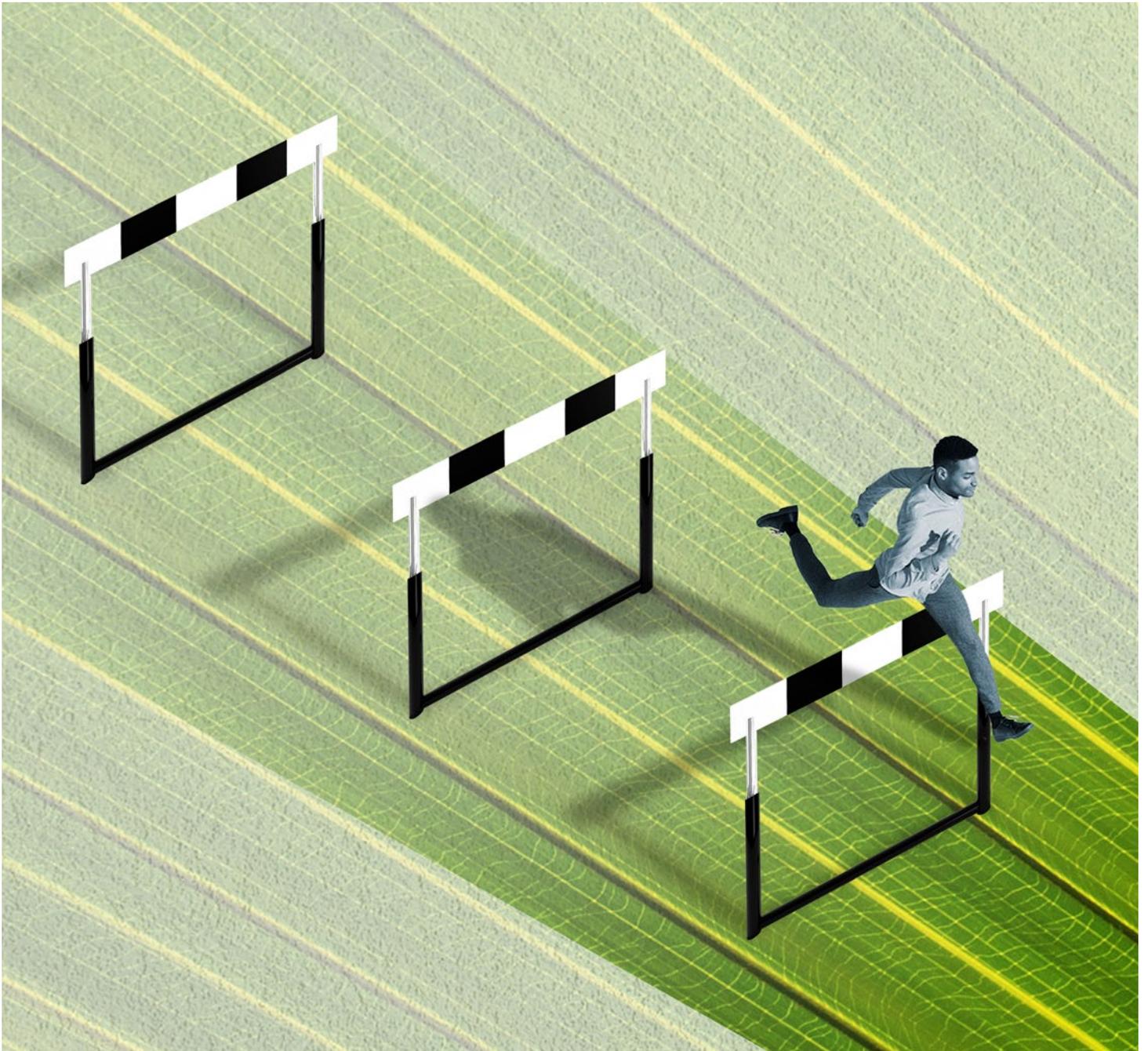


Fixed Income ESG

Combining Performance & Responsible Investing



ESG Acceleration

ESG is increasingly at the top of many institutional investors' agendas today and the focus is no longer solely on equity. Whether driven by regulation or the momentum of Net Zero, investors are putting much more thought into how to successfully embed ESG into their fixed income investments.

ESG is also dynamic and fast moving, forcing investors and asset owners alike to keep pace with developments in market thinking and how to implement effectively. New technology, big data and factor-based strategies are creating tremendous opportunities for investors while also disrupting more conventional approaches to portfolio management.

As investors redefine their objectives beyond traditional portfolio metrics and consider the broader impact of their investment choices, ESG has risen to the forefront. This move is being underpinned by regulation and policymaking, such as the European Commission's sustainable finance action plan.

We outline the approaches investors can take to integrate ESG into fixed income investments, what the challenges are and how State Street Global Advisors can help.

New Opportunities

The ESG data available today is extensive and rapidly becoming more so. Data can be piped in from an ever-growing number of sources and vendors and in forms that enable investors to apply it in a far more comprehensive and systematic manner. Responsibility risk ratings, percentile scores versus sector peers, carbon metrics and thresholds to gauge involvement in controversial industries or practices are all increasingly available, transforming the ESG fixed income landscape and opening up new opportunities for investors.

Common Approaches to Incorporating ESG into Investments

While there is no one standard approach to incorporating ESG into a portfolio, some applications are more common than others. We have the expertise to enable investors to achieve their investment objectives using a variety of approaches across their fixed income portfolios. Actual implementation can vary from exclusions or screening through to integration via tilts.

Recently, we surveyed over 350 institutional investors globally to assess their views on ESG integration. The results confirmed that substantial shifts in ESG investor thinking and action have already taken place. In fact, most investors are already beyond the stage of simple exclusions and are tilting using Best-in-Class approaches.

How Do Investors Intend to Integrate ESG?

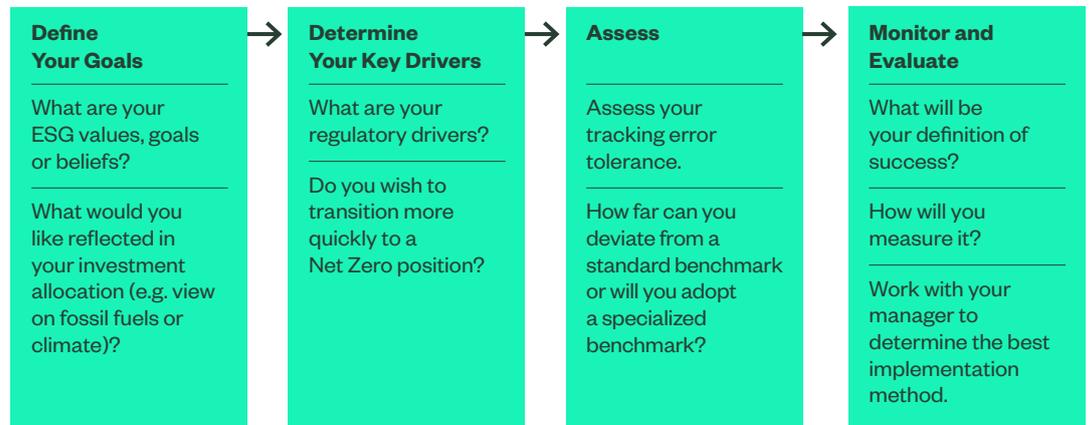
Best-in-Class Investment in issuers selected for stronger ESG scores relative to industry peers	49%
Impact Targeting a measurable positive social and/or environmental impact. Investments typically align to the UN SDGs	39%
Thematic Investment in themes or assets specifically aimed at solving social or environmental problems (e.g. clean energy and green technology)	31%
Norms-Based Screening of investments against minimum standard of business practice, based on international norms	30%
ESG Tilt The inclusion of ESG risks/opportunities into traditional financial analysis using a weighting scheme or optimizer with constraints	27%
ESG Tail Risk Monitoring ESG scores through time and imposing constraints when there is a deterioration in ESG performance	24%
Negative Screening Removal of certain sectors or companies based on specific ESG criteria	16%

Source: Fixed Income: Preparing for the Big Shift, State Street Global Advisors, 2021.

Clarifying Your Aims and Objectives

Incorporating ESG considerations into investment strategies can be daunting given rapidly evolving standards and regulation, not to mention the sometimes complex terminology. Clarifying your aims and objectives is a valuable first step. We will work with you to help formulate the right approach to help achieve your aims.

Helpful Steps to Formulate the Right Approach



Meeting the Data Challenges

Fixed income is a diverse and somewhat fragmented asset class — spanning corporate bonds, sovereign, government-related, and securitized bond issuance. Getting ESG right here relies heavily on transparency and having good data. We highlight four key challenges:

- 1 Data Coverage**

Publicly listed companies generally have the highest levels of data coverage and this can be easily transposed for application into corporate bond portfolios, such as investment grade. However, when we move into high yield markets there is a higher proportion of private debt and data coverage there can be poor or non-existent. For other fixed income sectors such as sovereigns or agencies data coverage is available but limited. While data for the securitized sector is improving it remains a niche and more challenging segment to monitor and manage from an ESG perspective.
- 2 Data Availability**

Investors should also be aware of the limitations around data availability. General ESG scores are usually available for most public companies that have some form of ESG coverage but climate-risk metrics — which may incorporate factors such as carbon intensity, physical risk, and temperature indicators for example — are still a fairly new, if fast-growing segment. However, unless consistent data across all issuers is available the incorporation of ESG data into the investment process is incomplete.

<p>3</p> <p>Time Lags</p>	<p>The cycle of data updates can be long and subject to lags, and is usually dependent on a company's filings schedule (annual reports, CSR and sustainability report filings). Again, for other sectors such as Sovereigns the data may only be available annually.</p>
<p>4</p> <p>Equity Centricity</p>	<p>Most fixed income ESG indexes are based on the same ESG scoring frameworks and methodologies that are used to create ESG equity indexes, however there is room for ESG rankings to be more tailored to fixed income. For example, taking issue level metrics such as those from green-labelled bonds and combine them with the standard issuer level indicators. Green bonds typically fund specific projects that seek to meet environmental objectives, including climate change mitigation and adaptation. Such instruments have become particularly popular for investors who have a stated climate objective which involves seeking to identify and provide funding to companies based on their future intentions, rather than on their historical record on sustainability.</p>

To help overcome these challenges, we have designed an ESG data architecture that's transparent and open, allowing us to add or remove data providers as well as make adjustments to improve the proprietary score, meet regulatory requirements and evolve to meet investors' demands from around the world. We currently source data from more than ten market-leading ESG and carbon data providers who are able to meet our strict standards.

Not being reliant on a single third-party methodology and index provider gives us more control over the quality of the data, transparency, improved coverage, ability to tailor to individual situations, and the ability to scrutinize the ESG score on any given dimension.

Key Implementation Approaches

In this section, we outline a selection of the options open to investors who want to optimize ESG in Fixed Income.

Strategies Overview From Cash to Corporate, Controversies to Climate, State Street Global Advisors has strategies covering the full spectrum of assets and ESG topic areas.

Specialized Climate Strategies A climate-aware investment process to enable investors to quickly improve a portfolio's carbon profile and reduce climate risk while maintaining target returns.

ESG Screening Exclude specific companies, industries or countries from investment portfolios either as an independent approach, or in combination with other styles.

ESG Indexes Investors have greater choices than ever before to help target sustainable outcomes that align with their objectives.

Sample SSGA ESG & Climate Strategies

Name	ESG Approach (Indicative)	Benchmarked to an ESG Index?	Description and Objective
Corporate and High Yield			
Sustainable Climate Strategy	Thematic — Climate	No	Seeks to invest in companies which offer lower current or future carbon emissions or are better positioned for the risks posed by climate change; and in green-labelled bonds or climate-aligned issuers. Screens out securities based on an assessment of their adherence to ESG criteria such as international norms in relation to environmental protection, human rights, labour standards, anti-corruption, controversial weapons and tobacco.
Low-Carbon Strategy	Thematic — Climate	No	Seeks to lower or completely avoid exposure to those companies with acute levels of carbon intensity.
SASB IG/HY Corporate ESG Ex-Controversies Select Index Strategy	Best-in-Class	Yes	Tracks an index that stems from flagship Bloomberg Corporate Indices and applies an ESG construction method. Uses an optimization process to maximize the overall R-Factor™* score while also minimizing active total risk relative to the parent index. Issuers involved in extreme controversies, controversial weapons, UNGC violations, civilian firearms, thermal coal extraction and tobacco are excluded from the index.
Global High Yield Bond ESG Screened Index Strategy	Negative Screening	No	Seeks to track the performance of the ICE BofA Merrill Lynch Global High Yield Constrained Index as closely as reasonably possible while excluding any company in violation of a robust ESG policy.
LDI			
CDI/Buy and Maintain Strategies	Negative Screening	No	Incorporates an ESG screen for controversial weapons, UNGC compliance, companies with high controversy rating and sector-relative ESG laggards and underperformers.
Cash			
ESG Liquid Reserve Strategy	Best-in-Class	No	Uses R-Factor scoring to produce an optimized ESG cash product uniquely focused on liquidity, stability of principal and attractive current income.
Emerging Market Debt			
Emerging Markets ESG Local Currency Government Bond Index Strategy	Best-in-Class	Yes	Based on the flagship JPM GBI-EM Global Diversified index and applies an ESG construction method. ESG index scores are an amalgamation of Sustainalytics & RepRisk on an equal weight basis. Issuers with better overall ESG scores and bonds identified as green (as per the Climate Bonds Initiative) are assigned larger weights. Issuers with ESG scores less than 20 are excluded and not eligible to be included for 12 months.

* Please see Page 12 for more detail on R-Factor.

Climate Strategies

State Street Global Advisors has developed a breakthrough climate bond strategy. Our climate-aware investment process enables investors to quickly improve a portfolio's carbon profile and reduce climate risk while maintaining target returns. Our approach incorporates both mitigation of greenhouse gas emissions and adaptation to the future impacts of climate change.

These complementary approaches reduce climate risks and correspond with asset-owner's need to balance the short and long-term risks and opportunities.

Mitigation aims to reduce the flow of heat-trapping greenhouse gases into the atmosphere and increase exposure to new energy and green companies.

Adaptation aims to increase exposure to companies working proactively to minimize their exposure to the actual or expected physical, economic and regulatory impacts of climate change and the transition to a low-carbon economy.

Our approach targets Paris-Aligned reductions in carbon emissions and fossil fuel exposures and reallocates capital towards companies benefiting from low-carbon technologies.

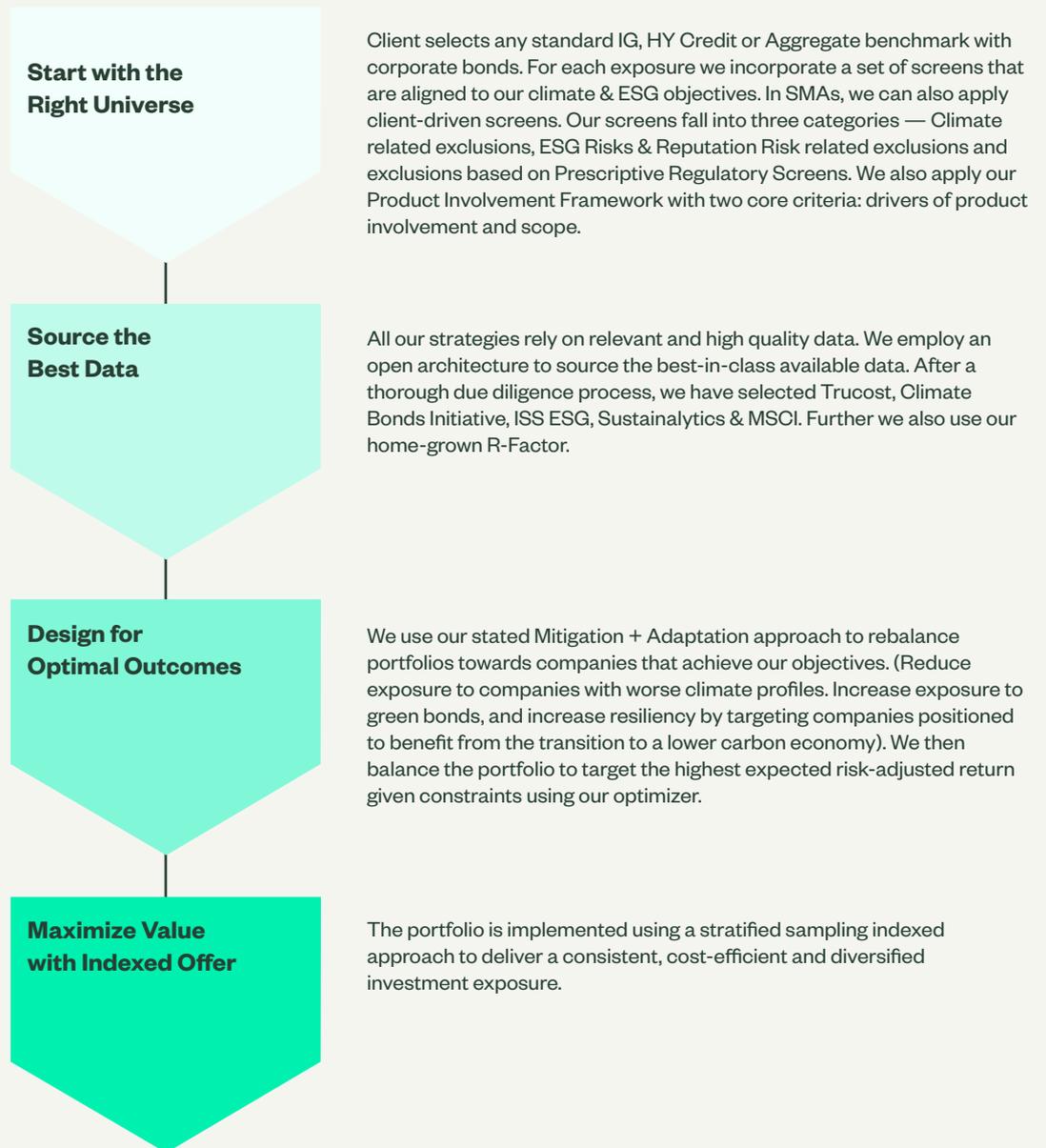
The Strategy Objectives

Mitigation + Adaptation

Objectives	Minimize	Minimize	Minimize	Maximize	Build
	Carbon Emission Intensity	Fossil Fuel Reserves	Brown Revenues	Green Bonds & Climate-Aligned Issuers	Resilient Portfolio
Metrics	CO ₂ Emissions / \$M Revenues	Embedded CO ₂ / Per Tonnes of CO ₂ Emissions	% Revenues from Extractive Activities	% Invested Green Bonds and Issuers with Revenue Streams in Climate-Aligned Activities	Score on Climate Change Preparedness

Source: State Street Global Advisors, as of March 2022. For illustrative purposes only.

Process



Advantages

Paris-Aligned A comprehensive solution enabling investors to minimize carbon intensity, reduce fossil fuel exposure and reduce brown revenue exposure while avoiding exposure to companies associated with high ESG controversies.

Funds the Transition Increases exposure to green bonds, adapting companies and bond issuers investing in solutions needed to achieve Net Zero by 2050.

Optimized Return Capitalizing on decades of indexing expertise, we deliver cost-effective, diversified corporate bond exposure vs standard indices.

ESG Screening

Investors often seek portfolios which screen out certain topics — such as excluding Arctic Drilling or Controversial Weapons — based on their ESG investment goals. ESG screening involves excluding specific companies, industries or countries from investment portfolios either as an independent approach, or in combination with other styles (e.g. climate goals through thematic investing or ESG integration within the investment process).

While the process may first appear relatively simple, it involves a significant amount of research, analysis and modeling on the part of the asset managers or third-party data providers with whom the investor partners to achieve these screens.

There are multiple questions that investors need to answer while deciding how to effectively screen a topic out. Taking tobacco screening as an example — there are numerous ways that a company could be involved in tobacco: as a manufacturer, licensor or retailer. Further there are multiple potential thresholds for what it means to be involved in tobacco. Should a business that derives 1% of revenue from tobacco-related products count as involved? What about a business that is a significant owner of a tobacco manufacturer, but does not conduct activities directly?

These questions give a glimpse of the complexities of accurately defining involvement in screened products or industries. As stewards of our clients' assets, we believe it important to offer our own perspective on how to conduct ESG screening, and to approach this process with the same rigour that guides all of our work. Using our research and expertise we have developed a recommended approach to applying ESG screens on investment portfolios called the *State Street Point of View on ESG Screening (POV)*.

Principles

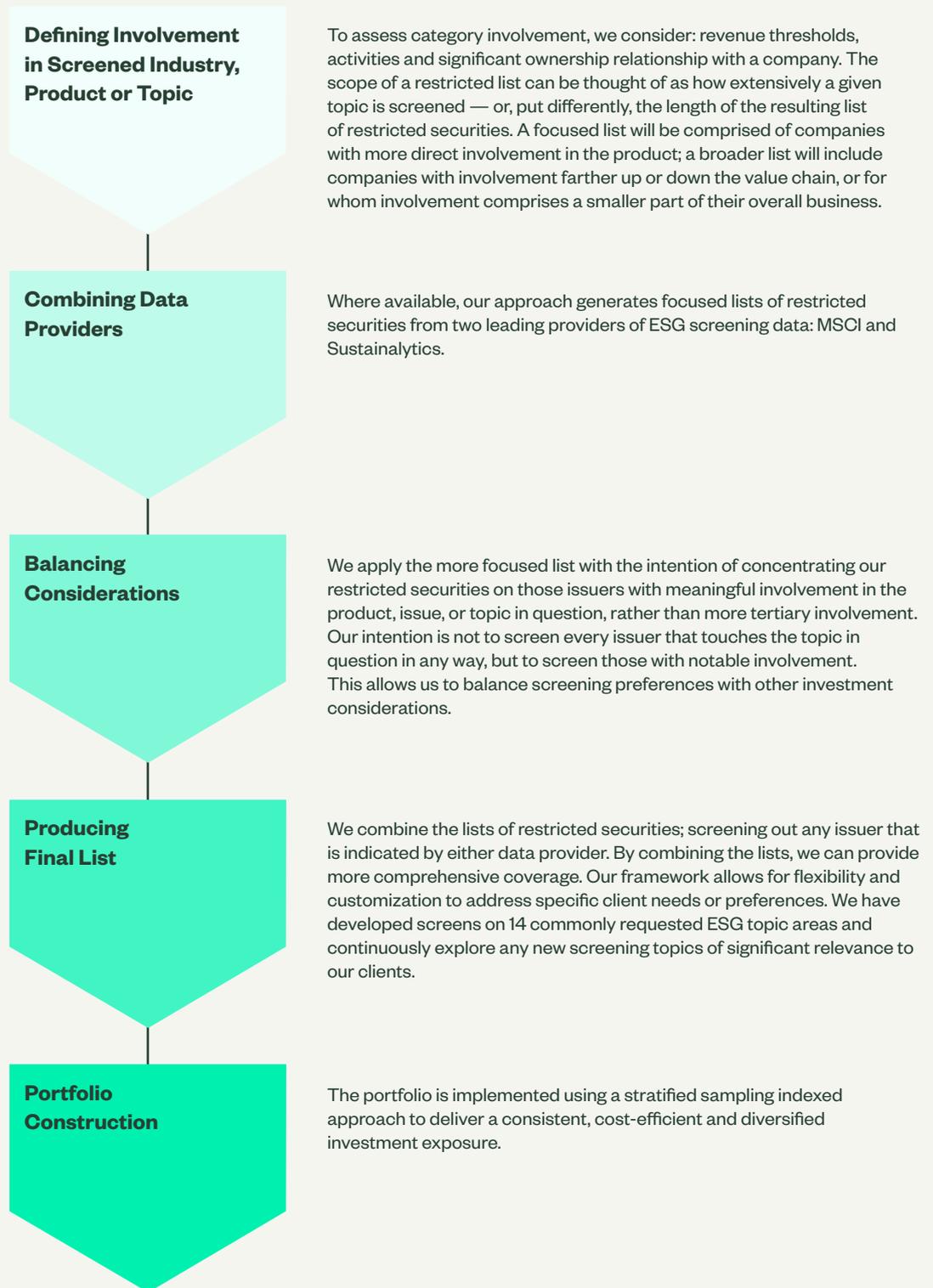
Systematic and Transparent Approach We believe that screening should follow a well-defined methodology that is flexible and applies to a wide range of cases.

Leverage Best-in-Class Data Data is fundamental to any analysis. Inputs from multiple data providers help broaden the overall coverage universe and reduce the potential bias that a singular data provider may carry.

Awareness of Impact on Risk-and-Return Objectives Screens must be attentive to the impact exclusions have on the broader investment considerations.

Strive for Consistency While Accommodating for Differences A good screening model must allow for deviations from the approach, to adapt to investment styles, regulatory requirements and/or market developments. These help clients see both a defined perspective as well as investment solutions that effectively meet their investment goals.

Process



Advantages

Systematic and Transparent Approach Our approach to screening is transparent and follows a systematic approach to screening based on a clearly defined definition of involvement.

Multiple Data Providers We use multiple data providers to widen our investment gambit which helps our POVs be in sync with the real investment narrative.

ESG Indexes

There is an ever-growing array of ESG indexes, providing greater choice for investors to target the type of sustainable outcome that optimally aligns with their objectives. The types of indices available range from screening-out controversial businesses, to overweighting companies with strong ESG ratings or even climate-thematic and Paris-Aligned benchmarks.

ESG index approaches to sustainable investing offer several benefits, such as investment universe transparency, risk–return profiles consistent to that of the parent index, and typically, clear, rules-driven control of the inclusion and exclusion criteria. An example of a passive ESG indexed strategy is a portfolio benchmarked to the **Bloomberg SASB® Corporate ESG ex-Controversies Select Indexes**.

These indexes are designed to exclude ESG controversies and tilt the universe to maximize ESG scores while targeting a similar risk and return profile to traditional corporate exposures. These indexes also use State Street Global Advisors' **R-Factor** for maximizing ESG scores. R-Factor was developed using the SASB ESG Scoring model and offers transparency around the financial materiality of various ESG factors. The model scores companies based on the financial risks and opportunities that can be derived from the intangible, financially material issues identified by SASB for each sector.

Process

Let's consider the Bloomberg US HY Corporate Index as an example. The index uses a two-step process to achieve an ESG-enhanced index from the vanilla index.

1 Screen for Controversies and ESG Scoring Using R-Factor The index first removes issuers involved in/or deriving significant revenue from, operations related to:

- Extreme Controversies
- Controversial Weapons
- UN Global Compact Violations
- Thermal Coal
- Oil Sands
- Arctic Drilling
- Tobacco
- Civilian Firearms

Of the remaining issuers, those firms which do not have an aggregate R-Factor score are removed to identify the investable universe.

2 Maximize R-Factor Score and Control Risk-Reward Exposure vs. the Parent Index

Securities and their corresponding weights are maximized while maintaining similar risk-return characteristics of the benchmark.

Building an Effective ESG-Enhanced Index

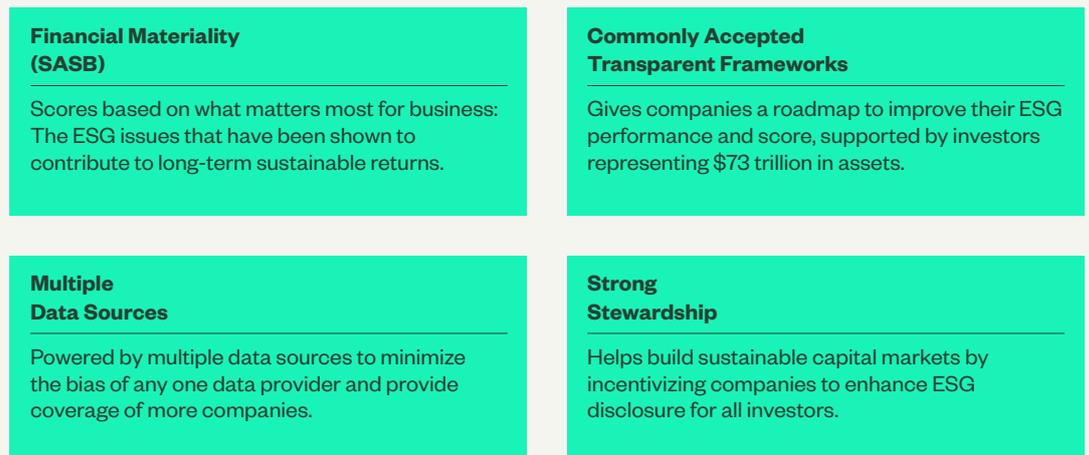


Advantages

R-Factor Provides a transparent ESG scoring system aligned with SASB, helping address ESG infrastructure challenges and building more sustainable capital markets.

Transparency The portfolio will be managed against the chosen ESG index similar to a standard indexed product. This way a client can assess the performance of their portfolio from two critical dimensions — tracking to the chosen ESG index as well as differences driven by ESG factors in the ESG index relative to the parent/non-ESG index.

ESG Scoring System Aligned with SASB



Fixed Income ESG and State Street Global Advisors

We were one of the first asset managers to develop index-orientated, socially responsible investment solutions. This commitment is translated across not just our range of ESG investment solutions, but our investment process, risk management, partnerships, initiatives and stewardship activities.

We believe that the next five years will be a critical juncture for ESG as we are fast approaching a tipping point due to a range of issues which affect society. These include, at the core, climate change but also the fallout from the COVID-19 pandemic — which was both a social crisis for many countries as well as a health emergency for its citizens.

The focus on climate-related risks and strategies is front of mind for investors and in 2021 we partnered with several progressive investors to launch our Sustainable Climate Corporate Bond Strategies as direct alternatives to traditional fixed income index approaches in Euro, US, and Global Corporate Bond Indexed solutions.

Sophisticated Screening

We regularly build indexes from the bottom up, with deep insights to ensure precision and risk awareness. These techniques allow us to accommodate whichever ESG screening or tilting that our clients require. We have the data feeds from multiple sources and the infrastructure to incorporate multiple screens of issuers in fixed income portfolios including:

- Adult Entertainment
- Alcohol
- Arctic Drilling
- Cannabis
- Civilian Firearms
- Controversial Weapons
- Extreme Controversies
- Fossil Fuel Reserves
- Gambling
- Oil and Gas
- Oil Sands
- Shale Energy
- Thermal Coal
- UNGC Violators

Flexible Delivery

As markets, companies and investment objectives become more complex, ESG screens too become increasingly sophisticated. Our systems allow us to flexibly deliver portfolios that are tailored to specific client needs and values. Further, we have inhouse-views (POVs) on various screens which clients can then apply as part of their responsible investment objectives.

Extensive Capabilities

State Street's Fixed Income Platform has the infrastructure, tools and capabilities to help investors to implement their ESG preferences and values in a variety of ways — either through the index itself (e.g. a third-party provided ESG index) or as part of complete portfolio construction through screens, tilts or optimized approaches. We build both index and active fixed income portfolios for clients with ESG-values-based or outcome-oriented objectives. Our range of ESG investment solutions include those that comply with Article 9 of the European SFDR regulation. We also have a strong track record in the design and management of fully bespoke indexed and active solutions for institutions within their separately managed accounts.

Mitigate the Risks, Capture the Opportunities

20+

dedicated specialists for
ESG data and research

50K+

companies researched through
inhouse ESG analysis

10+

ESG ratings and data providers

45+

Fixed Income Responsible
Investment Solutions

Including: Climate Negative ESG Risk Screening,
Best-in-Class Green Bonds, Multi-Dimensional
ESG Integration, and Bespoke ESG Strategies

Getting ESG Right

Our ESG experience covers portfolio management, investment research, proxy voting and engagement, as well as valuable relationships with third-party research providers. While most clients' custom ESG criteria require a separate account, we have created pooled funds that address many of the more common client approaches. Pooled vehicles may offer advantages such as economies of scale and lower fees and administrative costs.

We apply a multi-dimensional approach to ESG investing for fixed income. Over more than thirty years of ESG investing we have advanced our investing and stewardship capabilities to deliver value to our clients and continue earning the trust they place in us. Through our extensive ESG data and research we can help develop and implement investment solutions for our clients that align policy, principles and values yet seek maximum performance or minimum tracking error within the constraints.

For more on how we can help you incorporate ESG into your fixed income portfolio, please contact your relationship manager or visit us at [ssga.com](https://www.ssga.com).

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 \$4.14 trillion[†] under our care.

* Pensions & Investments Research Center, as of December 31, 2020.

[†] This figure is presented as of December 31, 2021 and includes approximately \$61.43 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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