Rising to the occasion: **responding to unprecedented times**

This is an **interactive brochure**

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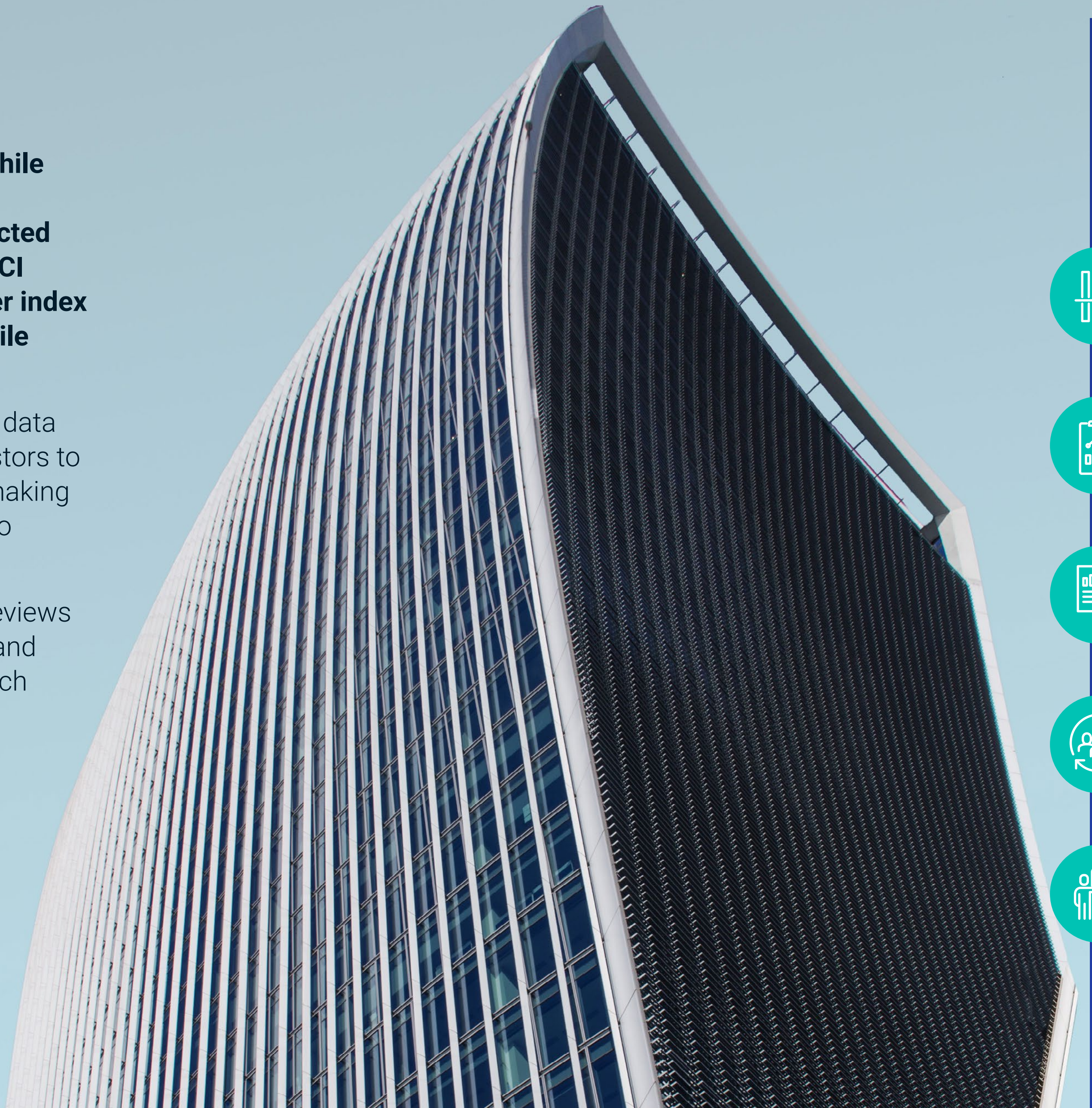
MSCI

Introduction

To say 2022 was challenging is an understatement. While 2021 held promise, and brought hope of a stable post pandemic recovery, 2022 was riddled with the unexpected and the distressing. Through these difficult times, MSCI continued to work with institutional investors to deliver index and data solutions that help them navigate more volatile markets while retaining a long-term perspective.

Underlined by precision and objectivity, our global index data and timely research insights are designed to allow investors to act with greater confidence when evaluating markets, making investment decisions, and building their desired portfolio strategy.

As we prepare together for new challenges, this piece reviews the main challenges investors may have faced in 2022 and how MSCI developed index solutions and shared research insights to help address them.



Our Strengths in **Numbers**

1,570 equity and fixed income ETFs tracking MSCI indexes[1]

Over **278,000** indexes calculated daily[2]

USD **13.5 trillion** in assets under management are benchmarked to MSCI indexes[3]

430 Research experts, with **105** dedicated to Index Research and Product Development[4]

Over **430** professionals dedicated to Index Production[2]

1. As of Dec 31, 2022 based on the data from Refinitiv and MSCI
2. As of Dec 31, 2022. Index count at a variant level, includes one currency per variant.
3. As of June 30, 2022, reported on or before September 30, 2022 using data from eVestment for active institutional funds and Morningstar for active retail funds. Equity ETF values were based on data from Refinitiv and MSCI.
4. As of Dec 31, 2022

Key **Challenges**

There were **four themes** that dominated markets throughout

2022

Higher **Inflation** 1

Higher prices across the globe were driven by disrupted supply chains and higher energy prices coupled with increased consumer demand in a post pandemic recovery.

Read

Higher Market **Volatility** 2

Financial markets were swayed by macro and political events, and had to contend with drastic changes in central banks' monetary policy.

Read

Diversified Sources **of Returns** 3

In 2022, the increase in correlation between stocks and bonds in a higher inflation environment limited the potential of multi-asset risk reduction strategies, leading investors to review both strategic and tactical allocations.

Read

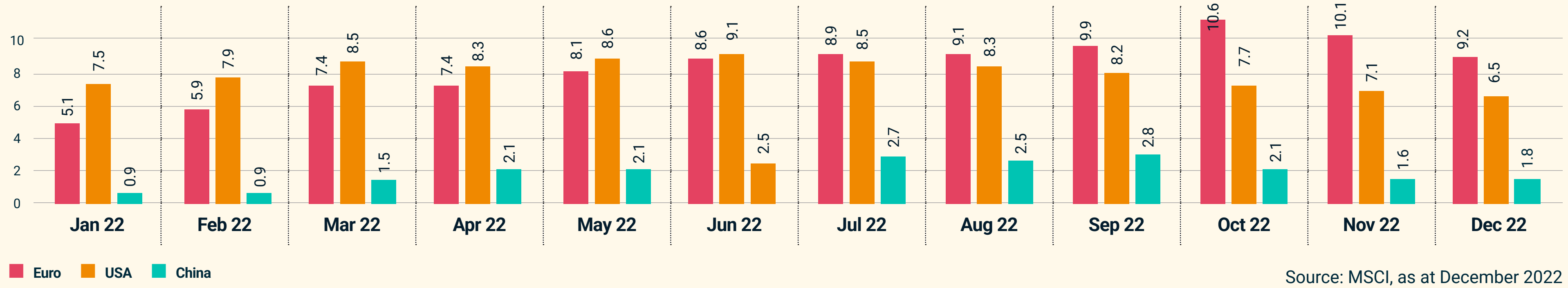
Climate **Transition** 4

2022 was the year where the need to address climate change took center stage. We saw record temperatures and deadly floods, but there was hope with new global agreements and country-specific initiatives to implement much need change.

Read

Higher **Inflation**

2022 Annual Inflation Rates



Source: MSCI, as at December 2022

In 2022, inflation continued its upwards trajectory which had initially been driven by post-pandemic recovery and a tentative return to pre-pandemic consumption practices. The war in Ukraine added another layer of inflation drivers by limiting the energy supply from Russia, due to international sanctions, and putting further pressure on supply chains and movement of raw materials.

Traditionally, equities have been seen as a good inflation hedge, but our research team felt that there was need for a more nuanced approach, given the nature of the inflation drivers this time around. In the "Inflation Sensitivity and Equity Returns" blog, we showed that some sectors (Energy, Consumer Staples) and equity factors (Value, Momentum) were more sensitive to inflation and historically outperformed during periods of rising inflation. In a subsequent post "Navigating Inflation in Equity Portfolios", our research examined whether stock-level inflation sensitivity could help determine whether to adjust or not their portfolio. In this blog, our simple hypothetical portfolios constructed using stock-level inflation sensitivity were shown to have responded to the hike in inflation we were seeing in 2022.

Throughout the year and around the globe we saw the various central banks taking action to bring inflation under control. In the "Three Scenarios for Fed Policy, Inflation and Growth", our research team reviewed three scenarios for the U.S. economy and analyze their impact on diversified portfolios: sticky inflation, soft landing and global recession. The possible outcomes of our stress testing models: A diversified composite portfolio could gain 10% in our soft-landing scenario while it could lose up to 11% in our worst-case global-recession scenario. The sticky-inflation scenario is in between, with a portfolio loss of around 8%.

While US inflation has started to taper off towards the end of the year, our Research shows that housing prices have not yet contributed in a big way to recent inflationary pressures. In the US housing prices account for roughly one-third of the U.S. consumer price index (CPI) investors but there is a lag in how the data is captured, which could suggest inflationary pressure ahead from shelter prices.

Highlights

Index Solutions

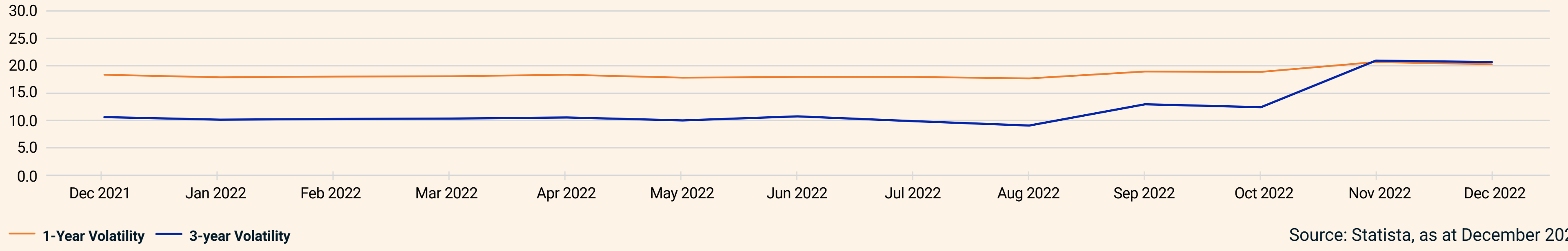
- Launch of MSCI USA Inflation Sentiment Select 100 Index (USD)
- Launch of MSCI Government Bonds Indexes denominated in US Dollars (USD), British Pounds (GBP), Euros (EUR) or Canadian Dollars (CAD)

Thought Leadership

- "Inflation Sensitivity and Equity Returns"
- "Navigating Inflation in Equity Portfolios"
- "Three Scenarios for Fed Policy, Inflation and Growth"
- "Real Estate Likely to Transition to Be a Source of Inflation"
- "How Eurozone Inflation and ECB Policy Could Impact Markets"
- "Real Estate's Income Risk in an Inflationary World"

Higher Market **Volatility**

MSCI World Volatility



Source: Statista, as at December 2022

The invasion of Ukraine at start of 2022 took the world by surprise and the implementation of sanctions against Russia led many investors to undertake a detailed review of their portfolios and their exposure to Russian assets. At that time, our clients leveraged our data to determine the geographic source of revenues for companies in their portfolios. It was also important to determine how the impact of conflict could be felt in other regions. In a piece from our research team "Signs of Contagion from the Russia-Ukraine War", we showed how the conflict was increasing the risk of default in neighbouring countries, and led to depreciation of their currencies.

The equity-market sell-off that continued into 2022 brought renewed focus to firms that can weather the new macroeconomic environment. Such high-quality firms historically fared well during market sell-offs[5]. Higher equity volatility also led investors to revisit low volatility indexes, which have been shown to have a more defensive nature.

The increase in equity market volatility also impacted hedge funds, which are seen as nimbler. Our analysis showed that their preference for high-risk growth stocks exhibiting positive momentum which was painful when the IT and Industrials sectors sold off. As a response, equity hedge funds have reduced their net-long exposure in 2022.

As global growth slowed down, commercial-property markets globally entered a period of adjustment. According to the MSCI Global Quarterly Property Index, total returns at the global level turned negative for the first time since the COVID-19 decline of the second quarter of 2020, registering -0.1% in the third quarter.

Over time institutional investors have increased their familiarity and use of derivatives such as options. 2022 saw an increase in volume, which could indicate that investors are hedging portfolios going into the final quarter of 2022, and beyond, due to their risk-off sentiment. In a longer piece "Evaluating Options in Different Macro and Volatility Regimes", our research team evaluated the historical performance of systematic options-overlay strategies on equities.

In the structured products space, investors increased their attention to risk control indexes potentially to help them hedge volatility risks more efficiently. In the "Risk Control with Maximum Exposure", our research team introduce alternative approaches to risk control that aim to maximize exposure to non-cash assets. To broaden the reach of our approaches, we also discussed its application to non-market weighted equities (factors, ESG, climate, thematic) and multi-asset-class portfolios.

The market sell-off in 2022 may also have an impact for private-equity investors going forward. Our analysis shows that capital calls and distributions in 2023 could drop below their historical average, diminishing investors' ability to fund upcoming contributions with distributions from prior vintages.

5. This report may contain analysis of historical data, which may include hypothetical, backtested or simulated performance results. There are frequently material differences between backtested or simulated performance results and actual results subsequently achieved by any investment strategy.

Highlights

Index Solutions

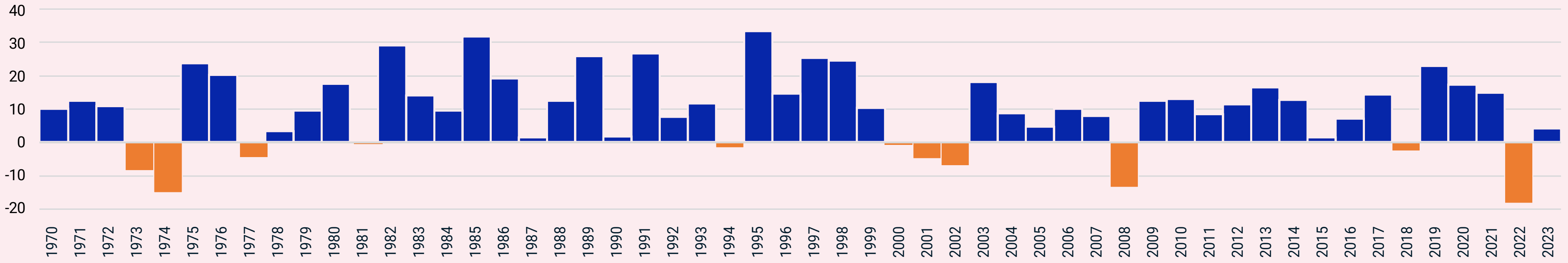
- Launch of MSCI Maximum Exposure Risk Control Indexes
- Expansion of MSCI's Decrement Index suite

Thought Leadership

- "Companies Most Exposed to Ukraine"
- "Signs of Contagion from the Russia-Ukraine War"
- "Quality in Times of Crisis"
- "Market Uncertainty Has Favored Low-Volatility Indexes"
- "How Have Hedge Funds Navigated the Recent Market Turmoil?"
- "Global Real Estate Returns Turned Negative"
- "Derivatives Tell a Protective Story"
- "Evaluating Options in Different Macro and Volatility Regimes"
- "Risk Control with Maximum Exposure"
- "Has Liquidity Dried Up in Private Equity?"
- "Bond-Index Replication While Navigating Volatility"
- "Index Replication with Futures in a Deglobalized World"

Diversified Sources **of Returns**

Annual Returns of a 60/40 portfolio (%)



The 60/40 portfolio is composed of a 60% allocation to US equities (MSCI USA) and a 40% allocation to 10-year US Treasuries.

Source: MSCI, as at December 31, 2022

Traditionally, equities were expected to be lowly correlated with Treasurys and as such, there would be diversification benefits of combining asset classes. However recently major stock sell-offs coincided with sell-offs in Treasurys, potentially prompting investors to rethink basic assumptions underlying portfolios comprised of bonds, equities and other asset classes. The "The 60/40 Portfolio Is Sick. Can It Recover?" piece showed how challenging the recent period was for a simple bond-equity portfolio.

Also, given the higher inflationary environment, the "Has Inflation Affected the Bond-Equity Relationship?" piece went all the way back to the 1970s and the Great Stagflation period (high inflation, low growth) and showed that bonds offered weaker diversification during that time.

As investors revised assumptions, they sought to improve the diversification potential of their portfolios, both within and across asset classes.

In the "The Future of Factor Investing" , we showed how a new factor allocation paradigm enables investors to understand the sources of portfolio risk through factor models and to seek exposure to market segments and factor premiums through factor strategies. Investors have now more tools at their disposal.

Incorporating an innovation theme in equity portfolios, is becoming an important goal for investors as they seek to diversify portfolios and capitalize on opportunities created by megatrends and innovation-driven themes. Our research showed that multi-theme portfolios provided an opportunity to capture innovation with high capacity and low tracking error. To help investors seeking to implement innovation themes, we created additional mega-trend indexes covering Virology and Digital Assets.

Macro risks like supply-driven inflation and rising real rates were modest in recent times but could dominate in coming dates. In "Building Balanced Portfolios for the Long Run" we examine an asset allocation framework aimed to be more robust to long-term risks. Part of the possible solution may be the inclusion of private assets as part of core allocations, rather than a peripheral "alternative" allocation.

To better understand the potential returns of private equity, our research paper "Growth Investing in Private Markets: Trends and Transparency" illustrated how the developing secondary market for high growth private companies can be leveraged to help assess private equity returns with relatively high frequency compared with traditional metrics.

Highlights

Index Solutions

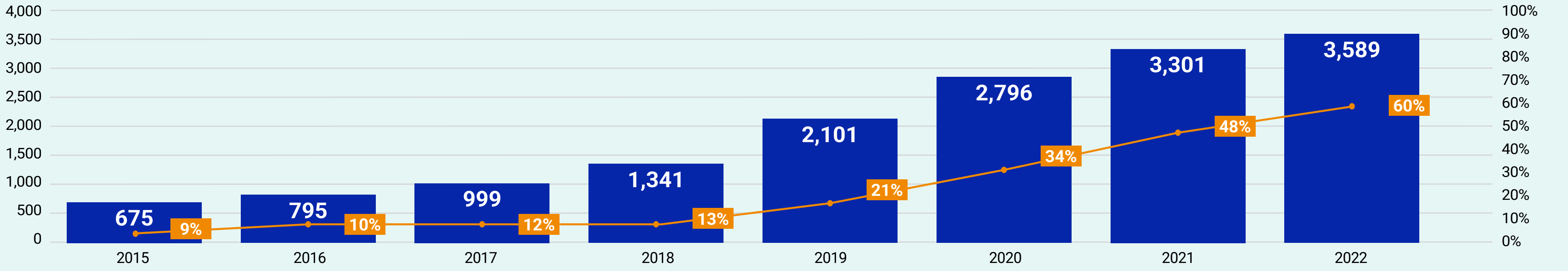
- Launch of first suite of Digital Assets Index in collaboration with Menai Financial Group and Compass Financial Technologies
- Launch of Datonomy™, a Taxonomy of Digital Assets in collaboration with Goldman Sachs and Coin Metrics
- Launch of Thematic Exposure Standard to help investors measures economic relationship to megatrends for their portfolios or funds
- Launch of MSCI MarketAxess USD HY Tradable Corporate Bond Index
- Launch of MSCI N Indexes, new suite of market cap indexes
- Launch of MSCI ACWI IMI Virology Index in collaboration with Royalty Pharma

Thought Leadership

- "The 60/40 Portfolio Is Sick. Can It Recover?"
- "Has Inflation Affected the Bond-Equity Relationship?"
- "The Future of Factor Investing"
- "Innovation Investing and Equity Allocations"
- "Building Balanced Portfolios for the Long Run"
- "Growth Investing in Private Markets: Trends and Transparency"

Climate **Transition**

Number of companies with climate and net-zero targets in the MSCI ACWI IMI



Cumulative number of companies with targets — % of companies with self-declared net-zero targets

Source: MSCI ESG Research. The constituents of the MSCI ACWI IMI were as of January 3, 2023

Preventing the worst effects of climate change will require society to limit the rise in average global temperatures this century to 1.5 degrees Celsius (about 2.7 degrees Fahrenheit) above preindustrial levels[6]. The COP27 which was held in November underscored the need for action on corporate climate pledges, the importance of data and a series of initiatives to spur public and private investment for developing countries.

In this context, institutional investors are committing to reduce financed emissions across their portfolios and MSCI can help them in this transition. In 2022, MSCI published the "Implementing Net-Zero: A Guide for Asset Owners" which outlined concrete steps to help asset owners seeking to convert climate commitments to action. In this guide, we also showcased our vast range of MSCI climate change indexes which are designed to decarbonize at rates designed to align to certain climate goals.

MSCI Climate Action indexes are our latest addition to our climate change equity index range. These indexes are designed to help investors seeking to decarbonize their portfolios through the emission reduction efforts taken by companies in all sectors to drive change in the real economy. To help investors address this issue across their entire portfolio, we also expanded our corporate bond Climate Paris Aligned index range.

Our Multi-Asset research team also reviewed the topic of Net-Zero Alignment at a total portfolio level "Net-Zero Alignment: Managing Portfolio Risk Along the Net-Zero Journey". They found that scenario analysis may provide a powerful tool for handling the uncertainty by helping investors understand their financial exposures under different transition- and physical-risk scenarios.

In addition to the need for indexes, investors have expressed a need for data to address both portfolio analytics needs and respond to regulatory requirements. For that, we have expanded the depth and breadth of ESG and Climate metrics available for our equity and fixed income indexes and included in existing products. This covers metrics such as fossil fuel reserves, decarbonation trajectory and reported & estimated emissions. To better understand these and other Climate metrics, our ESG research team publish a foundational paper on this topic "Understanding Climate Metrics"[7].

Highlights

Index Solutions

- Launch of the Bloomberg MSCI Climate Paris Aligned Fixed Income Indexes
- Launch of the MSCI Climate Transition Corporate Bond Indexes
- Launch of the MSCI Climate Action Indexes
- Expansion of ESG and Climate metrics available in current products
- Launch of the Institutional Client-Designed Indexes (iCDIs) which will enable asset owners to evolve their index design over time and remain well suitable to their investment strategy
- Launch of MSCI Global Climate Change Multi-Asset Select Index our first ever multi-asset index

Thought Leadership

- "Implementing Net-Zero: A Guide for Asset Owners"
- "Net-Zero Alignment: Managing Portfolio Risk Along the Net-Zero Journey"
- "Understanding MSCI's Climate Metrics"
- "Parallel Benchmarking for Climate Alignment"
- "Net-Zero Alignment: Engaging on Climate Change"
- "Breaking Down Real Estate Net-Zero Targets"
- "How Climate Transition Risk May Impact Sovereign Bond Yields"

6. Source: United Nations, Paris Agreement, December 2015
7. MSCI ESG and climate ratings, research and data are produced by MSCI ESG Research LLC, a subsidiary of MSCI Inc. MSCI ESG Indexes, Analytics and Real Estate are products of MSCI Inc. that utilize information from MSCI ESG Research LLC. MSCI Indexes are administered by MSCI Limited (UK).

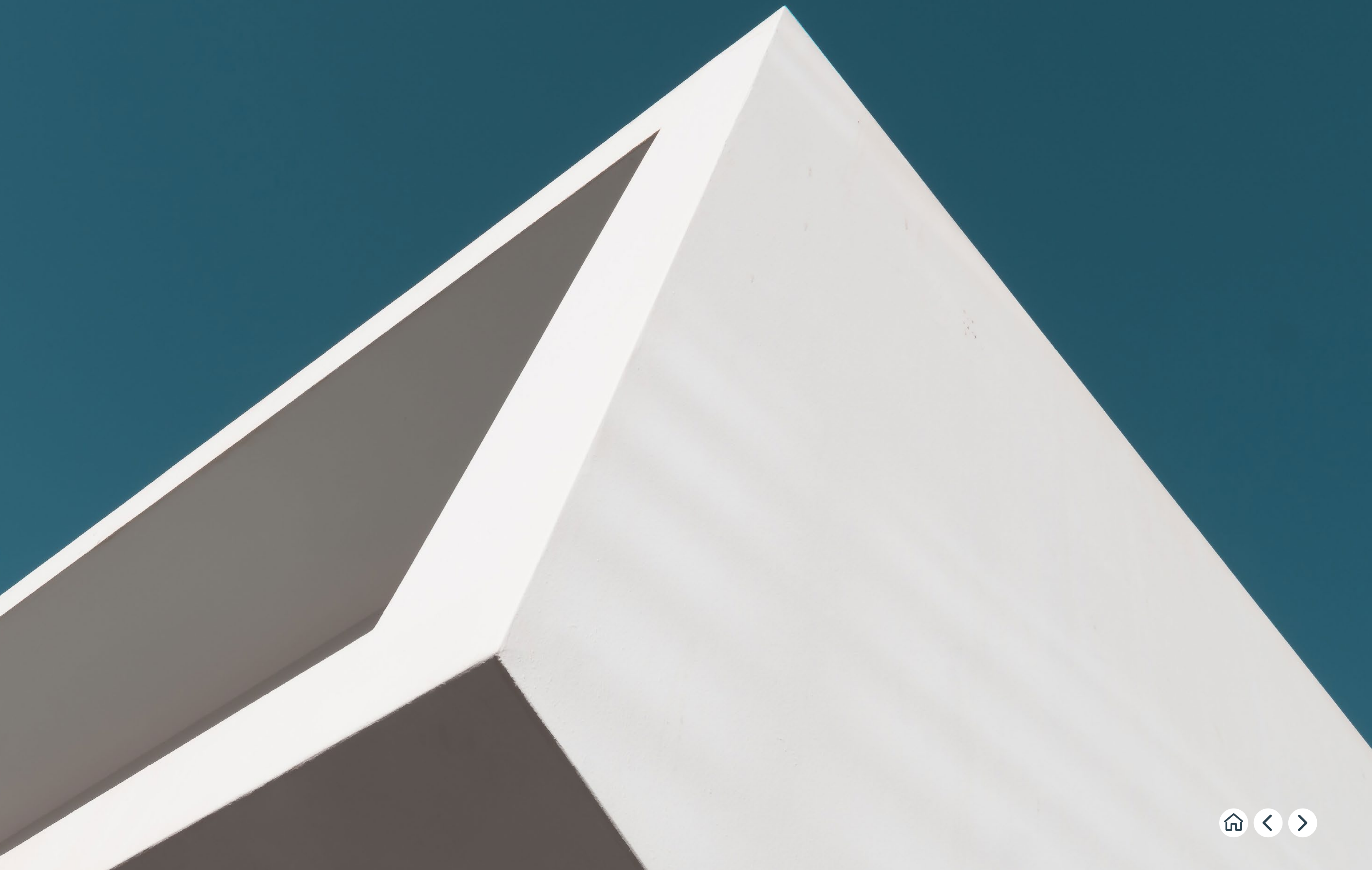
*When target reporting year or base year (which was used as a proxy for reporting year) was not announced we assumed the target reporting year to 2022. In self declared Net zero targets we are accounting for targets that include any type of Net zero target, carbon neutrality targets and targets including the increase of renewable energy to 100%.

Looking Ahead

The new year started with the prospect of lower global economic growth, softening inflation and continued monetary tightening, as we showed in our most recent Markets in Focus.

Investors may see such significant shifts in market dynamics as opportunities to consider active allocation decisions targeting explicit exposures across various time horizons. Climate transition will continue to be a priority for many investors.

Whether your 2023 investment goals are to diversify, differentiate or decarbonize your portfolio, we believe that MSCI's robust data and timely insights can help you confidently drive outcomes.



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About MSCI

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process.

To learn more, please visit **www.msci.com**