dollar, which, supported by the firm tightening of monetary policy by the Fed, appreciated against most other currencies. The strengthening of the dollar has a negative impact on the prices of commodities quoted in this currency as they become more expensive in other currencies.

At the same time, China treated its approach to the SARS-CoV-2 pandemic in a rather restrictive way, which resulted in a series of lockdowns in the economy of the Middle Kingdom, the largest consumer of raw materials in the world. The restrictions on activity also affected copper processors in China and resulted in lower copper consumption, which pushed the price of the metal down in the second half of the year, reaching its lowest level in July at USD 7,000/t. The citizens protests in China and the reaction of the authorities towards the zero-covid policy were long-awaited, and the consequence of changes in Beijing's current health policy was an increase in copper prices in the last quarter of last year. However, the health situation in China raises great doubts and the long-awaited economic recovery of the Middle Kingdom is being postponed.

According to the latest estimates by the Chilean copper institution, Cochilco, annual copper production in Chile will fall in 2022 to the lowest level in 16 years. Production will fall to 5.3 million tonnes, down 5.7% y/y. if materialized, this figure will be the lowest annual production in Chile since 2006. Production in the first ten months of the year was 3.9 million tons, down 6.7% from the previous year, reflecting lower production from some of the world's largest copper producers including Codelco, Collahuasi, Los Bronces and Los Pelambres. Lower than expected mining production (production disruptions, project implementation delays) is a factor stabilizing the fundamental situation on the copper market. Initially expected significant production surplus related to the expected economic slowdown and new mining projects entering the market.

According to the Peruvian Ministry of Energy and Mines (Minem), from January to November 2022, cumulative mining investments in the country increased by 3.2% to $4.6 billion compared to $4.4 billion a year earlier. In total, four companies were responsible for 42.7% of mining investments in Peru in 2022. USD 383 million was invested in exploration activities between January and November 2022, an increase of 33.9% compared to the same period a year earlier. Cumulative investments in mine development amounted to USD 778 million, an increase of 49.5% compared to the previous year. The increases are surprising as in the first months of last year there were discussions on the introduction of new tax regulations, which ultimately did not come into effect, but introduced quite a lot of legislative uncertainty in the country.

The fact that copper prices remained at a relatively high level was also caused by record-low inventories on major exchanges, the lowest for many years. In addition, according to CRU International data, a similar situation occurs in Chinese bonded warehouses, where stock levels are at their lowest since data collection began.

2023 will be a test of the reliability of supply-demand models, which for several months have been pointing to a large surplus in the coming 2-3 years on the refined copper market. According to the banks and research institutions, next two years should show a surplus of approx. 300,000 tons. The condition of the Chinese economy and the pace of its return to the upward trend, the implementation of which will certainly require a departure from the restrictive health policy, remains an important issue. Mining costs will also be under pressure not only due to the dynamics of inflation and thus labor costs, but also still high energy prices.

Other important information on copper market:

- China's top copper smelters agreed to make no change to the guidance price for treatment and refining charges (TC/RCs) for copper concentrate in the first quarter of 2023. The rates of $93 per tonne and 9.3 cents per pound were unchanged from the current quarter but up from $70 per tonne and 7 cents per lb set for the first quarter of 2022. The prices were decided at a meeting of the China Smelters Purchase Team (CSPT). The prices are at a five year high because of expectations of higher supply next year. Because of China's clout in the market, its TC/RCs guide the global direction for processing prices. Normally CSPT members, including Jiangxi Copper, Tongling Nonferrous and China Copper, set a floor price that they are supposed to adhere to when agreeing spot processing deals for imported concentrate. Spot treatment charges in China are currently at $84.50 a tonne compared with $59.50 a year ago, according to Asian Metal. Global copper production is estimated to rise 3% from this year to 22.66 million tonnes in 2023, according to CITIC Futures, as new copper mines start up. Refined copper production is forecast to increase 2.5% to 26.45 million tonnes next year. China added 1 million tonnes of new smelting capacity this year and will add another 560,000 tonnes of new capacity in 2023, CITIC said.

- Copper output in Chile fell 5.5% year-on-year to 459,229 tonnes in November, the country's statistics agency INE said. The agency said the drop was partly due to lower ore grade and operational problems affecting major companies in the sector. Some copper deposits have also been affected by less water availability, fatal accidents and maintenance issues. Chile is the world's top copper producer and is home to global giants like Codelco, BHP, Glencore, Anglo American, Freeport and Antofagasta.

- The world's refined copper market saw a 46,000 tonne surplus in October, compared with a deficit of 85,000 tonnes in September, the International Copper Study Group (ICSG) said in its latest monthly bulletin. World refined copper output in October was 2.2 million tonnes, while consumption was 2.16 million tonnes. For the first ten months of the year, the market was in a 307,000 tonne deficit compared with a 271,000 tonne deficit in the same period a year earlier, the ICSG said.

Precious Metals

Russian gold removed from some Western funds

Russian bullion worth a total of $2.2 billion was removed from funds accounts between July and November. Funds storing gold have shrunk as rising interest rates triggered disinvestment from bullion. But the data, compiled, shows Russian gold being removed at a significantly faster pace than that from other countries.

Data from 11 Western investment funds show that Russian bullion worth a total of $2.2 billion at current prices was removed from their accounts between July and November. Funds storing gold have shrunk in recent months as rising interest rates triggered disinvestment from bullion. But the data, compiled, shows Russian gold being removed at a significantly faster pace than that from other countries. While a small fraction of the total amount of Russian gold held by wealth managers, this reflects a shift, with some funds saying they no longer want to hold any assets linked to Russia. ETFs are among the biggest holders of bullion and many list publicly the bars they own. This means investors can see whether they have Russian gold as each bar is stamped with its origin. "Some clients click on the bar list, see a lot of Russia and they are like, 'Whoa, what's going on?'," one source said. "Explaining it to them is difficult. We want to make the barriers to entry (to the fund) as low as possible and anything that would make them doubt that this is the right product we try to eliminate," the source added. In the months after Russia invaded Ukraine, banks resisted requests from funds to remove Russian gold, fearing a sell-off that would disrupt the market. Funds do not have to sell their holdings as gold produced in Russia before Mar 7 does not fall under Western sanctions against Moscow, unless it is owned by a sanctioned Russian individual or company. But sanctions do bar funds from holding new gold from Russia, which is one of the world's biggest producers, mining around 330 tonnes a year worth $19 billion at current prices. Some funds that publicly reveal the origin of what they own are worried that investors may not want them to hold Russian metal, while other owners of gold who do not publish such data are less concerned. Russian gold removed from such funds was often reassigned to other owners in the same location. But some has been shipped to Asia, where demand has been strong in recent months. The amount of gold stored in vaults in London monitored by the London Bullion Market Association (LBMA) fell by 468 tonnes, or 5%, in the first 11 months of the year. British and Swiss customs data show huge shipments to China, India and other countries in Asia and the Middle East. Reuters analysed the holdings of eleven of the biggest ETFs. These between them held almost 2,300 tonnes of gold in late November worth $130 billion, stored in London, Zurich and New York, around two thirds of all the gold owned by ETFs globally, according to the World Gold Council, which tracks the sector. Most of the gold held by ETFs is managed by JP Morgan, HSBC and ICBC Standard. ICBC Standard is the smallest, holding around 100 tonnes of gold for the eleven funds tracked, and has moved the fastest, reducing Russian gold by 47% in those funds while increasing non-Russian gold by 16% since mid-July. HSBC, which stored around 1,100 tonnes of gold for the tracked funds, reduced Russian gold in their accounts by 20% since July and non-Russian gold by 10%. JP Morgan, which stored around 1,050 tonnes of gold for the funds, trimmed Russian gold by 13% and non-Russian gold by 9%. Of the funds, eight had cut the proportion of Russian gold in their stockpiles since July, while two, run by Amundi and WisdomTree, had shed all of their Russian metal. Amundi and WisdomTree did not respond to requests for comment. Since July, the total amount of Russian metal in the 11 funds has fallen 19%, while non-Russian gold has decreased 9%.

Global economies | Foreign exchange markets

China December manufacturing contracts sharply as COVID infections soar

The National Bureau of Statistics (NBS) said 56.3% of surveyed manufacturers reported that they were greatly affected by the epidemic in December, up 15.5 percentage points from the previous month. The official purchasing managers' index (PMI) fell to 47.0 from 48.0 in November.

As Reuters informs China's factory activity shrank for the third straight month in December and at the sharpest pace in nearly three years as COVID infections swept through production lines across the country after Beijing's abrupt reversal of anti-virus measures. The official purchasing managers' index (PMI) fell to 47.0 from 48.0 in November, the National Bureau of Statistics (NBS) said on Saturday. Economists in a Reuters poll had expected the PMI to come in at 48.0. The 50-point mark separates contraction from growth on a monthly basis. The drop was the biggest since the early days of the pandemic in February 2020. The data offered the first official snapshot of the manufacturing sector after China removed the world's strictest COVID restrictions in early December. Cumulative infections likely reached 18.6 million in December, UK-based health data firm Airfinity estimated. Analysts said surging infections could cause temporary labour shortages and increased supply chain disruptions. Reuters reported that Tesla plans to run a reduced production schedule at its Shanghai plant in January, extending the reduced output it began this month into next year. Weakening external demand on the back of growing global recession fears amid rising interest rates, inflation and the war in Ukraine may further slow China's exports, hurting its massive manufacturing sector and hampering an economic recovery. "Most factories I know are way below where they could be this time of year for orders next year said Cameron Johnson, a partner at Tidalwave Solutions, a supply chain consulting firm. "So even though China is opening up, manufacturing is still going to slow down because the rest of the world's economy is slowing down. Factories will have workers, but they will have no orders." NBS said 56.3% of surveyed manufacturers reported that they were greatly affected by the epidemic in December, up 15.5 percentage points from the previous month, although most also said they expected the situation will gradually improve. "While (the factory PMI) was lower than expected, it is actually hard for analysts to provide a reasonable forecast given the virus uncertainties over the past month," said Zhou Hao, chief economist at brokerage house Guotai Junan International. "In general, we believe that the worst for the Chinese economy is behind us, and a strong economic recovery is ahead." The country's banking and insurance regulator pledged lately to step up financial support to small and private businesses in the catering and tourism sectors that were hit hard by the COVID-19 epidemic, stressing a consumption recovery will be a priority. The non-manufacturing PMI, which looks at services sector activity, fell to 41.6 from 46.7 in November, the NBS data showed, also marking the lowest reading since February 2020. The official composite PMI, which combines manufacturing and services, declined to 42.6 from 47.1. "The weeks before Chinese New Year are going to remain challenging for the service sector as people won't want to go out and spend more than necessary for fear of catching an infection," said Mark Williams, Chief Asia Economist at Capital Economics. "But the outlook should brighten around the time that people return from the Chinese New Year holiday – infections will have dropped back and a large share of people will have recently had COVID and feel they have a degree of immunity."

Macroeconomic calendar

Important macroeconomic data releases

Weight	Date	Event	For	Reading [1]		Previous	Consensus [2]	
		China						
✪✪✪	31-Dec	Official manufacturing PMI	Dec	47.0	▼	48.0	47.8	
		Poland						
✪✪✪✪	20-Dec	Sold industrial production (yoy)‡	Nov	4.6%	▼	6.6%	2.8%	
✪✪	20-Dec	Average gross salary (yoy)	Nov	13.9%	▲	13.0%	13.1%	
✪✪	20-Dec	Producer inflation PPI (yoy)‡	Nov	20.8%	▼	23.1%	21.2%	
✪	20-Dec	Employment (yoy)	Nov	2.3%	▼	2.4%	2.3%	
✪✪✪	21-Dec	Retail sales (yoy)	Nov	18.4%	▲	18.3%	16.1%	
✪	22-Dec	M3 money supply (yoy)	Nov	5.6%	▼	7.0%	5.9%	
✪✪	23-Dec	Unemployment rate	Nov	5.1%	-	5.1%	5.1%	
		US						
✪✪✪✪✪	22-Dec	GDP (annualized, qoq) -	3Q	3.2%	▲	2.9%	2.9%	
✪✪✪✪	23-Dec	Consumer spending inflation PCE (mom)‡	Nov	0.2%	▼	0.3%	0.2%	
✪✪✪✪	23-Dec	Consumer spending inflation PCE (yoy)	Nov	4.7%	▼	5.0%	4.6%	
✪✪	23-Dec	Durable goods orders - preliminary data‡	Nov	-2.1%	▼	0.7%	-1.0%	
✪✪	23-Dec	Personal income (sa, mom)	Nov	0.4%	▼	0.7%	0.3%	
✪✪	23-Dec	Personal spending (sa, mom)‡	Nov	0.1%	▼	0.9%	0.2%	
✪✪	23-Dec	University of Michigan confidence index - final data	Dec	59.7	▲	59.1	59.1	
✪	27-Dec	Dallas Fed manufacturing activity	Dec	- 18.8	▼	- 14.4	- 13.5	
✪	28-Dec	Richmond Fed manufacturing index	Dec	1.0	▲	- 9.0	- 10.0	
		Eurozone						
✪✪	19-Dec	Labour costs (yoy)‡	3Q	2.9%	▼	3.8%	--	
✪	20-Dec	Consumer confidence - preliminary data	Dec	- 22.2	▲	- 23.9	- 22.0	
✪	29-Dec	M3 money supply (yoy)	Nov	4.8%	▼	5.1%	5.0%	
		Germany						
✪✪	19-Dec	IFO business climate‡	Dec	88.6	▲	86.4	87.5	
✪✪	21-Dec	GfK consumer confidence‡	Jan	- 37.8	▲	- 40.1	- 38.0	
		France						
		No major data in the period						
		Italy						
		No major data in the period						
		UK						
✪✪✪✪✪	22-Dec	GDP (yoy) - final data	3Q	1.9%	▼	2.4%	2.4%	
✪✪✪✪✪	22-Dec	GDP (qoq) - final data	3Q	-0.3%	▼	-0.2%	-0.2%	
		Japan						
✪✪✪✪	23-Dec	Consumer inflation CPI (yoy)	Nov	3.8%	▲	3.7%	3.9%	
✪✪✪✪	28-Dec	Industrial production (yoy) - preliminary data	Nov	-1.3%	▼	3.0%	-1.5%	
		Chile						
✪✪✪	30-Dec	Total copper production (metric tons)	Nov	459 229	▼	485 447	--	
✪✪✪	30-Dec	Manufacturing (yoy)	Nov	-7.8%	▲	-9.2%	-7.0%	

Weight	Date	Event	For	Reading [1]		Previous	Consensus [2]	
		Canada						
✪✪✪✪	21-Dec	Consumer inflation CPI (yoy)	Nov	6.8%	▼	6.9%	6.7%	◓
✪✪✪✪✪	23-Dec	GDP (yoy)	Oct	3.1%	▼	3.9%	3.1%	⭘

[1] Reading difference to previous release: ▲ = higher than previous; ▼ = lower than previous; ▪= equal to previous.
[2] 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

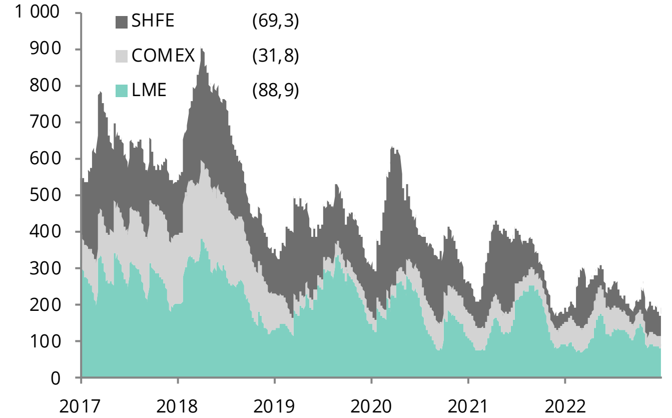
Key market data

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

(as of: 30-Dec-22)		Price change[1]				From year beginning[2]		
	Price	2W	QTD	YTD	1Y	Average	Min	Max
LME (USD/t; Mo in USD/lbs)								
Copper	8 387.00	▲ 1.9%	▲ 9.7%	▼ -13.5%	▼ -13.7%	8 797.01	7 000.00	10 730.00
Molybdenum	26.13	▲ 5.5%	▲ 51.1%	▲ 40.4%	▲	18.51	13.92	26.13
Nickel	30 425.00	▲ 5.5%	▲ 36.5%	▲ 45.4%	▲ 47.0%	25 607.47	19 100.00	45 795.00
Aluminum	2 360.50	▲ 0.3%	▲ 8.3%	▼ -15.9%	▼ -16.6%	2 703.18	2 080.00	3 984.50
Tin	24 800.00	▲ 4.4%	▲ 19.5%	▼ -37.4%	▼ -37.9%	31 219.02	17 700.00	50 050.00
Zinc	3 025.00	▼ -3.3%	▲ 1.3%	▼ -16.7%	▼ -16.0%	3 478.32	2 682.00	4 530.00
Lead	2 335.00	▲ 8.3%	▲ 23.6%	▲ 0.3%	▲ 0.7%	2 150.17	1 754.00	2 513.00
LBMA (USD/troz)								
Silver	23.95	▲ 4.9%	▲ 25.9%	▲ 3.7%	▲ 5.2%	21.73	17.77	26.18
Gold[2]	1 812.35	▲ 1.1%	▲ 8.4%	▼ -0.4%	▲ 0.4%	1 800.13	1 628.75	2 039.05
LPPM (USD/troz)								
Platinum[2]	1 065.00	▲ 6.8%	▲ 23.3%	▲ 10.7%	▲ 11.1%	961.06	831.00	1 151.00
Palladium[2]	1 788.00	▲ 3.4%	▼ -19.2%	▼ -7.3%	▼ -9.4%	2 108.95	1 658.00	3 015.00
FX [3]								
EURUSD	1.0666	▲ 0.4%	▲ 9.4%	▼ -5.8%	▼ -5.9%	1.0527	0.9565	1.1464
EURPLN	4.6899	▼ -0.1%	▼ -3.7%	▲ 2.0%	▲ 2.1%	4.6880	4.4879	4.9647
USDPLN	4.4018	▼ -0.5%	▼ -11.1%	▲ 8.4%	▲ 8.3%	4.4632	3.9218	5.0381
USDCAD	1.3544	▼ -1.0%	▼ -1.2%	▲ 6.8%	▲ 6.0%	1.3013	1.2451	1.3856
USDCNY	6.8986	▼ -1.1%	▼ -3.1%	▲ 8.5%	▲ 8.2%	6.7381	6.3093	7.3050
USDCLP	859.51	▼ -1.8%	▼ -11.0%	▲ 1.8%	▲ 1.1%	873.22	777.10	1 042.97
Money market								
3m LIBOR USD	4.767	▲ 0.02	▲ 1.01	▲ 4.56	▲ 4.55	2.405	0.216	4.779
3m EURIBOR	2.132	▲ 0.09	▲ 0.96	▲ 2.70	▲ 2.71	0.352	-0.576	2.202
3m WIBOR	7.020	▼ -0.04	▼ -0.19	▲ 4.48	▲ 4.51	6.049	2.590	7.610
5y USD interest rate swap	4.023	▲ 0.34	▼ -0.12	▲ 2.65	▲ 2.66	3.068	1.445	4.488
5y EUR interest rate swap	3.239	▲ 0.34	▲ 0.27	▲ 3.22	▲ 3.22	1.733	0.031	3.239
5y PLN interest rate swap	6.160	▲ 0.12	▼ -0.89	▲ 2.42	▲ 2.43	5.937	3.780	7.911
Fuel								
WTI Cushing	80.26	▲ 8.0%	▲ 1.0%	▲ 4.2%	▲ 4.2%	94.65	71.02	123.70
Brent	84.97	▲ 8.0%	▼ -1.4%	▲ 9.7%	▲ 8.1%	100.02	75.31	133.89
Diesel NY (ULSD)	336.72	▲ 8.4%	▲ 0.2%	▲ 40.5%	▲ 40.5%	372.17	241.70	534.54
Others								
VIX	21.67	▼ -0.95	▼ -9.95	▲ 4.45	▲ 4.34	25.67	16.91	36.45
BBG Commodity Index	112.81	▲ 0.1%	▲ 1.2%	▲ 13.8%	▲ 13.5%	118.91	100.58	136.61
S&P500	3 839.50	▼ -0.3%	▲ 7.1%	▼ -19.4%	▼ -19.7%	4 095.72	3 577.03	4 793.54
DAX	13 923.59	▲ 0.2%	▲ 14.9%	▼ -12.3%	▼ -12.3%	13 866.37	11 975.55	16 271.75
Shanghai Composite	3 089.26	▼ -2.5%	▲ 2.1%	▼ -15.1%	▼ -14.6%	3 225.56	2 886.43	3 632.33
WIG 20	1 792.01	▲ 2.9%	▲ 30.1%	▼ -20.9%	▼ -20.9%	1 806.02	1 358.50	2 411.11
KGHM	126.75	▲ 1.9%	▲ 44.6%	▼ -9.1%	▼ -9.1%	126.97	84.22	182.20

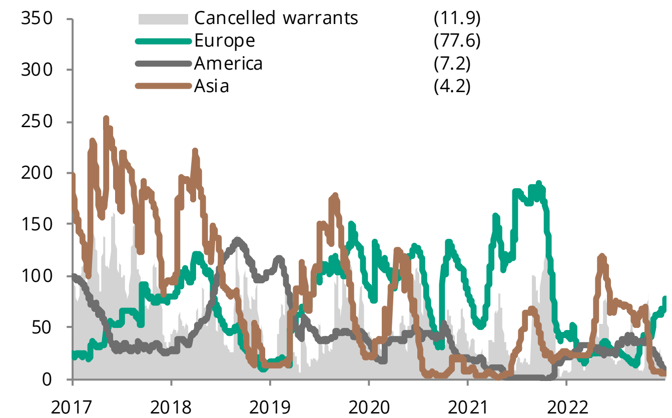
° change over: 2W = two weeks; QTD = quarter-to-day; YTD = year-to-date; 1Y = one year. [1] based on daily closing prices. [2] latest quoted price. [3] central banks' fixing rates (Bank of China HK for USD/CNY). [4].
Source: Bloomberg, KGHM Polska Miedź

Copper: official exchange stocks (thousand tonnes)



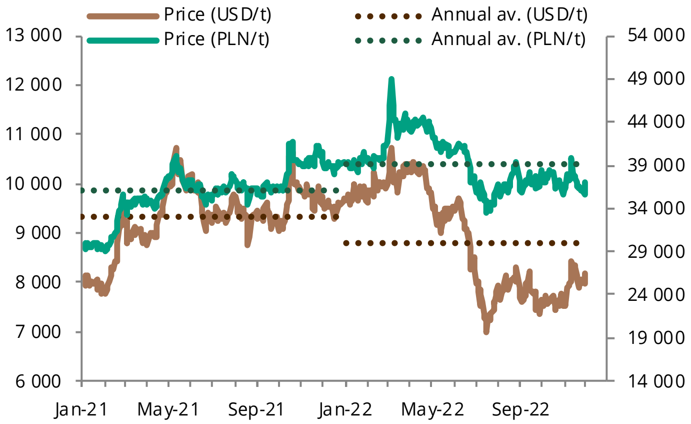
Note: Latest values in brackets. Source: Bloomberg, KGHM

Copper: official LME stocks (thousand tonnes)



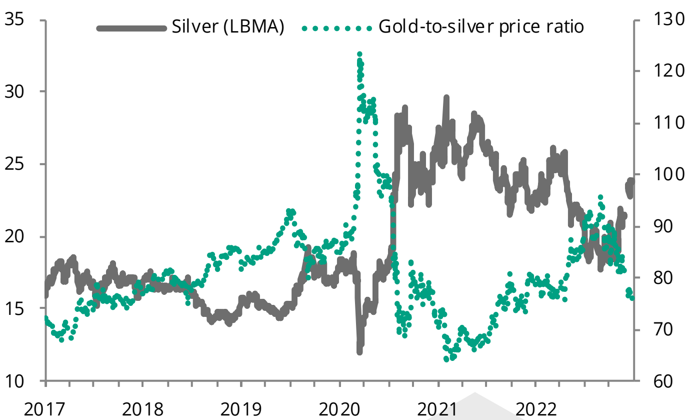
Note: Latest values in brackets. Source: Bloomberg, KGHM

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



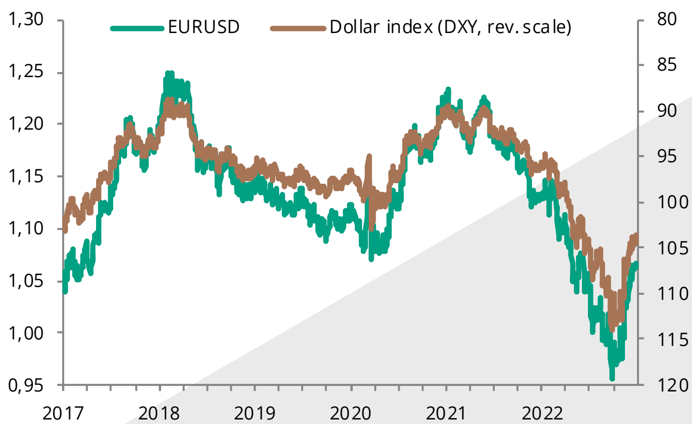
Source: Bloomberg, KGHM Polska Miedź

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



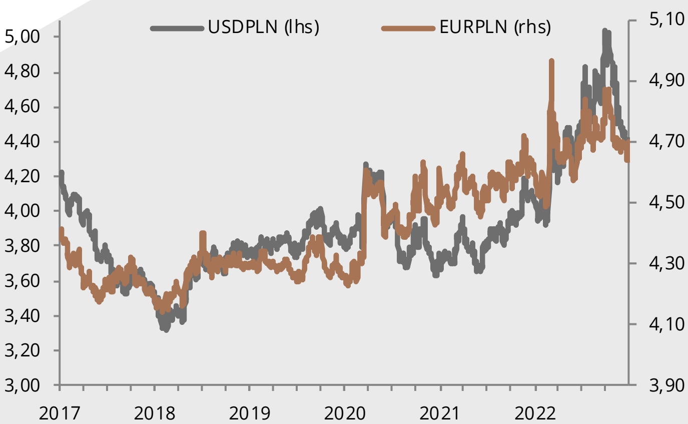
Source: Bloomberg, KGHM Polska Miedź

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

This document has been prepared based on the below listed reports, among others, published in the following period: **19 December 2022 – 1 January 2023.**

▪ 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 (charge-free logging)
- silver and gold: www.lbma.org.uk/pricing-and-statistics
- platinum and palladium: www.lppm.com/statistics.aspx

In case of questions or comments please contact us:

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