GLOBAL ECONOMY and

GRAPHITE ELECTRODE INDUSTRY

December 2023

& OUTLOOK 2024

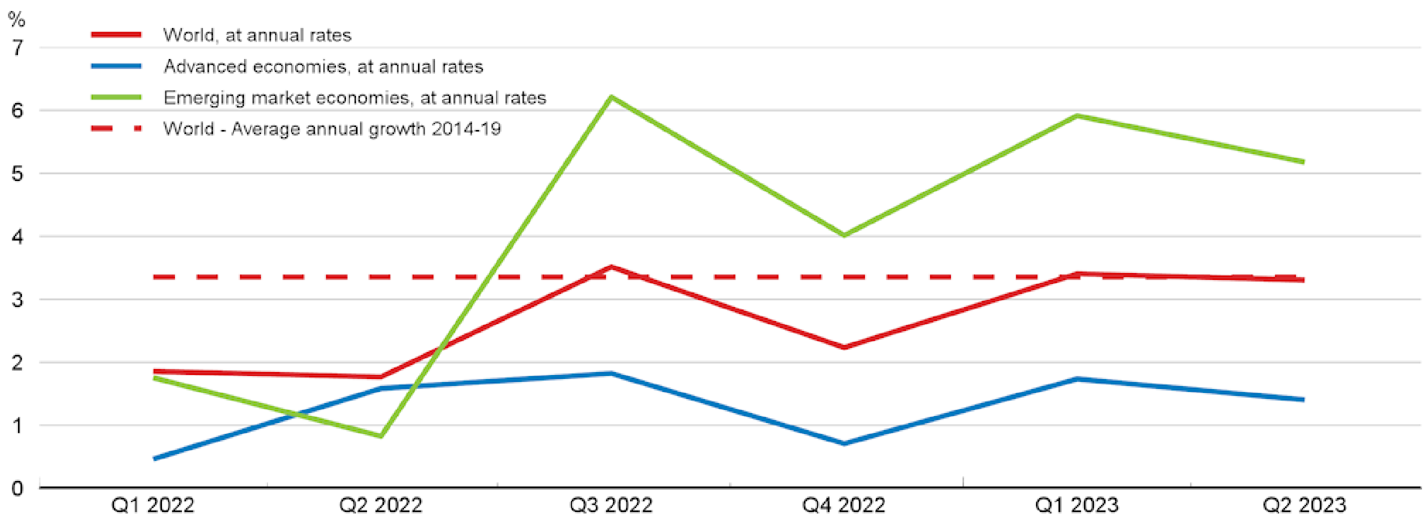
11 January 2024

Redefining ALPHA

PR-ALTZ-OLGG-0179-20230111-Rev1 ©

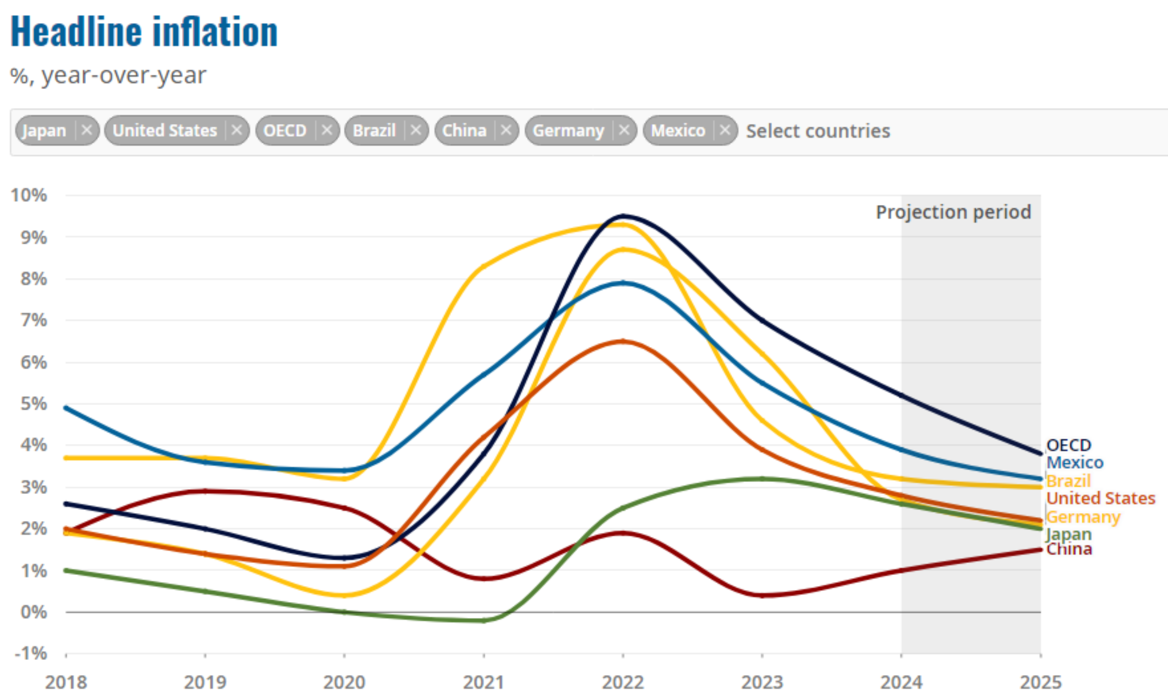
Global Economy

- The global economy faces twin threats: rising prices and slowing growth
- A potential boost from constrained household spending offers promise for the global economy
- According to OECD, global growth is projected to be 2.9% in 2023, and weaken to 2.7% in 2024. As inflation abates further and real incomes strengthen, the world economy is projected to grow by 3% in 2025. Global growth remains highly dependent on fast-growing Asian economies.



Source: https://www.oecd.org/

- Inflation is expected to ease in the absence of further large shocks to food and energy prices, projected headline inflation is expected to return to levels consistent with central bank targets in most major economies by the end of 2025. Annual OECD headline inflation is expected to fall gradually to 5.2% and 3.8% in 2024 and 2025 respectively, from 7.0% in 2023.

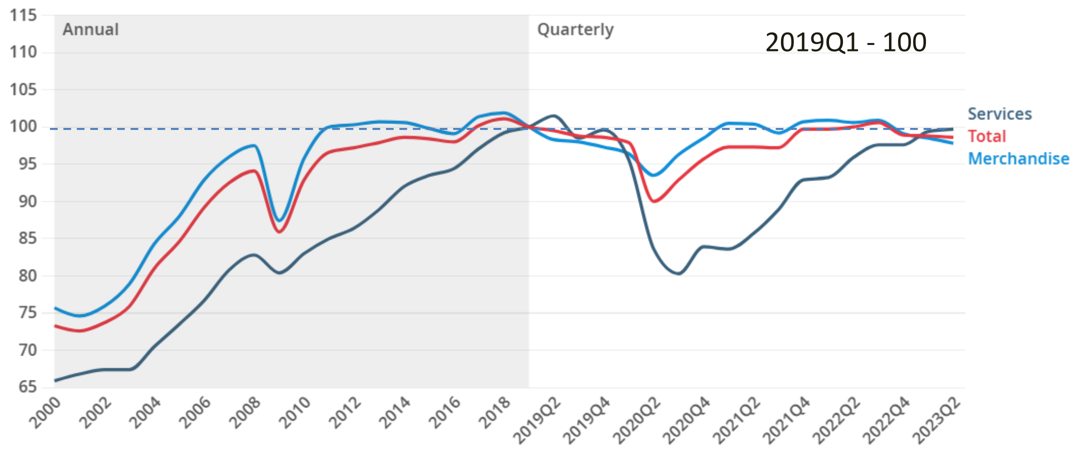


Source: https://www.oecd.org/

Global Economy

- Fiscal policy needs to prevent unsustainable debt increases. Public debt may rise, but strategic investments in aging populations and climate solutions can build a more sustainable future

- Trade growth is weak. Global trade growth has been surprisingly weak over the past year. This is worrying given the importance of trade for productivity and development. Merchandise trade volumes fell by 1.5% in the first half of the year, whilst services trade volumes are estimated to have risen by 6.4%, as the ongoing normalization of travel in Asia helped to boost tourism. Weak trade is not an entirely new development. Since the recovery from the pandemic, trade has fallen relative to GDP, particularly merchandise trade.



Source: https://www.oecd.org/

Global Economy

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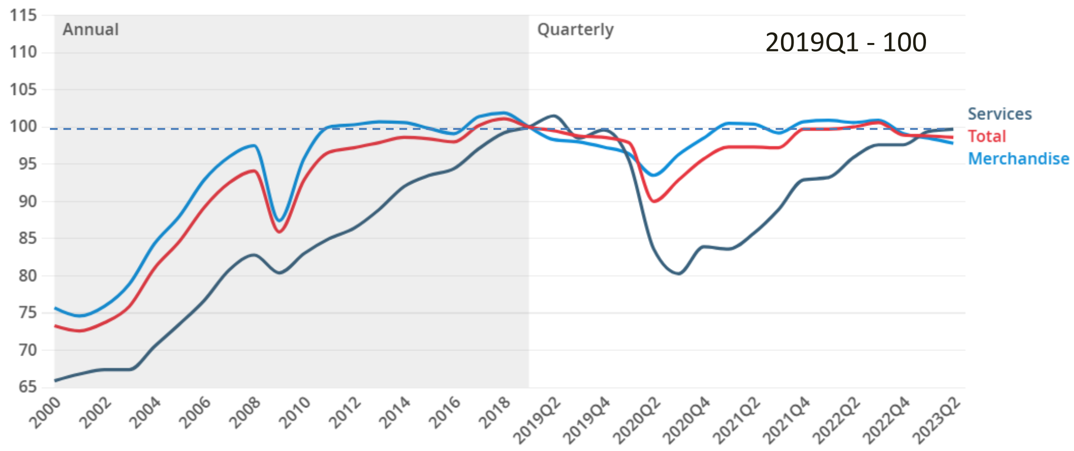
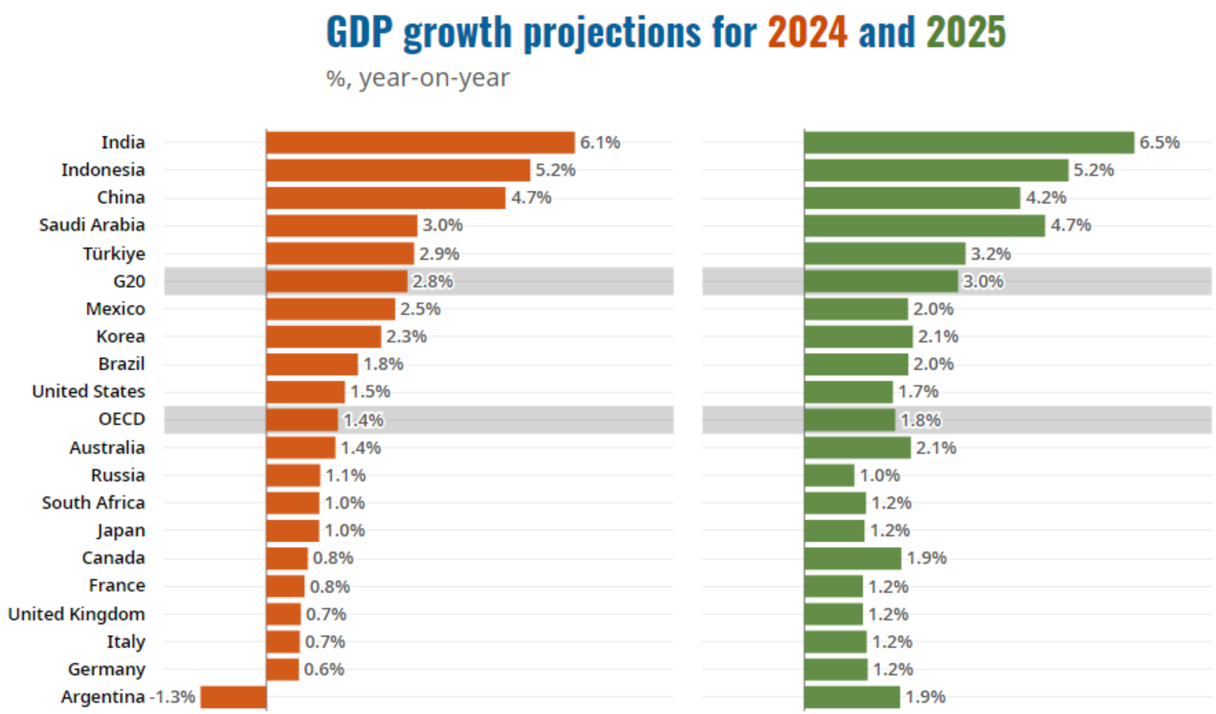


Source: https://www.oecd.org/

Global Economy in 2024 and 2025



- A growing divergence across economies is expected to persist in the near term, with growth in the emerging-market economies generally holding up better than in the advanced economies, and growth in Europe being relatively subdued compared to that in North America and the major Asian economies

Source: https://www.oecd.org/

Global Economy in 2024 and 2025

- The prospects for major economies and regions:

- United States and Canada: Expect a bumpy ride for both US and Canadian economies. Slower job growth and tighter money will cool domestic demand until mid-2024. Growth will dip before rebounding in 2025 as inflation eases and monetary policy loosens. Real GDP growth is projected to slow in both countries in 2024, to 1.5% in the United States from 2.4% in 2023, and in Canada to 0.8% from 1.2%, before growth recovers in 2025 to 1.7% in the United States and 1.9% in Canada.

- Europe: Major European economies, bruised by energy shocks and Ukraine-Russia conflict, will see sluggish growth gradually restored as inflation eases and money starts flowing freely again. Expect a slow climb from 0.6% growth in 2023 to 1.5% by 2025. UK's outlook is muted due to tighter finances, but still shows improvement. Tight job markets will keep inflation sticky for now.

Source: https://www.oecd.org/

Global Economy in 2024 and 2025

- China: China's 2023 growth rebound (5.2%) is fading, but policymakers are fighting back. Slower consumer spending and real estate weakness are expected to dampen growth in 2024 and 2025 (4.7% and 4.2%), but easier monetary policy and increased infrastructure investment aim to counter these headwinds. Low inflation (under 2%) provides some breathing room

- India: While many economies struggle, India stands tall. Unfazed by rising energy costs and global slowdown, it powers ahead with 6.3% growth this year and 6.1% next. Services exports and public investment are the secret sauce, with inflation easing and reforms promising even higher speeds down the road.

- Latin America: Latin America's economic landscape is uneven. While some ride the growth wave (Brazil, Mexico, Costa Rica), others face headwinds (Colombia, Chile) or even crisis (Peru, Argentina). By 2025, expect most economies to converge around 2-3% growth, with falling inflation paving the way for income recovery.

Source: https://www.oecd.org/

Global Economy in 2024 and 2025

- Central and Eastern Europe (CEE): CEE bounced back from Ukraine-Russia conflict and tight money challenges, but the fight against inflation isn't over. Steady growth awaits in 2024-25, though. Meanwhile, Türkiye's post-earthquake boom cools as it tightens belts to tame inflation.

- Japan and Korea: Japan continues along at 1% growth in 2024-25, its exports fading but wages ticking up. Korea slumps in 2023, hit by weak exports and tight money, but rebounds on a global chip boom, reaching 2% growth by 2025.

Source: https://www.oecd.org/

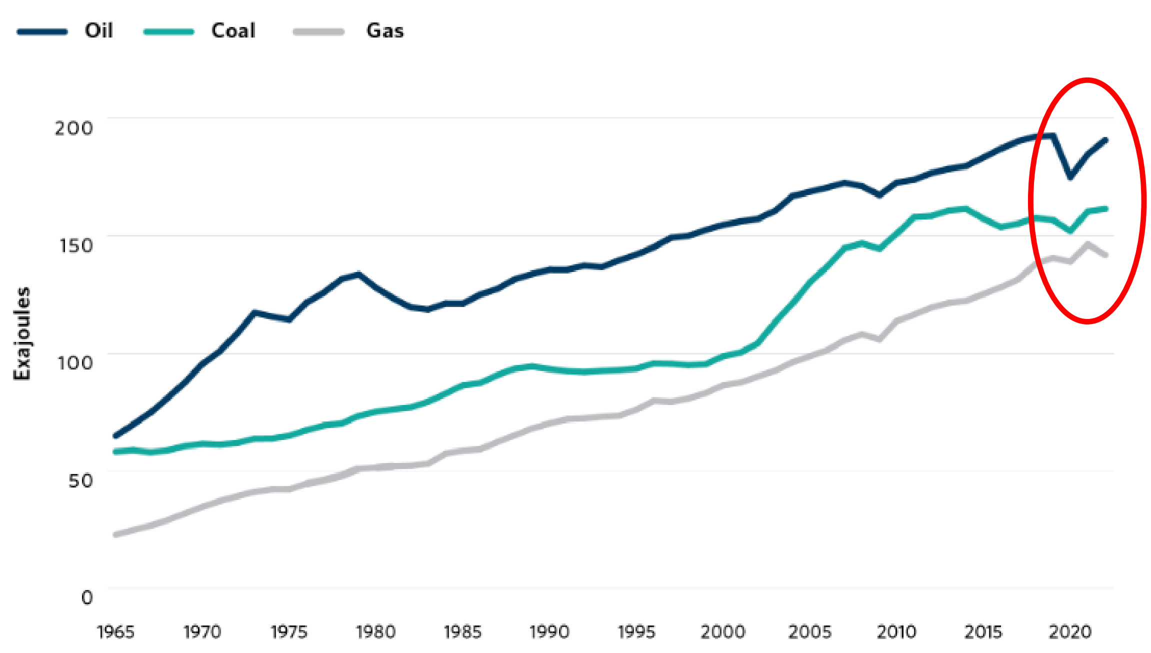
Decarbonization

- According to IEA (International Energy Agency), in 2023, companies and governments are projected to invest $1.8 trillion in assets, infrastructure, and businesses devoted to decarbonizing the global economy. These investments, as well as the trillions of dollars already contributed since 2000 and the trillions more that will flow thanks to economic and policy support for clean technologies, have the potential to substantially change the world's energy and climate systems.

- A turning point approaches. The International Energy Agency predicts a definitive end to the era of unchecked fossil fuel demand within this decade, with renewable energy and electric vehicles leading the charge, but that does not mean consumption of oil, gas, and coal will necessarily fall rapidly, or even initially fall at all. As the IEA executive director noted, "fossil fuels have held their share of global energy supply steady at about 80 per cent for decades." To date, renewable energy sources and EVs have merely displaced what otherwise would have been even more growth in fossil fuel consumption.

Source: https:// Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach - 2023 Update (windows.net) /

- But the end of fossil fuel growth means several things. China is by far the biggest determinant of global coal consumption, and so it will be essential to watch its policy, energy, and environmental decisions about coal. Oil now faces a steadily increasing demand erosion function in the form of EVs, which in 2022 displaced more than 1.5 million barrels per day of oil demand in road transport.



Source: Energy Institute, Statistical Review of World Energy

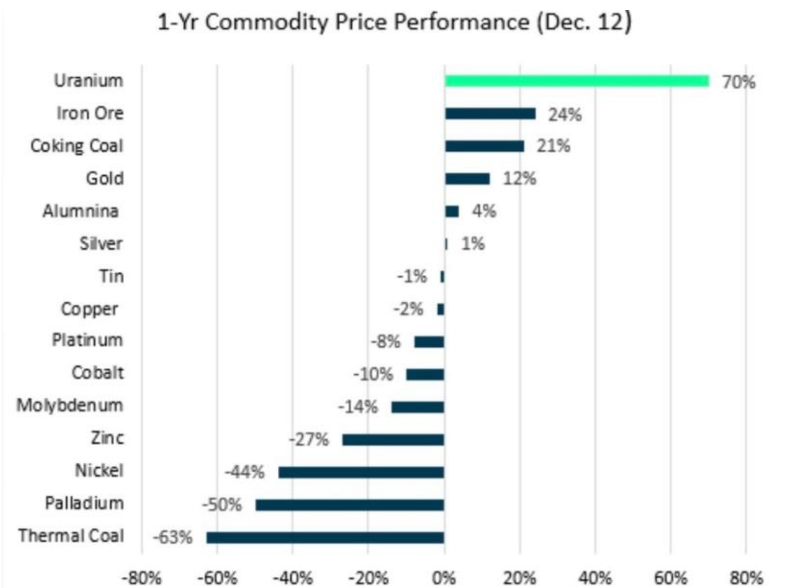
Decarbonization

- While both fuels are currently at all-time high consumption levels, they are also likely at a plateau and remain highly sensitivity to economic and policy factors and demand displacement. Natural gas consumption, on the other hand, is not at a plateau, nor is it likely to hit a plateau this decade. Nuclear power demand is increasing as well as an alternative source…

Source: Energy Institute, Statistical Review of World Energy

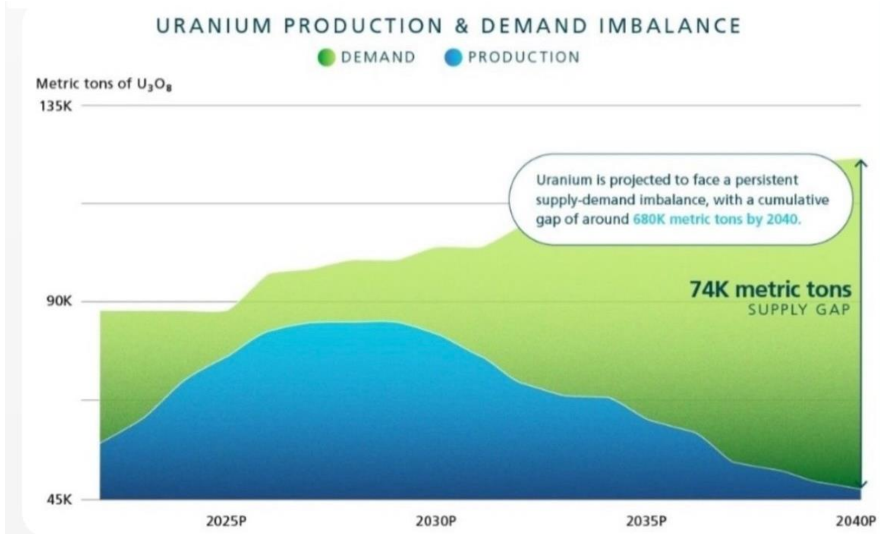
Nuclear power… Uranium price performance

- Uranium mining can't keep up with the demand of the nuclear power chain.
- An increase in the supply deficit threatens the profitability of new nuclear projects and the intention to replace oil and coal with this source.
- Miners are struggling to extract enough uranium, which has caused the mineral used for nuclear power production to reach its highest price in 16 years and appreciate 70% in 2023.



Source: Morgan Stanley

Uranium



- Cameco, one of the world's largest producers, recently said it will need to buy uranium from other sources to meet its obligations by the end of the year. Production in Niger and Kazakhstan is also struggling.

- The price of U308, the uranium mineral concentrate also known as "yellow cake," has reached its highest price since 2008.

- Analysts at Morgan Stanley mentioned that no other mineral chain has better valuation fundamentals than uranium right now.

Source: Morgan Stanley

Brent Crude Price

Brent crude futures rose driven by concerns over shipping security after an armed group attacked an oil tanker in Oman. This incident further escalated fears of a Middle East conflict, given the tanker's role in the Iran-US sanctions disputes. Furthermore, Libya's Sharara oilfield ceased production due to political protests, removing 300,000 barrels per day from the market.

Source: *https://www.tradingeconomics.com*

Mixed signals for iron ore: After hitting a 20-month high of $145 on January 4th, Policymakers inject liquidity, hinting at infrastructure spending, but steel mills tighten belts amid economic worries. Prices retreat from peaks, caught between potential stimulus and uncertain construction demand. Beijing refrained prices from falling more after their rally since November. Per the latest measures, the PBoC lent CNY 350 billion to other policy banks, including the China Construction Bank.

Source: https://www.tradingeconomics.com

Steam Coal Price

Japan and South Korea, the main consumers of high-grade coal in the Newcastle index out of Australia, increased their purchasing activity toward the end of the year as utilities piled on thermal coal instead of liquified natural gas to generate additional power and meet demand in the Northern Hemisphere winter. On the other hand, demand for lower coal grades from India and China slowed down and China opted to restore Russian coal levies at the start of 2024

Source: https://www.tradingeconomics.com

LME Steel Scrap CFR Turkey – USD / MT

Scrap offer prices to Turkey continued to increase in December with sellers maintaining their pricing power due to approaching holiday season and the upward trend observed in freight rates.

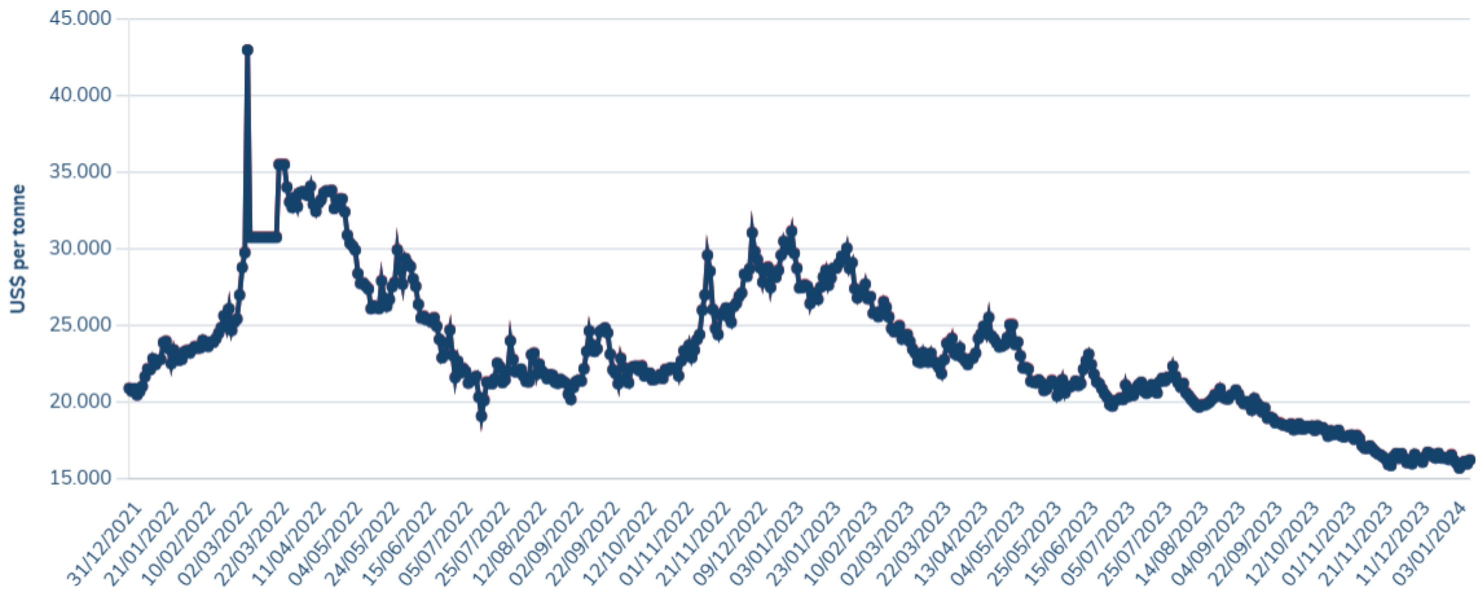
Source: https://www.lme.com

LME-HRC Steel-FOB China (USD/MT)

Source: https://www.lme.com

LME- Nickel Price- (USD/MT)

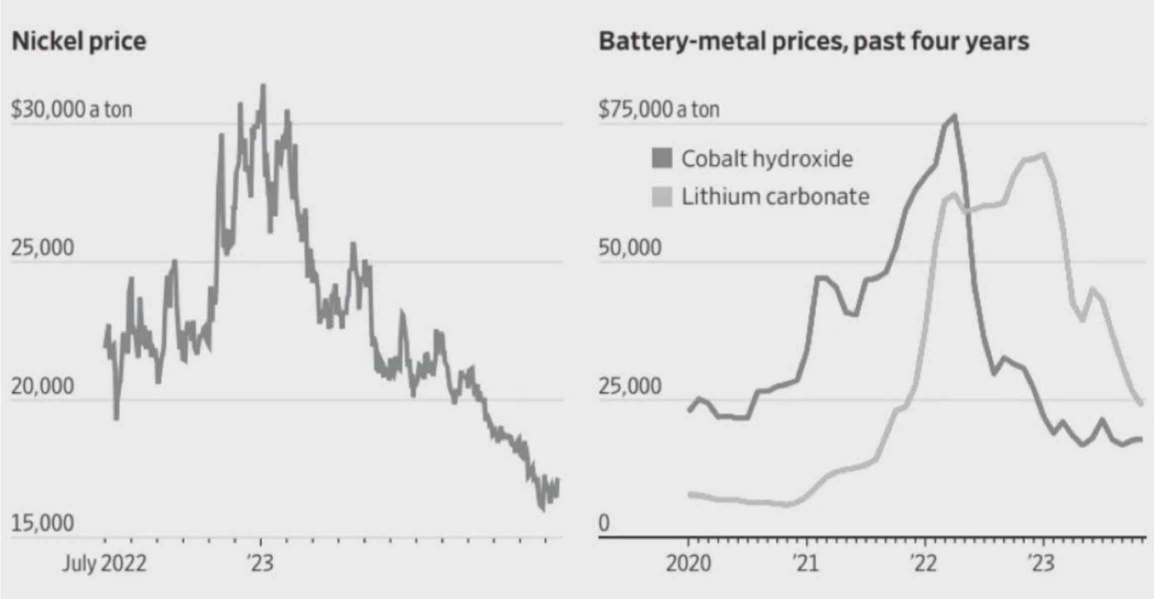
Nickel slumps below $16,500, nearing its lowest point in three years, as abundant supply from top producers (Indonesia, Philippines and China) drowns out modest demand prospects. Battery hopes and potential rate cuts provide some support, but global slowdown and China's woes keep the pressure on.



Source: https://www.lme.com

Nickel and Battery – Metal prices

Mining companies have expanded production with the long term in mind, because new mines take an average of 10 to 15 years to come online. With supply higher and demand falling short of expectations, prices have fallen. The price of lithium carbonate — the raw material for batteries — has fallen 70% in 2023. Cobalt prices fell by 25%, while nickel prices on the LME fell by 45%. Global nickel surplus is expected to easily surpass that of lithium and cobalt next year, according to International Nickel Study Group, the metal's supply surpassed demand by 223,000 metric tons in 2023, and the gap is expected to widen to 239,000 metric tons in 2024.



Source: WSJ, Bloomberg NEF, Dow Jones Newswires

Nickel and Battery – Metal prices

- Benchmark Mineral Intelligence projects a surplus of 30,000 tonnes in the global lithium market for next year. Cobalt prices are also expected to remain under pressure.

- But the supply of battery metals is largely determined by market conditions, including prices high enough to motivate miners to explore. Low prices for cobalt, lithium and nickel could delay the development of needed new sources, creating deficits, increasing battery prices in the long run, thereby delaying decarbonization efforts.

Source: WSJ, Bloomberg NEF, Dow Jones Newswires

LME-Aluminium Price (USD/MT)

Aluminum tumbles below $2,250 after Guinea scare fades despite hopes for Chinese stimulus. An explosion in a fuel depot in Guinea, which is the world's third-largest export of bauxite, a key input for aluminum production, halted industrial activity and triggered a late-year surge in aluminum prices. Still, prices have since retreated at the turn of the year as reports of strong investments from the UAE in Guinean bauxite infrastructure calmed the market's previous concerns over a supply crisis.

Source: https://www.lme.com

LME- Copper Price (USD/MT)

Beijing injects life into copper: Chinese stimulus and yuan defense lift prices, but overflowing warehouses keep a lid on the bounce. Data from the Shanghai Futures Exchange showed that inventories in key Chinese warehouses rose by 8% to 33,130 tonnes in the first week of January. The Chinese central bank set its daily reference rate for the yuan at its widest gap to estimates since November, defending the local currency and increasing the purchasing power of Chinese manufacturers to import copper

Source: https://www.lme.com

LME- Lead Price (USD/MT)

Lead prices slipped by nearly 14 percent from the start of 2023 to their lowest point of the year at US$1,973 per MT on December 7.

Source: https://www.lme.com

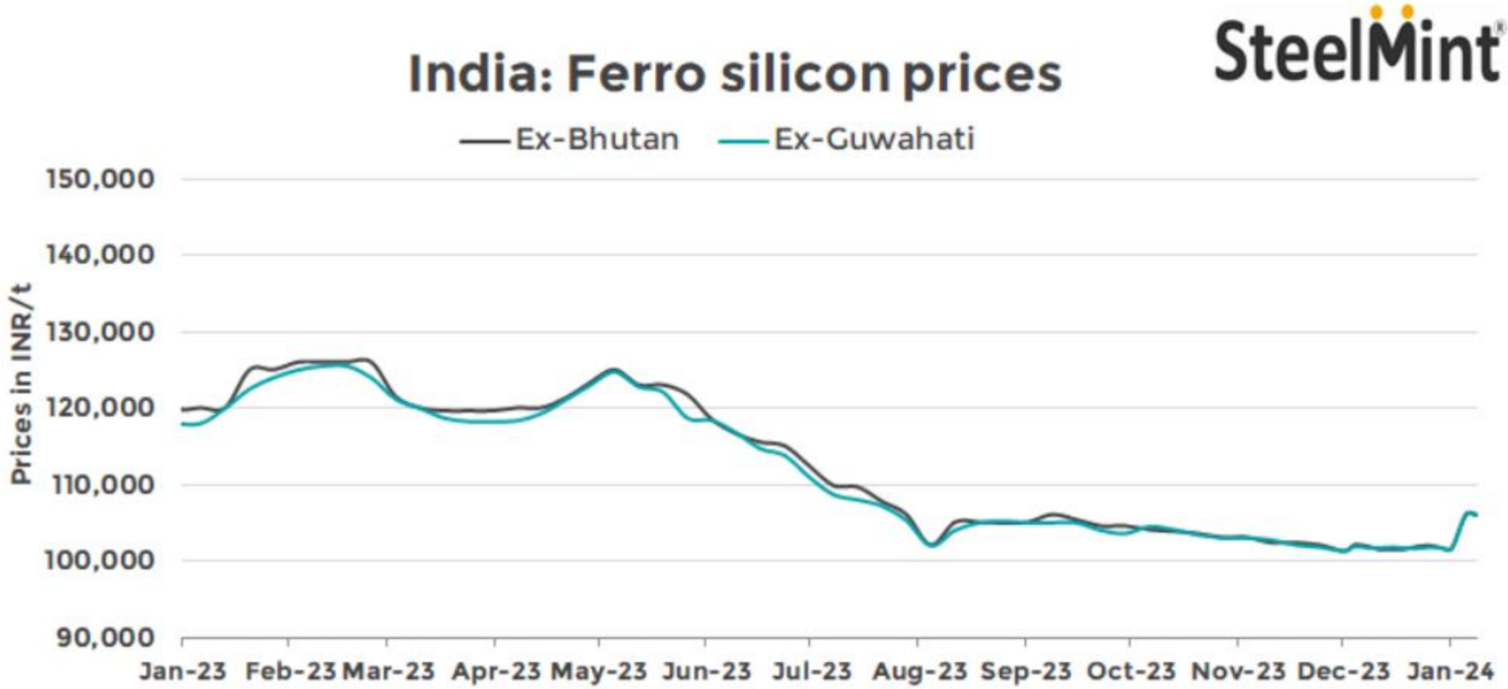
LME- Zinc Price (USD/MT)

Zinc traded above $2,500 a tonne, not far from an over 7-month high touched at the end of December, as the industrial outlook improved on hopes of early interest rate cuts by major central banks and fuller economic recovery of top consumer China.. the commodity remained pressured by prospects of another market surplus in 2024, as the output growth was set to outpace demand. In 2023, zinc prices dropped by 13%.

Source: https://www.lme.com

Ferro Alloys: Ferro Silicon Price Trend

Indian ferro silicon (70%) prices saw a w-o-w increase of INR 4,300/t ($52/t) w-o-w as compared to the previous evaluation on 1 January. The main reasons causing price hike were an increase in Bhutan's electricity rate and an increase in European inquiries. Bhutan's prices also saw an uptick of INR 4,400/t ($53/t) w-o-w and were standing at INR 106,000/t ($1,275/t) EXW on 8 January. In both the regions, around 1,800 t of deals were concluded at the same price.



Source: https://www.steelmint.com

Red Sea Crisis

- The Houthis have continued their attacks, targeting commercial vessels. These attacks have been ongoing since mid-November, with the latest incidents involving vessels unrelated to Israeli ownership or trade. Early January, a coalition of 12 nations, including the US and UK, issued a strong warning to the Houthis, urging them to halt their attacks in the Red Sea. This warning was accompanied by the possibility of strikes on Houthi targets in Yemen. Additionally, a representative from China at the UN also called for an end to these attacks. Despite this, the Houthis have persisted and carried out numerous attacks, including the deployment of drones, the use of boats laden with explosives, and an attempted hijacking using small vessels.

- Due to the ongoing attacks, six out of the top ten container carriers have made the decision to divert their routes away from the Red Sea. These carriers include Maersk, MSC, Hapag-Lloyd, ZIM, ONE, and CMA CGM (although CMA CGM is still operating some vessels in the area). However, most Asian carriers such as Evergreen, HMM, Yang Ming, OOCL and COSCO are not diverting, so container vessels are still using the Suez, but the total fleets of the carriers that are diverting represent 62% of global capacity.

Source: https://fbx.freightos.com/

- The diversions are leading to higher costs for carriers using more fuel and more ships for the longer journeys around the south of Africa, and higher container rates for shippers.

- But, even with the threat of some congestion and equipment shortages, carriers are much better-positioned to accommodate operationally for these diversions when compared to the disruptions seen during the pandemic. In 2021 and 2022 an extreme surge in demand for goods that overwhelmed ports was the main culprit of disruptions and spiking rates.

- So, the next couple weeks will likely be the worst in terms of capacity shortages and possible congestion. As demand eases in late January, the industry may have a reprieve to recover schedules, and with a typical lull in volumes following Lunar New Year, freight rates may start to ease in late February – but should remain higher than usual until container traffic returns in full to the Red Sea.

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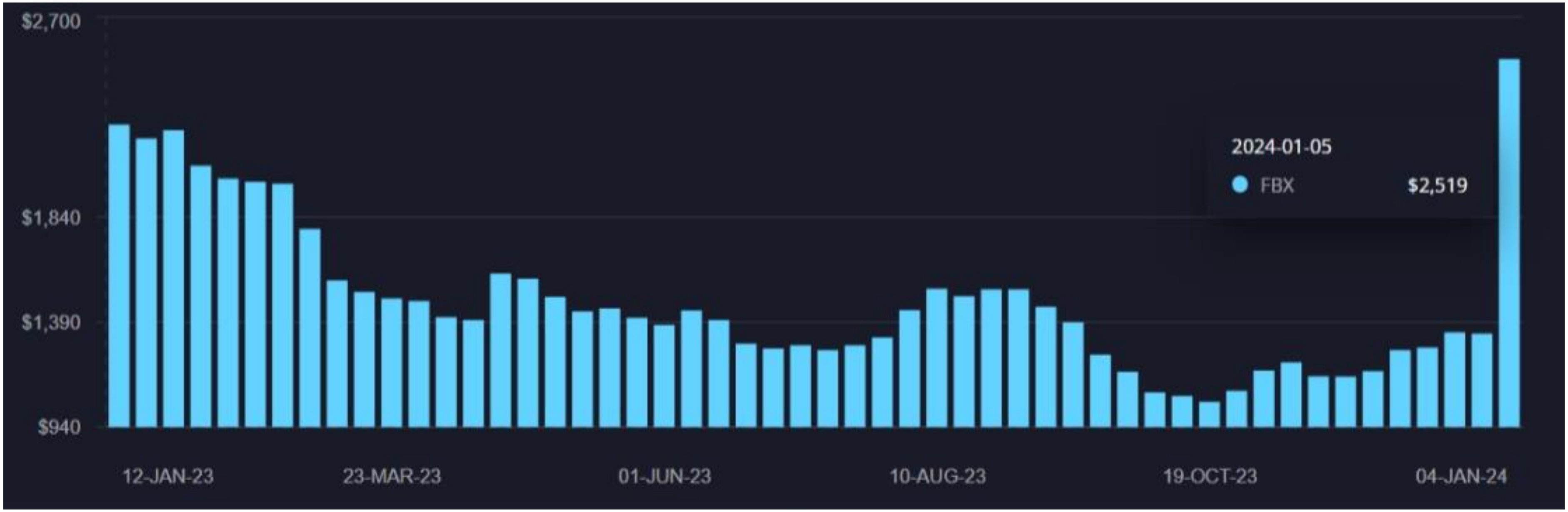
Source: https://fbx.freightos.com/

Freightos Baltic Index (FBX) Global Container Index

Freight movement for the last year



- The longer, more expensive, journey for Asian container trade with European, Mediterranean and N. America East Coast destinations is leading to spiking freight rates as new base prices and surcharges are being introduced in January

Source: https://fbx.freightos.com/

Global Crude Steel

Global Crude Steel Production

World crude steel production was 145.5 million tonnes (Mt) in November 2023, a 3.3% increase compared to November 2022.

Region	Nov 2023 (Mt)	% change Nov 23/22	Jan-Nov 2023 (Mt)	% change Jan-Nov 23/22
Africa	1,8	3,1	20,1	4,5
Asia and Oceania	104,8	2,2	1271,4	1,8
EU (27)	10,6	3,2	117,6	7,8
Europe, Other	3,7	22,2	37,9	6,3
Middle East	4,8	4,0	48,2	0,3
North America	8,9	3,1	100,2	2,5
Russia & other CIS + Ukraine	7,4	14,8	81,4	4,4
South America	3,5	0,6	38,3	6,0
Total 71 countries	145,5	3,3	1715,1	0,5

All regions showed positive growth in November, except South America, lead by a drop of 10% of steel production in Argentina.

Source: https://www.worldsteel.org/

Top 10 Crude Steel Producing countries

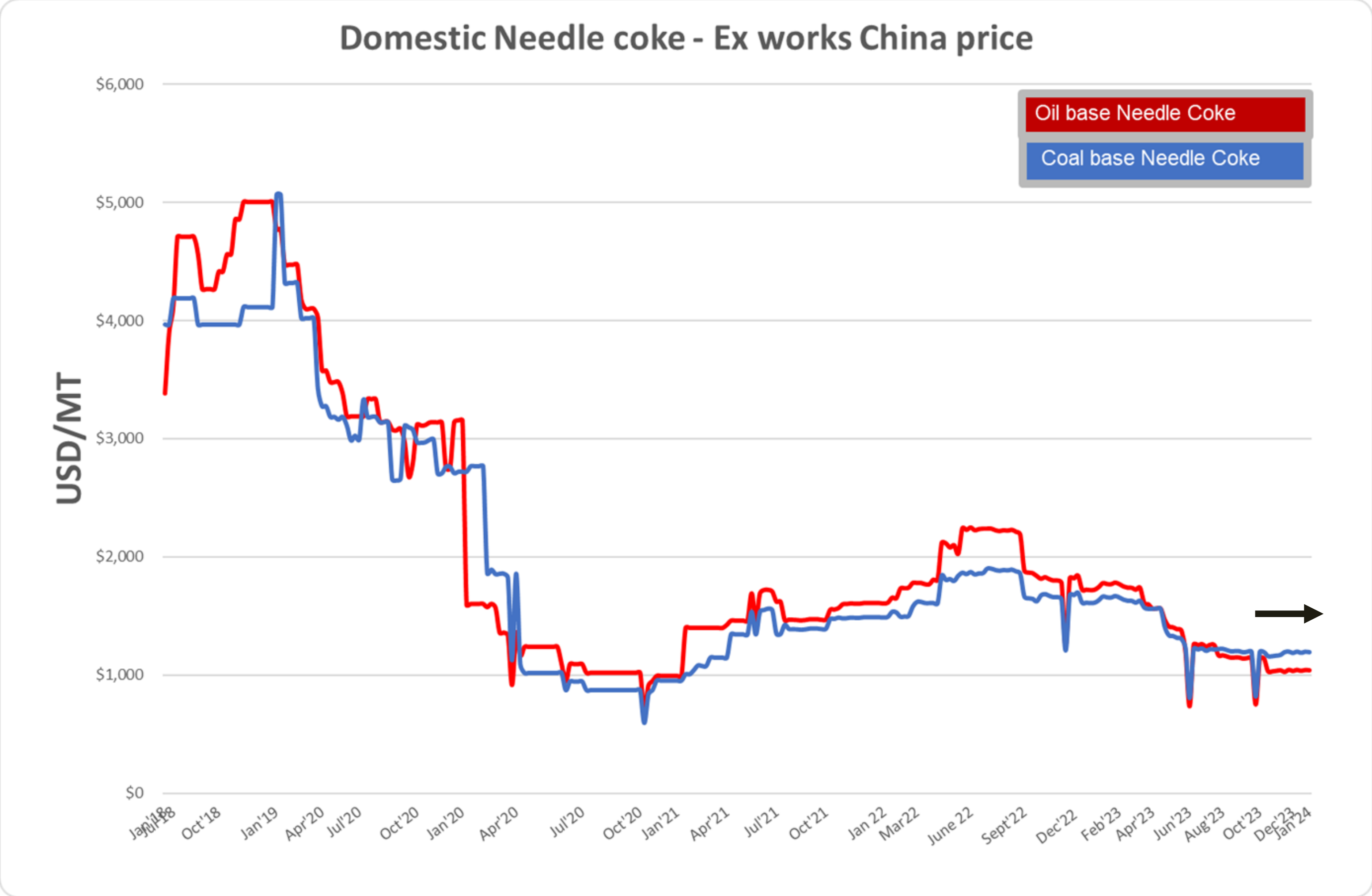
Top 10 steel-producing countries	Nov 2023 (Mt)	% change Nov 23/22	Jan-Nov 2023 (Mt)	% change Jan-Nov 23/22
China	76,1	↑ 0,4	952,1	↑ 1,5
India	11,7	↑ 11,4	128,2	↑ 12,1
Japan	7,1	↓ 0,9	80	↓ 2,8
United States	6,6	↑ 6,1	73,9	↓ 0,5
Russia estimated	6,4	↑ 12,5	70,2	↑ 6,4
South Korea	5,4	↑ 11,9	61,3	↑ 1,1
Germany	2,7	↓ 2,4	32,8	↓ 4,0
Türkiye	3	↑ 25,4	30,5	↓ 6,1
Brazil	2,7	↑ 3,8	29,3	↓ 7,1
Iran estimated	3	↑ 7,6	28,1	↑ 0,6

China, India and South Korea show a positive growth from January until November.

Source: https://www.worldsteel.org/

Graphite Electrode Outlook

GE Raw Material – Ex works China Needle Coke Price index



Source: http://www.iccsino.com

Graphite Electrode and Needle Coke prices

- According to customs data, from January to November 2023, China's total export of graphite electrodes was 271,400 tons, an increase of 0.37%

- Major western graphite electrodes producers reported a lower production rate due to the decline in the EAF operating rate in various regions.

- However, new EAF projects are progressing steadily, particularly in the US and Canada, and the medium-term outlook for GE remains positive.

Conclusion

- According to OECD, global growth is projected to be 2.9% in 2023, and weaken to 2.7% in 2024.
- Red Sea crisis - Six out of the top ten container carriers have made the decision to divert their routes away from the Red Sea. The total fleets of the carriers that are diverting represent 62% of global capacity.
- In 2023, price of key raw materials for batteries such as lithium carbonate has fallen 70%. Cobalt prices fell by 25%, while nickel prices on the LME fell by 45%
- World crude steel production increased marginally by 0.5% YoY in the period Jan. to Nov. 2023
- Despite of slower EAF production rates in various regions, new EAF projects are progressing steadily, particularly in the US and Canada, and the medium-term outlook for GE remains positive.

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