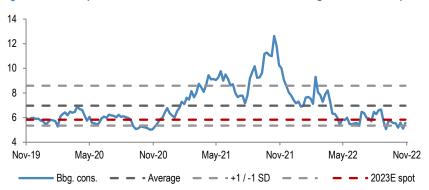


Kazatomprom

Model Update - remain OW

We update our model post <u>robust Q3'22 financials</u> released today. We make only minor adjustments to our midterm forecasts, as the results were broadly in line with our expectations, adjusted for seasonality (9M earnings tracked at on average ~80% of FY'22E JPMe). As a result, our Dec'24 PT remains unchanged at US \$36.0/GDR. Shares trade on inexpensive spot 2023/24E EV/EBITDA of 5.8x/5.3x, 11%/13% FCF yields & 8%/10% dividend yields and we remain OW, as we view KAP as an <u>attractive ESG/Energy transition play</u> in the uranium/nuclear power sector.

Figure 1: Kazatomprom - Historical EV/EBITDA based on Bloomberg consensus vs spot



Source: J.P. Morgan estimates, Bloomberg Finance L.P.

Overweight

KAPq.L, KAP LI Price (24 Nov 22):\$27.90 Price Target (Dec-24):\$36.00

CEEMEA Metals & Mining

Anna Antonova, CFA AC

(971) 4428-1766 anna.antonova@jpmorgan.com **Bloomberg** JPMA ANTONOVA <GO>

J.P. Morgan Securities plc

Dominic O'Kane

(44-20) 7742-6729 dominic.j.okane@jpmorgan.com J.P. Morgan Securities plc

Catherine Cunningham

(27-11) 507-0357 catherine.cunningham@jpmchase.com J.P. Morgan Equities South Africa (Pty) Ltd.

Patrick Jones

(44-20) 7742-5964 patrick.jones@jpmorgan.com J.P. Morgan Securities plc

Key Changes (FYE Dec)						
	Prev	Cur				
DPS - 22E ()	1,027.82	1,001.89				
DPS - 23E ()	1,034.50	1,049.59				
Adj. EPS - 22E ()	672.52	695.08				
Adj. EPS - 23E ()	1,245.84	1,254.48				
Adj. EBITDA - 22E (mn)	373,223	379,668				
Adi. EBITDA - 23E (mn)	534.155	536.382				

Style Exposure

Quant	Current Hist %Rank (1=Top)					
Factors	%Rank	6M	1Y	3Y	5Y	
Value						
Growth						
Momentum						
Quality						
Low Vol						

Sources for: Style Exposure – J.P. Morgan Quantitative and Derivatives Strategy; all other tables are company data and J.P. Morgan estimates.

See page 5 for analyst certification and important disclosures, including non-US analyst disclosures.

J.P. Morgan does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.





Company Data	
Shares O/S (mn)	259
52-week range (\$)	45.00-22.05
Market cap (\$ mn)	7,236.05
Exchange rate	1.00
Free float(%)	-
3M - Avg daily vol (mn)	0.10
3M - Avg daily val (\$ mn)	2.7
Volatility (90 Day)	51
Index	BKGDR
BBG BUY HOLD SELL	6 1 0

Key Metrics (FYE Dec)				
in millions	FY21A	FY22E	FY23E	FY24E
Financial Estimates				
Revenue	691,011	954,994	1,163,798	1,267,921
EBITDA	350,294	491,447	641,643	716,691
Adj. EBITDA	276,510	379,668	536,382	552,116
Adj. EBIT	207,248	309,519	462,834	468,332
Adj. net income	137,796	180,273	325,358	322,856
Net income	140,773	202,399	325,358	322,856
Adj. EPS	531.30	695.08	1,254.48	1,244.83
BBG EPS	768.73	757.33	1,117.25	1,321.50
Net debt	(93,948)	(114,351)	(237,245)	(387,080)
Cashflow from operations	118,729	373,136	410,568	438,927
Investing cashflow	(71,241)	(9,065)	(47,610)	(16,873)
FCFF	95,912	373,890	383,436	446,071
Margins and Growth				
Revenue growth	17.6%	38.2%	21.9%	8.9%
EBITDA growth	(6.4%)	37.3%	41.3%	2.9%
Adj. EPS growth	(12.0%)	30.8%	80.5%	(0.8%)
Ratios				
Adj. tax rate	22.1%	28.5%	21.9%	23.0%
Net debt/EBITDA	NM	NM	NM	NM
ROCE	13.0%	18.8%	33.7%	32.1%
ROE	12.2%	16.9%	33.5%	31.4%
Valuation				
FCFF yield	2.8%	11.1%	11.4%	13.2%
Dividend yield	6.8%	7.7%	8.1%	9.4%
EV/Revenue	4.8	3.5	2.8	2.4
EV/EBITDA	12.1	8.7	6.0	5.5
Adj. P/E	24.4	18.7	10.3	10.4
P/ BV	2.2	2.5	2.2	1.9

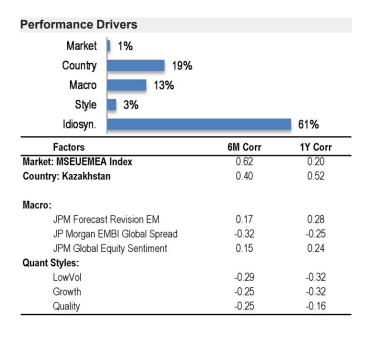
Summary Investment Thesis and Valuation

Investment Thesis

National Atomic Company Kazatomprom (KAP) is the world's largest primary uranium producer, commanding a 24% share of global supply (2021, on attributable basis) with low cost Tier-1 assets underpinning historically solid profitability and a strong balance sheet supporting an attractive shareholder returns potential. Amid gradually tightening uranium market fundamentals and with a guided ~20% uranium production growth into 2024, we believe KAP offers investors an attractively valued exposure to the uranium/nuclear power sector, which is increasingly acknowledged as being among main sources of low carbon MWs amid heightened focus on energy transition vs security. We thus rate the company as Overweight.

Valuation

Our Dec-24 Price Target is calculated as the equal weighting of: 1) 1.0x NPV under JPM base case uranium price, inflation and FX forecasts, and 2) 7.0x 2024E EV/EBITDA.





Investment Thesis, Valuation and Risks

Kazatomprom (Overweight; Price Target: \$36.00)

Investment Thesis

National Atomic Company Kazatomprom (KAP) is the world's largest primary uranium producer, commanding a 24% share of global supply (2021, on attributable basis) with low cost Tier-1 assets underpinning historically solid profitability and a strong balance sheet supporting an attractive shareholder returns potential. Amid gradually tightening uranium market fundamentals and with a guided ~20% uranium production growth into 2024, we believe KAP offers investors an attractively valued exposure to the uranium/nuclear power sector, which is increasingly acknowledged as being among main sources of low carbon MWs, especially with heightened focus on energy transition vs security. We thus rate the company as Overweight.

Valuation

Our Dec'24 Price Target is calculated as the equal weighting of: 1) 1.0x NPV under JPM base case uranium price, inflation and FX forecasts, and 2) 7.0x 2024E EV/EBITDA.

Risks to Rating and Price Target

Downside risks to our Overweight recommendation and price target include:

- Uranium prices. KAP's earnings and cash flows are highly sensitive to uranium prices. If metal prices significantly underperform JPM forecasts, this could materially impact KAP's cash flow, earnings and share price performance.
- **FX.** KAP's consolidated revenues are ~80% denominated in US\$, while its costs are >85% denominated in local currency, the Kazakh Tenge. A stronger KZT would thus be negative for earnings, cash flows and margins.
- Controlling shareholder & corporate governance. Kazakhstan's sovereign wealth
 fund Samruk-Kazyna is KAP's majority shareholder (with a 75% stake) and a key
 decision maker on corporate strategy and capital allocation. This increases the risk that
 the interests of controlling shareholder and minority shareholders may not fully align.
- **Geopolitical risks**. KAP's activities could be indirectly affected if US-Russia geopolitical tensions intensify in future, as KAP has 5 JVs with Russian state nuclear energy company Rosatom, which account for >30% of KAP's attributable uranium production.



Kazatomprom: Summary of Financials

Income Statement	FY20A					Cash Flow Statement	FY20A	FY21A	FY22E	FY23E	FY24E
Revenue		691,011				Cash flow from operating activities				410,568	
COGS	(319,624)	,	,	,	,	o/w Depreciation & amortization	61,984	69,262	70,150	73,548	83,784
Gross profit	267,833	288,044	408,417	551,816	628,646	o/w Changes in working capital	(59,358)(118,487)	(32,311)	(8,734)	(36,883)
SG&A	(43,934)	(49,811)	(65,104)	(74,454)	(85,267)						
Adj. EBITDA	295,465	276,510	379,668	536,382	552,116	Cash flow from investing activities	48,759	(71,241)	(9,065)	(47,610)	(16,873)
D&A	(61,984)	(69,262)	(70,150)	(73,548)	(83,784)	o/w Capital expenditure	(35,472)	(47,294)	(77,059)(138,470)(128,360)
Adj. EBIT	233,481	207,248	309,519	462,834	468,332	as % of sales	6.0%	6.8%	8.1%	11.9%	10.1%
Net Interest	(543)	(340)	2,943	3,562	6,278						
Adj. PBT	258,188	278,667	423,839	571,658	639,185	Cash flow from financing activities	(201,415)	(1,843)(312,381)(259,847)(272,219)
Tax	(63,776)	(61,618)	(120,683)	(124,982)	(147,117)	o/w Dividends paid	(99,002)(150,082)(227,388)(259,847)(272,219)
Minority Interest	(37,827)	(79,253)	(122,883)	(121,318)	(169,212)	o/w Shares issued/(repurchased)	-	-	-	-	-
Adj. Net Income	156,585	137,796	180,273	325,358	322,856	o/w Net debt issued/(repaid)	(72,898)	(10,583)	(3,700)	0	0
Reported EPS	707.68	542.78	780.39	1,254.48	1,244.83	Net change in cash	14,787	47,843	67,024	103,112	149,836
Adj. EPS	603.74	531.30	695.08	1,254.48	1,244.83						
						Adj. Free cash flow to firm	182,505			383,436	446,071
DPS	578.67	876.74	1,001.89	1,049.59	1,220.48	y/y Growth	29.2%	(47.4%)	289.8%	2.6%	16.3%
Payout ratio	81.8%	161.5%	128.4%	83.7%	98.0%						
Shares outstanding	259	259	259	259	259						
Balance Sheet	FY20A		FY22E		FY24E	Ratio Analysis	FY20A	FY21A	FY22E	FY23E	FY24E
Cash and cash equivalents	113,347	161,190	228,214	331,326	481,161	Gross margin	45.6%	41.7%	42.8%	47.4%	49.6%
Accounts receivable	117,418	220,138	159,772	204,141	231,611	EBITDA margin	50.3%	40.0%	39.8%	46.1%	43.5%
Inventories	233,389	275,856	350,337	308,380	308,380	EBIT margin	39.7%	30.0%	32.4%	39.8%	36.9%
Other current assets	428,942	567,637	630,237	650,597	694,560	Net profit margin	26.7%	19.9%	18.9%	28.0%	25.5%
Current assets	542,289	771,756	858,459	981,931	1,175,729						
PP&E	301,066	310,160	334,762	405,197	454,475	ROE	15.2%	12.2%	16.9%	33.5%	31.4%
LT investments	387	0	0	0	0	ROA	9.3%	7.6%	8.9%	14.7%	13.3%
Other non current assets	786,018	810,648	866,319	876,380	864,934	ROCE	14.9%	13.0%	18.8%	33.7%	32.1%
Total assets	1,689,279	1,951,504	2,114,151	2,312,606	2,539,535	SG&A/Sales	7.5%	7.2%	6.8%	6.4%	6.7%
						Net debt/Equity	0.0	NM	NM	NM	NM
Short term borrowings	21,526	11,317	12,594	12,594	12,594	Net debt/EBITDA	0.0	NM	NM	NM	NM
Payables	43,948	,	63,283	,	81,988						
Other short term liabilities	45,682	,	466,940	,	,	Sales/Assets (x)	0.3	0.4	0.5	0.5	0.5
Current liabilities	111,156		542,816	,		Assets/Equity (x)	1.6	1.6	1.9	2.3	2.4
Long-term debt	76,300	,	81,495	,	81,495	Interest cover (x)	544.1	813.3	NM	NM	NM
Other long term liabilities	238,331		244,504			Operating leverage	296.0%	(63.7%)	129.2%	226.5%	13.3%
Total liabilities	349,487		787,321			Tax rate	24.7%	22.1%	28.5%	21.9%	23.0%
Shareholders' equity	1,072,655	,		,		Revenue y/y Growth	17.0%	17.6%	38.2%	21.9%	8.9%
Minority interests	, ,	347,258	,	, ,	, ,	EBITDA y/y Growth	36.0%	(6.4%)	37.3%	41.3%	2.9%
Total liabilities & equity	1,689,279					EPS y/y Growth	30.1%	(12.0%)	30.8%	80.5%	(0.8%)
BVPS		5,926.59	<u> </u>	<u> </u>	<u> </u>	Valuation	FY20A	FY21A	FY22E	FY23E	FY24E
y/y Growth	7.9%	,	(13.7%)	,	•	P/E (x)	21.5	24.4	18.7	10.3	10.4
y/y G/OWIII	1.9/0	17.1/0	(13.170)	17.1/0	17.0/0	P/BV (x)	2.5	2.2	2.5	2.2	1.9
Not deht/(cash)	1 615	(93,948)	(11/1351)	(227 245)	(387 080)	EV/EBITDA (x)	11.6	12.1	8.7	6.0	5.5
Net debt/(cash)	4,010	(33,340)	(114,331)	(231,245)	(307,000)	Dividend Yield	4.5%	6.8%	7.7%	8.1%	9.4%
-										- '	

Source: Company reports and J.P. Morgan estimates.

Note: in millions (except per-share data).Fiscal year ends Dec. o/w - out of which



Analyst Certification: The Research Analyst(s) denoted by an "AC" on the cover of this report certifies (or, where multiple Research Analysts are primarily responsible for this report, the Research Analyst denoted by an "AC" on the cover or within the document individually certifies, with respect to each security or issuer that the Research Analyst covers in this research) that: (1) all of the views expressed in this report accurately reflect the Research Analyst's personal views about any and all of the subject securities or issuers; and (2) no part of any of the Research Analyst's compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed by the Research Analyst(s) in this report. For all Korea-based Research Analysts listed on the front cover, if applicable, they also certify, as per KOFIA requirements, that the Research Analyst's analysis was made in good faith and that the views reflect the Research Analyst's own opinion, without undue influence or intervention.

All authors named within this report are Research Analysts who produce independent research unless otherwise specified. In Europe, Sector Specialists (Sales and Trading) may be shown on this report as contacts but are not authors of the report or part of the Research Department.

Important Disclosures

- Market Maker/ Liquidity Provider: J.P. Morgan is a market maker and/or liquidity provider in the financial instruments of/related to Kazatomprom.
- Client: J.P. Morgan currently has, or had within the past 12 months, the following entity(ies) as clients: Kazatomprom.
- Debt Position: J.P. Morgan may hold a position in the debt securities of Kazatomprom, if any.

Company-Specific Disclosures: Important disclosures, including price charts and credit opinion history tables, are available for compendium reports and all J.P. Morgan—covered companies, and certain non-covered companies, by visiting https://www.jpmm.com/research/disclosures, calling 1-800-477-0406, or e-mailing research.disclosure.inquiries@jpmorgan.com with your request.



The chart(s) show J.P. Morgan's continuing coverage of the stocks; the current analysts may or may not have covered it over the entire period. J.P. Morgan ratings or designations: OW = Overweight, N= Neutral, UW = Underweight, NR = Not Rated

Explanation of Equity Research Ratings, Designations and Analyst(s) Coverage Universe:

J.P. Morgan uses the following rating system: Overweight [Over the next six to twelve months, we expect this stock will outperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Neutral [Over the next six to twelve months, we expect this stock will perform in line with the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Underweight [Over the next six to twelve months, we expect this stock will underperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Not Rated (NR): J.P. Morgan has removed the rating and, if applicable, the price target, for this



stock because of either a lack of a sufficient fundamental basis or for legal, regulatory or policy reasons. The previous rating and, if applicable, the price target, no longer should be relied upon. An NR designation is not a recommendation or a rating. In our Asia (ex-Australia and ex-India) and U.K. small- and mid-cap equity research, each stock's expected total return is compared to the expected total return of a benchmark country market index, not to those analysts' coverage universe. If it does not appear in the Important Disclosures section of this report, the certifying analyst's coverage universe can be found on J.P. Morgan's research website, https://www.ipmorganmarkets.com.

Coverage Universe: Antonova, Anna V: AD Ports (ADPORTS.AD), ALROSA (ALRS.MM), En+ Group (ENPLq.L), Evraz (EVRE.L), Ignitis Group (IGN1L.VL), KGHM (KGH.WA), Kazatomprom (KAPq.L), MMK (MAGNq.L), NLMK (NLMKq.L), Norilsk Nickel (NKELyq.L), PJSC Polyus (PLZL.MM), PJSC TMK (TRMK.MM), Polymetal International (POLYP.L), Polyus PJSC (PLZLq.L), RUSAL (0486) (0486.HK), Salik (SALIK.DU), Segezha Group (SGZH.MM), Severstal (SVSTq.L)

J.P. Morgan Equity Research Ratings Distribution, as of October 01, 2022

	Overweight (buy)	Neutral (hold)	Underweight (sell)
J.P. Morgan Global Equity Research Coverage*	50%	37%	13%
IB clients**	50%	46%	33%
JPMS Equity Research Coverage*	50%	38%	12%
IB clients**	70%	68%	50%

*Please note that the percentages might not add to 100% because of rounding.

**Percentage of subject companies within each of the "buy," "hold" and "sell" categories for which J.P. Morgan has provided investment banking services within the previous 12 months.

For purposes only of FINRA ratings distribution rules, our Overweight rating falls into a buy rating category; our Neutral rating falls into a hold rating category; and our Underweight rating falls into a sell rating category. Please note that stocks with an NR designation are not included in the table above. This information is current as of the end of the most recent calendar quarter.

Equity Valuation and Risks: For valuation methodology and risks associated with covered companies or price targets for covered companies, please see the most recent company-specific research report at http://www.jpmorganmarkets.com, contact the primary analyst or your J.P. Morgan representative, or email research.disclosure.inquiries@jpmorgan.com. For material information about the proprietary models used, please see the Summary of Financials in company-specific research reports and the Company Tearsheets, which are available to download on the company pages of our client website, http://www.jpmorganmarkets.com. This report also sets out within it the material underlying assumptions used.

A history of J.P. Morgan investment recommendations disseminated during the preceding 12 months can be accessed on the Research & Commentary page of http://www.jpmorganmarkets.com where you can also search by analyst name, sector or financial instrument.

Analysts' Compensation: The research analysts responsible for the preparation of this report receive compensation based upon various factors, including the quality and accuracy of research, client feedback, competitive factors, and overall firm revenues.

Registration of non-US Analysts: Unless otherwise noted, the non-US analysts listed on the front of this report are employees of non-US affiliates of J.P. Morgan Securities LLC, may not be registered as research analysts under FINRA rules, may not be associated persons of J.P. Morgan Securities LLC, and may not be subject to FINRA Rule 2241 or 2242 restrictions on communications with covered companies, public appearances, and trading securities held by a research analyst account.

Other Disclosures

J.P. Morgan is a marketing name for investment banking businesses of JPMorgan Chase & Co. and its subsidiaries and affiliates worldwide.

UK MIFID FICC research unbundling exemption: UK clients should refer to <u>UK MIFID Research Unbundling exemption</u> for details of JPMorgan's implementation of the FICC research exemption and guidance on relevant FICC research categorisation.

All research material made available to clients are simultaneously available on our client website, J.P. Morgan Markets, unless specifically permitted by relevant laws. Not all research content is redistributed, e-mailed or made available to third-party aggregators. For all research material available on a particular stock, please contact your sales representative.

Any long form nomenclature for references to China; Hong Kong; Taiwan; and Macau within this research material are Mainland China; Hong Kong SAR (China); Taiwan (China); and Macau SAR (China).

J.P. Morgan Research may, from time to time, write on issuers or securities targeted by economic or financial sanctions imposed or administered by the governmental authorities of the U.S., EU, UK or other relevant jurisdictions (Sanctioned Securities). Nothing in this report is intended to be read or construed as encouraging, facilitating, promoting or otherwise approving investment or dealing in such Sanctioned Securities. Clients should be aware of their own legal and compliance obligations when making investment decisions.

Any digital or crypto assets discussed in this research report are subject to a rapidly changing regulatory landscape. For relevant regulatory



advisories on crypto assets, including bitcoin and ether, please see https://www.jpmorgan.com/disclosures/cryptoasset-disclosure.

The author(s) of this research report may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so.

Exchange-Traded Funds (ETFs): J.P. Morgan Securities LLC ("JPMS") acts as authorized participant for substantially all U.S.-listed ETFs. To the extent that any ETFs are mentioned in this report, JPMS may earn commissions and transaction-based compensation in connection with the distribution of those ETF shares and may earn fees for performing other trade-related services, such as securities lending to short sellers of the ETF shares. JPMS may also perform services for the ETFs themselves, including acting as a broker or dealer to the ETFs. In addition, affiliates of JPMS may perform services for the ETFs, including trust, custodial, administration, lending, index calculation and/or maintenance and other services.

Options and Futures related research: If the information contained herein regards options- or futures-related research, such information is available only to persons who have received the proper options or futures risk disclosure documents. Please contact your J.P. Morgan Representative or visit https://www.theocc.com/components/docs/riskstoc.pdf for a copy of the Option Clearing Corporation's Characteristics and Risks of Standardized Options or https://www.finra.org/sites/default/files/Security_Futures_Risk_Disclosure_Statement_2018.pdf for a copy of the Security Futures Risk Disclosure Statement.

Changes to Interbank Offered Rates (IBORs) and other benchmark rates: Certain interest rate benchmarks are, or may in the future become, subject to ongoing international, national and other regulatory guidance, reform and proposals for reform. For more information, please consult: https://www.jpmorgan.com/global/disclosures/interbank offered rates

Private Bank Clients: Where you are receiving research as a client of the private banking businesses offered by JPMorgan Chase & Co. and its subsidiaries ("J.P. Morgan Private Bank"), research is provided to you by J.P. Morgan Private Bank and not by any other division of J.P. Morgan, including, but not limited to, the J.P. Morgan Corporate and Investment Bank and its Global Research division.

Legal entity responsible for the production and distribution of research: The legal entity identified below the name of the Reg AC Research Analyst who authored this material is the legal entity responsible for the production of this research. Where multiple Reg AC Research Analysts authored this material with different legal entities identified below their names, these legal entities are jointly responsible for the production of this research. Research Analysts from various J.P. Morgan affiliates may have contributed to the production of this material but may not be licensed to carry out regulated activities in your jurisdiction (and do not hold themselves out as being able to do so). Unless otherwise stated below, this material has been distributed by the legal entity responsible for production. If you have any queries, please contact the relevant Research Analyst in your jurisdiction or the entity in your jurisdiction that has distributed this research material.

Legal Entities Disclosures and Country-/Region-Specific Disclosures:

Argentina: JPMorgan Chase Bank N.A Sucursal Buenos Aires is regulated by Banco Central de la República Argentina ("BCRA"- Central Bank of Argentina) and Comisión Nacional de Valores ("CNV"- Argentinian Securities Commission" - ALYC y AN Integral N°51). Australia: J.P. Morgan Securities Australia Limited ("JPMSAL") (ABN 61 003 245 234/AFS Licence No. 238066) is regulated by the Australian Securities and Investments Commission and is a Market, Clearing and Settlement Participant of ASX Limited and CHI-X. This material is issued and distributed in Australia by or on behalf of JPMSAL only to "wholesale clients" (as defined in section 761G of the Corporations Act 2001). A list of all financial products covered can be found by visiting https://www.jpmm.com/research/disclosures. J.P. Morgan seeks to cover companies of relevance to the domestic and international investor base across all Global Industry Classification Standard (GICS) sectors, as well as across a range of market capitalisation sizes. If applicable, in the course of conducting public side due diligence on the subject company(ies), the Research Analyst team may at times perform such diligence through corporate engagements such as site visits, discussions with company representatives, management presentations, etc. Research issued by JPMSAL has been prepared in accordance with J.P. Morgan Australia's Research Independence Policy which can be found at the following link: J.P. Morgan Australia - Research Independence Policy. Brazil: Banco J.P. Morgan S.A. is regulated by the Comissao de Valores Mobiliarios (CVM) and by the Central Bank of Brazil. Ombudsman J.P. Morgan: 0800-7700847 / ouvidoria.jp.morgan@jpmorgan.com. Canada: J.P. Morgan Securities Canada Inc. is a registered investment dealer, regulated by the Investment Industry Regulatory Organization of Canada and the Ontario Securities Commission and is the participating member on Canadian exchanges. This material is distributed in Canada by or on behalf of J.P.Morgan Securities Canada Inc. Chile: Inversiones J.P. Morgan Limitada is an unregulated entity incorporated in Chile. China: J.P. Morgan Securities (China) Company Limited has been approved by CSRC to conduct the securities investment consultancy business. Dubai International Financial Centre (DIFC): JPMorgan Chase Bank, N.A., Dubai Branch is regulated by the Dubai Financial Services Authority (DFSA) and its registered address is Dubai International Financial Centre - The Gate, West Wing, Level 3 and 9 PO Box 506551, Dubai, UAE. This material has been distributed by JP Morgan Chase Bank, N.A., Dubai Branch to persons regarded as professional clients or market counterparties as defined under the DFSA rules. European Economic Area (EEA): Unless specified to the contrary, research is distributed in the EEA by J.P. Morgan SE ("JPM SE"), which is subject to prudential supervision by the European Central Bank ("ECB") in cooperation with BaFin and Deutsche Bundesbank in Germany. JPM SE is a company headquartered in Frankfurt with registered address at TaunusTurm, Taunustor 1, Frankfurt am Main, 60310, Germany. The material has been distributed in the EEA to persons regarded as professional investors (or equivalent) pursuant to Art. 4 para. 1 no. 10 and Annex II of MiFID II and its respective implementation in their home jurisdictions ("EEA professional investors"). This material must not be acted on or relied on by persons who are not EEA professional investors. Any investment or investment activity to which this material relates is only available to EEA relevant persons and will be engaged in only with EEA relevant persons. Hong Kong: J.P. Morgan Securities (Asia Pacific) Limited (CE number AAJ321) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission in Hong Kong, and J.P. Morgan Broking (Hong Kong) Limited (CE number AAB027) is regulated by the Securities and Futures Commission in Hong Kong. JP Morgan Chase Bank, N.A., Hong Kong (CE Number AAL996) is regulated by the Hong Kong Monetary Authority and the Securities and Futures



Commission, is organized under the laws of the United States with limited liability. Where the distribution of this material is a regulated activity in Hong Kong, the material is distributed in Hong Kong by or through J.P. Morgan Securities (Asia Pacific) Limited and/or J.P. Morgan Broking (Hong Kong) Limited. India: J.P. Morgan India Private Limited (Corporate Identity Number - U67120MH1992FTC068724), having its registered office at J.P. Morgan Tower, Off. C.S.T. Road, Kalina, Santacruz - East, Mumbai - 400098, is registered with the Securities and Exchange Board of India (SEBI) as a 'Research Analyst' having registration number INH000001873. J.P. Morgan India Private Limited is also registered with SEBI as a member of the National Stock Exchange of India Limited and the Bombay Stock Exchange Limited (SEBI Registration Number - INZ000239730) and as a Merchant Banker (SEBI Registration Number - MB/INM000002970). Telephone: 91-22-6157 3000, Facsimile: 91-22-6157 3990 and Website: http://www.jpmipl.com. JPMorgan Chase Bank, N.A. - Mumbai Branch is licensed by the Reserve Bank of India (RBI) (Licence No. 53/ Licence No. BY.4/94; SEBI - IN/CUS/014/ CDSL: IN-DP-CDSL-444-2008/ IN-DP-NSDL-285-2008/ INBI00000984/ INE231311239) as a Scheduled Commercial Bank in India, which is its primary license allowing it to carry on Banking business in India and other activities, which a Bank branch in India are permitted to undertake. For non-local research material, this material is not distributed in India by J.P. Morgan India Private Limited. Indonesia: PT J.P. Morgan Sekuritas Indonesia is a member of the Indonesia Stock Exchange and is registered and supervised by the Otoritas Jasa Keuangan (OJK). Korea: J.P. Morgan Securities (Far East) Limited, Seoul Branch, is a member of the Korea Exchange (KRX). JPMorgan Chase Bank, N.A., Seoul Branch, is licensed as a branch office of foreign bank (JPMorgan Chase Bank, N.A.) in Korea. Both entities are regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). For non-macro research material, the material is distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch. Japan: JPMorgan Securities Japan Co., Ltd. and JPMorgan Chase Bank, N.A., Tokyo Branch are regulated by the Financial Services Agency in Japan. Malaysia: This material is issued and distributed in Malaysia by JPMorgan Securities (Malaysia) Sdn Bhd (18146-X), which is a Participating Organization of Bursa Malaysia Berhad and holds a Capital Markets Services License issued by the Securities Commission in Malaysia. Mexico: J.P. Morgan Casa de Bolsa, S.A. de C.V.and J.P. Morgan Grupo Financiero are members of the Mexican Stock Exchange and are authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. New Zealand: This material is issued and distributed by JPMSAL in New Zealand only to "wholesale clients" (as defined in the Financial Markets Conduct Act 2013). JPMSAL is registered as a Financial Service Provider under the Financial Service providers (Registration and Dispute Resolution) Act of 2008. Pakistan: J. P. Morgan Pakistan Broking (Pvt.) Ltd is a member of the Karachi Stock Exchange and regulated by the Securities and Exchange Commission of Pakistan. Philippines: J.P. Morgan Securities Philippines Inc. is a Trading Participant of the Philippine Stock Exchange and a member of the Securities Clearing Corporation of the Philippines and the Securities Investor Protection Fund. It is regulated by the Securities and Exchange Commission. Russia: CB J.P. Morgan Bank International LLC is regulated by the Central Bank of Russia. Singapore: This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MCI (P) 060/08/2022 and Co. Reg. No.: 199405335R], which is a member of the Singapore Exchange Securities Trading Limited, and/or JPMorgan Chase Bank, N.A., Singapore branch (JPMCB Singapore), both of which are regulated by the Monetary Authority of Singapore. This material is issued and distributed in Singapore only to accredited investors, expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289 (SFA). This material is not intended to be issued or distributed to any retail investors or any other investors that do not fall into the classes of "accredited investors," "expert investors" or "institutional investors," as defined under Section 4A of the SFA. Recipients of this material in Singapore are to contact JPMSS or JPMCB Singapore in respect of any matters arising from, or in connection with, the material. As at the date of this material, JPMSS is a designated market maker for certain structured warrants listed on the Singapore Exchange where the underlying securities may be the securities discussed in this material. Arising from its role as a designated market maker for such structured warrants, JPMSS may conduct hedging activities in respect of such underlying securities and hold or have an interest in such underlying securities as a result. The updated list of structured warrants for which JPMSS acts as designated market maker may be found on the website of the Singapore Exchange Limited: http://www.sgx.com. South Africa: J.P. Morgan Equities South Africa Proprietary Limited and JPMorgan Chase Bank, N.A., Johannesburg Branch are members of the Johannesburg Securities Exchange and are regulated by the Financial Services Board. Taiwan: J.P. Morgan Securities (Taiwan) Limited is a participant of the Taiwan Stock Exchange (company-type) and regulated by the Taiwan Securities and Futures Bureau. Material relating to equity securities is issued and distributed in Taiwan by J.P. Morgan Securities (Taiwan) Limited, subject to the license scope and the applicable laws and the regulations in Taiwan. According to Paragraph 2, Article 7-1 of Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers (as amended or supplemented) and/or other applicable laws or regulations, please note that the recipient of this material is not permitted to engage in any activities in connection with the material that may give rise to conflicts of interests, unless otherwise disclosed in the "Important Disclosures" in this material. Thailand: This material is issued and distributed in Thailand by JPMorgan Securities (Thailand) Ltd., which is a member of the Stock Exchange of Thailand and is regulated by the Ministry of Finance and the Securities and Exchange Commission, and its registered address is 3rd Floor, 20 North Sathorn Road, Silom, Bangrak, Bangkok 10500. UK: Unless specified to the contrary, research is distributed in the UK by J.P. Morgan Securities plc ("JPMS plc") which is a member of the London Stock Exchange and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. JPMS plc is registered in England & Wales No. 2711006, Registered Office 25 Bank Street, London, E14 5JP. This material is directed in the UK only to: (a) persons having professional experience in matters relating to investments falling within article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) (Order) 2005 ("the FPO"); (b) persons outlined in article 49 of the FPO (high net worth companies, unincorporated associations or partnerships, the trustees of high value trusts, etc.); or (c) any persons to whom this communication may otherwise lawfully be made; all such persons being referred to as "UK relevant persons". This material must not be acted on or relied on by persons who are not UK relevant persons. Any investment or investment activity to which this material relates is only available to UK relevant persons and will be engaged in only with UK relevant persons. Research issued by JPMS plc has been prepared in accordance with JPMS plc's policy for prevention and avoidance of conflicts of interest related to the production of Research which can be found at the following link: J.P. Morgan EMEA - Research Independence Policy. U.S.: J.P. Morgan Securities LLC ("JPMS") is a member of the NYSE, FINRA, SIPC, and the NFA. JPMorgan Chase Bank, N.A. is a member of the FDIC. Material published by non-U.S. affiliates is distributed in the U.S. by JPMS who accepts responsibility for its content.



General: Additional information is available upon request. The information in this material has been obtained from sources believed to be reliable. While all reasonable care has been taken to ensure that the facts stated in this material are accurate and that the forecasts, opinions and expectations contained herein are fair and reasonable, JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively J.P. Morgan) make no representations or warranties whatsoever to the completeness or accuracy of the material provided, except with respect to any disclosures relative to J.P. Morgan and the Research Analyst's involvement with the issuer that is the subject of the material. Accordingly, no reliance should be placed on the accuracy, fairness or completeness of the information contained in this material. There may be data discrepancy in this material as a result of calculations, adjustments and/or translations to different languages, as applicable. J.P. Morgan accepts no liability whatsoever for any loss arising from any use of this material or its contents, and neither J.P. Morgan nor any of its respective directors, officers or employees, shall be in any way responsible for the contents hereof, apart from the liabilities and responsibilities that may be imposed on them by the relevant regulatory authority in the jurisdiction in question, or the regulatory regime thereunder. Opinions, forecasts or projections contained in this material represent J.P. Morgan's current opinions or judgment as of the date of the material only and are therefore subject to change without notice. Periodic updates may be provided on companies/industries based on company-specific developments or announcements, market conditions or any other publicly available information. There can be no assurance that future results or events will be consistent with any such opinions, forecasts or projections, which represent only one possible outcome. Furthermore, such opinions, forecasts or projections are subject to certain risks, uncertainties and assumptions that have not been verified, and future actual results or events could differ materially. The value of, or income from, any investments referred to in this material may fluctuate and/or be affected by changes in exchange rates. All pricing is indicative as of the close of market for the securities discussed, unless otherwise stated. Past performance is not indicative of future results. Accordingly, investors may receive back less than originally invested. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients. The recipients of this material must make their own independent decisions regarding any securities or financial instruments mentioned herein and should seek advice from such independent financial, legal, tax or other adviser as they deem necessary. J.P. Morgan may trade as a principal on the basis of the Research Analysts' views and research, and it may also engage in transactions for its own account or for its clients' accounts in a manner inconsistent with the views taken in this material, and J.P. Morgan is under no obligation to ensure that such other communication is brought to the attention of any recipient of this material. Others within J.P. Morgan, including Strategists, Sales staff and other Research Analysts, may take views that are inconsistent with those taken in this material. Employees of J.P. Morgan not involved in the preparation of this material may have investments in the securities (or derivatives of such securities) mentioned in this material and may trade them in ways different from those discussed in this material. This material is not an advertisement for or marketing of any issuer, its products or services, or its securities in any jurisdiction.

"Other Disclosures" last revised November 12, 2022.

Copyright 2022 JPMorgan Chase & Co. All rights reserved. This material or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.

Completed 25 Nov 2022 10:47 AM GMT

Disseminated 25 Nov 2022 10:47 AM GMT