

CHIEF INVESTMENT OFFICE

Impactonomics®

**Portfolio Construction and the Energy Transition:  
Q & A on What Investors Need to Know**

September 2023

**SUMMARY**

- As climate challenges have intensified, so too have energy security priorities; the global energy crisis underscores the planet’s over-reliance on fossil fuels.
- Numerous policy tailwinds are not just considered bullish for renewable stocks and electrical vehicle (EV) players, but are also constructive for Industrials, Materials, Utilities and Energy.
- As clean energy solutions have become more economically competitive, investors have had a growing set of options for implementing renewable investments.
- There are a wide range of climate-related metrics that can help screen and assess climate change in portfolios.
- Standardization—such as climate disclosure, accounting and regulatory frameworks—has been accelerating.
- To help mitigate greenwashing, disclosure and uniform standards could help as one key aspect of the due diligence on sustainable investment options.
- Transitioning to a net-zero carbon future will likely require extensive use of a variety of commodities giving way to a variety of related investments.
- Increasingly large flows of capital into Private Markets have pursued climate-related investments across a spectrum of risk and return profiles.
- There remain significant variations in pricing in climate risk; some areas of the market have begun to account for it, but others have been slow to do so.
- Sustainable investment strategies have the potential to offer a holistic investment approach to the energy transition.

AUTHORED BY:

**Chief Investment Office**



**Planet**  
Contributions to climate and environmental sustainability

**1. With energy security a top global priority for states around the world, what effects has this had on global climate change commitments and priorities?**

The effects of climate change are accelerating at a greater rate than any other time—it’s increasingly often that climate headlines come in the form of extreme heat waves, floods, thawing arctic ice, rising sea levels, droughts and ocean changes related to loss of species. Just as climate challenges have intensified, so too have energy security priorities. Russia’s invasion of Ukraine continues through it’s second year. The global

Trust and fiduciary services are provided by Bank of America, N.A., Member FDIC and a wholly owned subsidiary of Bank of America Corporation (“BofA Corp.”).  
Investment products:

<b>Are Not FDIC Insured</b>	<b>Are Not Bank Guaranteed</b>	<b>May Lose Value</b>
-----------------------------	--------------------------------	-----------------------

energy crisis that unfolded as a byproduct of the war underscores the planet's over-reliance on fossil fuels and has galvanized policymakers into redoubling their efforts in promoting/securing renewable energy sources.

That said, however, the world lacks sufficient renewable supply to meet current energy demands as high-carbon energy sources continue to provide most of the world's power, making it clear that the energy transition will likely require myriad energy sources, shifting over time to lower-carbon sources. It's reassuring that in some parts of the world, the message is received, with low-carbon sources on the rise. The economics behind renewables such as wind and solar matter, as cost declines and technological innovation have aided much of the adoption rates. Take the U.S.'s low-carbon consumption share, which has climbed from 13% in 2010 to 16% last year. The U.K.'s share has gone from 8% to 19% over the same period.<sup>1</sup> Not unexpectedly, governments have had to turn back, embracing the near-term use of more coal, gas, oil and even nuclear power to offset supply disruptions. Just in June, the International Energy Agency (IEA) estimates that global oil demand hit a record 103 million barrels per day and could hit a fresh record before summer's end. Policymakers have had to accept the reality of more fossil fuel usage for security in the short term while also accelerating the long-term ambition of a world powered by renewable energy sources.

## **2. How has the Inflation Reduction Act affected the transition to clean energy, and what does it mean for investors?**

The August 2022 Inflation Reduction Act (IRA) was touted by the administration as the most significant action Congress has taken on clean energy and climate change.<sup>2</sup> The IRA includes dozens of tax provisions aimed at accelerating the deployment of clean energy, clean vehicles, clean buildings and clean manufacturing. It also provides a new way for clean energy developers to finance projects through the transfer of tax credits —where developers can sell the tax credit at a discount to another company that wants to offset taxes. Even tax-exempt organizations can benefit. The majority of the initial around \$400 billion in energy and climate funding in the IRA comes in the form of tax credits. With about \$216 billion worth of tax credits, corporations are the biggest recipient. A smaller amount of tax credits is aimed at consumers and households. Household credits are designed to lower emissions by making EVs, energy-efficient appliances, solar panels, geothermal heating and home batteries more affordable. Broadly speaking, the bill is not just considered bullish for renewable stocks and EV players, but, also constructive for a much wider universe of sectors that includes Industrials, Materials, Utilities and Energy. Important to address, though, is the misconception that these investments depend on the subsidies created by the IRA. Investment in clean energy is not dependent on these subsidies, but rather the IRA serves as an additional tailwind alongside improving economics and the broader imperative to decarbonize the global economy.

## **3. What are some things an investor would need to consider about implementing renewable investments through traditional means? How would investors get exposure to this economic opportunity?**

Over the last two decades, significant cost declines and technological improvements have made several clean energy solutions more economically competitive, highlighted by the \$1.1 trillion invested in the global energy transition in 2022, up 31% on the prior year.<sup>3</sup> The world has witnessed rapid growth in deployment of and greater capital markets access to renewable companies and projects. For investors, this has resulted in a proliferation of options for achieving exposure to low-carbon risk and/or fossil fuel-free strategies and, in our view, renewable investments can now be integrated in nearly all areas of a traditional investment portfolio.

<sup>1</sup> Council on Foreign Relations estimates as of August 7, 2023.

<sup>2</sup> The IRA builds on climate and clean energy provision in the bipartisan Infrastructure Investment and Jobs Act (November of 2021). The Infrastructure Act provided billions to modernize the electricity grid, build a nationwide network of electric vehicle chargers, strengthen the battery supply chain, and invest in new clean energy and emissions reduction technologies.

<sup>3</sup> BloombergNEF, "Energy transition Investment Trends 2023," January 2023.

Within traditional Equity allocations, investors can invest passively,<sup>4</sup> actively<sup>5</sup> and across all vehicles, running the gamut of risk-return profiles. Exposure is often found within the likes of Energy, Utilities, Industrials and Materials sectors, and can play out through companies such as those that develop or construct and operate wind, solar or hydroelectric plants, those that focus on energy storage solutions, grid technology and battery technology, or manufacturers of component parts or servicing of parts, to name just a few examples. The traditional Fixed Income space similarly offers a wide range of options. Many fund managers have begun integrating sustainable analysis into their selection process to uncover credit risk tied to sustainability issues, at first for Investment-grade, but more recently even high-yield bonds. This can include debt issued for renewable energy infrastructure, energy-efficient buildings and development of clean energy technology, for example. Managers of municipal bond funds are looking at bond proceeds and how they drive positive outcomes in communities, like more energy-efficient and climate-resilient buildings. Additionally, an explosion of green bond issuance over the past few years has led to the emergence of even more options for investors, from the purchase of individual green-bonds to actively and passively managed funds and other product structures focused on sustainable finance.

Given the numerous types of solutions now available to investors, the Chief Investment Office (CIO) has developed the A-B-C framework for evaluating sustainable investment strategies with a few examples below:

<p style="text-align: center;"><b>Avoid</b></p> <p style="text-align: center;">✕</p> <p style="text-align: center;">Seeks to reduce negative social or environmental effects and manage risk by limiting certain exposures</p>	<p style="text-align: center;"><b>Benefit</b></p> <p style="text-align: center;">✓</p> <p style="text-align: center;">Seeks to support positive social or environmental practices and enhance potential for long-term competitive financial returns</p>	<p style="text-align: center;"><b>Contribute</b></p> <p style="text-align: center;">+</p> <p style="text-align: center;">Seeks to advance positive, measurable social or environmental outcomes and target opportunities where impact is intrinsic to financial performance</p>
<ul style="list-style-type: none"> <li>• Avoid companies that have a record of severe environmental violations or environmental fines.</li> <li>• Avoid carbon-intensive industries or divest of fossil fuel-related holdings.</li> <li>• Underweight companies that are more dependent on carbon-based fuel.</li> </ul>	<ul style="list-style-type: none"> <li>• Invest in companies that demonstrate leading environmental practices as part of a diversified approach.</li> <li>• Invest in companies that are leading their industry peers on metrics such as carbon intensity, water management, energy efficiency, waste mitigation and recycling.</li> <li>• Include companies that use sustainability to create a competitive advantage.</li> </ul>	<ul style="list-style-type: none"> <li>• Invest in resource-efficient companies relative to their industry peers.</li> <li>• Look for firms that are innovating to address climate, energy, water and waste issues with new products or services.</li> <li>• Invest in thematic strategies focused on clean energy production.</li> </ul>

The "A-B-C" framework that helps classify the impact objective of a sustainable strategy was adapted from The Impact Management Project. The Impact Management Project (IMP) is a forum for building global consensus on how to measure, compare and report ESG risks and positive impacts.

When leveraging the CIO framework, investors should consider both traditional and environmental risk factors with their allocations to renewables. Given how rapidly this sector is growing, it's no surprise to us to see market, regulatory, technological and environmental risks exerting an outsized influence on renewables-focused companies and solutions. By accounting for these risks through careful selection and diversification, we believe investors have the ability to construct portfolios that help deliver not just favorable environmental characteristics, but compelling risk-adjusted financial returns (when compared to traditional market benchmarks) as well.

#### 4. What key metrics are considered to evaluate climate change in portfolios?

There is a wide range of climate-related metrics, such as the carbon footprint of an entity's operations and products, and its reliance on extraction, refining, or the

<sup>4</sup> A passive investor is one who does not participate in the day-to-day decisions of running a company.

<sup>5</sup> Active management is an approach to investing. In an actively managed portfolio of investments, the investor selects the investments that make up the portfolio.

consumption of fossil fuels, that can help assess a company's or portfolio's current standing. While these metrics are specific, objective, comparable and can measure over time whether a company or portfolio is reducing its carbon footprint, they still rely on backward-looking data and only provide current point-in-time information. For example, a widely used carbon intensity metric, which typically combines both direct and indirect greenhouse gas (GHG) emissions and normalizes that number based on revenue generated by the company (Unit – tons CO<sub>2</sub>e<sup>6</sup>/U.S. dollar (USD) million (mm) revenue), allows for a direct comparison between companies of different sizes without any bias. Another version of the same metric uses the total carbon emissions for a portfolio normalized by the total market value of the portfolio, expressed in similar units (tons CO<sub>2</sub>e / USD \$mm invested). Ability to assess what the forward-looking projections are for the portfolios is also very important. Many third-party data providers now incorporate companies stated commitments and other data such as renewable energy investment, transition risk management policies and reporting, science-based targets, and revenue generated from climate solutions like battery technology and green hydrogen as a proxy for what future estimated emissions may look like. Both point-in-time and this future assessment should be considered for a comprehensive analysis.

Another aspect of climate metrics relates to exposure to climate risk. Assessing a portfolio's transition and physical climate risks is an important and underrated aspect of evaluating climate change in a portfolio. Transition risks metrics show exposure to any carbon-related assets in the portfolio, usually expressed in USD \$mm or as a percentage of the current portfolio value. Physical climate risk metrics involve assessing a portfolio's assets for any potential physical climate hazard based on geographical location, exposure to certain sectors that are usually sensitive to such risks, and other scenarios.

## 5. What are the latest developments relating to standardization and accounting of climate data?

Climate data disclosure and accounting standards have come a long way, and momentum continues. Common global frameworks are converging thanks to collaboration among leading standard setters, regulatory bodies are prioritizing the issue, and companies are responding to investor preferences. Despite misconceptions, disclosure, accounting and regulatory frameworks have been increasingly well coordinated and defined. Standardization has been accelerating and reporting on climate data becoming more required.

In 2020 five leading international standard setters co-published a shared vision<sup>7</sup> of what would make reporting more comprehensive, alongside a statement of intent to work together on this goal. Since then, they set the standards for corporate sustainability disclosure along with recommendations from the Task Force on Climate-related Financial Disclosures (TCFD).<sup>8</sup> Four of the five institutions set the standards and frameworks for sustainability disclosure, while the fifth provides the integrated reporting framework that connects sustainability reporting to financial reporting. Together, they cover most sustainability reporting. Regulatory bodies are making dedicated efforts in this space as well, with the Securities and Exchange Commission (SEC) in the U.S. actively making a determination about climate disclosure for public companies,<sup>9</sup> while timing on a final rule is unknown. Lastly, corporations are disclosing more climate data thanks to strong demand from investors and more standardization—in fact, 96% of the companies in the S&P 500 are publishing corporate responsibility or sustainability reports.<sup>10</sup>

Transparent capital markets greatly benefit investors—this case is no different. S&P 500 companies that either follow TCFD reporting recommendations, Sustainability

A combination of carbon emissions intensity metrics along with transition risk and climate risk metrics can help provide a clear picture of the portfolio's progress toward a low-energy economy. For example, the increasing frequency of severe weather events such as drought and flood have a disproportionate effect on agrarian economies and on industries dependent upon reliable sources of fresh water, such as utilities and semiconductor manufacturing. As such, data sets that allow investors to quantify such risks based on geographic vulnerability are of increasing importance.

<sup>6</sup> Carbon dioxide equivalent or CO<sub>2</sub>e means the number of metric tons of CO<sub>2</sub> emissions with the same global warming potential as one metric ton of another greenhouse gas and is calculated using Equation A-1 in 40 CFR Part 98.

<sup>7</sup> "Statement of Intent to Work Together Towards Comprehensive Corporate Reporting: Summary of alignment discussions among leading sustainability and integrated reporting organisations CDP, CDSB, GRI, IIRC and SASB," September 2020.

<sup>8</sup> TCFD is an institution that develops recommendations on the types of information that companies should disclose to support investors lenders, and insurance underwriters in appropriately assessing and pricing climate change risks.

<sup>9</sup> [sec.gov/news/press-release/2022-46](https://www.sec.gov/news/press-release/2022-46) to Enhance and Standardize Climate-Related Disclosures for Investor, March, 2022.

<sup>10</sup> Governance & Accountability Institute, Inc. 2022.

Accounting Standards Board (SASB) reporting standards, or the Global Reporting Initiative (GRI) framework for reporting have had higher average price-to-book ratios than their peers who do not.<sup>11</sup> With greater standardization and disclosure of climate data, we believe investors have the opportunity to better understand climate risk in their portfolios and make more informed investment decisions.

## 6. What is greenwashing?

The dramatic growth of sustainable funds has made greenwashing—the practice of providing misleading or incomplete information in order to present a product or company as more environmentally sustainable than it actually is—a hotly debated topic. As investors increasingly allocate capital to sustainable funds, managers have responded by launching new funds as well as repurposing existing traditional funds. But the breadth of sustainable investment approaches and the lack of consistent definitions surrounding which funds or companies are sustainable can lead to investor confusion, or unintentional greenwashing.

In response, the European Union Sustainable Finance Disclosure Regulation (SFDR) began to take effect in early 2021, with more detailed disclosure requirements implemented in 2022, including requirements that asset managers classify funds into one of three categories based on the sustainability objective. Similarly, the SEC proposed in 2022 a set of rules,<sup>12</sup> that if adopted, would require environmental, social and governance (ESG)-related disclosures and allow only funds with an ESG mandate to label themselves as such. A number of related regulations are also in the pipeline, such as the SEC’s proposed climate risk disclosure rule that would require public companies to prepare detailed disclosures on climate-related risks that are reasonably likely to have a material impact on their business.<sup>13</sup> While more disclosure and uniform standards will help, investors already have the ability to rely on various sources, such as a robust due diligence process, to identify truly sustainable investment options.

## 7. What commodities as the world transitions to a more net-zero carbon future would be in demand that could potentially offer attractive investment opportunities?

As the world moves from an energy system built on fossil fuels to one more inclusive of renewables, global demand for minerals, metals and materials should intensify. Going green won’t be easy—a handful of critical minerals related to the “green” build-out will likely be led by countries such as Indonesia, Chile, the Democratic Republic of the Congo and China, necessary to mine and refine Cobalt, Copper, Lithium and Nickel. The push to boost renewable power capacity (aka solar, wind and batteries) is extraordinarily metal- and mineral-intensive, requiring more minerals that are energy- or fossil fuel-based. The IEA estimates that if the world were to match renewable energy goals established in the 2015 Paris Agreement, mineral demand would double or quadruple over the next 20 years. Capital spending is reflective of the transition dynamic—capital spending on wind and solar generation overtook that of upstream oil and gas last year, according to consultancy Rystad Energy AS.

Transitioning to a net-zero carbon future will require extensive use of a variety of commodities. The Energy sector, which has the lowest valuations of any sector in the S&P 500 and offers solid balance sheets and free cash flow generation to support future dividend yields and stock buybacks, will remain supported in the long term, yet not at the expense of renewables. Additionally, through legislation packages, trillions of dollars are incentivizing spending on infrastructure over the next decade. Beneficiaries include infrastructure-related industrial companies across renewables and the required infrastructure behind each renewable source. Leaders in electricity distribution, charging stations/batteries, low-carbon hydrogen and biofuels stand to benefit.

<sup>11</sup> Bloomberg, BofA Global Research, Factset, as of 4/2023. TCFD no: 6.19, yes: 9.64. SASB no: 4.33, yes: 8.77. GRI no: 6.39, yes: 9.61.

<sup>12</sup> See [sec.gov/files/rules/proposed/2022/33-11067](https://www.sec.gov/files/rules/proposed/2022/33-11067) for full detail (2022).

<sup>13</sup> [sec.gov/files/rules/proposed/2022/33-11067](https://www.sec.gov/files/rules/proposed/2022/33-11067) to Enhance and Standardize Climate-Related Disclosures for Investor, March, 2022.

### CHIEF INVESTMENT OFFICE DUE DILIGENCE

A rigorous due diligence process designed to understand whether a sustainable strategy consistently incorporates ESG considerations into their decision-making processes and classifies each strategy according to its sustainability objective, alongside traditional investment analysis, supporting clients as they navigate the sustainable investing universe.

## 8. What opportunities might there be in Private Capital Markets for qualified investors?

Financing innovative technologies or long-dated investments has long been the province of Private Markets, and the Energy Transition theme is no exception. Increasingly large flows of capital into Private Markets are pursuing climate-related investments across a spectrum of risk and return profiles. As an illustration of the accelerating trend, the last two years saw \$90 billion of Venture Capital (VC) investment in climate tech companies, compared to \$63 billion over the preceding four years.<sup>14</sup>

The range of investment types that touch the Energy Transition theme is rapidly expanding. From the earlier VC stage through Private Equity (PE) strategies more broadly, climate-related investment verticals have grown to include, but are not limited to, areas such as:

- Intermittent renewable energy sources
- Electric vehicles and battery technologies
- Clean fuels
- Carbon capture, utilization and storage
- Industrial applications
- Land use
- Grid infrastructure
- Sustainable foods

We have also observed private funds at the other end of the spectrum focused on long-dated investments such as renewable project finance, which fits an infrastructure profile with a significant yield component. The investment in low carbon infrastructure required to transition to a world with net-zero emissions is estimated at \$194 trillion.<sup>15</sup> Even in public markets, private funds such as Hedge Funds have increasingly begun to hone in on the Energy Transition. In recent years we have observed Hedge Funds employing climate-related strategies in public Equities, Macro Strategies, quantitative trading strategies, carbon credits and more.

## 9. Are climate risks priced into the global capital markets? If not, what are the potential implications and risks? What about the potential opportunities?

The simple answer is that it depends. Some areas of the market have begun to account for climate risk, but others have been slow to do so. With respect to climate transition risk, domestic coal is perhaps the best example of an industry that has felt the effects of the move away from fossil fuels. Over the past decade, companies in the sector have been assigned significantly lower valuations as coal has become a more expensive energy input, and both investors and industries that consume energy have shifted away from it in favor of less carbon-intensive and more cost-effective resources. Even within the borders of the world's largest energy consumer, China, its low-carbon share went from 8% in 2010 to 17% last year. While China derives 55% of its power from coal, this is down from 69% a decade ago.<sup>16</sup>

Across different sectors, there remains meaningful variation in those pricing in climate risk; take, for example, the Insurance sector. Insurers today are increasingly factoring in the financially material effects of extreme weather events on claims, in turn increasing insurance costs. These factors influence the Real Estate sector, where higher insurance costs and risks of weather events can affect property prices. For financial institutions, where possible, they are increasingly looking to model climate-related scenarios on their lending and investment portfolios to understand and help mitigate potential risks or avoid stranded assets. For the Energy sector, as future demand wavers for traditional fossil fuel sources, threatening profitability, progress in the energy transition to renewables is being factored into their ability to remain competitive in the long term. While Consumer Staples or retailers, notably those with global scale, are increasingly considering the climate-related risks to production and supply chains. Yet, importantly, in doing so opportunities may arise, such as the economic benefits of onshoring production processes, shifting to more sustainable practices, and aligning with the growing consumer preference for sustainable products.

Ultimately, the investment opportunity—whether in Private or public markets—is poised to grow due the confluence of:

- the increasing urgency of the climate crisis
- the pace of innovation and cost declines
- government-driven investment and incentives (please refer to the commentary on the Inflation Reduction Act)

<sup>14</sup> Pitchbook Venture Capital "Investment In Climate Technology". June 20, 2023.

<sup>15</sup> BloombergNEF, New Energy Outlook 2022. As of August 29, 2023.

<sup>16</sup> Council on Foreign Relations estimates as of August 7, 2023.

Looking ahead to the future, carbon pricing mechanisms (including emissions trading schemes or carbon taxes) if implemented at scale would change the risk-pricing of the capital markets, affecting the revenues and costs of companies and subsequently the value that their shares trade in the market.

Given the points above, it's likely that the implications of investment mispricing on portfolios, though difficult to precisely quantify, will be meaningful and multidimensional. One way to address this uncertainty is to assign higher levels of expected volatility to sensitive areas of the market to account for climate risk. But since traditional measures of risk have often struggled to accurately capture the potential effects of climate change, investors would also be wise to integrate alternative measures of risk into their investment strategy. The movement to better understand and price climate risk, as well as how to consider investing in the energy transition and growth of the renewables space, has been gaining momentum, as evidenced by growing pressure on publicly traded companies to report more robust carbon metrics. We think this trend will increasingly influence capital markets in the future—however, it is not going to be linear.

The potential investment opportunities offered in transitional periods like these are significant, in our view. These could entail new investments in transitional infrastructure, integrating climate-resiliency in Real Estate, Equity, and debt financing for low-carbon technologies, or as scenario modeling improves, integrating climate risk into portfolio construction and across the investment process.

## **10. How could sustainable strategies offer a holistic investment approach to the energy transition?**

There are several approaches investors may choose to use when it comes to investing in energy transition while assessing the risks and opportunities related to transition and how those align with their risk tolerance and investment profile, including investment horizon. Some may choose divesting from fossil fuels completely, others can invest in companies that are in the process of transitioning and have already taken specific steps, such as investing in research and development and energy infrastructure, switching to where and how they source energy. And yet another way is to identify thematic opportunities in the market connected to the transition, for example strategies focused on solar, wind, hydrogen or energy efficiency. There is a great debate, which way is better, but, ultimately, it should fit specific investment profile and preferences of the client. Allocating capital and providing financing to companies that invest heavily to transition—for example, utilities companies—have been an effective strategy for facilitating decarbonization in a longer term; however, a lot of discernment is needed to evaluate such investments to ensure that the prospective path is likely to materialize.

Investment managers cater to these varying demands and multiple options available in the market. For example, one strategy aligns an entire portfolio with a 2°C scenario.<sup>17</sup> By calculating, for each company in a portfolio, a carbon emissions measure that includes both emissions induced by the company over the life cycle of its products and the emissions saved as a result of its low-carbon activities, and aggregating this measure at the portfolio level by calculating the weighted average, each company's emissions can then be compared to emissions levels in globally accepted climate change scenarios. Thus, the portfolio is diversified across multiple sectors but still maintains alignment to climate goals.

Another manager created a strategy that allocates largely to clean energy infrastructure companies critical to the energy transition rather than clean technology companies. In this manager's opinion, clean power companies with contracted and/or regulated cash flows are well positioned to provide defensive growth through the accelerating energy transition for these companies, while "transitioning" companies may offer opportunities for earnings growth and valuation multiple expansion.

<sup>17</sup> The 2-degree scenario is widely seen as the global community's accepted limitation of temperature growth to avoid significant and potentially catastrophic changes to the planet.

## Index Definitions

**Securities indexes assume reinvestment of all distributions and interest payments. Indexes are unmanaged and do not take into account fees or expenses. It is not possible to invest directly in an index. Indexes are all based in U.S. dollars.**

**S&P 500 Index** measures the performance of 500 large companies listed on stock exchanges in the United States.

## Important Disclosures

**Investing involves risk, including the possible loss of principal. Past performance is no guarantee of future results.**

Bank of America, Merrill, their affiliates, and advisors do not provide legal, tax, or accounting advice. Clients should consult their legal and/or tax advisors before making any financial decisions.

This information should not be construed as investment advice and is subject to change. It is provided for informational purposes only and is not intended to be either a specific offer by Bank of America, Merrill or any affiliate to sell or provide, or a specific invitation for a consumer to apply for, any particular retail financial product or service that may be available.

The Chief Investment Office (CIO) provides thought leadership on wealth management, investment strategy and global markets; portfolio management solutions; due diligence; and solutions oversight and data analytics. CIO viewpoints are developed for Bank of America Private Bank, a division of Bank of America, N.A., ("Bank of America") and Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S" or "Merrill"), a registered broker-dealer, registered investment adviser and a wholly owned subsidiary of Bank of America Corporation ("BofA Corp.").

All recommendations must be considered in the context of an individual investor's goals, time horizon, liquidity needs and risk tolerance. Not all recommendations will be in the best interest of all investors.

Asset allocation and diversification do not ensure a profit or protect against loss in declining markets.

Dividend payments are not guaranteed, and are paid only when declared by an issuer's board of directors. The amount of a dividend payment, if any, can vary over time.

Risk management processes seek to mitigate, but cannot eliminate risk, nor does it imply low risk.

**Sustainable and Impact investing and/or Environmental, Social and Governance (ESG) managers may take into consideration factors beyond traditional financial information to select securities, which could result in relative investment performance deviating from other strategies or broad market benchmarks, depending on whether such sectors or investments are in or out of favor in the market. Further, ESG strategies may rely on certain values based criteria to eliminate exposures found in similar strategies or broad market benchmarks, which could also result in relative investment performance deviating.**

**There is no guarantee that investments applying ESG strategies will be successful. There are many factors to take into consideration when choosing an investment portfolio and ESG data is one component to potentially consider.**

Investments have varying degrees of risk. Some of the risks involved with equity securities include the possibility that the value of the stocks may fluctuate in response to events specific to the companies or markets, as well as economic, political or social events in the U.S. or abroad. Investing in fixed-income securities may involve certain risks, including the credit quality of individual issuers, possible prepayments, market or economic developments and yields and share price fluctuations due to changes in interest rates. Bonds are subject to interest rate, inflation and credit risks. Investments in high-yield bonds (sometimes referred to as "junk bonds") offer the potential for high current income and attractive total return, but involves certain risks. Changes in economic conditions or other circumstances may adversely affect a junk bond issuer's ability to make principal and interest payments. Investments in foreign securities involve special risks, including foreign currency risk and the possibility of substantial volatility due to adverse political, economic or other developments. These risks are magnified for investments made in emerging markets. Investments in a certain industry or sector may pose additional risk due to lack of diversification and sector concentration. There are special risks associated with an investment in commodities, including market price fluctuations, regulatory changes, interest rate changes, credit risk, economic changes and the impact of adverse political or financial factors.

**Alternative investments are speculative and involve a high degree of risk.**

Alternative investments are intended for qualified investors only. Alternative Investments such as derivatives, hedge funds, private equity funds, and funds of funds can result in higher return potential but also higher loss potential. Changes in economic conditions or other circumstances may adversely affect your investments. Before you invest in alternative investments, you should consider your overall financial situation, how much money you have to invest, your need for liquidity, and your tolerance for risk.

Private investments involve significant risks, including those associated with companies with a limited operating history, securities that do not have a liquid market, and investments that are difficult to value. They are only appropriate for investors with substantial knowledge and prior experience in making private investments, who are capable of independently evaluating the merits and risks of such investments, and who have the wherewithal to bear investment losses.

An investment in Green Bonds involves risks similar to an investment in debt securities of the issuer, including issuer credit risk and risks related to the issuer's business. You should review the relevant offering document carefully before investing.

The CIO has developed Impactonomics®, a sustainability-related analytic lens that includes societal and environmental factors while also examining a range of relationships between economic growth and investing for impact and profit, as well as the measurable social and environmental change sustainable investing can enable.

2023 Bank of America Corporation. All rights reserved.