Climate Compendium

Working to build a more resilient and inclusive future

October 2021
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The Need for Speed

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COP26: Tackling the Climate Emergency

RICK LACAILLE
Executive Vice President
Global Head of ESG

After COP26, there will be heightened expectations for the finance industry to support new international agreements and government actions for climate change mitigation and adaptation. This could take the form of increased climate disclosures, new investments designed to advance the transition to net zero, and trading in new carbon instruments, to name a few. State Street’s Climate Compendium offers our perspectives on ESG trends and climate-related investment opportunities, and features research from State Street Global Advisors, our asset management division, and State Street Associates, our team that partners with academics to deliver innovative investment research.

The UN Climate Change Conference of the Parties, or COP26, will bring together governments, agencies, and stakeholders from around the world to make major decisions and set important goals to address climate change. Since the signing of the Paris Agreement in 2015, some progress has been made towards limiting the rise in global temperatures to well below 2° Celsius (and preferably 1.5° Celsius, compared with pre-industrial levels), but not enough.
As the Intergovernmental Panel on Climate Change’s (IPCC) latest report shows, the world is not only falling short on this target, we are on track to reach 1.5°C Celsius of warming within the next two decades.

The COP26 discussions aim to finalise the so-called ‘Paris Rulebook’ — an internationally agreed framework for cutting emissions and mitigating the worst effects of climate change. However, governments must also make more ambitious decisions to set the direction for a decisive decade ahead in global efforts to meet environmental goals.

The speed at which circumstances changed and societies were required to adapt during the pandemic is an indication of how quickly things could also move during a climate change emergency. Governments and international bodies will have to implement change fast to have the required impacts and cut emissions.

These demands will only increase as the effects of climate change become clearer and the risks to business models and economies manifest themselves.

During any period of significant economic change, investment opportunities and risks alter substantially. As investors we should endeavour to avoid being reactive, to ensure that we are adequately prepared and able to contribute to our long-term economic well-being by aligning our investments effectively.

Asset owners and asset managers will undoubtedly be impacted by policy shifts and international developments coming out of COP26. This Climate Compendium will give you information, insights and considerations to help you navigate investing in an era of climate change.
Partnering for Progress

GEORGE SERAFEIM
Charles M. Williams Professor of Business Administration

George Serafeim is the Charles M. Williams Professor of Business Administration and the Faculty Chair of the Impact-Weighted Accounts Project at Harvard Business School.

Professor Serafeim has held several positions of leadership. He is an academic partner at State Street Associates and serves on the advisory board of investment firms that focus on ESG issues as catalysts for value creation. He has served on several not-for-profit organizations including the board of directors of the High Meadows Institute and the Standards Council of the Sustainability Accounting Standards Board, and on the first ever decarbonization advisory panel for the New York Common Retirement Fund, one of the largest US pension funds.

Professor Serafeim earned his doctorate in business administration at Harvard Business School, where his dissertation was recognized with the Wyss Award for excellence in doctoral research. He received a master’s degree in accounting and finance from the London School of Economics and Political Science, where he was awarded the Emeritus Professors’ Prize for best academic performance. He grew up in Athens, Greece.
Reimagining Macroeconomics to Meet Climate Challenge

SIMONA M MOCUTA
Senior Economist,
State Street Global Advisors

Climate change can no longer be relegated to specialty models but must be integral to the mainstream macroeconomics framework.

Economics concerns itself with measuring the production and commercial exchange of goods and services.

A commercial exchange involves a price — the clearing mechanism for supply and demand — and price is central to the discipline’s conceptual framework. But what if there are no commercial exchanges and observed prices? This complicates things to the extent that such situations are often intentionally excluded from theoretical economic models. They are "externalized" away in order to simplify the stylized model world and are, in effect, unaccounted for in the model’s conclusions.

Such externalities help explain why macroeconomics has historically been poorly positioned to account for and, by implication, help mitigate one of society’s greatest challenges: climate change. Yet we may be at a point where these glaring limitations are no longer deemed acceptable by society as a whole. This means climate change can no longer be relegated to “specialty” or "satellite" models and must be endogenized into the mainstream macroeconomics framework.

Similarly, macroeconomic policies should seek to address costing disparities associated with new measures of productivity growth that take into account various aspects of climate change.

ESG investing would now be deemed as the necessary new framework for both macroeconomics and investing.
Role of Macroeconomics

Several official and multilateral institutions are pioneering the way forward, and others from the private sector are joining the effort. For instance, the Organization for Economic Co-operation and Development has produced an alternative estimate of productivity called environmentally adjusted multifactor productivity (EAMFP). While imperfect and not available for all countries, EAMFP marks a significant step toward broader efforts to systematically capture not just how much we produce but also how we produce it.

A seminal 2018 paper on this topic argued that “traditional measures of productivity growth fail to fully account for the role of environmental services in production.” Since “pollution is not considered an output of the production process,” only costs associated with mitigating pollution are fully captured and not the positive outcome of reduced pollution. Conversely, while the value of production is accounted for, any associated heightened intensity of natural resource utilization is not.

This asymmetry can skew traditional measures of productivity either toward a lower level than they should be (in the first instance) or toward a higher level (in the second). This would in turn affect our understanding of potential growth, relative economic performance of countries, the appropriate macro policy mix, and ultimately, the risk premia associated with various geographies. An environmental lens of analysis would, for instance, reduce the growth advantage of emerging markets (EM) relative to developed markets and — all else being equal — raise the EM risk premium.

From a microeconomic perspective, such “incomplete accounting” can disincentivize firms from investing in pollution mitigation technologies unless their competitors also are subject to similar requirements. Otherwise, a firm would find itself at a competitive disadvantage due to increased production costs. Consequently, in order to facilitate the achievement of societal goals around climate change, it is imperative that macroeconomic policies — whether around trade, tax or other issues — seek to address such disparities.

European discussions around a carbon border tax, for instance, should be understood within this context, as should the European Central Bank’s recent pledge to more systematically incorporate environmental sustainability in all aspects of monetary policy. The message is clear — the trend toward increased scrutiny, regulatory oversight and active government interference in markets to drive the climate agenda is here to stay. In time, the trend is also likely to broaden, permeating more sectors and facets of economic activity.
Role of the Investment Community

The investment community has a big role to play as the intermediary that helps determine the ultimate cost of capital for individual companies. An environmental overlay can drive upward or downward adjustments to a country’s GDP, and the same overlay should — and we believe it increasingly will — have an impact on the cost of capital for individual market participants. Theoretically at least, a more sustainable business model should imply a more stable revenue flow and should command a lesser risk premium and improved access to capital. This very idea underpins State Street Global Advisors’ R-factor scoring system.

This exercise is broadening beyond climate to other social and governance metrics as well. Environmental Social and Governance (ESG) based investing is not just becoming increasingly popular but has become the necessary new framework for both macroeconomics and investing.

Environmental Social and Governance (ESG) based investing is not just becoming increasingly popular but has become the necessary new framework for both macroeconomics and investing.

Green Transition and its Implications

The ultimate impact of the broad adoption of ESG investing could simultaneously be both obvious and nuanced. The investment process itself may change to incorporate ESG as a permanent dimension of portfolio management going forward. What this may mean in practice is still an open question at this time. All else being equal, ESG incorporation could turn Europe — with its thought and political leadership on climate change and its relative leadership in decarbonization efforts — into a more attractive investment destination over the medium term.
The United States (US) may also be an improbable winner. Despite its fairly dismal environmental reputation and the shale revolution of the past decade, the carbon intensity of the US economy has actually declined at a faster rate than that of the European Union (EU) and at a much faster rate than that of Japan (Figure 1). While the EU retains a clear absolute advantage, the US has managed to narrow the gap with the EU and has nearly closed the gap vis-à-vis Japan. By contrast, imposing more stringent ESG considerations in the investment allocation decision could disadvantage some EM economies, where greening efforts may lag.

The green transition process itself could prove to be inflationary. Admittedly, we have made great strides in lowering the carbon intensity of GDP over the past two decades without triggering higher inflation. However, what is in play today is a much accelerated transition timetable, driven at least as much by government mandate as by natural market forces. This accelerated “greening” of the economy means we are voluntarily making parts of the existing capital stock prematurely obsolete, ushering in a period of “parallel” production processes during which demand for certain inputs may actually increase. Somewhat paradoxically, the resource intensity of production could actually temporarily rise.
Notes

Three Trends Driving ESG Investing

1. The Great Reset Stemming from a Turbulent 2020

As much as we feel like we are on the verge of real and necessary change, it’s important to acknowledge that we’ve been here many times before — and lost the opportunity to address environmental, social and governance challenges.

In fact, in a strange twist of fate, it was the extraordinary policy responses to another crisis that laid the foundation for today’s turmoil. Massive fiscal and monetary policies implemented in the aftermath of the global financial crisis rewarded holders of financial assets but did precious little for the broader economy. So, while capital markets rallied and the modest economic expansion endured for more than a decade, beneath the surface, the ESG challenges festered — paving the way for the divisive, politics that define the current era. All that was needed to fuel the flames was a spark. And in early 2020, COVID-19 and its chain reactions provided that spark.

While tragically more than four million people around the globe died from COVID-19, the gut-wrenching reality is that the health, social and financial struggles it created have not been shared equally. Long-standing systemic health and social inequities put many people from underrepresented racial and ethnic groups at increased risk of dying from COVID-19. Economically, the crisis hurt working women. In 2020, women globally lost more than 64 million jobs, 5% of the total jobs held by women, according to Oxfam International. By comparison, 3.9% of men’s jobs were lost last year.

The COVID-19 pandemic and its aftershocks have put a spotlight on ESG issues, such as income inequality, diversity and inclusion, social injustice, employee welfare and climate change. Burying our heads in the sand, hoping that it all just goes away or that somebody else will deal with these issues is no longer an option. Many investors have also concluded that they can no longer look the other way and are ready to address these ESG issues in their portfolios.

At the same time, the crisis has underscored how qualitative ESG factors can impact long-term valuation, leading to a more complete application of ESG. That is, while ESG’s “E” has been a readily understood and acted-upon element of ESG, the pandemic has pulled the more vague “S” and “G” attributes into sharper focus. Factors such as a company’s contingency planning and work environment, as well as how they treat their customers and communities, are now top-of-mind for many investors. While climate change once dominated many annual shareholder meetings, the COVID-19 pandemic put greater emphasis on the treatment of employees and the behavior of corporate boards.

With greater attention from investors, we believe that these ESG issues will differentiate companies to a much greater extent than they have in the past. And there will be winners and losers, based on environmental and labor standards and governance practices in addition to corporate balance sheets.

At the very least, in our view, the more complete personal embrace of ESG resulting from the pandemic will help evolve ESG investing.
The 2010s were all about laying the groundwork for ESG investing through education and government regulation. We expect the 2020s will be about renewed commitment and putting ESG investing into action.

The pandemic environment continues to help investors overcome the traditional obstacles to ESG investing — performance, data and analytics, cost, and choice.

2 Investors Reshaping the Investment Industry

In the past decade, investor appetite for indexing and transparent rules-based factor investment strategies at an affordable cost with greater tax efficiency has permanently changed the investment landscape.

Investors are demanding even more choices when it comes to their investments. Not surprisingly, exchange traded funds (ETFs) and index mutual funds have been the primary beneficiaries of this massive industry transformation.

However, until recently, investor adoption of ESG ETFs and index mutual funds has been, at best, uneven. Despite compound annual growth rates (CAGR) of more than 30%, ESG ETFs make up a fraction of the industry’s more than $6 trillion in assets under management globally. But the COVID-19 pandemic is changing investor attitudes toward ESG investing.

Figure 2: Global ESG Flows in 2020

![Graph showing global ESG flows in billions from 2015 to 2020.](Image)

Source: Data from Bloomberg Finance L.P., as of 31 March 2020, calculations by SPDR Americas Research as of 31 December 2020.
1. Incorporate ESG Factors for Sustainable Performance

Although you might expect companies with stronger governance, risk management practices and labor standards to outperform, we believe many investors wrongly associate ESG issues with negative effects. That is, they hold that incorporating ESG data, especially in the “best-in-class” space (where companies with better ESG ratings are systematically overweighted), negatively impacts a portfolio’s performance. However, a recent Morningstar study concludes that there is “no evidence that investors need to sacrifice returns when they invest in good ESG companies globally compared with bad ESG stocks.”¹

In fact, in 2020, certain ESG indices outperformed their non-ESG counterparts. Compared with the S&P 500 Index, the S&P 500 ESG and S&P ESG Exclusions II indices achieved 1.5% outperformance, with less volatility of returns.² Moreover, numerous studies have identified a positive link between ESG integration and measures of corporate performance. In fact, in a well-known meta-study of over 2,000 academic studies, 90% showed a non-negative relationship between the incorporation of ESG factors and corporate financial performance, and 63% identified a positive link.³

Some investors also have expressed concerns that ESG investments would result in subpar performance or would risk sizable deviations from benchmark returns — so-called tracking error — a particular concern for investors expecting index-like returns. So far, studies indicate that not to be the case.⁴

Additionally, ESG has been characterised by some as a luxury investors could afford in a bull market, but a choice that might be too costly in a downturn.

Morningstar’s “ESG Indexes Protect on the Downside” concluded that 72% of Morningstar equity indexes that incorporate ESG screens lost less than the market during down periods for the five years through the end of 2019. A follow-up study after the Q1 2020 selloff found that 51 of Morningstar’s 57 ESG-screened indexes, or 89%, outperformed their broad market equivalents in the first quarter of 2020.⁵

These studies suggest that portfolios with ESG integration may provide downside protection when markets are struggling, underscoring ESG’s potential role as a long-term investment.
2. Rely on Better Data to Make Better Decisions

As ESG investing has slowly garnered greater interest from investors over the past decade, there has been a surge in data and analytics providers, all claiming to have the secret sauce to ESG investing success. This data overload appears to have investors confused and struggling to determine which ESG factors have a material impact on a company’s financial performance.

Thankfully, investment managers have identified and partnered with several ESG data and analytics providers. We believe these partnerships are an important step in improving ESG data and analytics for investors.

State Street is committed to helping investors understand how material ESG issues impact a company’s value. While ESG investing is still in its early stages, we are committed to combining our financial data and analytics capabilities with our investment practitioner perspective to create a new generation of ESG solutions.

We’ve forged partnerships with leading ESG data providers to enhance our investment decision-making. In addition, we incorporate our proprietary ESG insights into our investment processes across an array of asset classes. We’ve even leveraged a subset of these data sets to create our own proprietary ESG scoring system. Leveraging the Sustainability Accounting Standards Board (SASB) framework, it measures a company’s business operations and governance relative to industry-specific ESG issues likely to affect a company’s financial performance.

Our scoring system supports the increasing awareness that material issues vary across sectors and industries. In the financial sector, for example, governance issues (board representation, ethics, lobbying efforts) may weigh more heavily than environmental issues. Whereas in the energy sector, environmental issues are key (climate change, waste management, air quality).

Notably, analysis using SASB’s materiality framework found that companies that address material ESG issues and ignore immaterial ones outperform those that address both material and immaterial issues by 4% and outperform companies that address neither by nearly 9%. For all investors, using ESG to inform better decision-making starts with the right data.

The increased transparency and improved reporting helps investors to better understand their ESG exposures, take action to achieve their investment goals and monitor progress.
3. Gain ESG Exposure with Cost-Effective ETFs

One of the greatest single benefits of investors’ devotion to indexing and transparent rules-based factor investment strategies is that it has significantly reduced costs for all investors. However, depending on the asset class or investment category, there are major differences in cost. As of May 31, assets in the active ESG mutual funds category dwarf the assets in ESG ETFs and index mutual funds by more than three times, according to Morningstar. We believe that as investors increase their allocations to ESG investments, they may choose to do so through more cost-effective ETFs and index funds.

As an example, the average US actively managed ESG mutual fund has a total cost of 0.83 percentage points per year on an asset-weighted basis, compared to just 0.35 for the average US ESG indexed ETF.7 As investing’s great democratizer, ETFs offer a transparent and low-cost way to invest.

And ESG ETFs now make investment strategies that were once available only to the largest investors available to everyone.

4. Customize Portfolios with ESG Funds

One of the durable trends reshaping the investment management industry over the past decade has been that investors want more choices. However, as ESG investment choices increase, the behavioral finance “paradox of choice” has resulted in more investor inertia. Now, as the growth in ESG investing is forecasted to skyrocket in the post-pandemic environment, investment managers are flooding the market with new products to meet growing investor demand. But how does launching hundreds of ESG funds, with the hope that a handful will catch fire, serve the ESG investor?

We understand that ESG investing is deeply personal. There is no one-size-fits-all approach. But greater choice isn’t always better choice. That’s why we thoughtfully work to meet the ESG investment goals of our clients — managing risk, aligning their investments with their goals, pursuing sustainable performance. For some investors, simply excluding certain types of investments may be enough. While for many others, a best-in-class or more fully integrated ESG investment solution may be appropriate. Finally, some investors may just want to invest in an ESG theme, like increasing diversity in the corporate boardroom.

With a long-standing focus on clients, our experts are crafting ESG ETFs that meet our clients’ evolving needs.
Boomers Preparing to Transfer Wealth to Their Children

The enormous transfer in wealth from Boomers to their children has the potential to fuel incredible growth in ESG investing over the next decade.

In our view, greater use of ESG as a quality factor that can improve portfolios will have an especially profound impact on society as the greatest intergenerational wealth transfer in history begins.

Wealth-X’s “A Generational Shift: Family Wealth Transfer Report 2019” estimates that by 2030, $15.4 trillion of global wealth will be transferred by individuals with a net worth of $5 million or more. In North America, $8.8 trillion will be passed on by 2030, followed by $3.2 trillion in Europe and $1.9 trillion in Asia.\(^8\)

In the US, according to Cerulli Associates, Baby Boomers will pass nearly $48 trillion in assets to their heirs and charities over the next 25 years. When we include assets from Generation X — those born between 1965–1980 — Cerulli suggests that $68.4 trillion will be transferred by US households over the next quarter century.\(^9\)

Here, too, the global pandemic has highlighted an opportunity for investors. Many Boomers — folks born between 1946–1964 — were probably shocked to find themselves old enough to be included in COVID-19’s “at-risk” group. But the oldest Boomers are now approaching age 75. And by the end of this decade, the youngest of them will be turning 65, retirement age.

During the pandemic, stay-at-home orders around the world combined with the economic pain unleashed by COVID-19 resulted in more forced family togetherness. Sadly, many younger adults lost their jobs and abandoned urban city centers to return home to the perceived safer suburbs of their youth. Not to mention college and high school students unexpectedly stuck at home with dear old mom and dad.

With the human tragedy of the COVID-19 pandemic unfolding and the increasing focus on the need to address systematic racism, Boomer parents and their stuck-at-home children have had the opportunity to have real conversations about personal values. This growing dialogue between parents and their children has sparked useful discussions about estate planning, planned giving and family philanthropy as a means to enact real societal changes.

We think of ESG investing as a bridge between Boomers — and their children that may lead to a powerful joint vision for the family’s legacy.
Studies show that many Millennials — people born between 1981–1996 — understand the benefits of ESG investing. Eighty-seven percent of high net-worth Millennials consider a company’s ESG track record an important consideration in their decision about whether to invest. Another study found that 90% of Millennials want to tailor their investments to their values. And State Street Global Advisors’ own 2019 wealth management survey found that 75% of Millennials indicate it is important that their financial advisor assist them with ESG investing.

We believe that as the transfer of wealth occurs, ESG investing will soon be in the mainstream of every investment portfolio. And, in our view, that change will reverberate and be magnified through increased government regulation and institutional investments.

Notes

2 Morningstar, as of 31 December 2020.
5 Morningstar, “How Did ESG Indexes Fare During the First Quarter Sell-off?” 8 April 2020.
7 Morningstar, as of 30 June 2021.
12 State Street Global Advisors, State Street Global Advisors Individual Investors 2019 Study. A global survey on consumer sentiment, purpose and behaviour in wealth management. Q: How important is it that your advisor help you with impact/ethical and/or ESG investing?
About State Street Global Advisors

Our clients are the world’s governments, institutions and financial advisors. To help them achieve their financial goals we live our guiding principles each and every day:

- Start with rigor
- Build from breadth
- Invest as stewards
- Invent the future

For four decades, these principles have helped us be the quiet power in a tumultuous investing world. Helping millions of people secure their financial futures. This takes each of our employees in

30 offices around the world, and a firm-wide conviction that we can always do it better. As a result, we are the world’s fourth-largest asset manager* with US $3.90 trillion† under our care.

* Pensions & Investments Research Center, as of December 31, 2020.
† This figure is presented as of June 30, 2021 and includes approximately $63.59 billion of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated.

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

In general, ETFs can be expected to move up or down in value with the value of the applicable index. Although ETF shares may be bought and sold on the exchange through any brokerage account, ETF shares are not individually redeemable from the Fund.

ESG considerations may cause a fund to make different investment decisions than funds that do not incorporate such considerations.

This could cause the Fund’s investment performance to be worse than funds that do not incorporate such considerations. ESG considerations also may affect a fund’s exposure to certain sectors and/or types of investments, and may adversely impact the Fund’s performance depending on whether such sectors or investments are in or out of favour in the market.

Equity securities may fluctuate in value in response to the activities of individual companies and general market and economic conditions.

Non-diversified funds may invest in a relatively small number of issuers, a decline in the market value may affect its value more than if it invested in a larger number of issuers. While the Fund is expected to operate as a diversified fund, it may become non-diversified for periods of time solely as a result of changes in the composition of its benchmark index.

Passively managed funds hold a range of securities that, in the aggregate, approximates the full Index in terms of key risk factors and other characteristics. This may cause the fund to experience tracking errors relative to performance of the index.

While the shares of ETFs are tradable on secondary markets, they may not readily trade in all market conditions and may trade at significant discounts in periods of market stress.

ETFs trade like stocks, are subject to investment risk, fluctuate in market value and may trade at prices above or below the ETFs’ net asset value. Brokerage commissions and ETF expenses will reduce returns.

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Championing ESG Investing
An introduction to Karen Wong

Karen Wong recently joined State Street Global Advisors as Global Head of Environmental, Social and Governance (ESG) and Sustainable Investing.

Karen’s keen interest in sustainable investing started in 2014, when, in her prior role at Mellon Investment Corporation, she developed and launched a landmark Carbon Efficiency Strategy, the firm’s first green beta product. As a member of Mellon’s ESG Council and BNY Mellon’s ESG Investment Council, she drove ESG integration across the firm and became a champion of ESG investing there and across the asset management industry. She also enjoys coaching at the Oxford Impact Investing Programme.

Karen brings her longstanding passion and extensive track record in ESG investing to her new role at State Street Global Advisors, where she oversees all of the firm’s ESG functions, including ESG integration and investment strategy, ESG research and data analytics, and asset stewardship. She will further strengthen State Street’s market leading ESG capabilities and provide the solutions investors need to incorporate material ESG opportunities and risks into their portfolios. In particular, she strongly believes in the value of effective long-term engagement with companies and is interested in how State Street can further strengthen its asset stewardship capabilities.

Looking more broadly, Karen sees challenges in investor adoption of ESG, including the quality and consistency of ESG data, and the inconsistent and incomplete disclosure of ESG information by companies. “As one of the world’s largest asset managers, State Street Global Advisors intends to continue playing a leadership role in strengthening ESG standards and disclosures through proxy voting and engagement, investor-led initiatives, incisive thought leadership, and public policy advocacy.”
“There are many ESG initiatives that I am excited to work on,” she replies, when asked about her main priority in her new role, “but the most pressing is undoubtedly climate change. The UN IPCC’s report on the devastating impact of climate change across the globe from heatwaves and wildfires to rising sea levels and floods, only confirms that we already know – that climate change poses a systemic risk to all investors.”

“State Street Global Advisors offers a range of performance-targeted solutions to help investors address climate risk and position their portfolio for the transition to a low carbon economy.

Addressing climate risk and measuring impact through reporting has been a core, multi-year campaign for the Stewardship team and we have enhanced our reporting by launching our new ‘Annual Climate Stewardship Review’ and web hub dedicated to climate stewardship.”

Karen goes on to explain that collective action is critical to expand global ESG awareness and adoption, therefore she is pleased that State Street Global Advisors is an active signatory of several ESG and climate organizations, including the Task Force on Climate-Related Financial Disclosures (TCFD) and Climate Action 100+.
Your Climate Toolkit: State Street’s Proprietary Research

In This Section:

- Decarbonizing Everything
- Decarbonization Factors
- Climate Change Vulnerability and Currency Returns
- New Drivers & New Approaches for Climate-Related Investing
- Green Bonds: Mitigate Climate Risks, Capture Investment Opportunities and Fund the Transition
Decarbonizing Everything

Climate Data, Industry Returns and Portfolio Construction

Alexander Cheema-Fox
Bridget Realmuto LaPerla
George Serafeim
David Turkington
Hui (Stacie) Wang
Market participants operating in an era of climate change are demanding more data to measure upstream and downstream climate risk and opportunities. How can investors use these different approaches to climate data in portfolio construction to improve outcomes?

We test three types of climate data: (1) widely reported operational carbon intensity, (2) modeled total value chain carbon intensity (including supply chain and the use of products and services), and (3) analyst ratings assessing the management of – and performance on – total value chain carbon intensity. Our goal is to understand the circumstances in which they each add value to portfolio construction.

Decarbonization Factors: Cumulative Alpha and Sharpe Ratios

Note: The graph presents cumulative abnormal returns for $1 investment in the decarbonization factors from July 1, 2013 to November 30, 2020 for three value-weighted portfolios constructed with different data approaches and rules-based coefficient of variation-weighted (CV-weighted) portfolio, leveraging all three data types. The abnormal returns are estimated from regressions based on non-overlapping monthly data, controlling for market, size, value, profitability, investment, and momentum factors. Sharpe ratios are based on abnormal returns. Source: State Street Global Markets, MSCI market data, S&P Trucost, MSCI ESG ratings and Kenneth French data library.
There is a simple and surprisingly effective way to tell which data matters most for a given industry. Put simply, metrics that vary widely across the firms within an industry tend to matter more. We find that the “coefficient of variation” (CV) for each metric in each industry is effective at predicting returns.

These (and other) insights for determining merit and applicability of climate data can be applied in rules-based trading models. In particular, we test a systematic process for selecting different climate metrics and forming portfolios. Our model chooses a metric of operational or total value chain carbon intensity for half of the industries and uses analyst ratings for the others. In addition to using the chosen climate metrics to sort stocks within each industry, we also use the CV of the chosen metric to weight across industries for a broad market strategy. As seen in the figure above, our rules-based and industry-specific approach with CV-weighting between industries improves both the returns and Sharpe ratios of the underlying factors.

Playing to the strengths of various types of climate data can help investors design strategies to manage climate risk while increasing risk-adjusted returns. By using more sophisticated rules, we suspect investors could produce even better results.

For more on this topic, see our 2020 working paper on SSRN: “Decarbonizing Everything: Climate Data, Industry Returns, and Portfolio Construction” by Alexander Cheema-Fox, Bridget Realmuto LaPerla, George Serafeim, David Turkington, and Hui (Stacie) Wang.

State Street Associates

Our goal is to bridge the worlds of financial theory and practice with innovative investment research for asset managers and owners. We focus on two fundamental drivers of performance to help State Street’s clients exceed their performance goals and manage risk:

Information Advantage: Our extensive indicator suites provide investors with powerful and practical market intelligence.

Research Advantage: We partner with renowned academics to develop impactful new ideas for portfolio construction, risk management, and investment strategies.

Learn more about our thought leadership, publications, interactive tools and indicators at State Street Global Markets | Insights.
Decarbonization Factors

Going with the flows on low-carbon strategies improves investor returns

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Hui (Stacie) Wang
Investors increasingly view climate change as an economically significant event, affecting performance now, as well as long-term.

While a preponderance of scientific evidence links climate change to carbon emissions, there is a lack of quantitative research on investor behavior and low-carbon strategies. We set out to measure how institutional money, in aggregate, moves around low-carbon strategies and the effects on return profiles. Do flows contain information about the financial performance of low-carbon strategies?

To test this, we design and monitor the performance of six strategies in the US and Europe, which we call “decarbonization factors.” These regional strategies take long-short positions on lower carbon intensity firms, industries, and sectors within the respective industry, sector and market.

Decarbonization Factors: Cumulative Alpha and Sharpe Ratios

Source: State Street Global Markets, MSCI market data, S&P Trucost, Kenneth French data library. Note: The graph presents cumulative abnormal returns for $1 investment in the decarbonization factors from July 1, 2009 to December 31, 2018. The abnormal returns are estimated from regressions based on non-overlapping monthly data, controlling for market, size, value, profitability, investment, momentum factors and NYMEX oil spot returns. Sharpe ratios (1.00, 0.37, 0.32, and 0.00) are based on abnormal returns.
The chart illustrates the historical performance of two sets of regionally distinct decarbonization factors. Across regions we see the most aggressive decarbonization strategies produced the highest cumulative alpha, after controlling for traditional factors. Investors that had significant exposure to the European factors between 2009 and 2018 would have experienced significantly stronger performance relative to the US. Moreover, we observe a low correlation between the regional factor performance and flows. This is exemplified after 2016 when almost all US factors experienced outflows, an effect not seen in Europe. And, consistent with traditional factors, we find strong alignment with the decarbonization factor returns and contemporaneous institutional flows into (or out of) factors. During this period, holding positions in-line with concurrent monthly institutional flows into factors generated alpha ranging from 1.5% to 8.5%, well beyond the factor performance alone. While such perfect alignment is not practically possible, we find aggregate flows to be highly persistent, suggesting that flows contain information about anticipated climate change fundamentals and, may offer a useful signal to future price trends.

What can investors do with this insight? Decarbonization factors are versatile for investors to use. The low correlation between regional decarbonization factor returns creates an attractive opportunity for investors to rotate across strategies – implementing tilts at the sector, industry or firm level across regions – providing continuous exposure to low-carbon portfolios with more attractive return profiles.

For more on this topic, see our 2019 working paper on SSRN: “Decarbonization Factors” by Alexander Cheema-Fox, Bridget Realmuto LaPerla, George Serafeim, David Turkington, and Stacie Wang.
Climate Change
Vulnerability and
Currency Returns

Past trends in climate vulnerability can help predict currency returns

Alexander Cheema-Fox
George Serafeim
Hui (Stacie) Wang
George and Stacie presented key findings from this paper during the 2021 Research Retreat: State Street LIVE
Past trends in climate vulnerability predict currency returns. Investors can build physical risk resilient portfolios to manage physical risk from climate change with liquid FX instruments.

Climate change has already had substantial physical impacts across countries. Even if we were able to stop emitting carbon today, these physical impacts are expected to accelerate in the next years and decades. Notably, physical risk from climate change is highly localized, meaning that some countries and economies have higher vulnerability to climate change than others due to geographic locations, variations in climate sensitivity, and differences in adaptive capacity. In this study, we investigate the relationship between physical risk and currency returns, and demonstrate how investors can build climate resilient portfolios in the FX market.

**FX Physical Risk Resilient Portfolios Cumulative Risk-Adjusted Performance**

Note: This figure presents the risk-adjusted performance for the long-short portfolios based on past 5-year vulnerability momentum from 2002 to 2019 for all pairs in our sample, G10 pairs and non-G10 pairs in our sample. In all portfolios, currencies with decreasing risk are funded by currencies with increasing risk and currency pairs are equally weighted. The risk-adjusted returns are calculated from multi-factor regressions of portfolio returns on FX risk factors including G10 market, G10 carry, G10 value, G10 momentum, EM market, EM carry, EM momentum, and global carry. The green line labelled “Non-G10 Pairs” represents the portfolio performance based on a sample of 19 non-G10 currencies including BRL, CLP, COP, CZK, HUF, IDR, ILS, INR, KRW, MXN, MYR, PEN, PHP, PLN, RUB, SGD, THB, TRY, and ZAR. The blue line labelled “G10 Pairs” represents the portfolio performance based on a sample of G10 currency pairs. The grey line labelled “All Sample Pairs” represents the portfolio performance for all 29 currencies including the G10 and non-G10 currencies. We form these portfolios annually on the last business day of the year and the returns are calculated using spot and 1-year forward contracts. Source data: ND-GAIN, DataStream.
First and foremost, we find past trends in climate vulnerability predict currency returns, using vulnerability data from ND-GAIN. While the level of climate vulnerability can be largely explained by economic fundamentals, we find only a small proportion in the vulnerability momentum can be analogously explained, suggesting that most information in vulnerability momentum is not yet reflected in the country-level characteristics. We then demonstrate how investors can construct portfolios with decreasing physical risk based on past 5-year momentum in vulnerability with 29 of the most traded currencies across developed and emerging markets.

During our sample period 2002-2019, this physical risk resilient portfolio generates a positive and significant alpha, after controlling for a set of fundamental macroeconomic factors and common FX risk factors. Particularly, we find this phenomenon is more pronounced among non-G10 pairs, predominately driven by EM currencies. Moreover, double-sorting on both level and momentum in vulnerability reveals that the level of vulnerability provides important context to vulnerability momentum — improving from a risky base is rewarded more than improving from a less risky base.

In addition, we find emerging economies have higher climate vulnerability than developed economies due to lower adaptive capacity instead of exposure or sensitivity; however, this vulnerability gap between EM and DM has been shrinking over time. By linking to natural disaster loss data, we confirm that more vulnerable countries experience greater economic losses and more human lives affected by natural disasters.

We hope our study provides early evidence in a portfolio setting of how investors could use liquid FX instruments and information on climate vulnerability to manage physical risk and preserve asset values in domestic and foreign currencies.

For more on this topic, see our 2021 working paper: “Climate Change Vulnerability and Currency Returns” by Alexander Cheema-Fox, George Serafeim, and Hui (Stacie) Wang.
New Drivers &
New Approaches
for Climate-Related
Investing

Fundamental Active Equities

Esther Baroudy
John Flynn
As we approach November’s United Nations Climate Change Conference (COP26), we are seeing the emergence of new, and potentially dramatic, climate-related investment drivers which will shape equity portfolio investing for many years to come.

Moreover, a major new report (AR6) by the UN Intergovernmental Panel on Climate Change (IPCC) will only serve to strengthen policymakers’ drive to channel financial market capital into faster and smarter climate solutions.

The new climate-related drivers have both regulatory and macro-economic dimensions. Regulatory factors may set the transition path to net-zero emissions while fiscal policies, which are expected to be largely tied to sustainability, may help determine the pace and structure of economic growth.

In nearly all cases, publicly listed companies will need to have a credible transition plan to net-zero emissions. Additionally, there will be opportunity for a subset of these companies to derive revenue from the new economic growth drivers.

The transition to net-zero emissions in the next decade therefore sets the stage for determining distinct stock market winners and losers.

The transition to net-zero introduces a number of factors with the potential to greatly impact companies. A diverse set of regulatory and economic drivers are at play.
As COP26 approaches, a series of regulatory and economic drivers are emerging which have the potential to dramatically reshape equity investing.

Climate transition planning and competency will become key areas of differentiation for companies.

We see promising opportunities in both Climate Transition and Climate Opportunity Strategies.
Key Regulatory Drivers

G7 Climate Commitment

The G7 supports mandatory emissions disclosures for companies together with requirements for credible net-zero emissions transition plans. The implication of this is that carbon intensities will become transparent, including all along the supply chain i.e. Scope 3 Greenhouse Gas (GHG) emissions. This could upend current scoring for company carbon intensities and other GHG measures.

Regulation and the Science

The IPCC AR6 report stresses that climate change and the accumulation of greenhouse gases in the atmosphere are primarily due to human influence. Given this, we do not exclude that COP26 may see a tightening-up of policies on the transition towards net-zero emissions.

Sustainability Standards New

IFRS sustainability standards are being developed to enable the move towards common climate-related financial disclosures with comprehensive reporting and data transparency. This will make genuine comparisons between companies possible.

Carbon Price Floors

The IMF board is actively negotiating setting a carbon price floor for large emitting nations. This will be increased on an annual basis and these carbon price increases will likely impact some companies’ costs and investment. This may, in turn, lead to equity market valuation revisions.

Key Economic Drivers

Fiscal Policy and Sustainability

Fiscal policies are increasingly being tied to climate resilience and R&D. For example, in the United States, the multi-trillion fiscal packages currently going through the houses of Congress involve climate-related investment, including a strong emphasis on infrastructure resilience to climate change. In addition, a ‘Made in America’ manufacturing strategy for components is planned to accompany this. The impact of this on global supply chains (in addition to reshoring) is expected to be significant.

New Growth Drivers

Fiscal policy could impact and change the structure of economic growth. President Biden is looking for 80% clean electricity and 50% economy-wide carbon emissions reductions by 2030. Achieving ambitious goals such as these will require new technologies and innovation in solar, wind and energy efficiency alongside new electricity system flexibility (Figure 1).

Digital Enablement

Climate change measurement and new technologies will also require digital solutions. We anticipate an acceleration in investment in software and artificial intelligence techniques, including for automation and ‘digital twinning’.
Figure 1: Global Total Final Energy Consumption by Fuel in the Net-Zero Emissions Scenario

Source: International Energy Agency (2021), Net-Zero by 2050, IEA, Paris IEA. Note: The share of electricity in final energy use jumps from 20% in 2020 to 50% in 2050.
Companies and the Transition to Net-Zero

In a climate-focused world, companies will be expected to have a credible transition plan for net-zero emissions. Companies will be assessed on their future transition plans as well as on their progress with regards to their current carbon footprint and regulatory and physical risks. Many companies are already preparing themselves for transition.

By definition, transition plans will be forward-looking, and companies may find themselves having to make new investments or to undertake restructuring in order to achieve net-zero emissions in the allotted timeframe.

Corporate transition plans can therefore be expected to come under stock market scrutiny going forward.

- Management and board directors may be assessed on climate credibility and resilience planning. They may face votes against them by asset managers and owners should they not comply.
- The ease of sector de-carbonization may become a factor. Ratings agencies may rate transition plans when they assign corporate debt ratings. In addition, financial intermediaries will be subject to central bank stress testing of assets.
- The credibility of transition plans to achieve net-zero emissions by 2050 and the costs of achieving this may bring about equity market re-rating or revaluation of companies within their sectors and relative to their benchmark.

- Equity markets may look for superior transition scoring relative to the industry whilst equity investors may look for this relative to their benchmarks.

Enhanced, as well as deep, analytical skill will be required to identify, assess and score potential outperformers as the global economy embarks on Climate transition.

Enabling Opportunities

A Subset of Climate Investing

Stocks with mitigation or enabling technologies have hitherto attracted the greatest attention where climate-related investment is concerned.

We believe only a subset of the market has climate-enabling or mitigation opportunities and we identify these to be mainly in Industrials, Materials and IT (Figure 2).

The winners will be those with proprietary technologies and strong barriers to entry. However, new technologies, new entrants, and new ways of investing in the next decade — for example public-private partnerships — make a longer-term assessment of future competitive positioning more difficult.

Portfolio concentration in a few sectors will also entail greater risk. Valuation will depend in large part on the success of a firm’s technologies with regards to climate resilience and should this become impaired for any reason, an abrupt loss of value in the name could result.

Hence, not only will these ‘Opportunities’-type companies be assessed on their transition planning, but the future of their market positions will also be under the spotlight.
**Figure 2: Promising Progress Ahead of COP26, the World Has Made Progress Toward Net-Zero**

<table>
<thead>
<tr>
<th>% of Emissions Covered by Net-zero Targets</th>
<th>Countries with Proposed or Agreed Net-zero Commitments</th>
<th>Companies with Net-zero Commitments</th>
<th>Growth in ESG Investing (Fund Inflows) ($bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>x2.5 ↑ 30% 73%</td>
<td>x6 ↑ 21 131</td>
<td>x3 ↑ 992 3,067</td>
<td>x4 ↑ $45 $185</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Companies Supporting TCFD</th>
<th>Countries Committed to Implementing TCFD</th>
<th>Central Banks in NGFS</th>
<th>Financial Commitments to Net-zero Through GFANZ ($trn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>x2.5 ↑ 1,000 2,300</td>
<td>x16 ↑ 0 45</td>
<td>x2 ↑ 50 91</td>
<td>x16 ↑ $5 $80</td>
</tr>
</tbody>
</table>

With market cap of $25trn from 86 countries  
Including G7 committing to mandatory reporting  
From countries representing 82% of emissions  
With over 250 firms across the financial sector, GFANZ is the gold standard for netzero commitments

### Figure 3: Climate-Related Investment: New Strategies Take Shape

<table>
<thead>
<tr>
<th>Strategy Inclusion Criteria</th>
<th>Valuation Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Climate Transition Strategies</strong></td>
<td><strong>Climate Opportunities Strategies</strong></td>
</tr>
<tr>
<td>• Future climate transition plans’ credibility to be assessed and scored.</td>
<td>• Stock valuation re-rating/de-rating dependent on credibility of transition plan.</td>
</tr>
<tr>
<td>• Credibility of management in achieving net-zero emissions and how well their plan is quantified.</td>
<td>• Fund is diversified relative to benchmark.</td>
</tr>
<tr>
<td>• Strong scores for future climate transition plans determine portfolio inclusion.</td>
<td>• Valuation to reflect potential success of climate-resilience technologies and innovation.</td>
</tr>
<tr>
<td></td>
<td>• New entrant risk including new technologies and new forms of financing and or partnerships makes sectors more cyclical and valued accordingly.</td>
</tr>
</tbody>
</table>

Source: State Street Global Advisors.

### Conclusion

We observe that many of the publicly listed companies we look at already have well-thought through and credible net-zero emissions plans. Active equity managers will have to develop in-house proprietary strategies for assessing the credibility of climate transition planning.

Transition-oriented portfolios will provide the opportunity for strong portfolio diversification and this in turn will have the potential for delivering sustainable as well as healthy returns. In contrast, an ‘Opportunities’ strategy will be narrower in focus, more concentrated in sectors and the returns profile may not be as smooth.

Overall, as managers of global equity portfolios, we see great opportunity in this new era for forward-looking, in-depth research and bottom-up stock selection.
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Our clients are the world’s governments, institutions and financial advisors. To help them achieve their financial goals we live our guiding principles each and every day:

- Start with rigor
- Build from breadth
- Invest as stewards
- Invent the future

For four decades, these principles have helped us be the quiet power in a tumultuous investing world. Helping millions of people secure their financial futures. This takes each of our employees in

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Green Bonds

Mitigate Climate Risks, Capture Investment Opportunities and Fund the Transition

Rupert Cadbury
We believe that investors in listed securities who want to encourage more sustainable corporate behaviour should consider green bonds.

**What are Green Bonds?**

Green bonds are defined and qualified by a clear “use of proceeds” (UoP) pledge by the borrower to allocate the funds borrowed into projects to meet specific environmental objectives, including climate change mitigation and adaptation. This makes it easier for investors to identify and provide funding to companies based on their future intentions, rather than on their historical record on sustainability.

Fixed income generally — and green bonds specifically — play a vital and immediate role in funding the transition to a low carbon future. For example, financing energy companies (possibly the worst polluters) that have made clear commitments to transition out of fossil fuels can be potentially very impactful. Not only do green bonds create important incentives, which can contribute to changing behaviours and business practices over time, they also provide the necessary funding for companies to do so.

Governments and companies are paying ever greater attention to the current trajectory of carbon emissions and are allocating capital into projects that deliver environmental benefits. With a growing numbers of investors seeking to finance the right companies, green bonds should enjoy strong support through increased portfolio allocations in the future.
A Small but Rapidly Growing Market

Yet, challenges remain, including the harmonisation of reporting methodologies, as well as the relatively small size of the green bond market itself, relative to the overall fixed income market. This can restrain the ability of investors to access and trade green bonds, which is a particular issue for very large investors.

New green-labelled issuance remains akin to a drop in the ocean compared to the volume of outstanding regular debt. Despite having slowed somewhat during the COVID-19 market disruption, the total issuance of green-labelled bonds rebounded in the second half of 2020 to reach a record-breaking $290bn by the end of December, compared to $267bn in 2019. The COVID-19 pandemic immediately impacted the issuance of all types of bonds in March 2020 but this subsequently led to an acceleration of issuance of new sustainable and social debt markets. For the first time, there was a large increase in instruments being issued with a pandemic-related UoP. This contributed to a ten-fold increase in the volume of social bonds compared to 2019.

New regulations and policy changes are also creating opportunities for private sector investments in Europe and a more diverse range of borrowers are coming to the market. For example, European car manufacturers including Volkswagen (€2bn), Daimler AG (€1bn) and Volvo (€500m) have all issued debut green bonds in 2020 as they transition their production toward electric vehicles.

The Climate Bonds Initiative predict $450–500 billion of new green-labelled bonds in 2021 and $300–$500 billion of other labelled bonds (such as sustainability-linked bonds and transition bonds). Consequently, the ESG-labelled bond market may cross $1 trillion of labelled new issuance in a single year for the first time.

Figure 1: Growth of ESG-Labelled Debt Issuance

![Figure 1: Growth of ESG-Labelled Debt Issuance](image-url)
While growth has accelerated, a big challenge has been that the green-labelled bond opportunity set remains very small relative to the outstanding bond universe. Yet, investors ask us “how can we make our portfolios more climate aligned, while still balancing risk and return?”

No investor can ignore their return objectives, just as they cannot ignore ESG, risks and opportunities. The green-labelled bond market is small to the extent that even with the growth of the market in recent years, investors are wary of how its inherent risk characteristics and return profile may change materially given the magnitude of the projected growth relative to the existing market. So, investors are rightly asking “what are the options?”

The Role of Green Bonds in Funding the Climate Transition

Meeting the Paris Agreement goals requires not just the greening of select sectors but the transition of the entire global economy to an emissions pathway that is aligned to net zero carbon by 2050. This requires significant effort and enormous capital commitments. The OECD estimates that for infrastructure alone, the additional investment needed amounts to at least $6.9tn a year.²

The climate finance gap requires every capital source available, but could largely be bridged through the capital markets, especially the largest segment — the $100 trillion bond market. Green bonds are a vital and immediate way for companies to fund their transition and for investors to directly plug into some of the financing required to urgently decarbonise the global economy. More than 1,300 entities have already issued just under $1.2 trillion worth of bonds whose proceeds are ring-fenced to financing projects, assets and activities that seek to generate positive environmental impacts. There has been a surge of net zero aspirational pledges and initiatives recently. Once set, climate targets, usually require external financing.

Green bonds are well-understood and transparent instruments that can help companies move closer to alignment with the Paris Agreement in numerous ways. To qualify, the issuer must first conduct an internal assessment to establish a green bond framework that defines eligibility criteria, how projects are selected, how outstanding proceeds will be managed and how it will report on the UoP, and importantly the impact of these green investments. This gives companies a better view and understanding of climate-related risks³ and how they can manage and mitigate them.

Further, green bond issuers have commented positively on the closer integration of various internal departments, including finance, sustainability or core operations, as a result of their green bond issuance — a collaboration that would not otherwise taken place, and that can unlock the delivery of more efficient corporate transitions or even transformations. The market has already witnessed several prominent examples of this phenomenon, such as the Danish energy company Orsted (former Dong Energy).
Orsted funded a lion’s share of its shift from a fossil fuel power company into a renewable energy pure play with green bonds. Industry peers EDF, Enel, Iberdrola have done the same, with labelled green issuances reportedly resulting in emissions savings equivalent of as much as 43% of their interim 2030 reduction targets.

Similar moves have been made by companies in different sectors, with the automotive industry providing ample recent case studies via maiden green bonds from Kia, Volvo, Volkswagen and Porsche.

Investors can be faced with the choice between bonds from two companies, one with relatively low current emissions but no investment plans, and another with relatively higher current emissions but aggressive and credible future plans to lower them. An asset allocation strategy based exclusively on current ESG scores derived from historical data would not only underperform an alternative strategy that takes account of forward-looking information, it would also risk failing to fund the very investments required to tackle climate change. The biggest rewards will fall to investors who are first to adjust their core exposures towards those heavy-polluting bond issuers that are making clear commitments to transition to becoming credibly green.

**Why a Sustainable Climate Bond Strategy Should be in Your Core Allocation**

As investors explore options to transition the core of their fixed income portfolio into debt financing a lower carbon economy, we argue that green bonds are a viable option. However, they may have other constraints and need to cast their net wider, for example, for diversification or risk-return target requirements that are consistent with their strategic benchmark (such as the Bloomberg Barclays Corporate Bond Index).

If companies are proactively transitioning to net zero emissions, but have not specifically issued a ‘green-labelled’ bond, climate-aware investors should probably consider them. Undertaking this approach increases the investment opportunity set, giving investors a far greater choice of which bonds to buy.

For a climate thematic investment approach, there are two key elements that investors should consider in their framework:

- Reduce carbon intensity and fossil fuel exposure
- Have a means to examine companies and identify those that are aligned and/or making progress in their transition to net zero
In our Sustainable Climate Bond Strategy, we typically buy green-labelled bonds in the primary market. Prior to each investment decision, we evaluate green bonds ensuring that the requirements are in harmony with the Green Bond Principles and that are expected to qualify for inclusion in the Climate Bonds Initiative database. The ESG-labelled bond market remains somewhat limited, relatively basic and voluntary, which is why organisations such as the Climate Bonds Initiative (who State Street Global Advisors partners with) are vital.

Just because a security is identified as green or even ‘dark-green’, doesn’t automatically qualify it to be eligible in the sustainable climate investment universe, and in some cases we may actively avoid certain issues. For example, a green-labelled bond may be excluded if the issuer also fails to meet certain other ESG screens such as violating the United Nations Global Compact principle.

Notes
1 Climate Change Mitigation refers to efforts to reduce or prevent emission of greenhouse gases. Adaption refers to efforts to prepare for a warming world.
Green Bonds

**About State Street Global Advisors**

For four decades, State Street Global Advisors has served the world’s governments, institutions and financial advisors. With a rigorous, risk-aware approach built on research, analysis and market-tested experience, we build from a breadth of active and index strategies to create cost-effective solutions. As stewards, we help portfolio companies see that what is fair for people and sustainable for the planet can deliver long-term performance. And, as pioneers in index, ETF, and ESG investing, we are always inventing new ways to invest. As a result, we have become the world’s fourth-largest asset manager* with US $3.90 trillion† under our care.

* Pensions & Investments Research Center, as of December 31, 2020.
† This figure is presented as of June 30, 2021 and includes approximately $63.59 billion of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated.

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Addressing The Challenges

In This Section:

Demystifying Climate Data

ESG in Index Investing: Deconstructing Five Myths
Demystifying Climate Data

Investing for a Low-Carbon Economy: A Framework to Implement Low-Carbon Strategies

Bridget Realmuto LaPerla
Hui (Stacie) Wang
Video by Bridget Realmuto LaPerla and Hui (Stacie) Wang presenting key findings in their State Street LIVE presentation "Investing for a Low-Carbon Economy: A framework to Implement Low-Carbon Strategies" with insights from SSA’s thought leadership, "Decarbonization Factors," "Decarbonizing Everything," and "Climate Change Vulnerability and Currency Returns."
ESG in Index 
Investing

Deconstructing Five Myths

Carlo M. Funk
Two of the most prominent investment trends of the post-global financial crisis world have been the sustained rise of both indexing and environmental, social and governance (ESG) investing. These trends have combined with many investors now seeking ESG and climate indexing strategies to achieve long-term and cost-effective sustainable returns.

Yet, many myths have arisen over the years around what sustainability-minded investors can achieve within an index approach. This piece aims to set the facts straight and clear up some misunderstandings of ESG in index investing.
Myth: Investors Cannot Fully Express Their ESG Preferences Within an Index Approach

When they were first developed, index approaches to ESG centred around negative screening, essentially exclusion of selected ‘sin stocks’, or broad sectors like tobacco, based on an investor’s values and preferences. Today, however, screening is far more comprehensive, targeted and precise. Improvements in ESG data mean that more sophisticated types of screening are possible, including norms-based exclusions (e.g. UN Global Compact principles), product involvement-based exclusions (e.g. thermal coal and controversial weapons), as well as exclusions based on overall ESG risk scores, controversy-level rating and climate metrics (e.g. carbon intensity and fossil fuel reserves). Given these improvements in available ESG data, investors can now be far more targeted in their approach to tailor their portfolios or benchmarks to exclude unwanted exposures to ESG factors and ensure alignment with their ESG policy, principles and values.

Yet, index investing is about much more than screening. Investors can incorporate a wide variety of ESG strategies into their index portfolios, from best-in-class approaches and ESG integration, to thematic investing, including climate strategies. ESG index approaches benefit from rigorous and transparent objectives that are clearly defined and executed, which makes them appealing to investors wanting to adhere to specific ESG attributes in a controlled manner.

Investors can be creative when selecting the methodologies of ESG indexing propositions which can include targeting specific outcomes, like alignment with the Paris Agreement goals. A great deal of innovation is taking place to target other specific sustainability-related areas.

One criticism has been that ESG data coverage is deemed insufficient for highly diversified index approaches. This is not true anymore with ESG data coverage well above 90%, and close to 100%, for many ESG data points and investment universes.

Some investors have not adopted ESG indexing approaches because of concerns around relying on one external ESG top-line rating. Data providers can assign different ESG ratings to the same company, something largely driven by variations in the scope of ESG categories covered and the different ways of measuring ESG factors by different data providers (Berg et al, 2020). Average correlations of ESG ratings from different providers is estimated to be 0.54 (Berg et al, 2020), far lower than credit rating correlations, for example.

At State Street, we have begun addressing the ESG data challenge by constructing a proprietary ESG score for companies called R-Factor™. This ESG score draws on multiple data sources and maps them to the materiality framework of the Sustainability Accounting Standards Board (SASB) to ensure a meaningful ESG score by which to rate, rank and also engage with companies. Incorporating these new developments in ESG data sources into our processes means we can ensure that our clients’ ESG preferences are accurately reflected in their portfolios and benchmarks alike.
Data improvements are also being driven by ESG standard setters and regulators. The SASB, Taskforce on Climate-related Financial Disclosures (TCFD) and others are collaborating to align ESG reporting standards. In addition, the European Union has introduced a taxonomy of sustainable activities, which is expected to boost green financing and which may inspire other regions to act.

**Myth: Stewardship is not Effective in an Index Approach**

Index approaches are often termed ‘passive’, which conveys an image that an index manager’s role is simply to replicate an index and sit back. Yet, index managers can play a powerful active ownership role in the companies they buy.

As a long-term holder of the constituents of the world’s primary indices, State Street has a strong incentive to use its voice and vote to influence companies on long-term governance and sustainability issues. We use sustained, multi-year engagements to drive improved disclosure and standards around material ESG risks and opportunities and ensure the long-term preservation of the value of the companies in which we invest. In 2020, State Street voted in over 19,000 meetings and engaged with over 2,400 companies on a variety of sector and thematic issues, including our multi-year campaigns — climate change and gender diversity.

Given our size and scale, we can also push for stronger industry standards through thought leadership and partnerships. As an example, State Street joined Climate Action 100+, a global investor-led initiative to foster the clean energy transition by engaging the companies and sectors with the highest greenhouse gas emissions. We look forward to working closely with asset managers and asset owners to scale our impact on climate change risks.

Recent months have seen the debate around engagement vs. divestment becoming a hot topic. When an investee company’s strategy or operations are not in line with ESG expectations, investors face a fundamental question: divest or engage? In the case of divestment, investors lose their voice, and hence, a seat at the table to influence positive change. Investors may have a greater impact by engaging directly with companies to improve standards and using their vote, a core element of an index investor’s approach.
Myth: ESG Index Approaches Only Work for Equities

ESG factors are equally important for bond investors as they are for equity investors. Factors like a company’s ability to manage carbon emissions or maintain a diverse workforce can have a direct impact on its creditworthiness. As environmental and social issues come to the fore, particularly in the wake of the COVID-19 pandemic and the growing climate crisis, bond index investors are also holistically implementing ESG factors alongside more traditional financial considerations.

Like equities, fixed income investors can use a variety of methods to incorporate ESG principles into their portfolios, from screening, ESG integration and thematic investing to active ownership.

Robust ESG data and off-the-shelf ESG indices now exist for many corporate bonds, allowing investors to be consistent in how they reflect their ESG values and objectives across their corporate bond exposures. This includes the aforementioned R-FactorTM methodology, which is included in fixed income index propositions.

However, there remain challenges in assessing sustainability risks of other fixed-income security types, such as sovereign bonds and securitised products. In these areas, the availability of ESG indices, and the range of ESG metrics and indicators is much more limited and currently lags that of corporates. Nevertheless, the increasing availability of country-level data from sources such as the World Bank, United Nations, World Health Organisation and International Energy Association, is facilitating ESG implementation by allowing investors to measure a country’s current and trending ESG performance, and severe ESG-related events, to assess a country’s overall ESG profile. This data can ultimately be embedded in index solutions.

Fixed income investors are also able to invest in green and social bonds, in the context of index (aware) investing. Green bonds are instruments that fund projects with a positive environmental and/or climate impact, while social bonds fund social projects like new schools and hospitals. Both green and social bonds have experienced significant growth in recent years. These securities with their particular “use of proceeds” differentiate them from their “non-green” counterparts and facilitate an investor’s ability to identify and “reward” issuers based on their future intentions, rather than on their historical record on sustainability. They also create important incentives, which can contribute to changing behaviours and business practices over time. This is significant given that many of the solutions required for a low-carbon economy will come from carbon-intensive sectors.

Another interesting development is around fixed income stewardship. Stewardship approaches have traditionally focussed on equity investors, but bond investors are increasingly playing an important role in addressing an issuer’s ESG risks. Equity investors have an ownership stake in a business and therefore voting rights, something bond investors lack. Yet, bond investors can still use active engagement to push for robust ESG standards and adequate ESG disclosures.
4 Myth: ESG Indexes Underperform Standard Indexes

Indexing involves techniques focused on minimising costs and controlling risks, while also adding value. It is a straightforward and effective way to both efficiently gain diversified market exposure and incorporate ESG considerations. This attractive combination has led to a huge growth in flows into ESG index funds in recent years.

The COVID-19 pandemic has put the subject of sustainability and ESG issues into sharper focus, while regulation has also driven flows. In 2020, assets under management in sustainable passively managed funds increased 80%, compared to 45% for active funds. Sustainable open-end and ETFs available to European investors attracted net inflows of €233 billion in 2020, almost double the figure for 2019 (Morningstar, 2021). Morningstar also reports that of 26 sustainable index funds that it selected at the start of 2020, 25 outperformed their traditional index counterparts.

5 Myth: Index Investing Won’t Help Tackle Global Sustainability Challenges

Climate change, ecosystem damage and biodiversity loss pose some of the most serious threats that humanity faces. It is widely recognised that the financial sector will play a fundamental role in tackling these challenges through allocating capital to the green transition. The European Commission’s Green Deal Investment Plan aims to mobilise over €1 trillion of sustainable investments over the next decade to aid the transition to a climate-neutral, green, competitive and inclusive economy.

Index investing can mobilise capital at the magnitude required to tackle the systemic risks associated with climate change. Institutional index and exchange-traded funds allocate capital to hundreds or thousands of companies across various global indices. Through effective stewardship, large global index investors like State Street can monitor and engage with a huge number of companies on sustainability issues.
Conclusion

Various criticisms have been laid at ESG index approaches, yet they largely reflect confusion around what is possible in an index approach.

With increased ESG data transparency and improved reporting, index investors now have access to more insights than ever before to understand their exposures, take action to achieve their investment goals and monitor progress.

As a result, we would expect investors to transition the core of their portfolios to sustainable index investments.

Index investing is not a ‘passive’ approach and can include tailored and nuanced investment strategies and an active ownership approach.

Notes

1 The exact percentage coverage depends on the ESG data and universe in question.

ESG in Index Investing: Deconstructing Five Myths

About State Street Global Advisors

Our clients are the world’s governments, institutions and financial advisors. To help them achieve their financial goals we live our guiding principles each and every day:

- Start with rigor
- Build from breadth
- Invest as stewards
- Invent the future

For four decades, these principles have helped us be the quiet power in a tumultuous investing world. Helping millions of people secure their financial futures. This takes each of our employees in 30 offices around the world, and a firm-wide conviction that we can always do it better. As a result, we are the world’s fourth-largest asset manager* with US $3.90 trillion† under our care.

* Pensions & Investments Research Center, as of December 31, 2020.
† This figure is presented as of June 30, 2021 and includes approximately $63.59 billion of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated.

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About the research

State Street commissioned Longitude Research to conduct a global survey of more than 500 executive respondents representing institutional asset owners, asset managers and insurance companies during March and April of 2017.

The respondents span investment, operations and distribution roles and collectively represent 19 countries. Approximately 36 percent of respondents were located in the Americas, 40 percent in Europe and 24 percent in Asia Pacific.

In addition to the survey, we conducted a range of in-depth interviews with select leaders across the industry about their priorities and strategies for growth.

For more information, please contact your State Street relationship manager.