

## ESG Matters - US

# JPMorgan Chase: key insights from climate strategy meeting with mgmt.

### A closer look at JPM's climate strategy

On November 20, we hosted a hybrid group meeting with JP Morgan's (JPM) Global Head of Corporate Advisory and Sustainable Solutions (Rama Variankaval) for an in-depth discussion on the company's climate strategy. Given the role of the Financials sector in funding the energy transition and reducing emissions in portfolio companies, our discussion focused heavily on JPM's green financing ambitions, financed emissions targets (GHG emissions associated with the with investment and lending activity), as well as the implications of the IRA and the Basel-III Endgame proposal.

### IRA tailwind, Basel & rates headwinds to green investing

Mr. Variankaval sees the IRA as a massive catalyst for green investments yet suggests that the IRA's 300-500bps reduction in cost of capital is currently negated by increased rates and risk premia. Mr. Variankaval also noted that the higher levels of capital required to comply with Federal Reserve's "Basel III endgame" proposal could make certain green products and services uneconomical (see [JPMorgan Chase & Co.: Higher for longer](#)). Excluding this impact however, Mr. Variankaval estimates that renewable tax equity financing could triple or even quadruple over time thanks to the IRA.

### A new approach to calculating financed emissions

JPMorgan has established specific emission reduction targets for eight carbon-intensive sectors in its financing portfolio, aligning with their 2050 net-zero emissions objectives. Although the bank has introduced new GHG reduction goals for shipping and aluminum in the 2023 climate report, targets for its Real Estate and Agriculture portfolios are yet to be set. Among these targets, JPM has introduced a new Energy Mix target for end-use (Scope 3) emissions from all energy sources (i.e., including both - oil & gas and zero carbon sources, like solar and wind). The current "energy mix target," aims to cut the carbon intensity of its energy financing portfolio by 36% by 2030 (using 2019 as a baseline). While this could theoretically reduce its financed emissions without cutting support to the oil and gas sector, JPM anticipates a shift toward cleaner energy sources over time.

### The opportunity for methane abatement

To reduce Scope 1 and 2 emissions of Oil & Gas companies in its portfolio, JPM is supporting and financing methane solutions. Although the Oil & Gas sector is responsible for 40% of global methane emissions, three-quarters of these emissions could be avoided using existing technologies (source: IEA). Solutions that address emissions from the intentional venting, waste burning, or equipment leaks in sector is not only cost-effective but also a straightforward approach to bring more gas to market (and helping to improve energy security). JPM also noted that they plan to urge oil and gas firms to establish emission intensity goals, and contemplate third-party audits.

27 November 2023

Equity and Quant Strategy  
United States

**Dimple Gosai, CFA**  
US ESG Strategist  
BofAS  
+1 646 855 3491  
[dimple.gosai@bofa.com](mailto:dimple.gosai@bofa.com)

**Ebrahim H. Poonawala**  
Research Analyst  
BofAS  
[ebrahim.poonawala@bofa.com](mailto:ebrahim.poonawala@bofa.com)

**Megan Mantaro**  
US ESG Strategist  
BofAS  
[megan.mantaro@bofa.com](mailto:megan.mantaro@bofa.com)

**Brandon Berman**  
Research Analyst  
BofAS  
[brandon.berman@bofa.com](mailto:brandon.berman@bofa.com)

### Related Research

[FAQs on supply chain emissions](#)

[Decarbonization 101: what we learned from Corporate America](#)

[JPMorgan Chase & Co.: Higher for longer](#)

IRA – Inflation Reduction Act

GHG – Greenhouse gas

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

**BofA Securities does and seeks to do business with issuers 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.**

**Refer to important disclosures on page 6 to 8.**

12632080

Timestamp: 27 November 2023 08:46PM EST

## Takeaways: JPM climate-focused meeting

On November 20, 2023, BofA's US ESG Team and US Banks Team hosted a hybrid group meeting with JPM's Rama Variankaval, Global Head of Corporate Advisory and Sustainable Solutions, for an in-depth discussion with investors. Overall, we came away with a better understanding of JPM's approach to climate.

### Inflation Reduction Act (IRA) tailwind to green investing

Mr. Variankaval sees the Inflation Reduction Act (IRA) as a massive secular catalyst for green investing that reduces cost of capital by 300-500 bps (per JPM's estimate). At present, this cost of capital reduction is negated by the increase in rates and risk premia (a cyclical trend), causing green investments to take a hit in recent months. However, Mr. Variankaval has hope that the cyclical challenges will recede even as the secular benefits from the IRA remain, and that the green companies that survive this period will come out stronger as a result.

### Targeting \$1trn in green financing

JPM has a Sustainable Development Target with the goal to finance and facilitate more than \$2.5 trillion over 10 years to address climate change and contribute to sustainable development. As part of this goal, JPM aims to finance and facilitate \$1 trillion in green financing (i.e., financing via a green product or of a green company) over 10 years. To identify opportunities to meet the \$1 trillion target, JPM analyzed what their client base could look like in 5-10 years given broader decarbonization trends, how to allocate capital given climate risk, and how product innovation could support clients. For example, JPM has raised equity for solar company Nextacker, acted as a Joint Placement Agent on a \$1 billion equity placement to capitalize a new passenger electric vehicle (EV) subsidiary for Tata Motors, and is working with Consumer companies to ensure they have access to sufficient recycled plastic supply to meet their targets.

### Basel implications for JPM's green investments

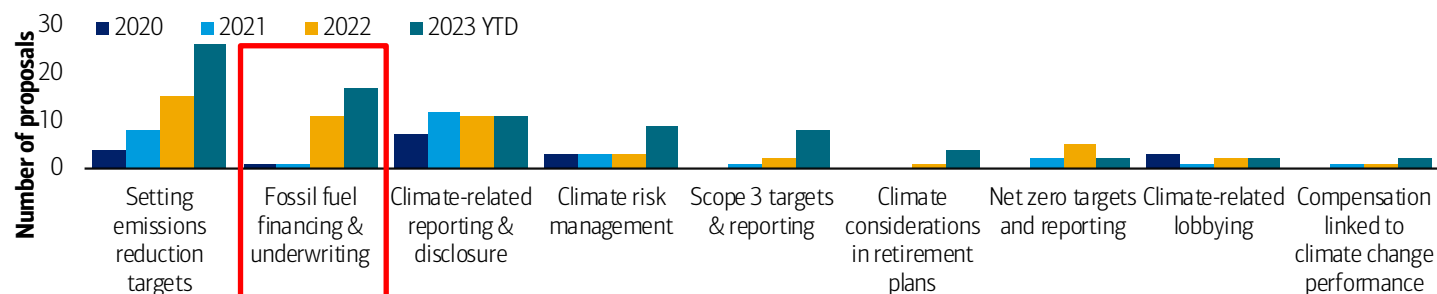
As part of the firm's broader green objective, JPM is directing some of its capital toward investments aimed at enhancing environmental sustainability. However, higher levels capital required to comply with Federal Reserve's "Basel III endgame" proposal could make certain green products and services uneconomical. JPM CFO Jeremy Barnum had previously acknowledged the need to "exit" businesses if proposed rules aren't modified. The renewable energy tax equity financing business, for example, would be impacted by the proposed increase in risk weighting of non-publicly traded equity from 100% currently to 400%. Management mentioned that JPM is among the largest players in the \$20B tax equity market and expect this market to grow to \$60-90B post the IRA (excluding the impact from higher capital requirements).

### Tackling financed emissions

Financed emissions, a specific type of Scope 3 emissions that refers to the carbon intensity of a company's investments and lending activity, make up the majority of Financials companies' Scope 3 emissions in the S&P 500 and are increasingly coming under shareholder scrutiny (Exhibit 1). See our reports [FAQs on supply chain emissions](#) and [Decarbonization 101: what we learned from Corporate America](#).

**Exhibit 1: Fossil fuel financing & underwriting is now a focus among shareholders**

Number of climate-related shareholder proxy proposals for US S&amp;P 500 companies by topic, 1/2020-11/2023



**Source:** Bloomberg Intelligence, BofA US ESG Research. Note: Proposals were manually categorized into topics according to their title. A proposal may be tagged as belonging to more than one topic, for example if shareholders are requesting both emission reduction targets and reporting on emissions.

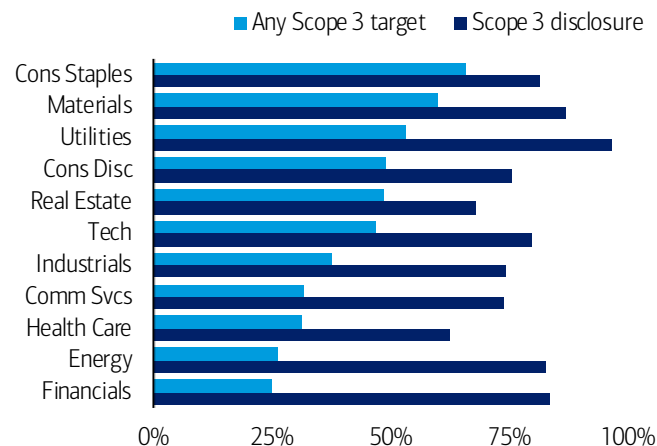
BofA GLOBAL RESEARCH

**Prioritizing sectors on emissions, exposure, and impact**

Although Financials companies lag other sectors, in setting Scope 3 targets (Exhibit 2), JPM has set financed emissions intensity targets for eight priority carbon-intensive sectors (Energy Mix, Oil & Gas Operational, Electric Power, Auto Manufacturing, Iron & Steel, Cement, Aviation, Shipping, and Aluminum). JPM identified these priority sectors based on three factors: (1) each sector's global emissions, (2) each sector's exposure within the JPM portfolio, and (3) the ability for JPM to engage with the sector on decarbonization strategies. Agriculture and Real Estate remain as the two key carbon-intensive sectors where JPM has not yet set a target, due to the less mature decarbonization pathways in these sectors at present.

**Exhibit 2: Financials lagging in Scope 3 disclosures**

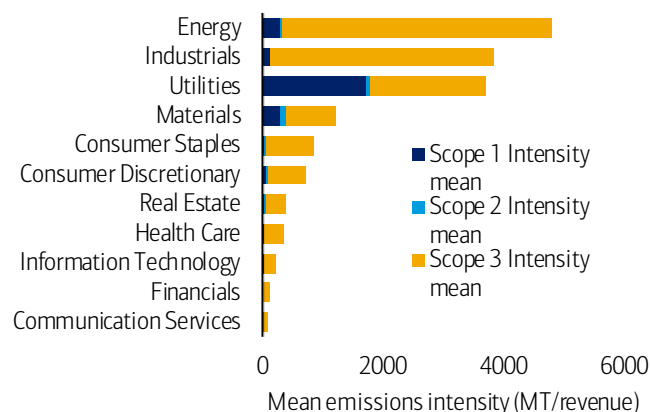
Percent of S&amp;P 500 companies by sector that disclose scope 3 emissions and have a scope 3 target, as of 11/2023

**Source:** BofA US ESG Research, ICE

BofA GLOBAL RESEARCH

**Exhibit 3: JPM is prioritizing carbon-intensive industries like Energy, Industrials, and Utilities**

Mean scope 1, 2, and 3 emissions intensity for the S&amp;P 500 in metric tons per million USD in revenue, as of 11/2023



**Source:** BofA US ESG Research, ICE. Reported data used where available. Where not available, emissions were imputed using the median sector emissions.

BofA GLOBAL RESEARCH

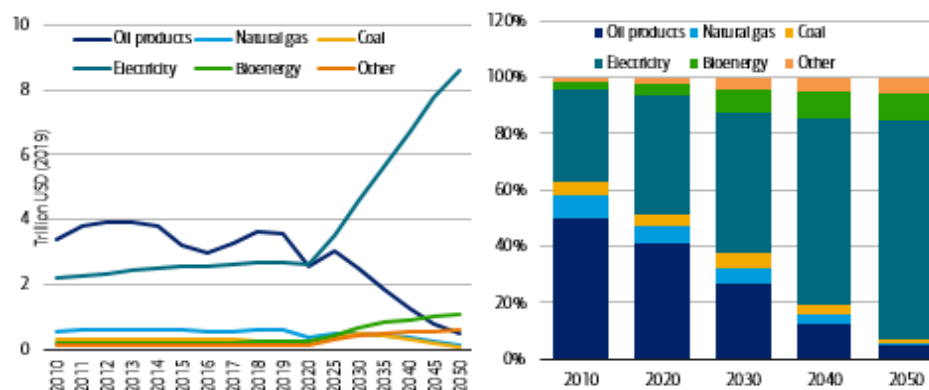
**New target to better track energy transition financing**

Prior to 2023, like the other big banks, JPM had set a GHG emission reduction target for the Scope 3 emission intensity of the Oil & Gas companies in their financing portfolio (-15% by 2030). This year, however, JPM widened the boundary of this target (now called "Energy Mix target") to also include Scope 3 emissions from Electric Power companies that provide zero- and low-carbon power generation (like renewables and biofuels). While expanding the target, JPM also adjusted the target to be more ambitious (36% reduction in carbon intensity by 2030). The new target was chosen to better capture the shift in

fuel mix needed for net zero and to balance the trade-offs between fossil-fuel based and zero- or low-carbon energy sources in achieving net zero. To make progress on this target, JPM aims to: (1) increase financing of zero-carbon power generation (like renewables), (2) reduce Oil & Gas scope 3 intensity (e.g., by shifting from oil to natural gas or implementing carbon capture), and (3) decrease Oil & Gas sector financing.

#### Exhibit 4: Trillions of dollars will need to shift between energy sources to reach net zero

Spend on energy sources per IEA net zero scenario



Source: IEA

BofA GLOBAL RESEARCH

#### Methane abatement is good for climate, business, and energy security

In addition to the new Energy Mix target, JPM has a separate 2030 target for reducing Oil & Gas operational (Scope 1 and 2) emissions. This target was increased from 35% to 45% this year to align with the IEA NZE scenario. JPM views methane abatement as a significant opportunity to achieve this target, as ~75% of Oil & Gas' methane emissions could be reduced using existing technologies (source: IEA). Methane, which is >25x more potent as a greenhouse gas than CO<sub>2</sub>, is responsible for ~30% of the rise in global temperatures since the Industrial Revolution (source: US EPA; IEA). The energy sector contributes ~40% of the global methane emissions from human activity (source: IEA).

In many cases, embracing sustainable practices also results in cost savings (see our report [Greenflation: pay now or pay more later](#)). Beyond the climate impact, reducing methane emissions would allow Oil & Gas companies to bring more natural gas to market, thus improving energy security and offsetting all or much of the costs of methane capture. The IEA found that ~40% of methane emissions from Oil & Gas operations could be avoided at no net cost based on average natural gas prices from 2017-2021 (this goes up to ~60% of methane emissions when using 2022 prices).

The amount of methane that could be captured from Oil & Gas operations with existing technologies is equivalent to more than the European Union's total annual gas imports from Russia prior to the invasion of Ukraine (source: IEA)

To support methane abatement, JPM (1) deploys capital to enable methane solutions to scale, (2) delivers financing that supports companies in reducing their operational emissions, (3) engages with stakeholders on methane and flaring mitigation technology and practice, and (4) evaluates Oil & Gas companies' methane emissions as part of its environmental and social due diligence process.

## Calculating emissions using PCAF framework

JPM reports the absolute emissions from its capital markets activities and includes 100% of its share in bond underwritings. In calculating absolute emissions, JPM follows the methodology recommended by the Partnership for Carbon Accounting Financials (PCAF), a widely used industry standard. However, JPM also publishes absolute emissions data using its own methodology that seeks to avoid volatility that can skew banks' emissions data. JPM's methodology involves using a three-year average for company value and a 12-month monthly average for committed financing.

# Disclosures

## Important Disclosures

**FUNDAMENTAL EQUITY OPINION KEY:** Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. **VOLATILITY RISK RATINGS**, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. **INVESTMENT RATINGS** reflect the analyst's assessment of both a stock's absolute total return potential as well as its attractiveness for investment relative to other stocks within its Coverage Cluster (defined below). Our investment ratings are: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and 3 - Underperform stocks are the least attractive stocks in a coverage cluster. An investment rating of 6 (No Rating) indicates that a stock is no longer trading on the basis of fundamentals. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster <sup>R1</sup>
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

<sup>R1</sup> 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.

**INCOME RATINGS**, indicators of potential cash dividends, are: 7 - same/higher (dividend considered to be secure), 8 - same/lower (dividend not considered to be secure) and 9 - pays no cash dividend. *Coverage Cluster* is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

BofA or one of its affiliates acts as a market maker for the equity securities recommended in the report: JP Morgan Chase.

The issuer is or was, within the last 12 months, an investment banking client of BofA and/or one or more of its affiliates: JP Morgan Chase.

BofA or an affiliate has received compensation from the issuer for non-investment banking services or products within the past 12 months: JP Morgan Chase.

The issuer is or was, within the last 12 months, a non-securities business client of BofA and/or one or more of its affiliates: JP Morgan Chase.

BofA or an affiliate has received compensation for investment banking services from this issuer within the past 12 months: JP Morgan Chase.

BofA or an affiliate expects to receive or intends to seek compensation for investment banking services from this issuer or an affiliate of the issuer within the next three months: JP Morgan Chase.

BofA together with its affiliates beneficially owns one percent or more of the common stock of this issuer. If this report was issued on or after the 9th day of the month, it reflects the ownership position on the last day of the previous month. Reports issued before the 9th day of a month reflect the ownership position at the end of the second month preceding the date of the report: JP Morgan Chase.

BofA or one of its affiliates is willing to sell to, or buy from, clients the common equity of the issuer on a principal basis: JP Morgan Chase.

The issuer is or was, within the last 12 months, a securities business client (non-investment banking) of BofA and/or one or more of its affiliates: JP Morgan Chase.

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

## Other Important Disclosures

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

This report may refer to fixed income securities or other financial instruments that may not be offered or sold in one or more states or jurisdictions, or to certain categories of investors, including retail investors. Readers of this report are advised that any discussion, recommendation or other mention of such instruments is not a solicitation or offer to transact in such instruments. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor for information relating to such instruments.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

Officers of BofA or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

Refer to [BofA Global Research policies relating to conflicts of interest](#).

**"BofA Securities" includes BofA Securities, Inc. ("BofA") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.**

**Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:**

BofA and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at [www.bofam.com/BofASEdisclaimer](http://www.bofam.com/BofASEdisclaimer); BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofA Japan: BofA Securities

Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSCF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil or its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information 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. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

#### General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities. This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

#### BofA ESGMeter Methodology:

ESGMeter is a proprietary metric based on quantitative analysis and fundamental analyst inputs that reflects our assessment of a company's Environmental, Social and Governance-related attributes. The ESGMeter is intended to indicate a company's likelihood of experiencing stronger financial stability (higher return on equity and lower earnings and price volatility) over the next three years relative to peer group. There are three ESGMeter levels - Low, Medium, and High - which indicate whether a company has attributes most likely to translate into superior financial stability (in the case of a High level) or weaker financial stability (in the case of a Low level) over the next three years relative to its peer group. A Medium level suggests that a company exhibits ESG characteristics that are likely associated with financial stability results in line with its peer group over the next three years. Full details of our methodology, financial stability definition and disclaimers are available at [BofA ESGMeter methodology](#). ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating.

ESGMeter is independent of the BofA Global Research fundamental equity analyst's investment rating, volatility risk rating, income rating or price objective for that company.

#### Copyright and General Information:

Copyright 2023 Bank of America Corporation. All rights reserved. iQDatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure

is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities. Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS or any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein.

Subject to the quiet period applicable under laws of the various jurisdictions in which we distribute research reports and other legal and BofA Securities policy-related restrictions on the publication of research reports, fundamental equity reports are produced on a regular basis as necessary to keep the investment recommendation current.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.