

Vale

4Q23 production and sales: ironing out the production kinks

Maintain Rating: BUY | PO: 20.00 USD | Price: 13.99 USD

Strong production numbers and better iron px realization

Vale reported 4Q23 production and sales figures with total iron ore shipments at 90.3Mt (-1.8% y/y, 1.6% below BofAe), nickel at 47.9kt (-17.7% y/y; 6% above BofAe) and copper at 97.5kt (+36.2% y/y; in-line with BofAe). Iron ore production was 89.4Mt (+10.6% y/y) and above BBG cons. at 82.97Mt. Vale closed the year with iron ore production at 321Mt which comes above guidance of 315Mt. For copper, annual production reached 326.6kt which came above revised guidance of 325kt while for nickel it hit 165kt (in-line with guidance). Price realization for iron ore fines and pellets came around 2% above our forecast, compensating for weaker realizations in nickel and copper. Running a sensitivity analysis based on reported figures we remain confident in our ~\$6.5bn EBITDA forecast for 4Q23. We maintain our Buy rating on the stock seeing reasonable valuations at ~3.5x EV/EBITDA '24E, delivering 16% FCF yield and see a possibility of extraordinary dividend payments this year.

Ferrous: output beats, sales a shy miss

Total iron ore production of 89.4Mt beat Bloomberg and Visible Alpha consensus at ~83Mt, and rose 3.7% q/q and 10.6% y/y mostly on better output at Serra Norte, S11D, Vargem Grande and Itabira, coupled with higher third party purchases. Iron ore sales (including pellets and ROM) of 90.3Mt missed our model by 1.6% and consensus by a shy 0.7%, and led to a reported inventory consumption of ~3.9Mt. Meantime, pellet production of 9.9Mt rose 7.4% q/q and 19% y/y boosted by higher pellet feed availability from Brucutu, while sales of 10.3Mt (+19% q/q; +17% y/y) missed BofAe by 2.1%. The all-in premium reached US\$1.6/t, down from US\$3.8/t in 3Q23 mostly given the increase of high-silica products in the sales mix this quarter. Iron ore realized prices were \$118.3/t for fines (1.7% above us) and \$163.4/t for pellets (1.9% above us).

See page 3 for details on base metals...

Estimates(Dec) (US\$)	2021A	2022A	2023E	2024E	2025E
EPS	5.00	3.73	2.40	3.01	2.00
EPS Change (YoY)	354.5%	-25.4%	-35.7%	25.4%	-33.6%
Consensus EPS (Bloomberg)			2.25	2.61	2.44
DPS	2.79	1.47	1.30	1.20	0.95
Common EPS (US\$)	5.00	3.73	2.40	3.01	2.00
Common DPS (US\$)	2.79	1.47	1.30	1.20	0.95
Valuation (Dec)					
P/E	2.8x	3.8x	5.8x	4.6x	7.0x
Dividend Yield	19.9%	10.5%	9.3%	8.5%	6.8%
EV / EBITDA*	2.9x	4.7x	5.2x	4.9x	6.5x
Free Cash Flow Yield*	32.7%	22.6%	16.1%	15.8%	9.0%

* For full definitions of *IQmethod*SM measures, see page 5.

29 January 2024

Equity

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Stock Data

Price (ADR / Common)	13.99 USD / 69.17 BRL
Price Objective	20.00 USD / 95.00 BRL
Date Established	20-Nov-2023 / 9-Jan-2024
Investment Opinion	B-1-8 / B-1-8
52-Week Range	12.22 USD - 18.75 USD
Market Value (mn)	62,116 USD
Free Float	63.1%
Average Daily Value	298.17 USD
Shares Outstanding (mn)	4,440.0 / 4,440.0
BofA Ticker / Exchange	VALE / NYS
BofA Ticker / Exchange	VALEF / SAO
Bloomberg / Reuters	VALE US / VALE.N
ROE (2023E)	27.1%
Net Dbt to Eqty (Dec-2022A)	21.4%

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Refer to important disclosures on page 6 to 9. Analyst Certification on page 4. Price Objective Basis/Risk on page 4.

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Timestamp: 29 January 2024 06:03PM EST

iQprofileSM Vale

iQmethodSM – Bus Performance*

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Return on Capital Employed	29.0%	21.3%	17.1%	17.0%	11.4%
Return on Equity	68.9%	47.6%	27.1%	29.3%	17.3%
Operating Margin	49.6%	39.3%	35.2%	37.8%	30.1%
Free Cash Flow	20,302	14,036	9,983	9,793	5,605

iQmethodSM – Quality of Earnings*

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Cash Realization Ratio	1.0x	1.2x	1.6x	1.3x	1.5x
Asset Replacement Ratio	1.6x	1.7x	2.0x	2.0x	2.0x
Tax Rate	18.8%	10.4%	14.8%	20.0%	20.0%
Net Debt-to-Equity Ratio	5.8%	21.4%	28.6%	17.9%	19.1%
Interest Cover	16.1x	12.9x	8.3x	10.4x	7.4x

Income Statement Data (Dec)

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Sales	54,663	43,839	42,000	44,178	39,221
% Change	37.0%	-19.8%	-4.2%	5.2%	-11.2%
Gross Profit	32,594	19,811	18,076	19,299	14,333
% Change	53.4%	-39.2%	-8.8%	6.8%	-25.7%
EBITDA	33,755	20,973	18,971	19,978	15,104
% Change	52.5%	-37.9%	-9.5%	5.3%	-24.4%
Net Interest & Other Income	3,080	2,268	(1,085)	(1,175)	(1,558)
Net Income (Adjusted)	24,175	16,744	10,247	12,502	8,295
% Change	328.6%	-30.7%	-38.8%	22.0%	-33.6%

Free Cash Flow Data (Dec)

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Net Income from Cont Operations (GAAP)	24,491	17,390	11,640	12,502	8,295
Depreciation & Amortization	3,051	3,171	2,995	3,282	3,282
Change in Working Capital	871	476	657	661	397
Deferred Taxation Charge	NA	NA	NA	NA	NA
Other Adjustments, Net	(3,078)	(1,555)	691	(151)	237
Capital Expenditure	(5,033)	(5,446)	(6,000)	(6,500)	(6,605)
Free Cash Flow	20,302	14,036	9,983	9,793	5,605
% Change	257.1%	-30.9%	-28.9%	-1.9%	-42.8%
Share / Issue Repurchase	0	0	0	0	0
Cost of Dividends Paid	(13,483)	(6,603)	(5,539)	(4,965)	(3,944)
Change in Debt	(1,245)	(1,070)	915	(248)	584

Balance Sheet Data (Dec)

(US\$ Millions)	2021A	2022A	2023E	2024E	2025E
Cash & Equivalents	11,721	4,736	1,847	5,009	4,154
Trade Receivables	3,914	4,319	4,182	3,532	3,136
Other Current Assets	6,725	6,471	7,695	7,815	7,817
Property, Plant & Equipment	41,931	44,938	50,417	53,301	59,726
Other Non-Current Assets	25,151	26,430	26,566	26,566	26,566
Total Assets	89,442	86,894	90,707	96,224	101,398
Short-Term Debt	1,204	489	948	930	971
Other Current Liabilities	13,994	13,402	13,036	13,166	13,169
Long-Term Debt	12,578	12,223	12,679	12,448	12,992
Other Non-Current Liabilities	26,360	23,422	22,798	22,798	22,798
Total Liabilities	54,136	49,536	49,461	49,343	49,929
Total Equity	35,306	37,358	41,246	46,881	51,469
Total Equity & Liabilities	89,442	86,894	90,707	96,224	101,398

* For full definitions of iQmethodSM measures, see page 5.

Company Sector

Non-Ferrous-Mining

Company Description

Vale is the largest producer of iron ore and pellets, and the largest nickel producer. Vale also produces copper, coal, copper, manganese, and ferroalloys and holds equity stakes in some steel producers/projects.

Investment Rationale

We rate Vale as Buy. VALE's earnings are almost entirely driven by the iron ore price, and our rating reflects BofA's more optimistic iron ore house view. We see the higher iron ore prices driving higher FCF generation, which could open the possibility of higher shareholder returns. We also like Vale's exposure to copper and nickel prices and could see a turnaround in the operation after the recent stake sale.

Stock Data

Average Daily Volume	21,313,352
Shares / Common	1.00

Quarterly Earnings Estimates

	2022	2023
Q1	0.94A	0.42A
Q2	0.89A	0.22A
Q3	0.98A	0.67A
Q4	0.84A	1.07E

Nickel sales above BofAe; copper in line

Total nickel production rose ~21% q/q to 44.9Kt, while copper production rose ~21.4% q/q to 99.1Kt. On a y/y basis, copper output increased ~49.5%, while nickel output dropped 5.3% y/y. Copper output improved on a y/y basis mostly on higher Salobo output, due to the Salobo III ramp up. Canada copper increased slightly y/y. Nickel output dropped y/y mostly on lower Brazil output given maintenance at Onça Puma, which should end in 1Q24. Nickel output increased in Indonesia and was stable in the Canadian operations as 3rd party feed more than offset lower output. Sales were at 97.5Kt for copper up ~36.2% y/y and 47.9Kt for nickel, down 17.7% y/y. Copper sales were slightly below our forecast while nickel sales were 6.3% above. On a q/q basis, copper sales were up 32.1%, while nickel sales increased 22.2% q/q.

4Q23 production and sales summary

Exhibit 1: Vale – 4Q23 production summary (as reported)

Iron ore production in 4Q23 came at 89.4Mt up 10.6% y/y

US\$m	4Q23A	3Q23A	q/q	4Q22A	y/y
Production volume					
Iron ore (Mt)	89.4	86.2	3.7%	80.9	10.6%
Pellets (Mt)	9.9	9.2	7.4%	8.3	19.2%
Nickel (Kt)	44.9	42.1	6.7%	47.4	-5.3%
Copper (Kt)	99.1	81.6	21.4%	66.3	49.5%

Including third-party purchases, run-of-mine and feed for pelletizing plants

Source: BofA Global Research, company reports

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Exhibit 2: Vale – 4Q23 sales summary (as reported)

Total sales of ferrous minerals were fairly in line with our estimates

	4Q23A	3Q23A	q/q	4Q22A	y/y	BofAe	Act vs Est
Sales volume							
Iron ore fines (Mt)	80.0	71.9	11.3%	83.2	-3.8%	81.3	-1.5%
Pellets (Mt)	10.3	8.6	19.4%	8.8	17.0%	10.5	-2.1%
Total ferrous (Mt)	90.3	80.6	12.1%	92.0	-1.8%	91.8	-1.6%
Nickel (Kt)	47.9	39.2	22.2%	58.2	-17.7%	45.1	6.3%
Copper (Kt)	97.5	73.8	32.1%	71.6	36.2%	98.2	-0.7%
Price							
Iron ore (\$/t)	118.3	105.1	12.6%	95.6	23.7%	116.3	1.7%
Pellets (\$/t)	163.4	161.2	1.4%	165.7	-1.4%	160.3	1.9%
Nickel (\$/t)	18,420.0	21,250.0	-13.3%	24,517.2	-24.9%	19,017.2	-3.1%
Copper (\$/t)	7,941.0	7,682.9	3.4%	8,291.7	-4.2%	8,166.3	-2.8%

Source: BofA Global Research estimates, company reports

Iron ore fines sales include run of mine (ROM)

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Exhibit 3: Vale – 2024 production guidance

Vale kept their 2024 guidance

2024E production guidance	Current	BofA estimate	BofA estimate vs Guidance
Iron Ore (Mt)	310-320	302	-2.7% / -5.7%
Nickel (Kt)	160-175	168	5.1% / -3.9%
Copper (Kt)	320-335	316	-1.2% / -5.6%

Source: BofA Global Research estimates, company reports

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Price objective basis & risk

Vale (VALE / VALEF)

Our US\$20 (R\$95/local share) PO is based on a 50/50 blended valuation approach. On multiples, we use a 4.0x 2024E EV/EBITDA (slightly below its normalized 4.5-5x given elevated prices), and our DCF using a WACC of 12% and terminal growth rate of 2.5%. We use a below normalized 4.0x EV/EBITDA 2024E, below its 5x historical average given our above-normal iron ore forecasts.

Downside risks to our price objective: 1) weaker than expected iron ore prices, 2) a global economic slowdown, negatively impacting metals prices, 3) appreciation of the Brazilian Real and the Canadian Dollar (80% of Vale's costs are denominated in those currencies), without an offsetting increase in metal prices, 4) slowdown in infrastructure spending or global steel production, mainly in China, 5) higher freight rates, reducing Vale's competitiveness in China, 6) higher government intervention, and 7) more fallout from its Brumadinho tailings dam tragedy.

Upside risks: 1) Stronger than expected iron ore prices, 2) stronger than expected global economic growth, 3) acceleration of infrastructure spending or global steel production, mainly in China, and 4) change in China's policy on steel production cuts.

Analyst Certification

We, Caio Ribeiro, Guilherme Rosito and Leonardo Neratika, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

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BofA Securities is currently acting as exclusive Financial Advisor to Manara Minerals Investment Company LLC in connection with its proposed strategic partnership with Vale S.A. on Vale Base Metals Limited, which was announced on 27 Jul 2023.

Latin America - Natural Resources Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	3R Petroleum	XPXXF	RRRP3 BZ	Leonardo Marcondes
	Alpek SAB de CV	ALPKF	ALPEKA MM	Leonardo Marcondes
	CSN	SIDHF	CSNA3 BZ	Caio Ribeiro
	CSN	SID	SID US	Caio Ribeiro
	Dexco SA	DURXF	DXCO3 BZ	Leonardo Neratika
	Empresas CMPC SA	XEMCF	CMPC CI	Leonardo Neratika
	Enauta Participacoes S.A.	QGEPI	ENAT3 BZ	Leonardo Marcondes
	Orbia	MXCHF	ORBIA* MM	Leonardo Marcondes
	Petro Rio	HRTPI	PRI03 BZ	Caio Ribeiro
	Petrobras	PBRQF	PETR3 BZ	Caio Ribeiro
	Petrobras	PBR	PBR US	Caio Ribeiro
	Petrobras PN	PBRA	PBR/A US	Caio Ribeiro
	Petrobras PN	PTRBF	PETR4 BZ	Caio Ribeiro
	PetroReconcavo	XPXYF	RECV3 BZ	Leonardo Marcondes
	Suzano	XXRTF	SUZB3 BZ	Caio Ribeiro
	Suzano S.A.	SUZ	SUZ US	Caio Ribeiro
	Ternium	TX	TX US	Caio Ribeiro
	Usiminas SA	USNZY	USNZY US	Caio Ribeiro

Latin America - Natural Resources Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Usiminas SA	USSPF	USIM5 BZ	Caio Ribeiro
	Vale	VALE	VALE US	Caio Ribeiro
	Vale	VALEF	VALE3 BZ	Caio Ribeiro
	Vibra Energia SA	XUBRF	VBBR3 BZ	Leonardo Marcondes
NEUTRAL				
	Bradespar	BRDQF	BRAP4 BZ	Caio Ribeiro
	Companhia Brasileira de Alumínio	XZUDF	CBAV3 BZ	Leonardo Neratika
	CSN Mineracao	XZRAF	CMIN3 BZ	Caio Ribeiro
	Ecopetrol S.A.	XESSF	ECOPETL CB	Caio Ribeiro
	Ecopetrol S.A.	EC	EC US	Caio Ribeiro
	Gerdau S. A.	GGBUF	GGBR4 BZ	Caio Ribeiro
	Gerdau S.A.	GGB	GGB US	Caio Ribeiro
	Metalurgica Gerdau	MZGPF	GOAU4 BZ	Caio Ribeiro
	Ultrapar	XLRUF	UGPA3 BZ	Leonardo Marcondes
	Ultrapar Pa-ADR	UGP	UGP US	Leonardo Marcondes
UNDERPERFORM				
	Empresas Copec SA	PZDCF	COPEC CI	Leonardo Neratika
	Grupo Mexico	GMBXF	GMEXICOB MM	Caio Ribeiro
	Klabn S.A	XLWDF	KLBN11 BZ	Caio Ribeiro
	Klabn S.A	KLBY	KLBY US	Caio Ribeiro
	Southern Copper	SCCO	SCCO US	Caio Ribeiro
	YPF SA	YPF	YPF US	Leonardo Marcondes
	YPF SA	YPFSF	YPFD AR	Leonardo Marcondes
RSTR				
	Braskem SA-A	BAKAF	BRKM5 BZ	Leonardo Marcondes
	Braskem SA-ADR	BAK	BAK US	Leonardo Marcondes

iQmethodSM Measures Definitions

Business Performance	Numerator	Denominator
Return On Capital Employed	$\text{NOPAT} = (\text{EBIT} + \text{Interest Income}) \times (1 - \text{Tax Rate}) + \text{Goodwill Amortization}$	$\text{Total Assets} - \text{Current Liabilities} + \text{ST Debt} + \text{Accumulated Goodwill Amortization}$
Return On Equity	Net Income	Shareholders' Equity
Operating Margin	Operating Profit	Sales
Earnings Growth	Expected 5 Year CAGR From Latest Actual	N/A
Free Cash Flow	Cash Flow From Operations – Total Capex	N/A
Quality of Earnings	Numerator	Denominator
Cash Realization Ratio	Cash Flow From Operations	Net Income
Asset Replacement Ratio	Capex	Depreciation
Tax Rate	Tax Charge	Pre-Tax Income
Net Debt-To-Equity Ratio	$\text{Net Debt} = \text{Total Debt} - \text{Cash \& Equivalents}$	Total Equity
Interest Cover	EBIT	Interest Expense
Valuation Toolkit	Numerator	Denominator
Price / Earnings Ratio	Current Share Price	Diluted Earnings Per Share (Basis As Specified)
Price / Book Value	Current Share Price	Shareholders' Equity / Current Basic Shares
Dividend Yield	Annualised Declared Cash Dividend	Current Share Price
Free Cash Flow Yield	Cash Flow From Operations – Total Capex	$\text{Market Cap} = \text{Current Share Price} \times \text{Current Basic Shares}$
Enterprise Value / Sales	$\text{EV} = \text{Current Share Price} \times \text{Current Shares} + \text{Minority Equity} + \text{Net Debt} + \text{Other LT Liabilities}$	Sales
EV / EBITDA	Enterprise Value	$\text{Basic EBIT} + \text{Depreciation} + \text{Amortization}$

iQmethodSM is the set of BofA Global Research standard measures that serve to maintain global consistency under three broad headings: Business Performance, Quality of Earnings, and validations. The key features of iQmethod are: A consistently structured, detailed, and transparent methodology. Guidelines to maximize the effectiveness of the comparative valuation process, and to identify some common pitfalls.

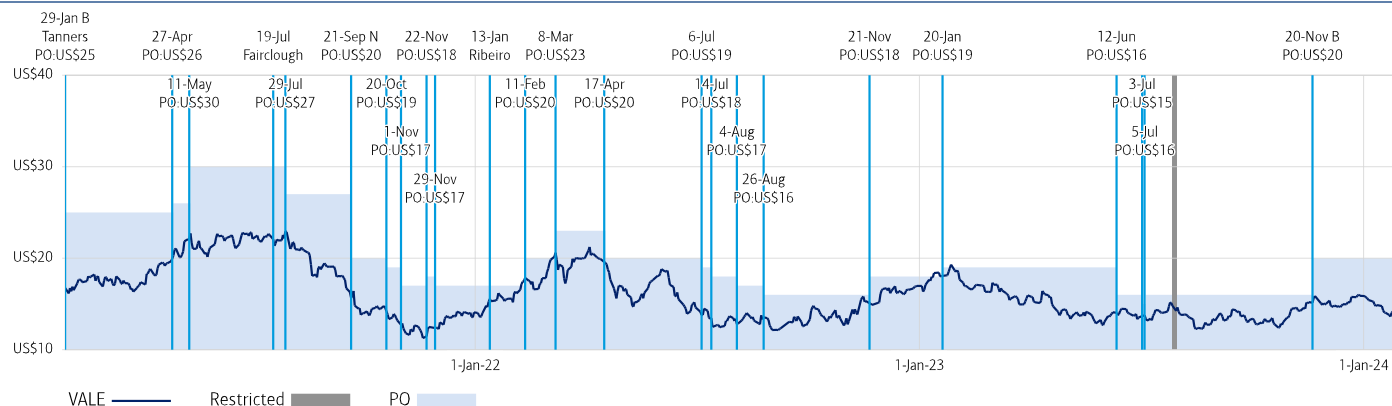
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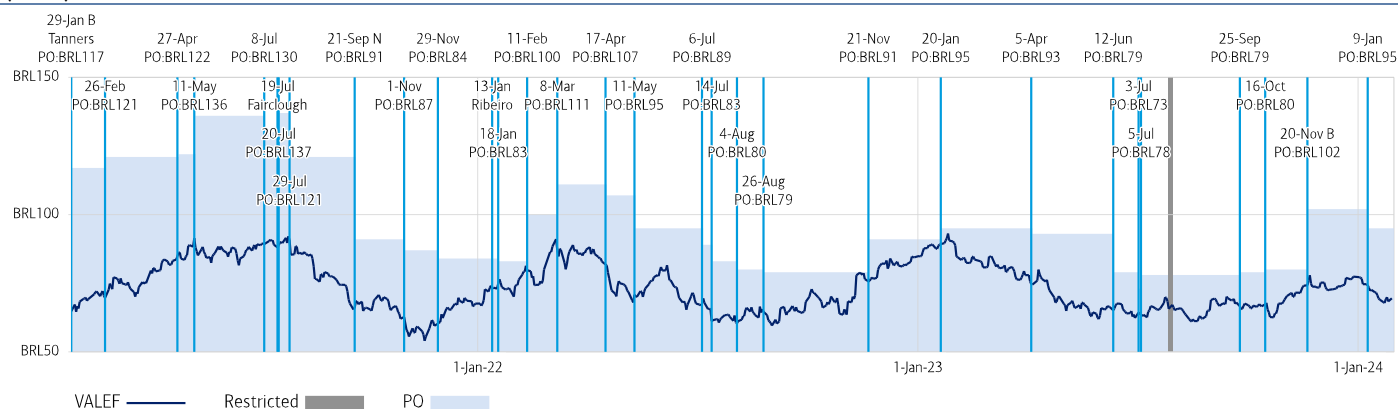
Important Disclosures

Vale SA (VALE) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Vale (VALEF) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Equity Investment Rating Distribution: Non-Ferrous Metals/Mining & Minerals Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	58	53.70%	Buy	26	44.83%
Hold	24	22.22%	Hold	10	41.67%
Sell	26	24.07%	Sell	13	50.00%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

^{R1} Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R2}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

^{R2}Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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