CHAPTER

8

Integrated Portfolio Construction and Management

LEARNING OUTCOMES

Mastery	The candidate should be able to:
☐	**8.1.1** explain the impact of ESG factors on strategic asset allocation
☐	**8.1.2** describe approaches for integrating ESG into the portfolio management process
☐	**8.1.3** explain approaches for how internal and external ESG research and analysis is used by portfolio managers to make investment decisions
☐	**8.1.4** explain the different approaches to screening and the benefits and limitations of the main approaches
☐	**8.1.5** explain the main indexes and benchmarking approaches applicable to sustainable and ESG investing, noting potential limitations
☐	**8.1.6** apply ESG screens to the main asset classes and their sub-sectors: fixed income; equities; and alternative investments
☐	**8.1.7** distinguish between ESG screening of individual companies and collective investment funds: on an absolute basis; relative to sector/peer group data
☐	**8.1.8** explain how ESG integration impacts the risk–return dynamic of portfolio optimization
☐	**8.1.9** evaluate the different types of ESG analysis/SRI investment in terms of key objectives, investment considerations, and risks: full ESG integration; exclusionary screening; positive alignment/best-in-class; active ownership; thematic investing; impact investing; other
☐	**8.1.10** describe approaches to managing passive ESG portfolios

1 INTRODUCTION TO INTEGRATED PORTFOLIO CONSTRUCTION AND MANAGEMENT

Environmental, social, and governance (ESG) integration occurs at different levels of the investment process, each necessitating its own framework for analysis and implementation. Where previous chapters have described ESG integration at the underlying security level, this chapter examines different approaches, research, and methodologies for integrating ESG assessment at higher levels of the investment decision-making process, starting at strategic asset allocation (SAA) and moving on to portfolio construction and management.

Much of the existing evidence supporting ESG integration draws upon single security and issuer case studies. The fact that ESG integration is comparatively less developed as investors elevate the decision-making process to higher levels — asset allocation, fund manager selection, and portfolio investment — makes it an exciting area for innovation. This is particularly true as investors build more robust ESG capabilities outside of the traditional equities focus of ESG. These areas include:

- mixed assets;
- real assets; and
- sovereign debt.

Nonetheless, investors should recognize the trade-offs — both explicit and implicit — to risk-adjusted returns when integrating ESG screening approaches.

Accordingly, this chapter draws upon portfolio management theory complemented with examples of investment best practices to:

- discuss research, approaches, and challenges to embedding ESG investing risk into global asset allocation models;
- examine how ESG investing can be applied to approaches across asset classes and different strategy types;
- consider how ESG can leverage quantitative research methods to understand risk exposure and performance return dynamics in portfolios; and
- differentiate between actively and passively managed ESG strategies.

2 INTEGRATING ESG: STRATEGIC ASSET ALLOCATION MODELS

☐ **8.1.1** explain the impact of ESG factors on strategic asset allocation

One of the most exciting, yet least developed, areas in ESG integration is the degree and means to which it can inform and shape the strategic asset allocation decision-making process. For asset owners and multi-asset managers, asset allocation represents the most important, top-down decision that will carry wide-ranging implications depending on exposure to asset classes and investment strategy types. Indeed, the strategic asset allocation policy may account for as much as 90% of the variability in investment returns of a typical fund over time.[1]

1 Ibbotson, R.G., and P.D. Kaplan. 2000. “Does Asset Allocation Policy Explain 40, 90, or 100 Percent of Performance?” *Financial Analysts Journal* 56 (1): 26–33. Available at: www.jstor.org/stable/4480220

Traditionally, institutional investors have managed systemic, macro-economic factors by coupling asset allocation strategies alongside asset/liability management (ALM). Where strategic asset allocation establishes return targets across asset classes (equities, fixed income, real assets, etc.) and investment strategy types (i.e., alternatives), ALM provides investors the tools with which to match the cash flows of assets to payment of liabilities. For example, both of these elements are vital for the sustainability of a pension fund's risk-adjusted returns and its ability to pay out pension benefits for its beneficiaries.[2]

A considerable misalignment exists between investors' traditional efforts, which emphasize integrating ESG in individual securities, assets, and companies, and the much broader, systemic exercise of strategic asset allocation. As discussed in both Chapter 7 of this book and later on in this chapter, ESG is most commonly integrated at the security level, complemented by more recent, increasingly sophisticated efforts to express ESG risk at a composite portfolio level. As a consequence, asset allocators often cede responsibility for active ESG integration to these underlying levels. Said another way, if an allocator believes that ESG risk resides at the underlying, security selection level, then integrating ESG at the asset allocation level may prove a redundant exercise. If, on the other hand, the allocator believes that ESG risk (e.g., climate risk) represents a top-down risk factor, then integrating ESG within the asset allocation process makes sense in light of more specific climate implications (e.g., coastal retreat to coastal property exposure).

Different asset allocation approaches carry important implications for the degree of ESG integration. A strategic asset allocation approach is constructed over a multi-decade period representing several economic cycles, an investment timeframe that clearly warrants the long-term consideration of financial and non-financial ESG effects like climate risk. Dynamic (or tactical) asset allocation, on the other hand, establishes an initial asset allocation mix with the aim to continually review and recalibrate this allocation mix under much shorter intervals using traditional factors to maintain the original target mix. However, there is a risk that continual rebalancing in shorter time intervals may ultimately diminish the value of ESG integration in **dynamic asset allocation**.

It could be argued that one result of the emphasis of ESG integration on equities exposure (versus other asset classes) is the relative underdevelopment of other asset classes and investment strategies. Challenges clearly exist in many alternative areas, but greater coverage beyond equities and corporate fixed income has now made ESG integration at the strategic asset allocation level more relevant. In addition, ESG research on top-down strategic asset allocation has tended to focus on environmental criteria, essentially exposure and sensitivity to assumptions around climate risk rather than through a broader ESG lens.

2 Bohne, A., and M. Elkenbracht-Huizing. 2018. *The Handbook of ALM in Banking: Managing New Challenges for Interest Rates, Liquidity and the Balance Sheet*. London: Risk Books.

Exhibit 1: Strategic Asset Allocation Models and Their Suitability to ESG

Model	Features	Potential link to ESG issues	Outputs to reflect ESG issues
Mean–variance optimization (MVO)[3]	MVO results in the construction of an efficient frontier that represents a mix of assets that produces the minimum standard deviation (as a proxy for risk) for the maximum level of expected return. It is based on defined asset class buckets and long-term expected returns, risks, and correlations. The Black-Litterman Global Asset Allocation is an MVO model, using the Markowitz portfolio optimization model or modern portfolio theory (MPT).	MVO is highly sensitive to baseline assumptions, making it imperative to fully understand any revised assumptions due to ESG considerations. MVO is highly dependent on historical data as the baseline, with adjustments made to reflect future expectations. Volatility as a proxy for risk does not work well in cases of fat tail risk and large market swings.	ESG issues could have an impact on assumptions regarding expected return, volatility, and correlation at the asset and sub-asset class level. ESG issues also have the potential to expand the regional and asset class mix and to add new sub-asset classes to align with the pursuit of positive real-world impact.
Factor risk allocation[4]	Factor risk frameworks seek to build a diversified portfolio based on sources of risk. They typically include such factors as fundamental risks (gross domestic product [GDP], interest rates, and inflation) as well as market risks (equity risk premium, illiquidity, and volatility).	The macroeconomic links to ESG issues are more difficult to quantify with precision from a purely top-down perspective. Market risk factors can be built from the bottom-up using asset and sector level analysis.	ESG issues could require a change to baseline factor risk assumptions. Factor risk allocation offers the potential to build in new ESG-related risk factors (such as climate change) to improve diversification (particularly across market risk factors).
Total portfolio analysis (TPA)[5]	Similar to factor risk allocation, TPA allows for closer review and interplay between the strategy setting process and alignment of investment goals. Based on an agreed risk budget, asset allocations are made on expected risk exposures and are less constrained by asset class 'buckets' than are traditional MVO approaches.	TPA is relevant to consider ESG issues that require the interplay between judgment about the future and quantitative analysis. TPA requires specialist knowledge to make informed judgments about future risk.	TPA's emphasis on risk budgeting and allocation of capital to opportunities within that budget (bringing alignment between top-down and bottom-up) would provide greater flexibility to capture the potential winners and losers in scenario analysis that also incorporate ESG-related issues.

3 Markowitz, H. 1952. "Portfolio Selection." *Journal of Finance* 7 (1): 77–91. Available at: https://doi.org/10.1111/j.1540-6261.1952.tb01525.x Widely-used models to generate the inputs for portfolio optimization (including estimates of asset returns) include Black Litterman (1991) (www.blacklitterman.org), with a range of asset return estimation techniques subsequently being developed.

4 For example, see: Idzorek, T. M., and M. Kowara. 2013. "Factor-Based Asset Allocation vs. Asset-Class-Based Asset Allocation." *Financial Analysts Journal* 69 (3). Available at: www.cfainstitute.org/research/financial-analysts-journal/2013/factor-based-asset-allocation-vs-asset-class-based-asset-allocation

5 Bass, R., S. Gladstone, and A. Ang. 2017. "Total Portfolio Factor, Not Just Asset, Allocation." *Journal of Portfolio Management Special QES Issue* 43 (5): 38–53. Available at: https://media.top1000funds.com/wp-content/uploads/2017/10/25154404/Total-portfolio-factor-not-just-asset-allocation-2.pdf

Model	Features	Potential link to ESG issues	Outputs to reflect ESG issues
Dynamic asset allocation (DAA)[6]	DAA is driven by changes in risk tolerance, typically induced by cumulative performance relative to investment goals or an approaching investment horizon.	DAA could introduce an additional source of estimation errors due to the need for dynamic rebalancing.	DAA has the potential to reflect changes in baseline assumptions over different time horizons.
Liability driven asset allocation[7]	Liability driven investment (LDI) seeks to find the most efficient asset class mix driven by a fund's liabilities. It is simultaneously concerned with the return of the assets, the change in value of the liabilities, and how assets and liabilities interact to determine the overall portfolio value.	LDI encounters the same limitations as MVO, with high sensitivity to baseline assumptions.	Some ESG issues could potentially impact on inflation and alter liability assumptions.
Regime switching models[8]	Regime switching approaches model abrupt and persistent changes in financial variables due to shifts in regulations, policies, and other secular changes. They capture fat tails, skewness, and time-varying correlations.	Regime switching approaches are relevant for considering ESG issues where an abrupt shift is expected over time. They are also typically based more on forward looking rather than historical data.	These approaches have the potential to capture dramatic shifts in the investment environment. These models are not yet widely used by investment practitioners.

Source: Adapted from Principles for Responsible Investment (PRI).[9]

Within the asset allocation framework shown in Exhibit 1, one of the most promising approaches may well be the **Black–Litterman asset allocation model (BLM)**.

While the Markowitz-derived MVO approach has garnered significant academic support, mean–variance theory poses a number of limitations. For it to function, MVO requires estimates for asset returns across each asset class, which makes the model incredibly sensitive and input-dependent. Any adjustments (even minor ones) to these return estimates will produce a dramatic change in allocation output, so investors may find the model hard to practically implement.

By comparison, BLM represents a more intuitive approach. Anchored by the global equilibrium market and not requiring return estimates for each asset class, it can arguably better accommodate areas like pricing climate risk.[10]

Notwithstanding ESG integration, diversification is a key consideration within any asset allocation framework. Because ESG research has traditionally been equities focused, its relevance has tended to be muted or at best underrepresented within multi- and mixed-asset allocation. As ESG research improves — from a better quantitative understanding of ESG risk implications to the extension into other asset classes beyond equities and fixed income — its relevance within a multi-asset allocation context should increase.

6 For an overview of various dynamic asset allocation techniques, see: Jarvis, S., A. Lawrence, and S. Miao. 2012. "Dynamic Asset Allocation Techniques." *British Actuarial Journal* 15 (3): 573–655.

7 For example, see: Hoevenaars, P. M. M., R. D. J. Molenaar, P. C. Schotman, and T. B. M. Steenkamp. 2008. "Strategic Asset Allocation with Liabilities: Beyond Stocks and Bonds." *Journal of Economic Dynamics and Control* 32 (9): 2939–2970.

8 Ang, A., A. and Timmerman. 2011. "Regime Changes and Financial Markets." NBER Working Paper No. 17182. Available at: www.nber.org/papers/w17182

9 PRI. 2019. "Embedding ESG Issues into Strategic Asset Allocation Frameworks." Discussion paper. Available at: www.unpri.org/embedding-esg-issues-into-strategic-asset-allocation-frameworks-discussion-paper/4815.article

10 For more information, see: Daniel, K. D., R. B., Litterman, and G. Wagner. 2018. "Applying Asset Pricing Theory to Calibrate the Price of Climate Change." NBER Working Paper No. 22795. Available at: www.nber.org/papers/w22795

Despite an increasing amount of academic work (see such meta-analyses as those by Friede, Busch, and Bussen)[11] supporting ESG's effect on risk-adjusted returns, introducing ESG into the asset allocation process will undoubtedly carry exposure and weighting implications that must be considered relative to a standard, non-ESG asset mix strategy. In other words, integrating a given ESG methodology (e.g., positive screening that tilts the overall asset mix to a higher-than-mean ESG rating) will introduce some diversification effect or skewness.

To be sure, this effect may well be intended. In theory, managing a mixed-asset portfolio according to a carbon constraint or desired exposure level should reduce the risk to a carbon pricing shock through lower commensurate exposure to carbon-intensive, coal-reliant utilities and potential stranded assets. There are trade-offs that investors must consider when allocating to ESG or 'sustainability' more broadly. Portfolio risk can be divided into two portions:

1. the isolated risk of the individual asset or individual investment strategy; and
2. the correlation risk that emerges from the combination of all the assets and strategies.

Climate change — and thus climate risk — has emerged as the most material ESG factor for institutional investors to address within asset allocation strategies. Climate risk is both systemic and local. It threatens the financial system and the global means of production as much as it poses risk on a more localized level for specific regions, sectors, and companies. Its potential physical risks will manifest in both acute, event-driven forms (such as extreme weather) and longer-term, chronic shifts driven by the effects of elevated temperatures and rising sea levels.

Exhibit 2: Macro-Economic Climate Considerations by Asset Class

Asset Classes	Subtypes	SAA/ALM Implications	Climate Change Considerations
Equities	▶ Industries or sectors; ▶ growth vs. value; ▶ large, mid, or small cap; and ▶ long vs. short positions.	▶ Hedge against inflation, which can result from supply shocks and high government spending; and ▶ sensitive to growth, macro-economic performance.	▶ Sensitive to climate impacts on macro-economic performance.

11 Friede, G., T. Busch, and A. Bussen. 2015. "ESG and Financial Performance: Aggregated Evidence from More than 2,000 Empirical Studies." *Journal of Sustainable Finance & Investment* 5 (4): 210–233. Available at: https://doi.org/10.1080/20430795.2015.1118917

Asset Classes	Subtypes	SAA/ALM Implications	Climate Change Considerations
Fixed income	▶ Sovereign, municipal, corporate; and ▶ investment vs. non-investment grade (high yield).	▶ Sensitive to interest rates; and ▶ typically less volatile returns.	▶ Sensitive to fiscal policy related to climate challenges; ▶ sensitive to climate-related impacts on issuers' creditworthiness; and ▶ many climate impacts fall within the tenor of long-term debt.
Alternative investments	▶ Real estate investment trusts (REITs); ▶ commodities; ▶ currencies; ▶ private equity, venture capital (VC) funds; and ▶ derivatives, hedge funds.	▶ Attractive for diversification and for low or inverse correlation to market returns; and ▶ heterogeneous and wide-ranging risk/return profiles.	▶ Diversification offered by alternative assets may allow for greater hedging of climate risk; and ▶ climate risk exposure may be concentrated, opaque, or difficult to assess.

Source: Climate Finance Advisors and Ortec Finance (2019).[12]

It is also clear that climate change represents different risks across asset classes. Accordingly, portfolio managers must recognize that a company's capital structure will naturally reflect risk. For example, carbon-intensive companies like coal-powered utilities without an adaptation strategy will be at risk in the transition to a low-carbon economy. In such a scenario, equity shareholders (who are subordinate to creditors and bondholders in the capital structure) will be disproportionately impacted. Hence, asset allocation strategies must recognize asset class sensitivity alongside systemic and company-specific risks.

As well as being one of the key recommendations of the **Task Force on Climate-related Financial Disclosures (TCFD)** framework, climate scenario analysis is as important in the wider asset allocation process as it is in understanding the micro, macro, and ESG sensitivities within a single investment portfolio. What might that look like in an asset allocation context? The asset allocator would work to sensitize the portfolio against different warming scenarios using the 1.5°C (2.7°F) as promoted in the Paris Agreement of 2015 as a baseline.[13] Different scenarios should stress test different asset classes across regions, sectors, time periods, and temperature assumptions to understand risks that are now formally characterized as:

- **Physical risks**. These represent the physical risks manifested by climate change that may impact businesses' operations, strategy, infrastructure, workforce, or markets; they may carry wider implications across the investment value chain and to the financial system.

12 Climate Finance Advisors and Ortec Finance. 2019. *Scenario Analysis for Systemic Climate Risk*. Available at: https://climatefinanceadvisors.com/wp-content/uploads/2019/09/310-002-Climate-Risk-Report_V5.pdf

13 Task Force on Climate-related Financial Disclosures. 2019. *2019 Status Report*. Available at: www.fsb-tcfd.org/wp-content/uploads/2019/06/2019-TCFD-Status-Report-FINAL-053119.pdf

- **Transition risks**. These are the risks represented by legal, regulatory, policy, technology, and market change in the transition to a low carbon economy. Stranded asset risk, for example, would qualify as a transition risk for a portfolio.

Investors will inherently be exposed to varying degrees of both physical and transition risks in their investment portfolios. Strategic asset allocation is particularly useful in determining where these risks lie across different asset classes and strategy types over a multi-decade period. Depending on the extent of asset reallocation, some of these choices may require near-term versus long-term trade-offs. For example, reducing (or outright divesting) portfolio concentration to highly carbon-intensive investments in the energy sector will decrease exposure to long-term transition risk. However, this decision may in turn reduce the portfolio income yield as the energy sector is generally associated with an above market cashflow profile and dividend income stream unless capital is redeployed in another sector with similar yield characteristics.[14]

CASE STUDIES

The Path towards Net Zero

The urgency to respond to the growing climate crisis is driving both national and corporate commitments towards Paris-aligned net zero carbon emissions targets. Greater emphasis on targets, timetables, and disclosure — particularly with regard to forward-looking data to describe the shape of the transition — is leading to an improved understanding for portfolio management analysis.

The following initiatives can be seen to operate as epistemic communities[15] as they are vital in developing, advancing, and disseminating methodologies and tools to support efforts to decarbonize and Paris-align portfolios over the next several decades.

Paris Aligned Investment Initiative (PAII)[16]

Launched in 2019 by the Institutional Investors Group on Climate Change (IIGCC), PAII is a European asset owner-coordinated and led initiative working to develop methodologies and assessment tools related to aligning investment portfolios to the Paris Agreement. PAII's work includes the *Net Zero Investment Framework*, which defines element of a net zero strategy and offers recommended approaches and actions for investors to take in order to measure and align portfolios towards net zero carbon emissions.

Transition Pathway Initiative (TPI)[17]

Established in 2017, TPI is a global, asset-owner driven, asset-manager supported initiative developed in partnership with the Grantham Research Institute on Climate Change and the Environment at the London School of Economics. Supporting the transition towards a low-carbon economy, the TPI dataset and

14 Litterman, R. 2015. "David Swensen on the Fossil Fuel Divestment Debate." *Financial Analysts Journal* 71 (3): 11. Available at: www.cfainstitute.org/research/financial-analysts-journal/2015/david-swensen-on-the-fossil-fuel-divestment-debate

15 An epistemic community is a network of knowledge-based experts who help decision makers define the problems they face, identify various policy solutions, and assess the policy outcomes.

16 IIGCC. 2021. *Paris Aligned Investment Initiative*. Available at: www.iigcc.org/our-work/paris-aligned-investment-initiative/

17 Transition Pathway Initiative (TPI). 2021. *The TPI Tool*. Available at: www.transitionpathwayinitiative.org

tool utilize forward-looking carbon metrics to measure and determine companies' pathways relative to three benchmark scenarios defined by the Paris Agreement. Under TPI, companies are measured in two ways:

1. the quality of companies' governance and management of their greenhouse gas (GHG) emissions; and
2. carbon emissions relative to international targets and national commitments as defined by the Paris Agreement.

Net Zero Asset Owner Alliance[18]

Launched in 2019, the United Nations-convened Net Zero Asset Owner Alliance is a group of international asset owners who have committed to achieving emissions neutral investment portfolios by 2050 or sooner, supporting global efforts to limit temperature rises to 1.5°C (2.7°F). The Alliance recently finalized its 2025 Target Setting Protocol, which outlines how asset owners calculate and establish climate targets within portfolios and allocate capital towards decarbonization efforts.

Net Zero Asset Managers Initiative[19]

Launched in 2020, the Net Zero Asset Managers Initiative is a group of international asset managers who support the goal of net zero GHG emissions by 2050 or sooner, in line with efforts under the Paris Agreement to limit temperature rises to 1.5°C (2.7°F). Asset manager signatories also commit to support investing aligned with net zero emissions by 2050 or sooner.[20]

Net Zero Company Benchmark

The Net Zero Company Benchmark was developed and launched in 2020 by Climate Action 100+, an investor-led initiative that engages with the world's largest corporate greenhouse gas emitters to drive action. The Benchmark assesses corporate climate commitments based on publicly-available information to understand alignment to climate priorities (strong governance, reduced greenhouse gas emissions, and improved corporate disclosure) and to support investor engagement action.[21]

It is worth highlighting new literature that introduces the notion of the **Inevitable Policy Response (IPR)**.[22] IPR assumes that, in the current environment where the policy response to climate change is inadequate — perhaps best characterized as 'business as usual' — governments may potentially respond to increasing climate-borne damage in a sudden reflex reaction.

IPR may take shape through the introduction of economic incentives, such as a carbon tax or the formation of national carbon markets. It may also include other measures, including more stringent environmental regulations requiring greater levels of mitigation-associated capital investment for highly exposed companies. The nature and magnitude of IPR may carry considerable implications for an investment

18 PRI. 2020. *UN-Convened Net-Zero Asset Owner Alliance.* Available at: www.unpri.org/climate-change/un-convened-net-zero-asset-owner-alliance/5370.article

19 Net Zero Asset Managers Initiative. 2021. *Net Zero Asset Managers Initiative.* Available at: www.netzeroassetmanagers.org

20 Net Zero Asset Managers Initiative. 2021. *Inaugural 2025 Target Setting Protocol.* Available at: www.unepfi.org/wordpress/wp-content/uploads/2021/01/Alliance-Target-Setting-Protocol-2021.pdf

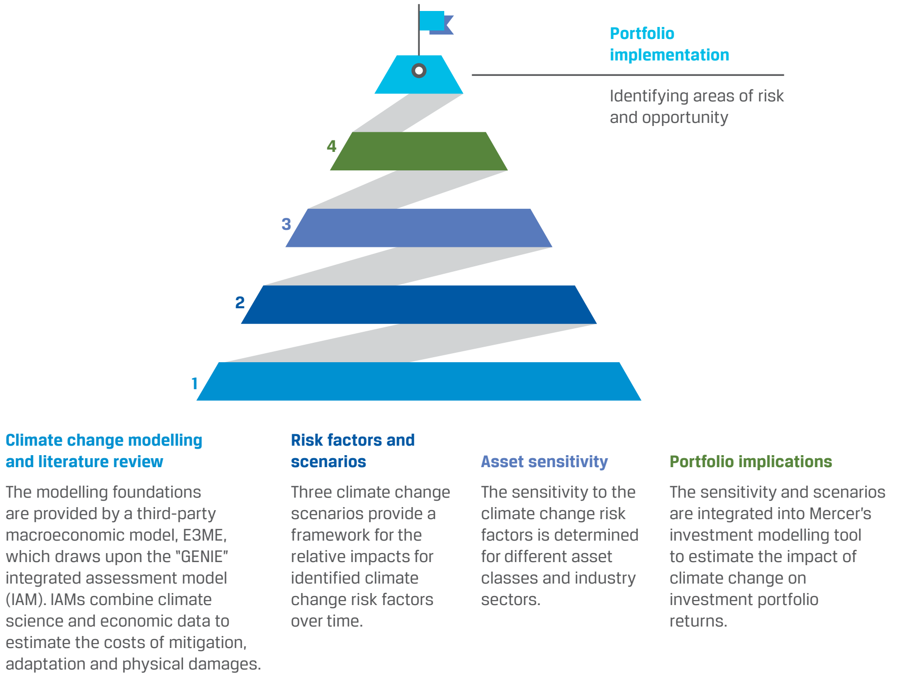
21 Climate Action 100+. 2021. *Net-Zero Company Benchmark.* Available at: www.climateaction100.org/progress/net-zero-company-benchmark

22 PRI. 2021. *What Is the Inevitable Policy Response?* Available at: www.unpri.org/inevitable-policy-response/what-is-the-inevitable-policy-response/4787.article

portfolio, particularly in the speed and scope of transition risk. Hence, more sophisticated approaches designed to understand the sensitivity of an investment portfolio to climate policy-related shocks and simulations are warranted as risk measures.

Climate-related portfolio analysis is nascent enough that it is worth highlighting the approaches of two practitioners, Mercer and Ortec Finance. Mercer has continued to refine its climate scenario model, now integrating it into a long-term, strategic asset allocation methodology that extends to 2100. Mercer's report *Investing in a Time of Climate Change* also addresses the need to enlarge asset allocation models beyond equities. This Mercer report formally extends its climate-informed asset allocation process to sustainability-themed equity, private equity, and real assets, including natural resources and infrastructure.

Exhibit 3: Illustrative Approach for Modeling the Investment Impacts of Climate Change

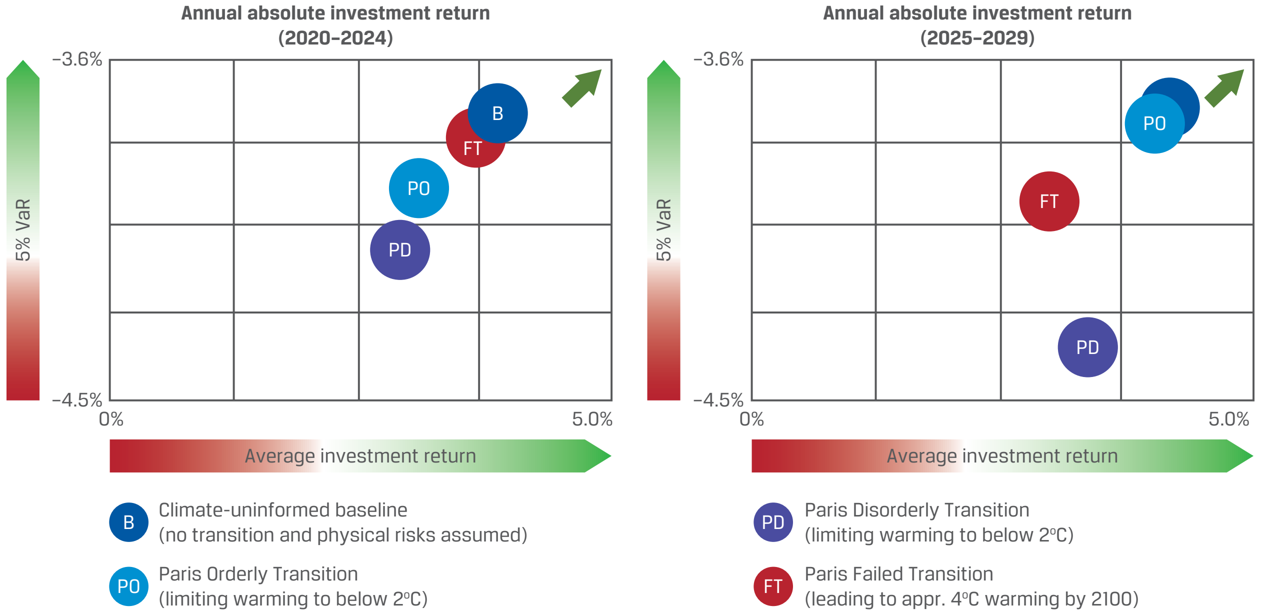


Source: Mercer.[23]

Ortec Finance's approach integrates climate risks into financial scenarios, which include transition, physical and extreme weather impacts, and pricing dynamics to cover all asset classes. For example, Exhibit 4 illustrates the impact on a representative UK pension fund portfolio over two different investment horizons and against three simulations — Orderly, Disorderly, and Failed — calibrated against the Paris Agreement.

23 Mercer. 2019. *Investing in a Time of Climate Change: The Sequel*. Available at: www.mercer.com.au/our-thinking/wealth/climate-change-the-sequel.html

Exhibit 4: Investment Return of a Representative Pension Fund's Portfolio in Different Climate Pathways and Time Buckets (Stylized Risk-Return Projections)



Source: Ortec Finance.[24]

In the **nearer-term simulation (2020–2024)**, climate transition risks point to lower expected investment returns relative to the Paris-aligned pathways (Orderly and Disorderly). While a **Paris Orderly Transition** gradually prices in lower earnings expectations across the 2020–2024 period, a **Paris Disorderly Transition** represents an earnings correction that produces a shock in 2024 and higher subsequent volatility.

In the **later-term simulation (2025–2029)**, the average investment return in an orderly transition is similar to the climate-uninformed baseline where transition risk and physical risks are not modeled. In contrast, both the Paris Disorderly and Failed Transitions point to lower expected investment returns.

- In the **Paris Disorderly Transition pathway**, the sentiment shock occurring in 2025 and subsequent increase in volatility remain until 2026.
- The **Paris Failed Transition pathway** — characterizing a business-as-usual-scenario that brings about a 4°C (5.4°F) temperature increase by 2100 — leads to diminishing investment returns as the impact of physical risk increases.

24 Ortec Finance. 2019. *Scenario Analysis for Systemic Climate Risk: The Case for Assessing the Impacts of Climate Change on Macro-Economic Indicators Used by Institutional Investors*. Available at: https://climatefinanceadvisors.com/wp-content/uploads/2019/09/310-002-Climate-Risk-Report_V5.pdf

3 INTEGRATING ESG: ASSET MANAGER SELECTION

☐ **8.1.1** explain the impact of ESG factors on strategic asset allocation

Within the wider asset allocation process, it is also worth highlighting that allocators are increasingly integrating ESG factors and expectations into their manager selection process. Indeed, the PRI recently published a resource guide for asset owners who allocate to ESG investment managers.[25]

Allocators range from traditional asset owners, such as pension funds, to fund of funds (FoF) and multi-manager investment strategies. Rather than investing directly into securities and issuers, multi-manager strategies focus on building a platform of strong individual fund managers. These platforms may either focus on internally-managed funds from the same investment firm or funds managed by external managers as well.

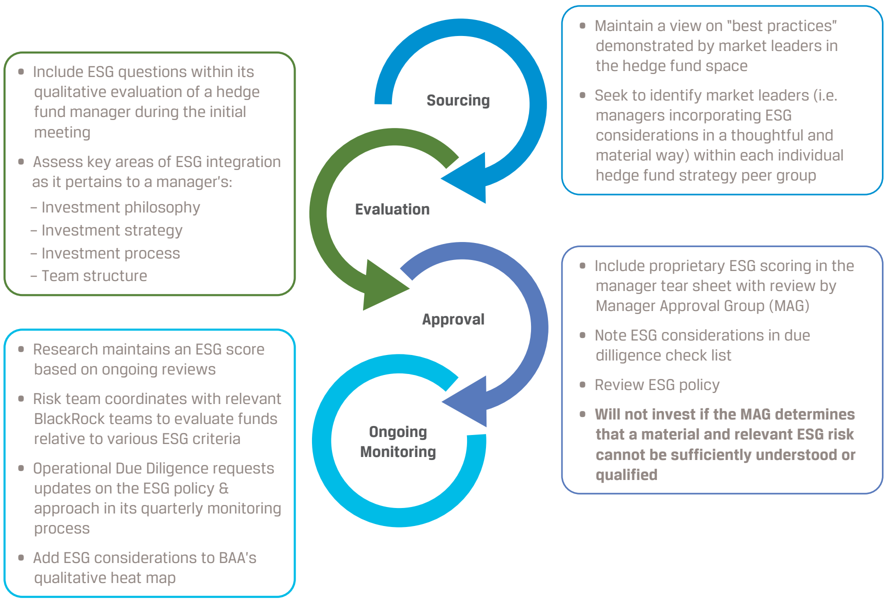
Due diligence in regard to manager selection combines qualitative and quantitative metrics that, within a framework, track the development, performance, and improvement of managers. Many of the larger multi-manager and fund of funds platforms typically track, monitor, and assess between a hundred and several hundred individual portfolio managers. These multi-manager platforms then review this long list of tracked managers in order to reduce this list to a short list or watch list, ultimately tightening this to a final focus list of managers to allocate capital. In this respect, due diligence focuses on establishing baseline metrics to evaluate and compare managers. Metrics may include:

- the existence of an ESG policy;
- affiliation with investor initiatives, such as the Principles for Responsible Investment (PRI);
- accountability in the form of dedicated personnel and committee oversight;
- the manner and degree in which ESG is integrated in the investment process;
- ownership and stewardship activities; and
- client reporting capabilities.

Exhibit 5 depicts an example of a high-level manager selection process, in this case developed by BlackRock Alternative Advisors (BAA).

25 PRI. 2020. *Asset Owner Technical Guide – Investment Manager Selection*. Available at: https://www.unpri.org/manager-selection/asset-owner-technical-guide-investment-manager-selection-guide/6573.article

Exhibit 5: Incorporating ESG into the Manager Selection Process



Notes: Effective as of January 2020. For illustrative purposes only. Current investment process is subject to change and based on market conditions, managers' opinions, and other factors.

Source: BlackRock Alternative Advisors.

As a whole, the due diligence process offers a more nuanced perspective into the degree of ESG integration and the investment approach adopted. A formal monitoring and reporting framework also provides a picture into the progress and evolution of a manager's ESG capabilities and resourcing. While much of this process naturally focuses on investment facing capabilities, from ESG data integration to dedicated investment strategies, due diligence also commonly assesses operational risk of the investment manager itself. The operational risk portion of manager due diligence may examine what organizational framework and oversight exist at the firm level to support ESG activities at the fund level:

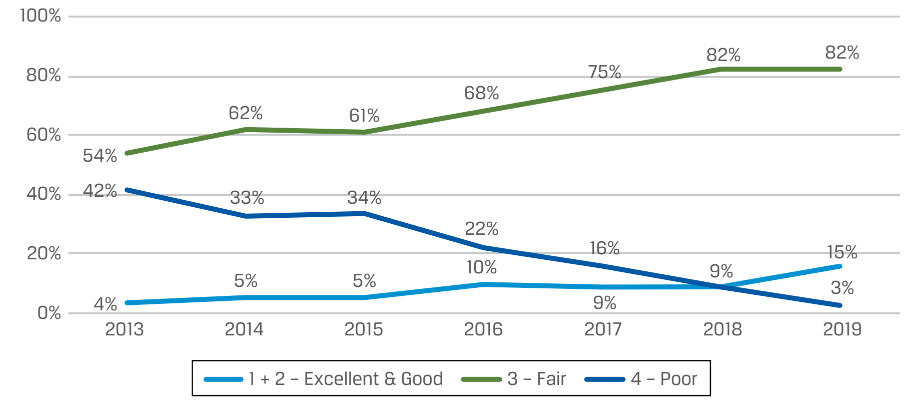
- Has the manager instituted ESG and/or stewardship policies?
- What compliance measures are in place to ensure that exclusion-oriented and/or ESG constraint-based investment mandates and strategies are observed?

Furthermore, because of growing regulatory requirements, they may also examine the sophistication of ESG and climate risk reporting.

Accordingly, multi-manager and fund of funds platforms are increasingly integrating their own ESG capabilities into more formal scoring frameworks. For some platforms, these frameworks represent a spectrum of capabilities across different strategies. For more sophisticated platforms, these frameworks have gone beyond simply informing the manager selection process to now acting as a formal factor or weight in the overall manager selection and allocation process.

Exhibit 6 shows how LGT Capital Partners has tracked the development of ESG capabilities among its managers for seven years, with the data illustrating the progress among the hedge fund managers it monitors.

Exhibit 6: ESG Ratings by the Number of Managers

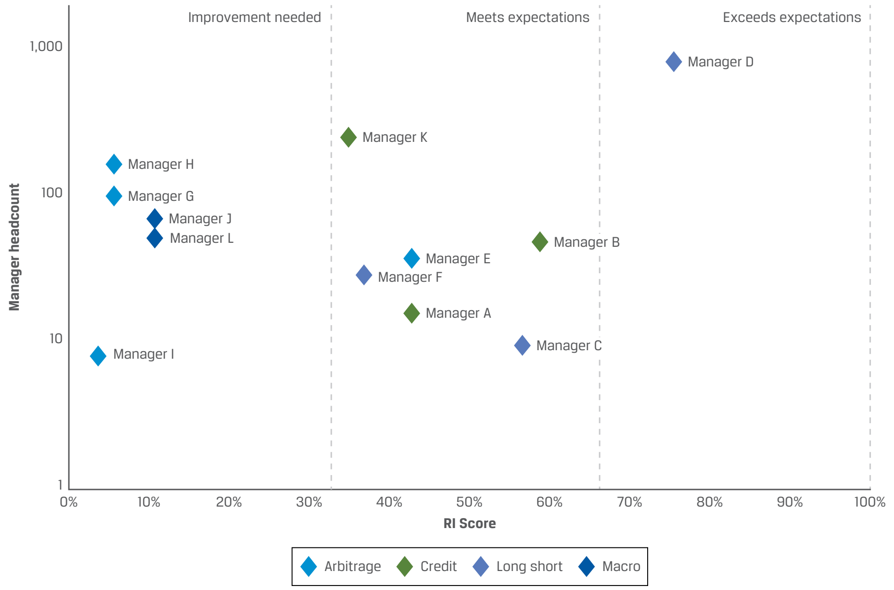


Source: LGT Capital Partners (2020).[26]

Exhibit 7 illustrates an example of a more complex fund of funds manager's approach, assessing the ESG capabilities among its underlying alternative managers. This stylized ranking summarizes due diligence performance at the operational (firm) level and at the investment (fund) level. What makes this exercise difficult is that it seeks to understand and score ESG capabilities across a range of strategy types, including arbitrage, credit, long/short, and macro investing. As we will later discuss, the nature of the underlying instruments or investment horizon or timeframe mean that ESG is more relevant and easily-applied for some portfolios than other strategies. The assessment also normalizes for firm size across funds, as smaller firms are generally less resourced and less able to absorb the financial costs of ESG compliance, research, data, and personnel requirements.

26 LGT Capital Partners. 2020. *ESG Report 2019*. Available at: www.lgtcp.com/shared/.content/publikationen/cp/esg_download/LGT-CP-ESG-Report-2019_en.pdf

Exhibit 7: Assessing ESG Capabilities among a Platform of Alternative Managers



Source: Man FRM (2021).[27]

APPROACHES TO INTEGRATING ESG: PORTFOLIO LEVEL FRAMEWORK

4

- ☐ **8.1.2** describe approaches for integrating ESG into the portfolio management process
- ☐ **8.1.3** explain approaches for how internal and external ESG research and analysis is used by portfolio managers to make investment decisions

As earlier chapters demonstrate, there is a rich diversity of approaches for integrating ESG at the individual securities level. This heterogeneity is now carrying over to portfolio construction and management, where new methodologies and frameworks are leveraging ESG datasets with innovations that drive fundamental and quantitative, as well as active and passive, investment strategies.

The endgame for ESG integration at the portfolio level is the combination of top-down analytics and underlying ESG analysis to produce a more complete picture of ESG exposure and risk at the portfolio construction and management levels. In this respect, ESG integration within portfolio management requires a different manner of explanatory power than integration at the individual security level: It should embed ESG considerations into:

- the highest level, asset allocation decisions;

27 Man Group. 2021. *The Wheat from the Chaff – A Guide to Rating an RI Fund Manager*. Available at: www.man.com/maninstitute/wheat-and-chaff

- portfolio exposure to non-financial factors;
- risk management measures; and
- performance attribution.

Statistics published by the PRI are often used to frame investor activities in ESG integration. But what do these statistics really reveal about ESG integration at the portfolio level?[28]

Data compiled by Mercer Consulting (see Exhibit 8), one of the largest global institutional investment advisers, suggests that progress in ESG integration is marked by a high degree of variation depending on asset class and investment strategy type. What is perhaps more interesting, though, is that these data reinforce the notion that integration is broadly more advanced across managers despite being slower to manifest itself through formal- and dedicated sustainability-themed strategies.

Exhibit 8: Mercer Consulting's View on ESG Integration and Availability of Strategies by Asset Class

Asset Class	Manager Progress on ESG Integration*	Availability of Sustainability-Themed Strategies**
Public equity (active)	Medium/high	Low/medium
Fixed income	Low/medium	Low
Real estate	Medium/high	Low
Private equity and debt	Medium	Low/medium
Infrastructure	High	Medium/high
Natural resources***	Medium	Medium/high
Hedge funds	Low	Low

Explanatory notes:
* *Refers to the percent distribution of ESG1- and ESG2-rated strategies in the Mercer Global Investment Manager Database (GIMD), where available.*
** *Refers to the percent distribution of sustainability-themed strategies compared to the asset class universe — noting equities is a large universe, so the low relative number is not actually a low absolute number.*
*** *Conservative view – research updates in this asset class may result in a more favorable view than is currently held.*

- *Low: below 5%*
- *Low/medium: 5% to 10%*
- *Medium: 11% to 20%*
- *Medium/high: 21% to 40%*
- *High: above 40% (as of December 2018)*

Source: Mercer.[29]

What Exhibit 8 does not illustrate, though, is the breadth and diversity of approaches within each of these categories. Earlier chapters have discussed some of these ESG methodologies as applied to individual securities. Examining these at the portfolio level draws important distinctions and also highlights the challenges that many approaches face in the path towards a credible form of ESG integration.

28 PRI. 2020. *About the PRI.* Available at: www.unpri.org/pri/about-the-pri
29 PRI. 2021. *What Is the Inevitable Policy Response?* Available at: www.unpri.org/inevitable-policy-response/what-is-the-inevitable-policy-response/4787.article

This ESG process is detailed in Chapter 7.

It is worth revisiting the CFA Institute ESG integration framework (see Exhibit 9). This forms the foundation of integration. More importantly, it demonstrates the expanding, sequenced degrees of analysis at different levels. At its core, the framework represents the process of 'classical ESG research and analysis,' which focuses on the individual security level.

The framework then expands outward, assuming more layers of analysis across a greater number of dimensions — including asset classes and investment strategy types — within portfolio and ultimately asset allocation decision making.

Exhibit 9: ESG Integration Framework

Source: CFA Institute (2018) in collaboration with PRI.[30]

It is important to emphasize that this illustration of ESG integration depicts roles that are distinct from one another, just as the role of portfolio manager is distinct from that of an investment research analyst.

30 CFA Institute and PRI. 2018. *Guidance and Case Studies for ESG Integration: Equities and Fixed Income*. Available at: www.unpri.org/investor-tools/guidance-and-case-studies-for-esg-integration-equities-and-fixed-income/3622.article

APPROACHES TO INTEGRATING ESG: ROLE OF ANALYSTS, PORTFOLIO MANAGERS, AND INTERNAL AND EXTERNAL RESEARCH

5

- [ ] **8.1.2** describe approaches for integrating ESG into the portfolio management process
- [ ] **8.1.3** explain approaches for how internal and external ESG research and analysis is used by portfolio managers to make investment decisions

Role of Analysts

Analysts (particularly fundamental analysts) present and justify their views in 'a story' or 'investment thesis' of a security, which generally entails incorporating different factors. These factors often include:

- the intrinsic value of the security;
- credit analysis;
- the potential for a re-rating or de-rating in valuation;
- potential risks;
- short-term and long-term catalysts; and
- an expectation on the security's earnings growth and cash flow profile.

ESG is an increasingly recognized element within securities analysis and, if material enough, may likely carry meaningful implications that help the investment thesis.

Role of Portfolio Managers

The role of portfolio managers, on the other hand, is of much broader scope. A portfolio manager constructs and manages a portfolio through a careful process that aggregates all of the individual, underlying risks. And while portfolio managers often form their own views for a given security, their primary role is to weigh security-specific conviction against:

- macro- and micro-economic data;
- portfolio financial and non-financial exposure; and
- sensitivities to potential shocks.

The treatment of ESG in a portfolio context — if properly and systematically integrated, regardless of whether in active or passive portfolio management — should be considered in the same light as these other factors.

The challenge that portfolio managers face is how to widen the focus of research and datasets largely optimized for security analysis into tools that can better inform portfolio and asset allocation analysis and decision making, particularly in understanding where and how ESG contributes to risk-adjusted returns.

To this end, the ESG framework should illustrate a continuity from micro- to macro-forms of analysis, including:

- the organizing principles and methodologies for ESG analysis;

- the identification and analysis of financial and non-financial (ESG) materiality at the individual security level;
- the approaches to build a composite picture of risks and exposure at a single portfolio level; and
- the representation of ESG risks and exposure that informs a mixed asset strategy, which may include many different, underlying strategies.

In addition, ESG integration should be considered in light of two different investment strategies:

- **Discretionary** ESG investment strategies most commonly take the form of a fundamental portfolio approach. A portfolio manager would work to complement bottom-up financial analysis alongside the consideration of ESG factors to reinforce the investment thesis of a particular holding. The portfolio manager would then work to understand the aggregate risk at the portfolio level across all factors to understand correlation and event risks and potential shocks to the portfolio.
- **Quantitative** investment strategies are, broadly speaking, rules-based approaches employing the statistical application of financial and/or non-financial factors to drive securities selection. Quantitative strategies generally seek to minimize the higher costs associated with discretionary active management. Where discretionary strategies often focus on depth within a portfolio, manifested through a portfolio of few, more concentrated holdings, quantitative strategies focus on breadth, using a much larger portfolio of holdings to target risk and volatility-adjusted returns.

Approaches may assume several forms when integrating ESG. Traditionally, passive or index-based strategies have been the most popular investment vehicles. These impose a custom index, typically with exclusion criteria. However, quantitative approaches are now becoming more sophisticated and rigorous when integrated into ESG, from beta-plus funds to single and multi-factor ESG models.

ESG integration can focus on risks as well as opportunities. A bias towards either of these can lead to different return profiles at the portfolio level as the emphasis can shift from downside protection to upside participation.

Developing a Policy that Reflects ESG-Integrated Portfolio Management

As a matter of definition — to the market, clients, and stakeholders — an ESG policy should formally outline the investment approach and degree of ESG integration within a firm. Particularly, asset managers should have ESG policies for asset classes and the approach used. The PRI provides guidance and templates to develop ESG policies.

There are well-established resources for developing a comprehensive ESG policy, though these have traditionally catered to the long-only equities and fixed-income strategies.[31] It is worth noting that investor organizations are now addressing policy development in alternative investment areas, including hedge funds.[32]

Further information on how ESG can be embedded in investment mandates and ESG policy can be found in Chapter 9.

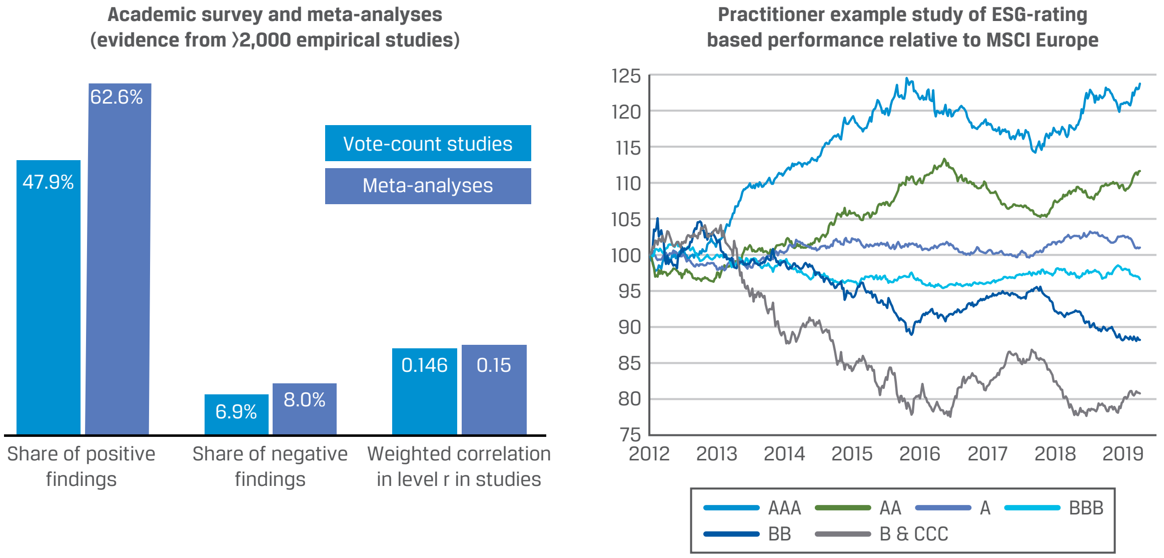
31 PRI. 2018. *An Introduction to Responsible Investment: Policy, Structure and Process*. Available at: www.unpri.org/pri/an-introduction-to-responsible-investment/policy-structure-and-process
32 AIMA. 2021. *Responsible Investment*. Available at: www.aima.org/regulation/responsible-investment.html

Complementing Internal Research with External ESG Resources

Broadly speaking, ESG external research and analysis can be categorized between academic research and practitioner research. Each of these resources offers their own unique advantages and disadvantages for investors. While meta-analyses surveying more than 2,000 academic studies indicate an overall positive bias in the linkage between ESG and investment returns (see Exhibit 10), academic studies on an individual basis often end up disconnected from practice and are not widely or generally applicable. While certainly additive to the overall discussion, these are often unhelpful for practitioners who tend to search for cross-regional and cross-temporal factors or frameworks that can be universally or generally applied to portfolios. Practitioner research, on the other hand, is often less rigorous than academic work and tends to be less conservative in its assertion to correlate ESG with investment returns, sometimes ignoring other causal factors at play.

As the ESG industry matures, institutional investors are finding an increasingly diverse universe of external research resources. These resources now include not only ESG-specific research content but also new quantitative techniques, such as natural language processing, machine learning, and even artificial intelligence to organize ESG data. Indeed, the market for ESG content and indexes is expected to grow from USD300 million (GBP216 mn) in 2016 to almost USD1 billion (GBP0.7 bn) by 2021.[33] These resources complement internal investment research as well as provide internal quantitative and performance analytics teams the opportunity to refine methodologies for managing ESG risk. Just as external providers are innovating ESG datasets and producing research, so too are investors developing in-house capabilities to differentiate themselves across asset classes and investment strategy types.

Exhibit 10: Academic vs. Practitioner Research Making ESG-Linked Performance Claims



Source: MSCI ESG Research, FactSet, and Nordea Markets (2018).[34]

33 Pierron, A. 2020. *ESG Data Market: No Stopping Its Rise Now. Opimas*. Available at: www.opimas.com/research/548/detail/

34 MSCI ESG Research, FactSet, and Nordea Markets. 2018. *Research Insights: ESG*. Available at: https://nordeamarkets.com/wp-content/uploads/2018/09/ESG_140918.pdf

For most investors, the sheer breadth and diversity of external ESG research represents a difficult resource to replicate by internal research analysts. While research (such as ESG ratings from third-party data providers) comes at a cost, many of these other resources are freely available.

The list of practitioner resources, though by no means exhaustive, includes:

- sell-side research and analysis;
- academic studies;
- investment consultant research;
- third-party ESG data provider research;
- ESG-integrated fund distribution platforms;
- asset owner and asset manager white papers;
- investor initiative research;
- non-governmental organizations (NGOs) research;
- governmental agencies and central banks; and
- multilateral institutions and agencies.

Given the wide array of research resources available, portfolio managers should reflect on their research requirements. The profundity of research, from ESG integration at the individual security level to the portfolio level, continues to mature and provide investors with several ways to assess and report exposure. In fact, it is important to note that this spectrum ranges from reporting a static or backwards-looking picture of a portfolio's position-weighted ESG rating towards a more advanced quantification of underlying ESG risk and exposure in the manner applied by traditional quantitative finance measures.

Recommendations by the TCFD provide an important model for both a move towards ESG standards convergence and in elevating risk exposure metrics to the portfolio level from the underlying asset level. Where carbon intensity was previously determined in the form of carbon footprint on a per company or per asset basis, for example, portfolio managers may now treat carbon exposure on a portfolio-weighted basis. Weighted-average carbon intensity measures a portfolio's exposure to carbon-intensive companies on a position-weighted carbon exposure. Calculated as the carbon intensity (Scope 1 + 2 Emissions ÷ USD million revenues) weighted for each position within a portfolio, this metric can be employed by investors to tilt or overlay portfolios towards lower carbon exposure.

It is important to note that TCFD is a principles-based framework providing recommendations for assessing climate risk and exposure. Because TCFD is not prescriptive, different approaches to measure carbon intensity have developed. For example, while the European Union's (EU) Sustainable Finance Disclosure Regulation (SFDR) accounts for Scopes 1, 2, and 3 emissions, UK TCFD practice currently focuses on only Scope 1 and Scope 2 emissions. Scope 3 emissions, which represent indirect emissions that occur within a company's value chain, are particularly difficult to measure because of the potential lack of data, transparency, and disclosure within layers of a supply chain. As data and supply chain visibility improve, it is expected that emissions analysis will normalize to cover Scope 1, 2, and 3.

Exhibit 11: Weighted-Average Carbon Intensity at the Portfolio Level

$$\sum_{n}^{i}\left(\frac{\text{current value of investment}_i}{\text{current portfolio value}} \times \frac{\text{issuer's Scope 1 and Scope 2 GHG emissions}_i}{\text{issuer's US\$m revenue}_i}\right)$$

Source: Implementing the Recommendations of the TCFD.[35]

Investors should recognize the need to differentiate themselves irrespective of their approach to ESG integration. Asset owners continue to rebase their expectations for the quality of proprietary ESG research that asset managers and consultants can provide to them. In turn, investors complement external, off-the-shelf research and data analytics with internal, proprietary ESG research.

One of the less developed areas where investors are able to both innovate and differentiate themselves is in the demonstration of how ESG is embedded in their portfolio construction and management process. In this respect, the Sustainability Accounting Standards Board (SASB) has much to offer as their framework and materiality map spans issuer-specific materiality as well as overall portfolio exposure. Covering equities, fixed income, private equity, and real assets, SASB's *Materiality Map* is capable of assessing portfolio exposure to sustainability risks and opportunities across each issue.[36]

Another development is SASB work around the Sustainable Industry Classification System (SICS). Modeled after the Global Industry Classification Standard (GICS), SICS offers an improved industry classification standard that speaks directly to ESG materiality. The SICS system organizes companies according to their sustainability attributes, such as resource intensity, sustainability risks, and innovation opportunities.[37]

For more on SASB's materiality map, see Chapter 7.

The starting point that many portfolio managers employ is to upload their portfolios onto third-party ESG data provider online platforms. While these platforms vary in sophistication, they do offer the first composite picture of a portfolio's stock-specific risks on a number of potential ESG metrics. Many of these platforms are capable of:

- illustrating a portfolio's mean exposure and weighting towards low-, mid-, or high-scoring companies on ESG metrics;
- producing a picture of the portfolio's environmental and carbon exposure on an absolute-value basis, for instance, expressed as weighted-average carbon intensity; and
- approximating an overall controversy or risk score for the portfolio.

Asset owners and managers increasingly recognize the limitations of third-party ESG platforms and the need to develop more sophisticated ESG analytics platforms that combine third-party and proprietary capabilities. The rationale stems not only from the interest in safeguarding portfolio holdings — particularly with regard to clients' segregated investment mandates — but also in demonstrating a differentiated approach to understanding and reporting portfolio data. Given the subjectivity and divergence among ESG ratings providers, developing an approach that incorporates both third party and proprietary ESG data lowers an overreliance on a single provider and creates greater context for discussion when reviewing the risk profile of a portfolio.

35 Task Force on Climate-related Financial Disclosures. 2017. *Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures*. Available at: www.fsb-tcfd.org/wp-content/uploads/2017/12/FINAL-TCFD-Annex-Amended-121517.pdf

36 Sustainability Accounting Standards Board (SASB). 2018. *SASB Materiality Map*. Available at: https://materiality.sasb.org/

37 Nascimento, D., and S. Payal. 2018. "Industry Classification & Environmental, Social and Governance (ESG) Standards" (September). Available at: www.norburypartners.com/industry-classification-esg-standards

For example, a portfolio ESG analytics tool employed by an asset manager may aggregate a number of different data streams from ESG providers to produce a picture of 'consensus,' rankings-oriented ESG scores and their variance alongside an internally-produced 'proprietary' ESG score, in addition to a view of absolute values-based environmental fund metrics and exposures.

These analytics tools enable investment teams to decompose both their portfolios and benchmark indexes, sort by ratings, and understand the distribution curves across a number of ESG metrics. They often provide drill-down capabilities that illustrate a more detailed picture of ESG characteristics on an underlying basis for positions.

Portfolio tools provide investors with the ability to stress test a portfolio against different ESG criteria (such as a sudden, hypothetical increase in the price of carbon emissions) to understand the sensitivity of the portfolio. This exercise is no different to how current portfolio tools provide the means to stress test portfolios against simulations, such as interest rate or oil shocks.

6 APPROACHES TO INTEGRATING ESG: QUANTITATIVE RESEARCH DEVELOPMENTS IN ESG INVESTING

- ☐ **8.1.2** describe approaches for integrating ESG into the portfolio management process
- ☐ **8.1.3** explain approaches for how internal and external ESG research and analysis is used by portfolio managers to make investment decisions

One of the most exciting areas of research development in portfolio management focuses on quantitatively understanding the risk properties of ESG. As Chapter 7 notes on the challenges to ESG integration at the individual security level, there is widespread disagreement about what an ESG factor represents. The fundamental manager's focus on bottom-up research elevates the ESG integration process as the primary means to drive price discovery, or understand the value of an asset or security. This process is often described in case study form.

Generally speaking, these case studies illustrate the long-term price appreciation of an issuer against the portfolio's investment position to demonstrate the investor's long-term holding period. Moreover, they are often annotated by interactions and engagements with the issuer's management as evidence that ESG integration is contributing to the fund's investment returns. But while single-security case studies often frame the investment process with a powerful engagement story, their anecdotal nature does not describe performance attribution from ESG exposure at a portfolio level. Portfolio analytics typically provide performance analytics that describe regional, sectoral, and stock-specific performance attribution over a given time period. In the same way, the assumption or contention that ESG is alpha generating in its own right must also be tested on the same attributional basis.

Hence, it is worth reflecting briefly on ESG research, ESG ratings and scores, and the signal or input they provide for active and passive strategies. Describing ESG performance attribution at a portfolio level requires quantifying ESG as a factor or risk premium in its own right. Third-party data providers are developing increasingly sophisticated ESG ratings and scoring methodologies, but many fall short in describing ESG as an uncorrelated, statistically independent factor. In fact, the ratings from many providers reveal a significant, underlying correlation to existing factors, such as value, quality, size, and momentum. In one respect, this should not be surprising. Transparency bias generally accrues to larger, more mature companies with higher ESG ratings. Nonetheless, the correlation to other factors effectively undermines the effort to define ESG as uniquely singular enough to be included in risk factor attribution analyses.

One of the most popular areas for research is the development and application of ESG ratings and scoring in the context of portfolio construction and management. In fact, the influence of ESG ratings within the investment community should not be underestimated, and its growing popularity presents a combination of positives and negatives that investors should consider. Supported by a growing number of academic and practitioner studies that demonstrate a correlation between corporate ESG operational metrics and financial returns, many investors have embraced ESG scoring methodologies.

In turn, ESG rating and scoring methodologies are evolving as institutionalized features both in retail and institutional investor platforms. For example, Morningstar, the popular investment and research platform catering to both retail and institutional investors, first introduced its sustainability rating to complement its core fund rating in 2016.[38] Updated in 2019 to incorporate the new Sustainalytics company-level *ESG Risk Rating*, the Morningstar methodology now reflects a company's ESG risks measured on the same scale across industries, and the overall fund rating shows the ESG risk embedded in the fund's portfolio.

For more on the Sustainalytics and Morningstar risk ratings, see Appendix to Chapter 7.

Exhibit 12: ESG Rating Correlation among Six Third-Party Data Providers

					Pearson Correlations				
	N (1)	**Mean (2)**	**Median (3)**	**Standard deviation (4)**	**Asset4(5)**	**Sust. (6)**	**Inrate (7)**	**FTSE (8)**	**KLD (9)**
Panel A: Total rating									
Asset4	31424	0.501	0.501	0.289					
Sustainalytics	32703	0.501	0.499	0.289	0.762				
Inrate	25945	0.501	0.534	0.284	0.233	0.303			
Bloomberg	32410	0.501	0.501	0.289	0.749	0.708	0.122		
KLD	32485	0.501	0.507	0.288	0.584	0.619	0.29	0.538	
MSCI IVA	32450	0.501	0.502	0.289	0.418	0.46	0.319	0.308	0.452
Average correlation								0.458	
Panel B: Environmental pillar									
Asset4	31261	0.501	0.501	0.289					
Sustainalytics	32532	0.501	0.501	0.289	0.71				
Inrate	25880	0.501	0.518	0.286	0.305	0.488			
Bloomberg	28258	0.501	0.501	0.289	0.651	0.566	0.206		
KLD	32403	0.501	0.498	0.281	0.629	0.654	0.422	0.472	
MSCI IVA	32361	0.501	0.502	0.289	0.174	0.325	0.403	0.14	0.284

38 Morningstar. 2016. *The Morningstar Sustainability Rating*. Available at: www.morningstar.co.uk/uk/news/148119/the-morningstar-sustainability-rating.aspx

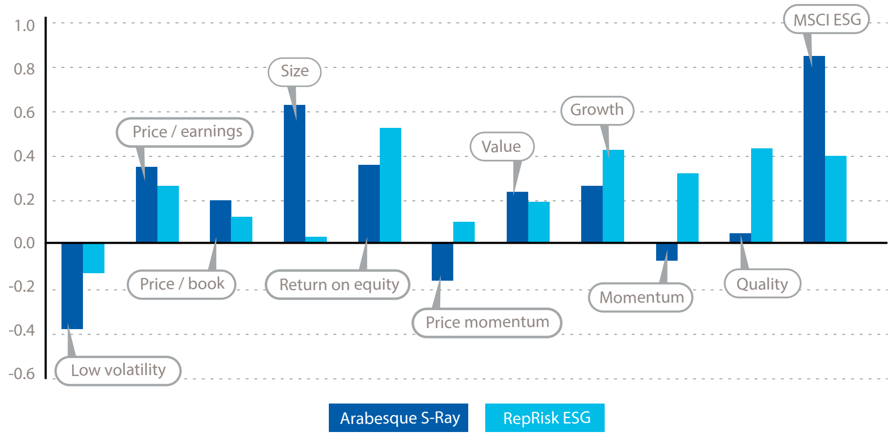
					Pearson Correlations				
	N (1)	Mean (2)	Median (3)	Standard deviation (4)	Asset4(5)	Sust. (6)	Inrate (7)	FTSE (8)	KLD (9)
Average correlation								0.429	
Panel C: Social pillar									
Asset4	31424	0.501	0.501	0.289					
Sustainalytics	32703	0.501	0.504	0.289	0.617				
Inrate	25945	0.501	0.522	0.288	0.133	0.143			
Bloomberg	32322	0.501	0.507	0.288	0.682	0.53	0.061		
KLD	32485	0.501	0.505	0.288	0.397	0.423	0.128	0.302	
MSCI IVA	32450	0.501	0.5	0.289	0.282	0.323	0.236	0.207	0.351
Average correlation								0.321	
Panel D: Governance pillar									
Asset4	31424	0.501	0.501	0.289					
Sustainalytics	32703	0.501	0.504	0.289	0.312				
Inrate	25945	0.501	0.502	0.283	0.297	0.401			
Bloomberg	32410	0.501	0.487	0.283	0.421	0.34	0.343		
KLD	32485	0.501	0.489	0.237	0.059	0.034	0.083	0.095	
MSCI IVA	32450	0.501	0.501	0.288	0.141	0.129	0.144	0.045	0.152
Average correlation								0.2	

Source: Brandon, Krueger, and Schmidt.[39]

Readers may ask what common risk factors explain ESG ratings. One means of answering this question is to examine the underlying factor exposure of the highest-rated ESG companies versus the lowest-rated companies. This exercise reveals that what is purportedly marketed as an 'ESG signal' with quasi-predictive signaling power is instead driven largely by existing factors.

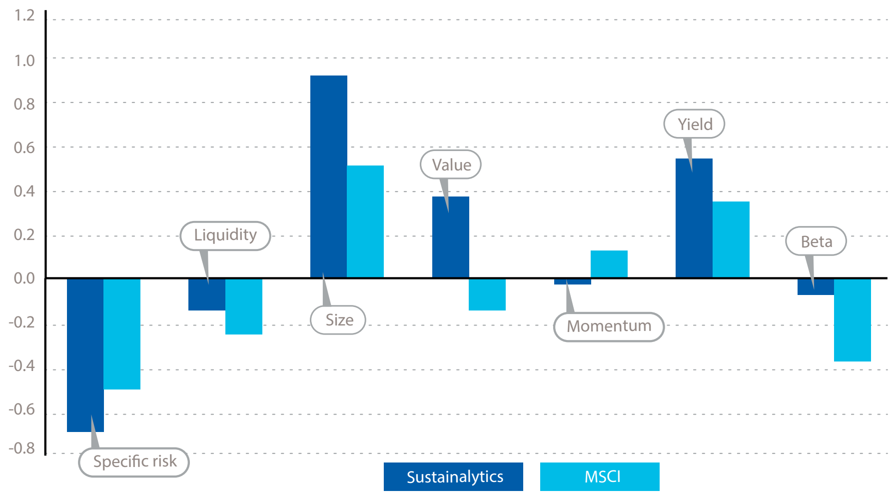
39 Brandon, R. G., P. Krueger, and P. S. Schmidt. 2021. "ESG Rating Disagreement and Stock Returns." *Financial Analysts Journal* 77 (4). Available at: https://www.cfainstitute.org/en/research/financial-analysts-journal/2021/1963186

Exhibit 13: Underlying Factor Exposure among Existing Third-Party Data Providers (Arabesque S-Ray and RepRisk ESG)



Source: J.P. Morgan, Arabesque, and RepRisk ESG.[40]

Exhibit 14: Underlying Factor Exposure among Existing Third-Party Data Providers (Sustainalytics and MSCI)



Source: Man Numeric, Sustainalytics, and MSCI.[41]

This represents, in effect, a causality problem for ESG. In other words:

- What exactly is ESG?
- If it can be quantified or measured, is it simply an amalgam of other established factors, like size and quality?

40 J.P. Morgan. 2016. *ESG – Environmental, Social and Governance Investing: A Quantitative Perspective of How ESG Can Enhance Your Portfolio*. Available at: https://yoursri.com/media-new/download/jpm-esg-how-esg-can-enhance-your-portfolio.pdf

41 Man Numeric, MSCI, and Sustainalytics. 2019. *ESG Data: Building a Solid Foundation*. Available at: www.man.com/maninstitute/esg-data-building-a-solid-foundation

The practitioner argument for causality is that a transparency bias towards large companies favors ESG because a common characteristic of high-ranking ESG companies is strong transparency and disclosure. Large companies, not surprisingly, are better equipped and staffed to address these issues, resulting in higher ESG scores. The linkage between quality and ESG as factors stems from the intuition that the governance of higher ESG-rated companies drives stronger decision making around capital allocation and shareholder returns.

If ESG does not represent a mix of existing factors like quality and value, then how can academics and practitioners begin to define it in its own right — as an uncorrelated factor? This is a fundamental question for investors because the potential development of ESG as an uncorrelated factor opens up powerful significant opportunities to better embed it within portfolio management.

7 THE EVOLUTION OF ESG INTEGRATION: EXCLUSIONARY PREFERENCES AND THEIR APPLICATION

- ☐ **8.1.4** explain the different approaches to screening and the benefits and limitations of the main approaches
- ☐ **8.1.5** explain the main indexes and benchmarking approaches applicable to sustainable and ESG investing, noting potential limitations

Screening represents the oldest, simplest approach to ESG investing. Negative screening imposes a set of exclusions based on ethical preferences or around a normative worldview to shape the investable universe of a portfolio. Indeed, its first formal use was aligned to religious values, when the Methodists avoided investing in businesses that dealt in alcohol, tobacco, and gambling. In the 18th century, the Quakers aligned their investment approach to their stance against slavery, choosing to screen out investments and boycott business interests that supported the slave trade. In a similar manner, Islamic approaches to investment apply hard or soft interpretations of Shariah principles to filter out companies that are not Shariah-compliant.[42]

Many investors apply exclusions to restrict exposure to certain sectors or securities that conflict with their worldview. Exclusions typically take the form of sectors or industries commonly known as 'sin sectors' that include tobacco, pornography, gaming, and alcohol. But exclusions can just as easily target specific companies or even countries. Exclusions have traditionally represented ethical and normative restrictions. For example, a church pension plan may exclude gambling, alcohol, and pornography while a pension fund that represents healthcare workers may exclude investment in the tobacco sector.

According to statistics maintained by the Global Sustainable Investment Alliance (GSIA), exclusions-based approaches remain the largest portion of dedicated, ESG-screened assets under management (AUM).[43] Their size and growth points to

42 Shariah-compliant investment funds are a type of responsible investment governed by Islamic law. Like other faith-based screening approaches, Shariah-compliant funds operate on exclusionary screening that typically excludes: conventional banking and insurance; pork and non-Halal foods; alcohol; gambling; tobacco; adult entertainment; synthetic instruments like derivatives and swaps; and weapons. The Shariah Supervisory Board applies and arbitrates exclusionary criteria.

43 For a detailed breakdown, please see: GSIA. 2018. *2018 Global Sustainable Investment Review*. Available at: www.gsi-alliance.org/wp-content/uploads/2019/06/GSIR_Review2018F.pdf

the expansion from traditional areas of exclusion, such as controversial arms and munitions, into other areas, such as tobacco, thermal, coal, and nuclear weapons. Because of their subjective nature and their regional, faith-based and normative specificity, exclusions are often treated as irreconcilable. For instance, it would be rare to find two pension funds with perfectly overlapping worldviews and normative expectations.

Nonetheless, it is possible to organize exclusions across four basic categories:

1. universal;
2. conduct-related;
3. faith-based; and
4. idiosyncratic exclusions.

Universal Exclusions

Universal exclusions represent exclusions supported by global norms and conventions, like those from the United Nations (UN) and the World Health Organization (WHO). It could be argued that controversial arms and munitions (cluster munitions and anti-personnel mines), nuclear weapons, tobacco, and varying degrees of exposure to coal-based power generation or extraction all qualify as universally accepted given normative support and the growing asset owner AUM they represent.

EXAMPLE 1

Arms and Munitions and Tobacco Exclusions

Arms and Munitions Exclusions

Exclusions governing investment in controversial arms and munitions are supported by multilateral treaties, conventions, and national legislation.

- **Ottawa Treaty (1997)** prohibits the use, stockpiling, production, and transfer of anti-personnel mines.
- **UN Convention on Cluster Munitions (2008)** prohibits the use, stockpiling, production, and transfer of cluster munitions.
- **UN Chemical Weapons Convention (1997)** prohibits the use, stockpiling, production, and transfer of chemical weapons.
- **UN Biological Weapons Convention (1975)** prohibits the use, stockpiling, production, and transfer of biological weapons.
- **Treaty on the Non-Proliferation of Nuclear Weapons (1968)** limits the spread of nuclear weapons to the group of so-called Nuclear-Weapons States (USA, Russia, UK, France, and China).
- **Belgium (2009)** bans investments in depleted uranium weapons.
- **UN Global Compact announced the decision (2017)** to exclude controversial weapons sectors from participating in the initiative.

Tobacco Exclusions

Although tobacco does not exhibit the same degree of universal acceptance that the exclusion over controversial arms and munitions does, it provides another example that can be said to be supported by the following:

- **WHO Framework Convention (2003) on Tobacco Control,** with 181 parties committing to implementing a broad range of tobacco control measures.
- **UN Global Compact (UNGC)** announced the decision (2017) to exclude tobacco companies from participating in the initiative as tobacco products are fundamentally misaligned with UNGC's commitment to advancing business action towards Sustainable Development Goal (SDG) 3 and are in direct conflict with the right to public health.
- **UN SDGs (2015)** drive a collection of 17 global goals to eradicate poverty, protect the planet, and improve prosperity; many of the goals touch on tobacco as an impediment to improved social and environmental outcomes.

Conduct-Related Exclusions

Conduct-related exclusions are generally company or country-specific and often not a statement against the nature of the business itself. Labor infractions in the form of violations against the International Labour Organization (ILO) principles are often cited.

Faith-Based Exclusions

Faith-based exclusions are specific to religious institutional or individual investors.

For more on faith-based exclusions, see Chapter 1.

Idiosyncratic Exclusions

Idiosyncratic exclusions are exclusions that are not supported by global consensus. For example, New Zealand's pension funds are singularly bound by statutory law to exclude companies involved in the processing of whale meat products.[44]

Applying Exclusionary Preferences

Exclusionary preferences are most commonly adopted and applied by asset owners rather than asset managers. While there are certainly asset managers who have formally instituted some form of values-based exclusionary screens, they currently represent a small minority. This is often because of their global reach and the subjective nature of negative screens. Hence, pooled or commingled investments and listed funds (such as undertakings for the collective investment in transferable securities [UCITS] funds) generally do not have exclusionary screens implemented, unless noted within their investment mandate. That said, asset managers do manage dedicated mandates for asset owners that commonly impose some form of an exclusionary screen.

44 NZ SuperFund. 2019. *Exclusions*. Available at: https://nzsuperfund.nz/how-we-invest-responsible-investment/exclusions

Among global asset owners, Norges Bank, in its Norwegian sovereign wealth fund (SWF), constructs and implements the most visible of these asset owner exclusion lists. Because of the size of its AUM, Norges Bank's exclusion list has been adopted by other Norwegian asset owners and continues to influence the construction of exclusions lists among other Nordic asset owners.[45]

Because of its relative ease of implementation, screening is the most universal approach within ESG investing. While the simplicity of exclusions means that they are often widely applied in both traditional asset classes as well as private markets and alternatives, the extent of exclusions may carry implications for a portfolio.

It is important to highlight that some issues continue to remain difficult to reconcile from a screening perspective, which means that investors often assume a best efforts approach in these cases. The degree of exclusions may carry significant implications from a portfolio management perspective, not just in terms of higher tracking error and active share, but also unintended factor exposure. Tracking error and active share are measures that represent the degree to which a portfolio deviates from its benchmark. A portfolio that imposes a broad set of exclusions (particularly sector exclusions, which represent a significant weight of their benchmark), will likely produce high active share and tracking error. This magnitude of difference may lead the portfolio manager to adopt a more appropriate ESG benchmark rather than a broad market benchmark.

On the other hand, a portfolio that applies a narrow exclusion list that doesn't by itself produce higher active share or tracking error may leave the benchmark index unchanged unless the exclusions represent a meaningful change to the risk–return profile to the investment fund. In addition, the list of excluded companies may not apply to index derivatives or proprietary index construction. This compromise is generally done to reflect the burden of repeatedly decomposing indexes. In some cases — particularly for smaller, more obscure indexes — investors make this compromise because of the prohibitive cost of purchasing the underlying constituent weights.[46]

EXERCISE

Construct an equities-only portfolio that aligns with your worldview. Consult the Global Industry Classification Standard (GICS)[47] to view its hierarchy of 11 sectors and underlying 24 industry groups. Discuss your construction:

- What sectors would you exclude? Are these normative (universally supported) or more idiosyncratic?
- How do your choices change the size of your investable universe?
- What implications would your chosen exclusions have for the overall portfolio's exposure?
- Would they make the portfolio more pro-cyclical or more defensive?
- How would it change its yield profile? What ways could you compensate for the effects of your exclusions?

45 Norges Bank. 2019. *Observation and Exclusion of Companies*. Available at: www.nbim.no/en/the-fund/responsible-investment/exclusion-of-companies/

46 For an example, see: Robeco Institutional Asset Management. 2019. *Exclusion Policy Robeco*. Available at: www.robeco.com/docm/docu-exclusion-policy-and-list.pdf

47 MSCI. 2020. *The Global Industry Classification Standard (GICS)*. Available at: www.msci.com/gics

Another challenge is the treatment of asset classes and securities that fall outside of the traditional spectrum of responsible investment, which has generally been focused on:

- listed equities;
- listed corporate debt; and
- real assets.

Indeed, the PRI itself acknowledges this limitation in the language of its signatory commitment, which recognizes that ESG may impact the performance of portfolios to "varying degrees across companies, sectors, regions, asset classes and through time."[48]

As discussed earlier, ESG integration has a natural bias towards company-related assets, manifested in capital markets through equities and fixed income. With oversight of these assets, management teams and boards of directors drive decision making and long-term corporate strategy with feedback loops to shareholders and other stakeholders.

However, other assets classes that lack the directed actions of a management team or board of directors prove more problematic. For instance, synthetic assets (currencies, interest rate derivatives, broad-based equity indexes, and commodity futures) are not single-operated assets and fall outside the conventional framework of ESG analysis. For some security types, it is possible to draw tenuous linkages between, say, currency forward contracts and the ESG profile of the underlying sovereign issuer, but other instruments are more difficult. For example, an interest rate swap represents a derivative contract that exchanges the floating interest rate payment of, say, a sovereign bond or loan for a fixed interest rate. Investors should certainly be aware of the underlying risks to that sovereign payment, but simply netting out the ESG risk profile of the same sovereign on both sides of the contract effectively creates a wash or cancellation.

In addition, investment strategies, particularly at the multi-asset level, commonly invest in indexes for various reasons, including for cash management to cover potential redemptions by investors. Within this context, it is complicated and often can become expensive to frequently break down indexes from a screening perspective. Widely traded, liquid indexes are generally easier and less costly to decompose into their constituent or member weights, while the opposite is true for less popular, thinly-traded indexes. Hence, while an investor may maintain a formal exclusion list, they may also include a specific policy in their exclusion policy that omits indexes in the interest of efficient portfolio management.

8 ESG SCREENING WITHIN PORTFOLIOS AND ACROSS ASSET CLASSES: FIXED INCOME, CORPORATE DEBT, AND ESG BONDS

☐ **8.1.6** apply ESG screens to the main asset classes and their sub-sectors: fixed income; equities; and alternative investments

48 PRI. 2020. *Signatories' Commitment*. Available at: https://www.unpri.org/pri/what-are-the-principles-for-responsible-investment

Exhibit 15: Examples of ESG Indexes, Benchmarks, and Their Methodologies (January 2021)

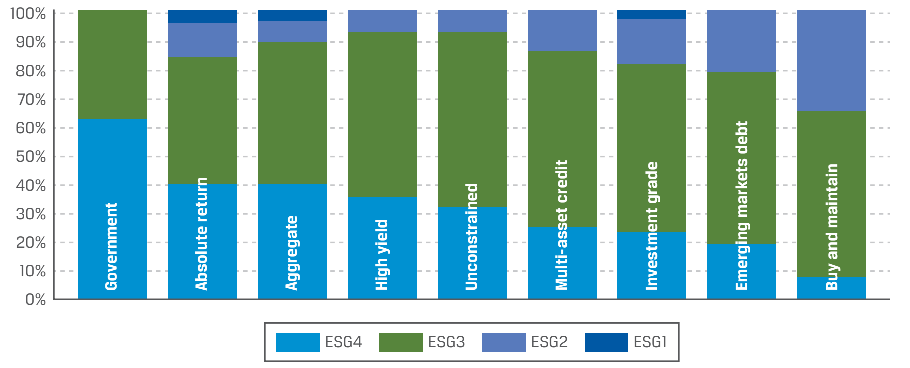
		Indexes				Ratings				
ESG Indexes	**Asset class**	**ESG**	**E**	**S**	**G**	**ESG**	**E**	**S**	**G**	**Description**
FTSE Russell	Equities	X	X	X	X	X	X	X	X	Rates above 4,000 securities in developed and emerging countries on 300 ESG indicators. Measures companies' revenue exposure and management to green and brown (fossil fuel) exposure.
FTSE4Good	Equities	X	X	X	X	X	X	X	X	Applies FTSE Russell ESG ratings data to select companies with at least a 3.1 (developed) and 2.5 (emerging) rating out of 5. Companies exposed to "significant controversies" and certain business activities (tobacco, weapons and coal) are also excluded.
JP Morgan ESG EMD	Fixed income	X				X				Designed for both corporate and sovereign emerging market debt. Combines exclusionary screening against worst offenders alongside ESG ratings integration. Adjusts constituent weights based on composite ESG score for each issuer which overweights green bonds, and companies with better scoring ESG profiles.
MSCI ESG	Equities	X	X	X		X	X	X	X	Offers more than 1,000 ESG indexes. Methodology is based on ESG ratings with screening criteria available (tobacco, weapons, coal, fossil fuel, Catholic, and Islamic values). Governance factor measures UN Global Compact compliance only.
S&P (DJSI) ESG	Equities, fixed income	X	X	X	X	X	X	X	X	Best-in-class indexes based on an ESG assessment of 4,500 corporates. Rules-based selection of top 10% to 30% (global or regional) of sustainable market cap based on ESG score. DJSI also offers indices with exclusions screens (weapons, alcohol, tobacco, gambling and pornography).
Sustain-alytics	Equities	X	X	X	X	X	X	X	X	Supports partner index and passive strategies (such as STOXX, SGX, S&P, iShares, and Nifty) that employ different approaches (including negative screening, ESG ratings, low carbon and gender diversity).
Intercontinental exchange (ICE) ESG	Equities, fixed income	X	X	X	X					ICE manages roughly 40 ESG-related indexes. Driven on MSCI ESG data, ICE indexes – covering equities, fixed income, and real estate – include: thematic (environmental, water, energy); ESG best practices; and factors (such as diversity and inclusion).
Global Real Estate Standards Board (GRESB) ESG Benchmark	Real assets – infrastructure and real estate	X	X	X	X	X	X	X	X	GRESB ESG benchmark leverages GRESB's position as the leading investor initiative focused on real assets and infrastructure with a focus on commercial and residential real estate.

Source: Adapted from the *Journal of Environmental Investing*. Douglas, E., T. Van Holt, and T. Whelan. 2017. "Responsible Investing: Guide to ESG Data Providers and Relevant Trends." *Journal of Environmental Investing* 9 (1): 92–114. Available at: www.thejei.com/wp-content/uploads/2017/11/Journal-of-Environmental-Investing-8-No.-1.rev_-1.pdf

Fixed Income (Government, Sovereign, Corporate, and Other)

Generally speaking, ESG integration in fixed income has experienced a good deal of catch up relative to listed equities. However, there is still significant differentiation across the sub-asset classes. In Exhibit 16, Mercer's ratings for ESG integration within credit subclasses reveal a greater number of higher ratings — ESG1 and ESG2 — in investment-grade credit, emerging markets debt, and buy-and-maintain strategies, while government debt and high-yield credit experience lower degrees of integration. As we will discuss, lower levels of ESG integration in areas like sovereign debt and high-yield credit often reflect a scarcity in ESG ratings and datasets and ratings, particularly in the unlisted credit markets.

Exhibit 16: ESG Ratings across Fixed-Income Sub-Asset Classes



Source: MercerInsight (2020).[49]

Corporate Debt

Corporate debt is now enjoying greater levels of ESG integration. In some regards, this should not be surprising. Issuers of equity also tend to issue debt. Indeed, there is growing evidence of ESG-incorporated methodologies yielding meaningful performance differentials.

First, it is worth briefly highlighting why debt is distinct from equities. The debt issued by a single corporate — or sovereign, for that matter — often represents multiple credit risk profiles across bond issuances. These bond issuances represent different maturities, which refer to the payment date of a loan.

In contrast, companies issuing equity generally issue one common share class.[50] The temporal dimension across multiple debt maturities and credit risk profiles arguably lends itself to a more granular comprehension of ESG issues and their materiality.

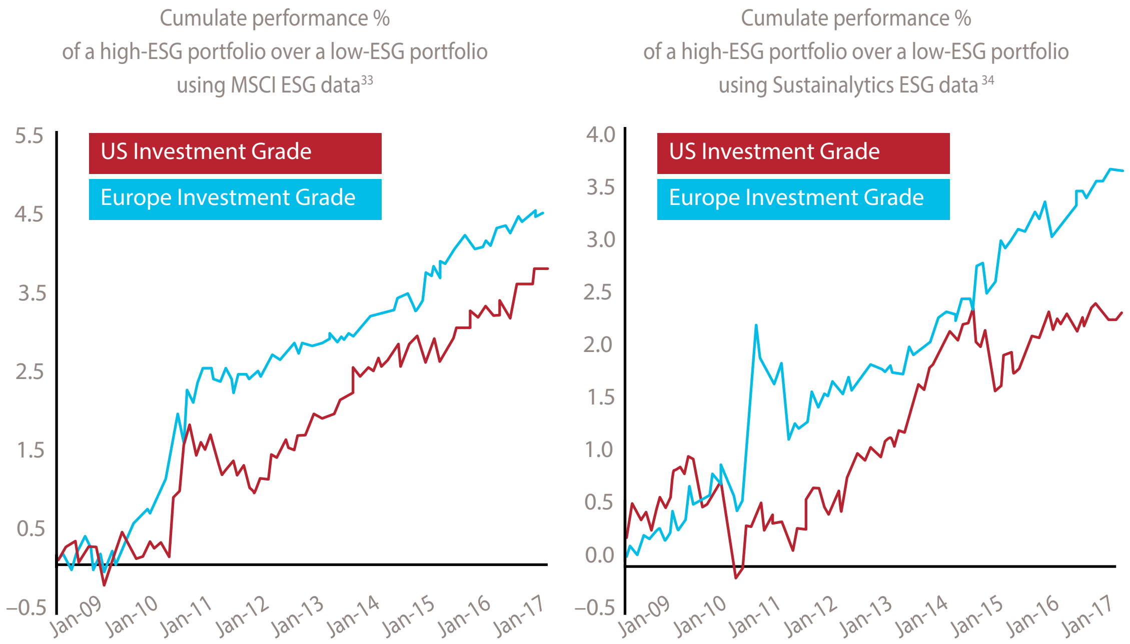
49 MercerInsight. 2020. *Responsible Investment in Fixed Income.* Information on the aggregation methodology can be found in Appendix 2 of the report. All data as of 1 December 2019. Available at: www.mercer.com/our-thinking/wealth/responsible-investment-in-fixed-income.html

50 While most corporations maintain one common share class, there are companies — notably, Alphabet and Facebook — that operate multiple share classes. Different share classes may contain different shareholder rights, such as voting rights, dividend payouts, and rights to capital and special rights. MSCI ESG Research, Bloomberg Barclays Indexes, Barclays Research. Sustainalytics corporate ESG data are based on *ESG Rating* methodology, which has now been replaced with the *ESG Risk Rating Methodology*. Sustainalytics ESG Research, Bloomberg Barclays Indexes, Barclays Research. Sustainalytics corporate ESG data are based on *ESG Rating* methodology, which has now been replaced with the *ESG Risk Rating Methodology.*

For example, one method available to a credit portfolio manager seeking to manage the long-term climate risk effects of an issuer is to invest in the issuer's shorter-dated maturing debt.

Exhibit 17 illustrates examples of two investment-grade bond portfolios with an ESG tilt applied. Although the short times (August 2009 to April 2016) limit the ability to make a strong performance claim across multiple economic cycles, both bond portfolios suggest that high ESG portfolios outperform low ESG portfolios despite being driven by different ESG methodologies. However, it is important to bear in mind that after the global financial crisis of 2008-09, 'quality' as a factor outperformed while 'value' largely underperformed. Given the strong correlation between high ESG and 'quality' among ESG vendors, it is important to note that the ESG-driven performance returns are not necessarily causal.

Exhibit 17: Investment-Grade Bond Portfolio Performance (High ESG over Low ESG)



Source: Barclays.[51]

Exhibit 18 illustrates an ESG evaluation framework developed by BlueBay Asset Management, a fixed-income specialist asset manager. Based on an ESG integration approach, the framework leverages third-party ESG data to produce proprietary issuer ESG metrics:

- The Fundamental ESG Risk Metric examines fundamental ESG risk at the issuer level.

51 Barclays. 2018. *The Case for Sustainable Bond Investing Strengthens.* Sustainalytics data based on the firm's legacy ESG ratings. Available at: www.investmentbank.barclays.com/content/dam/barclaysmicrosites/ibpublic/documents/our-insights/ESG2/BarclaysIB-ImpactSeries4-ESG-in-credit-5MB.pdf

- The Investment ESG Score operates at the bond security level. The ESG score takes into account varying credit risk sensitivities, which result from the exposure to ESG risk factors. These ESG risk factors are inherently present as a function of the bond's features (or characteristics).

The ESG Score is unique in that it examines ESG both as risk and as opportunity within the overall score. While useful at the issuer level, its value and differentiation for both its internal investment teams and investors lies in elevating the picture of ESG risk from the individual bond to the single issuer level — and ultimately understanding ESG risk within a given credit portfolio.

Exhibit 18: Credit Investment-Grade Corporates Portfolio — Issuer ESG Metrics Summary

	Very Low ESG Risks	Low ESG Risks	Medium ESG Risks	High ESG Risks	Very High ESG Risks	+2	+1	0	-1	-2
Long	0.009	0.135	0.509	0.182	0.019	0.013	0.078	0.347	0.333	0.083
Short	0	-0.0013	-0.0016	-0.0005	0	0	-0.001	-0.0007	-0.0017	0

Note: The Fundamental ESG (Risk) Rating, assigned at the issuer level, relates to how well the borrower is managing the material ESG risks it faces, capturing current performance as well as trajectory of travel. The Investment ESG Score, assigned at the security level, relates to the extent to which the ESG risks are considered investment relevant and material, and if so, the direction and extent of that potential credit risk.

Source: BlueBay Asset Management (2020)

ESG Bond Types

New forms of credit issuance have emerged, designed to raise funding to deliver social and environmental objectives alongside a financial return. With the World Bank often playing a leading role in developing these markets and advising bond issuers, ESG-oriented bonds are typically organized around a few sustainable themes. What distinguishes these from conventional bonds is their underlying use of proceeds and the greater transparency they provide towards their use of proceeds. Investors include both asset managers and asset owners who may see these bonds as a way to advance sustainable finance as well as a means to diversify their asset mix.

Despite the development of ESG in fixed income, the absence of a universally recognized standards certification system for sustainable bonds should be acknowledged. A number of standards have emerged, notably the EU's proposal for an *EU Green Bond Standard*.[52,53] However, the absence of a universal standard is particularly urgent given the emergence of bond issues geared towards underlying sustainable themes, as shown in Exhibit 19. For instance, despite the green bond market emerging little more than a decade ago, labeled green bond issuance has increased by roughly 50% in the first half of 2019 to USD118 bn (GBP84.8 bn), of which 19% represented certified climate bonds.[54]

52 European Commission. 2019. *EU Green Bond Standard*. Available at: https://ec.europa.eu/info/publications/sustainable-finance-teg-green-bond-standard_en

53 ICMA. 2018. *Green Bond Principles (GBP)*. Available at: www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/

54 Climate Bonds Initiative. 2019. *Green Bonds Market Summary – H1 2019*. Available at: www.climatebonds.net/files/reports/h1_2019_highlights_final.pdf

Exhibit 19: Types of ESG Investing Bonds

Bond Type	Features
Green bonds	Green bonds, sometimes referred to as climate bonds, are any type of bond instrument that funds projects that provide a clear benefit to the environment, such as renewable energy projects. Originating in 2007 with the issuance of the first green bonds from the European Investment Bank (EIB) and the World Bank, some green bond indexes now track the development of issuance and offer investors a passive means of investing in green bonds. More information can be found on bonds in the International Capital Markets Association's (ICMA) *Green Bond Principles*.[55] Benchmark indexes include: ▶ S&P Green Bond Select Index; ▶ Bank of America Merrill Lynch Green Bond Index; and ▶ the Bloomberg Barclays MSCI Green Bond Index.
Social bonds	Social bonds fund projects that provide access to essential services, infrastructure, and social programs to underserved people and communities. Examples include projects providing: ▶ affordable housing; ▶ microfinance lending; ▶ healthcare; and ▶ education. The Spanish Instituto de Credito issued the first social bond in 2015. More information can be found on bonds in the ICMA's *Social Bond Principles*.[55]
Sustainability bonds	Sustainability bonds allow issuers to offer more broadly defined bonds that still create a positive social or environmental impact. In 2016, Starbucks issued the first US corporate sustainability bond of USD500 mn (GBP359 mn) that directly links the company's coffee sourcing supply chain to ESG criteria. More information can be found on bonds at the ICMA's *Sustainability Bond Guidelines*.[56]
Sustainability-linked bonds	Not to be confused with sustainability bonds, sustainability-linked bonds (SLBs) provide financing to issuers who commit to specific improvements in sustainability outcomes. These outcomes may be defined as environmental, social, and/or governance-related. More information can be found in the ICMA's *Sustainability-Linked Bond Principles*.[57]
Transition bonds	Transition bonds provide financing to 'brown' industries with high GHG emissions (such as mining, utilities, and heavy industry). Because of this fossil fuel exposure, these sectors are generally excluded from raising capital in sustainable finance markets. Transition bonds allow companies in these sectors to raise capital designated to the transition towards greener industries.
SDG-linked bonds	Though there is common overlap with green and social bonds, SDG-linked bonds enable issuers to raise capital by specifically committing and advancing to SDG-related targets. Issuers are generally required to provide evidence and assurance for business alignment to the targeted SDGs.
Blue bonds	Blue bonds fund projects with clear marine and ocean-based benefits, such as sustainable fishing projects. The Seychelles and the World Bank jointly issued the first blue bond in 2018.

Source: Mitchell, J. (2021).

55 ICMA. 2020. *Social Bond Principles – Voluntary Process Guidelines for Issuing Social Bonds*. Available at: www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/June-2020/Social-Bond-PrinciplesJune-2020-090620.pdf

56 ICMA. 2018. *Sustainability Bond Guidelines*. Available at: www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Sustainability-Bonds-Guidelines-June-2018-270520.pdf

57 ICMA. 2020. *Sustainability-Linked Bond Principles – Voluntary Process Guidelines*. Available at: www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/June-2020/Sustainability-Linked-Bond-Principles-June-2020-171120.pdf

9 ESG SCREENING WITHIN PORTFOLIOS AND ACROSS ASSET CLASSES: GREEN SECURITIZATION AND SOVEREIGN DEBT

☐ **8.1.6** apply ESG screens to the main asset classes and their sub-sectors: fixed income; equities; and alternative investments

Green Securitization

An emerging area within credit, driven by several central banks including the Bank of England, leverages the momentum and research behind the green bond market to expand the conversation into green securitization.

Green securitization represents the mutualization of illiquid, 'green' assets or a series of assets into a security. Green collateralized loan obligations (CLOs), for which data that can be easily quantified and screened exists, constitute one such mutualized form of green securitization. This requires a common understanding of what 'sustainable assets' represent in a fixed-income context. The Green Finance Study Group (GFSG) defines sustainable assets as the following:

> *Sustainable loans, sustainable debt and sustainable bonds as specific financial products or debt linked to assets or investments that target environment and social sustainability; however, the more general consideration of financial sustainability is also contemplated.*[58]

Sovereign Debt

ESG integration approaches that lend themselves well to equities and corporate debt run into a number of difficulties when applied to sovereign debt. The number of governments issuing bonds, or sovereign debt, represent a much smaller investable universe than the number of corporates that issue corporate debt. Should their credit profile be strong enough, any listed corporate could issue some form of credit, from investment grade to high yield. While there is no limit to the creation of new corporate entities that issue fixed income, the pool of governments that issue debt is small by comparison and essentially finite.

By extension, the exclusion of countries (whether in the form of multilateral sanctions or economic sanctions limiting foreign direct investment [FDI]) will further reduce this pool and diversification potential. Here are some examples:

- US sanctions on Russia following its 2014 annexation of Crimea extended to Russian sovereign debt. US sanctions effectively limited any participant in the US financial system from financing or dealing in debt of longer than 90 days maturity.[59] Similarly, the Russian invasion of Ukraine in 2022 led to global sanctions that effectively restricted trading in Russian sovereigns.

58 G20 Sustainable Finance Study Group. 2018. *Towards a Sustainable Infrastructure Securitisation Market: The Role of Collateralised Loan Obligations (CLO).* Available at: https://g20sfwg.org/wp-content/uploads/2021/07/Towards_a_sustainable_infrastructure_securitisation_market.pdf

59 US Department of Treasury Resource Center. 2017. *Ukraine-/Russia-Related Sanctions.* Available at: https://home.treasury.gov/policy-issues/financial-sanctions/sanctions-programs-and-country-information/ukraine-russia-related-sanctions

- In 2019, the US government imposed sanctions on transactions tied to Venezuela, severely diminishing the trading liquidity of Venezuela's secondary sovereign debt.[60]

Credit rating agencies (CRAs) represent an important component for sovereign debt investors thus should be leveraged at both the issuer and the portfolio levels. Research already points to a high correlation among CRA ratings, as well as between CRA ratings and sovereign yields. This is quite different relative to the ESG ratings, which suffer with low correlation among ratings providers.

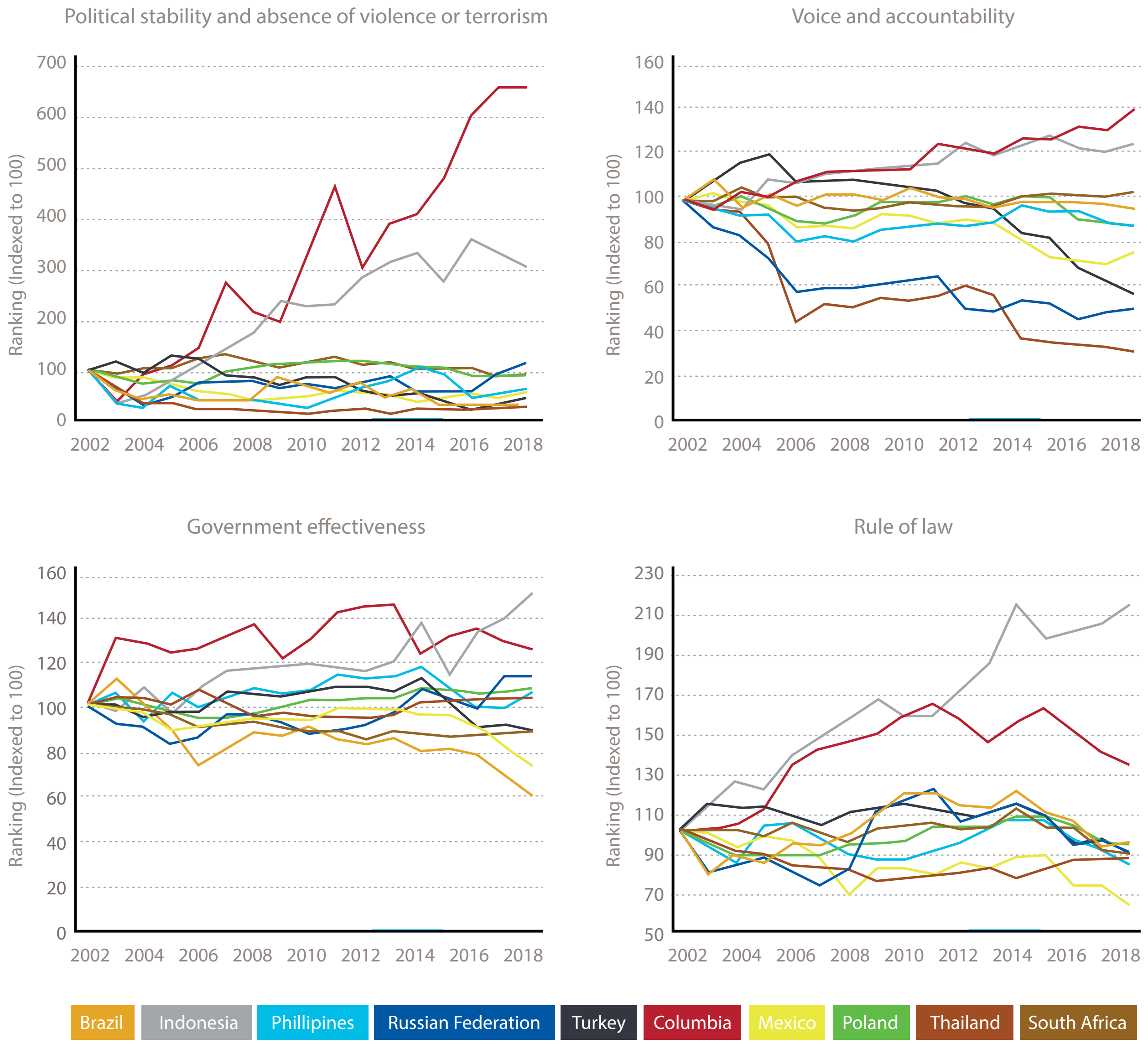
Fortunately, investors benefit from a growing pool of sovereign investment research resources. Not surprisingly, many of these resources focus on governance. Many ESG-focused sovereign debt investors begin by building and integrating an ESG framework based on the World Bank's Worldwide Governance Indicators (WGI). This dataset considers:

- a country's governance score; and
- its rankings on:
  - political stability;
  - voice and accountability;
  - government effectiveness;
  - rule of law;
  - regulatory quality; and
  - control of corruption.

Although this World Bank dataset is slow-moving, it offers a near 20-year time series and a means for investors to identify improving or deteriorating trends across these metrics. Investors can, in turn, examine either on a per sovereign basis or, as illustrated in Exhibit 20 with four of the six World Bank indicators, reflect on the change in momentum in the context of a portfolio holding many sovereign debt positions.

60 US Department of the Treasury. 2019. *Venezuela-Related Sanctions*. Available at: https://home.treasury.gov/policy-issues/financial-sanctions/sanctions-programs-and-country-information/venezuela-related-sanctions

Exhibit 20: Integrating World Bank World Governance Indicators to Screen for Change in Governance



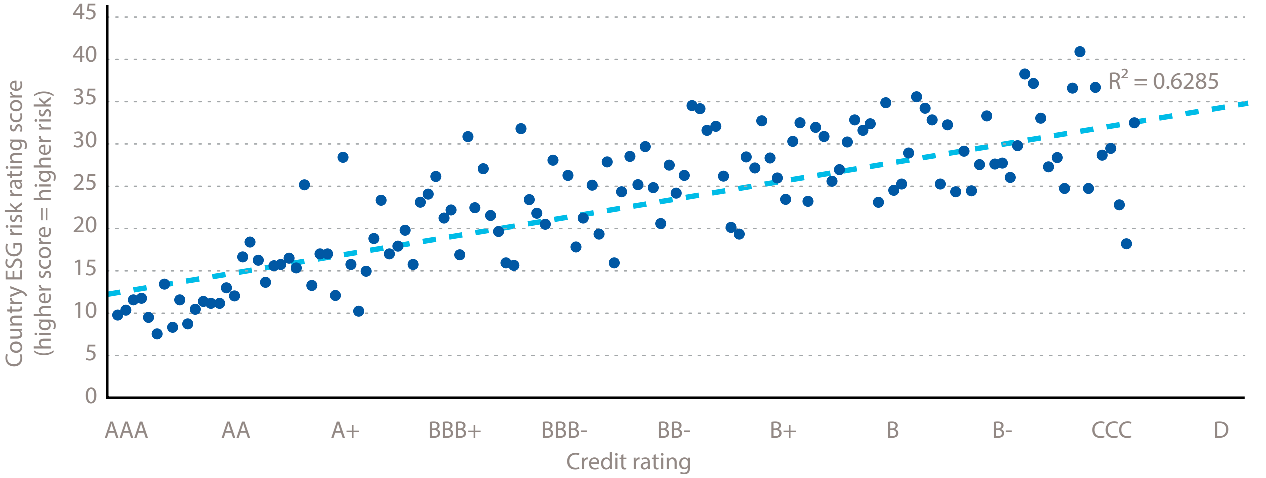
Note: The Worldwide Governance Indicators (WGI) project reports aggregated and individual governance indicators for over 200 countries and territories over the period 1996–2017 for six dimensions of governance. These aggregate indicators combine the views of a large number of enterprise, citizen, and expert survey respondents in industrial and developing countries. They are based on over 30 individual data sources produced by a variety of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms.

Source: World Bank WGI.[61]

ESG tools are increasingly more sophisticated in leveraging datasets like the World Bank's WGI to draw out correlations between economic data. Exhibit 21 shows a significant correlation between country ESG risk and credit ratings, supporting the theory that ESG may be a leading indicator or at the very least a supporting factor for stable economies.

61 World Bank. 2019. *Worldwide Governance Indicators.* Available at: www.govindicators.org

Exhibit 21: Correlation of Country ESG Scores and CRA Ratings

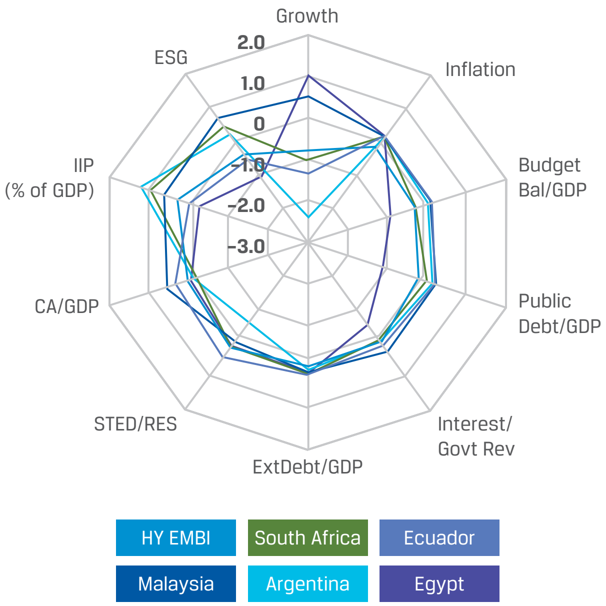


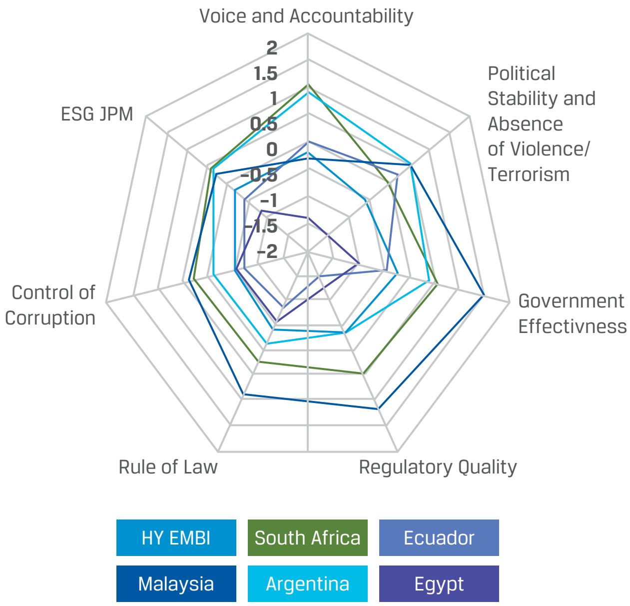
Source: Sustainalytics.[62]

Ultimately, though, investors should aim to embed ESG within their overall process, effectively normalizing it alongside other risk factor criteria. Exhibit 22 shows an example where a *Z*-scored ESG indicator, reflecting a composite of World Bank governance data and JP Morgan ESG data, sits as one of the active inputs with a portfolio's sovereign scoring tool.

62 Sustainalytics. 2017. *ESG Spotlight: Game of Bonds – Reassessing Sovereign Credit Ratings*. Available at: https://connect.sustainalytics.com/game-of-bonds-reassessing-sovereign-credit-ratings

Exhibit 22: Portfolio Sovereign Scoring Tool – Illustrative Example





Note: Z-scores measure by standard deviations the distance between a single data point and the mean. They offer a way to test a raw score result against the normal population. The JP Morgan ESG suite of indexes is a global fixed-income index family that integrates ESG factors in a composite benchmark. The ESG JPM Index applies a multi-dimensional approach to ESG investing for fixed-income investors. It incorporates ESG score integration, positive screening, as well as exclusions of controversial sectors and UN Global Compact violators. ESG JPM Index scores are calculated daily, using data from RepRisk, Sustainalytics, and Climate Bonds Initiative (CBI) as inputs.

Sources: Man Group, JP Morgan, and World Bank.[63]

Like equities, sovereign debt is just as susceptible to distortion effects based on ESG ratings. These will be most notable in strategies that trade in both developed and emerging economies. ESG ratings and indicators like those of the World Bank tend to be structurally lower for emerging countries relative to developed economies, which enjoy higher standards of transparency, rule of law, regulatory authority, and anti-corruption. For instance, an emerging markets debt portfolio will benefit from a higher ESG score if it is underweight with emerging markets and overweight with defensive positions, like US treasuries or German bunds. Hence, it is critical to understand that this developed-emerging weighting is driving the overall ESG score.

10 ESG SCREENING WITHIN PORTFOLIOS AND ACROSS ASSET CLASSES: LISTED AND PRIVATE EQUITY

☐ **8.1.6** apply ESG screens to the main asset classes and their sub-sectors: fixed income; equities; and alternative investments

63 Osses, G., and M. Cal. 2019. *GEMD Strategies' Approach to Responsible Investing.*

Listed Equity

Listed equities represent the most developed asset class in terms of ESG integration. Equities have various advantages relative to other asset classes — notably, the greatest amount of transparency owing to its capital structure where creditors and shareholders coexist, albeit in a relationship that subordinates shareholders. The listed nature of equities and their ownership structure provide shareholders with the ability to exercise their view through their voting rights on many aspects of operational and strategic direction of the company, including its board of directors. Shareholder rights and voting are one of the most prominent manifestations of stewardship, where investors increasingly address non-financial objectives alongside financial issues.

Because of the enhanced nature of ESG disclosure among listed equities, all of the responsible investment strategies discussed in this chapter lend themselves to the asset class. This ranges not only from passive to active investment strategies, but from long-only to hedge funds as well. For that reason, this section will not restate the nature and mechanics of those investment strategies in a long-only context.

That said, hedge fund or long–short strategies are increasingly embedding ESG into portfolio construction and management. Hedge funds are alternative investment vehicles that employ leverage to enhance returns and hedging strategies to manage net risk and produce alpha. Shorting or short selling involves borrowing a security generally on margin, hence the leverage component in hedge funds, and then selling it into the market to be bought later. A successful short sale means that the investor is able to cover or buy back the security at a lower price than that which they initially paid to borrow it.

Indeed, the PRI now provides resources and formally includes a hedge fund module within its *Reporting Framework*.[64] In addition, organizations representing the interests of the hedge fund community (which include the Alternative Investment Managers Association [AIMA], the Managed Funds Association [MFA], and the Standards Board for Alternative Investments [SBAI], not to mention the PRI itself) now all convene working groups focused on ESG and regularly produce research, surveys, policy papers, and recommendations on practices.

Exhibit 23 and Exhibit 24 provide examples of an approach that a quantitative ESG long–short equity strategy might assume. As a sector-neutral portfolio, the long exposure represents the top or best decile of ESG-rated companies, while the short exposure represents the bottom or worst decile of ESG-rated stocks.[65] It operates across a number of data provider scores that include a proprietary, factor neutral one (Man Numeric), carbon intensity metrics, and even an event-driven sentiment strategy operating on ESG news using natural language processing (NLP).

Although exposure and returns vary across data and metrics, the long–short example provides empirical support for the logic that better-scoring ESG and carbon-efficient companies are capable of not only enhancing ESG exposure but also of potentially outperforming their poorer-scoring peers. In effect, the simulation finds betting against poorly-rated companies has the potential to reduce risk exposure and add resilience through lower drawdown.

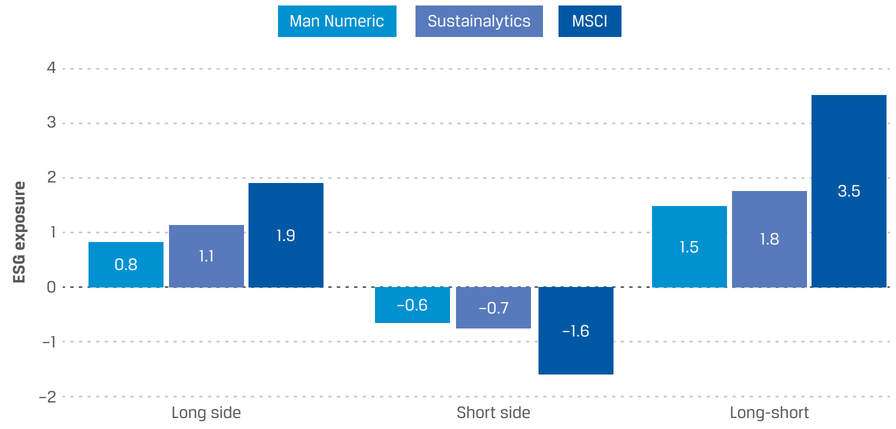
Note, though, that in Exhibit 23 and Exhibit 24, all model spread performance shown is gross-of-fees and does not represent the performance of any portfolio or product. To calculate long-only model spreads, Man Numeric invests long in the top 10% ranked names within each sector and displays the gross of fees return. To calculate long–short model spreads, Man Numeric invests long in the top 10% ranked names

64 PRI. 2018. *ESG Monitoring, Reporting and Dialogue in Private Equity*. Available at: www.unpri.org/private-equity/esg-monitoring-reporting-and-dialogue-in-private-equity/3295.article

65 Market- and sector-neutral strategies are used to reduce portfolio exposure to overall risks while optimizing for investment return potential. These strategies focus on producing returns that are independent in market and sector volatility.

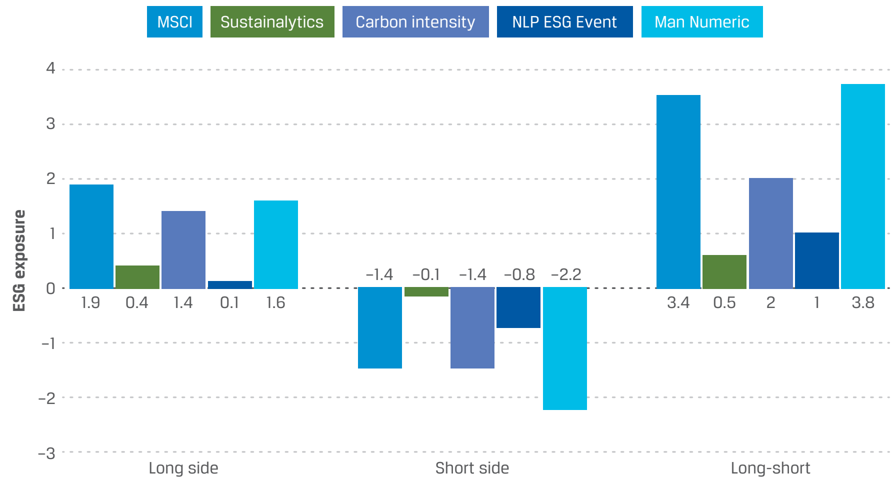
within each sector and short the bottom 10% ranked names within each sector and displays the gross of fees return. These spread returns are instantaneously rebalanced and do not reflect transaction costs. Rankings are based on Man Numeric's internal Alpha model scores.

Exhibit 23: Simulative Implications of Shorting Poor ESG Companies to Performance Exposure and Performance — Shorting Doubles Portfolio's ESG Exposure



Sources: MSCI ESG score; Sustainalytics ESG score; and Man Numeric proprietary ESG score as of 31 December 2019.[66]

Exhibit 24: Simulative Implications of Shorting Poor ESG Companies to Performance Exposure and Performance — Poor ESG Companies Have Underperformed



Sources: MSCI ESG score, Sustainalytics ESG score, Trucost carbon data, and Man Numeric proprietary ESG score as of 31 December 2019.[67]

66 Man Group. 2020. *The Big Green Short.* Available at: www.man.com/maninstitute/big-green-short

Private Equity

Like unlisted credit and real asset private markets, ESG integration in private equity faces several challenges, foremost being the lack of public transparency, established reporting standards, regulatory oversight, and public market expectations around ESG. The lack of compulsory non-financial reporting regulations like the EU's Non-Financial Reporting Directive (NFRD) for large European companies severely limits a private equity portfolio manager's ability to leverage ESG data for relative ranking and scoring comparability.[67]

In addition, smaller private companies are often capacity-challenged by ESG reporting requirements. The quality, consistency, and continuity of strong integrated reports published by many public companies represent a high hurdle to achieve for smaller companies. Early-stage companies also tend to operate with a much greater degree of freedom than more mature, listed companies. As a consequence, the portfolio manager will have to weigh the company's ESG trajectory (it may have established, but not yet met, ESG objectives) against the trajectories of more mature companies. This extends not only to the way the business or asset operates but also to the board level-devised strategy.

In some cases, private equity investors must negotiate against a strong founder or founder team, which, while a powerful internal motivator, may present long-term governance concerns. At the same time, early investors and significant shareholders are often strategic and long-term oriented, creating a powerful incentive to establish a strong set of ESG key performance indicators (KPIs) early in the company's life cycle. It may be in the interest of the general partners (GPs), investment professionals charged with investing and managing the fund's committed capital in companies, to establish specific, portfolio-wide metrics (obviously recognizing geographic and sectoral differences) as a means to support the overall portfolio strategy and communicate portfolio alignment to the fund's limited partner (LP) investors who invested in the overall private equity fund.

Exhibit 25 illustrates several ESG metrics tracked across different industries for several funds to gain a static, high-level picture of exposure.

Like other investor types, private equity investors may certainly impose exclusionary screening on any number of criteria to restrict investment in certain sectors, either normatively or ethically defined. However, private equity investors do not have the benefit of the breadth and diversity of indexes and benchmarks of the listed equities space, limiting opportunities for peer comparability analysis or portfolio optimization efforts around ESG criteria. However, portfolio managers can benchmark segments of the portfolio against smaller investment universes, even including public companies, if data comparability exists.

Hence, it is more likely that the GPs may apply some form of positive screening or thematic focus within their respective investment charter. In fact, because of the non-public nature of the private equity industry, LPs are increasing their expectations for GPs to integrate ESG analysis beyond screening in more robust forms. In addition, portfolio managers may establish minimum threshold ESG scoring for portfolio inclusion. Portfolio managers may address these challenges by formally establishing an ESG program that institutes in-depth, pre-deal ESG due diligence and ESG review for portfolio companies. Since ESG data for private equity firms may be more localized or regional, quantitative and systematic capabilities applied within the listed equities space will be of much less use.

67 European Commission. 2020. *Non-Financial Reporting*. Available at: https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/non-financial-reporting_en

Exhibit 25: Private Equity ESG Performance Data by Fund (Apax Partners) – Illustrative Example

		ENVIRONMENTAL			SOCIAL			GOVERNANCE	
Company	**Sector**	**CO_2 Emissions (tonnes)**	**Electricity (kwh)**	**Business Travel by Air (miles)**	**Sick Days (FTEs)**	**Voluntary Turnover**	**Workers Council**	**Anti-corruption policy**	**Cyber Security Function**
Apex Europe VI									
Company A	Healthcare	47,451	59,402,437	0	70,072	1,280	Yes	Yes	Yes
Company B	Healthcare	-	—	-	32,675	301	No	Yes	No
Apex Europe VI									
Company A	Consumer	56,723	108,346,559	1,364,303	58,389	1,440	No	Yes	No
Company B	Healthcare	46,857	41,368,783	66,493,839	366	882	Yes	Yes	Yes
Company C	Services	2,400	1,394,000	115,000	2,717	254	Yes	Yes	Yes
Company D	Tech and telecom	468	272	3,882,723	-	114	No	Yes	No
Company E	Tech and telcom	13,275	85,682,875	10,779,548	70,497	3,993	Yes	Yes	Yes

Source: Adapted from PRI

PRI. 2018. *ESG Monitoring, Reporting and Dialogue in Private Equity.* Available at: www.unpri.org/private-equity/esg-monitoring-reporting-and-dialogue-in-private-equity/3295.article

ESG SCREENING WITHIN PORTFOLIOS AND ACROSS ASSET CLASSES: REAL ASSETS – REAL ESTATE AND INFRASTRUCTURE

11

☐ **8.1.6** apply ESG screens to the main asset classes and their sub-sectors: fixed income; equities; and alternative investments

Real assets like real estate and infrastructure carry certain advantages and challenges compared to the equities and corporate fixed-income investment universe. In many cases, investors are majority owners or own the asset outright. Majority or full ownership stakes offer investors much greater control over the definition, application, and reporting of ESG data alongside or outside existing reporting standards like that of the Global Reporting Initiative (GRI).

Much like corporate unlisted fixed income, managing a portfolio of real assets requires building a picture of what the aggregate risk looks like as well as the correlation risk among all the underlying assets. GRESB's full benchmark[68] report provides a composite of:

- peer group information;
- overall portfolio KPI performance;
- aggregate environmental data in terms of usage and efficiency gains;
- a GRESB score that weights management, policy, and disclosure;
- risks and opportunities, monitoring, and environmental management system (EMS);
- environmental impact reduction targets; and
- data validation and assurance.

Nonetheless, this report depends heavily on companies, funds, and assets participating in the GRESB reporting assessment process. For portfolios where a significant percentage of the fund's holdings do not participate in the GRESB assessment, portfolio managers will need to supplement with their own ESG scoring.

As reporting data and standards improve for real assets, investors should work towards a stronger link between ESG considerations and their financial implications. One of the counterparts to the idea of an ESG risk premium conversation discussed in this chapter for the real asset investment universe is the potential for the existence of a green risk premium in real estate. Exhibit 26 demonstrates the increasing studies pointing to the existence of a green building premium across regions and for both commercial and residential real estate markets. This green building premium may help to more accurately price and understand the risks and implications of ESG in the real estate market.

68 GRESB. 2018. *GRESB Benchmark Report 2018*. Available at: https://gresb.com/benchmark-report/

Exhibit 26: Real Estate Studies and the Potential for a Green Building Premium

Author/ Source	Year	Sample Period	Location	Segment	Sample Size (Number of Projects)	Scheme	Sales or Rental Yields	Price Increase/ Decrease	Magnitude	
									Sales	Rents
Fuerst, McAllister, Nanda, Wyatt	2013	1995–2011	UK	Residential	325,950	EPC	Sales	Positive	6% to 14%	–
Kok, Kahn	2012	2007–2012	USA	Residential	1,604,879	Energy Star, GreenPoint Rated, LEED	Sales	Positive	9%	–
Deng, Li, Quigley	2012	2000–2010	Singapore	Residential	74,278	Green Mark	Sales	Positive	4% to 11%	–
Yoshida, Sugiura	2014	2002–2010	Japan	Residential	41,560	Tokyo Green Building Program	Sales	Mixed	−5% to +17%	–
Fuerst, McAllister	2011	1999–2008	USA	Office	24,479	Energy Star, LEED	Both	Positive	25% to 26%	4% to 5%
Kok, Jennen	2012	2005–2010	Netherlands	Office	1,072	EPC	Rents	Positive	–	6.5% to 12%
Newell, MacFarlane, Walker	2014	2011	Australia	Office	366	NABERS	Both	Mixed	−1% to 9%	−1% to 7%

Source: AllianzGI Global Solutions.[69]

Traditional residential housing model delivery had little regard for ESG factors. The primary model of delivery was concrete based, with inefficiencies among other building materials. Not surprisingly, the sector had a significant carbon footprint focused primarily on environmental criteria on a short-term, new build, and construction basis. ESG and impact-oriented residential strategies now focus on much broader criteria, actively integrating all components — particularly social considerations — within their portfolio.

Besides reducing the carbon footprint of their housing stock through more efficient building materials, community housing strategies now make efforts to deliver affordable mixed tenure housing solutions that provide greater social segmentation to meet the needs of the community — young people, first-time buyers, key workers, and seniors.

Investors with significant real estate exposure are increasingly leveraging the analytical modeling capabilities and historical datasets of insurance companies to understand weather risk generally and climate risk more specifically. Munich Re, one of the world's largest reinsurers, produces climate risk assessments that model potential property impact scenarios based on a broader set of twelve natural hazard types, including:

- earthquakes;
- volcanic eruptions,

69 AllianzGI Global Solutions. 2015. *ESG in Real Estate.* Available at: www.risklab.com/media/151208_esg_in_real_estate.pdf

- tsunamis;
- tropical cyclones;
- extratropical storms;
- hail;
- tornadoes;
- lightning;
- wildfires;
- river floods;
- flash floods; and
- storm surges.

A joint study by Munich Re and PGGM (the Dutch pension fund) applies these analytics on PGGM's private real estate portfolio.[70]

A climate risk profile based on over 100 years of meteorological, weather, and hazardous-event data is capable of examining the climate risk of a diversified, global property portfolio across different dimensions — from overall hazard risk factor exposure to country and city (Exhibit 27) to individual property level risk. Capabilities now enable an extremely nuanced understanding of exact longitudinal and latitudinal data.

Exhibit 27: Climate Risk Overview for the Portfolio at the City Level

City/Metropolitan Statistical Area (MSA), country	Extratropical Storm	Flash Flood	River Flood	Storm Surge	Tornado	Tropical Cyclone	Wildfire
Marrero, USA	1.67	3.33	5.00	5.00	5.00	4.00	1.25
Savannah, USA	1.67	3.33	5.00	5.00	3.33	3.00	2.50
Palm Harbor, USA	1.67	3.33	1.00	5.00	5.00	4.00	3.75
Metairie, USA	1.49	3.33	5.00	5.00	5.00	3.11	0.00
Newark, USA	1.67	3.33	5.00	5.00	5.00	1.00	1.25
Amagasaki, Japan	1.67	3.33	5.00	5.00	1.67	4.00	1.25
Quanzhou, China	0.00	4.17	5.00	5.00	3.33	3.00	0.00
Miami, USA	1.49	3.58	0.60	3.14	5.00	4.00	0.98
Dalian Shi, China	1.67	4.91	4.43	4.43	3.33	0.00	0.00
Philadelphia, USA	1.67	3.33	0.00	5.00	5.00	1.00	2.50

Note: The numbers are based on PGGM portfolio weights of assets in each country and PGGM's rebasing of underlying hazard and risk scores.

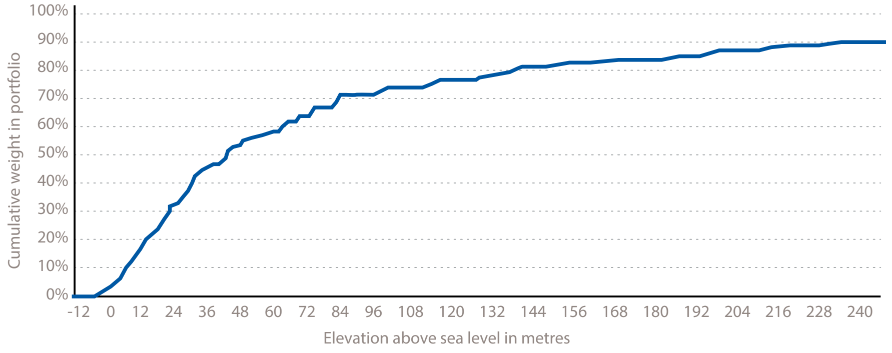
Sources: PGGM and Munich Re.[71]

With growing evidence of sea-level rises capable of impacting population-dense coastal areas and communities, investors may also enhance the climate rate analysis of their portfolios by profiling a portfolio's exposure to elevation and coastline proximity (Exhibit 28). The effects of coastal erosion and flooding ultimately leading to managed retreats could carry meaningful consequences to property values and insurance

70 Munich Re and PGGM. 2019. *Climate Risk Assessment in Global Real Estate Investing.* Available at: www.pggm.nl/media/3ouenmff/pggm-position-paper-climate-risk-assessment-in-global-real-investing_september_2019.pdf

premiums. Indeed, a study already indicates that residential properties in the United States located in areas exposed to sea level rises already reflect a 7% discount relative to unexposed nearby homes.[71]

Exhibit 28: Elevation Profile of PGGM Private Real Estate Portfolio



Note: The remaining 10% of portfolio represents elevation levels between 250 and 2,292 meters above sea level.[71]

12 INTEGRATING ESG SCREENS WITHIN PORTFOLIOS TO MANAGE RISK AND GENERATE RETURNS

☐ **8.1.6** apply ESG screens to the main asset classes and their sub-sectors: fixed income; equities; and alternative investments

The effects and benefits of integrating ESG into portfolio management are an increasingly wide area of study. Investors typically address the effects to risk-adjusted returns of ESG integration in portfolio management through two dimensions:

- risk mitigation; and
- alpha generation.

Integrating ESG to Manage Portfolio Risk

Risk mitigation is the exercise of assessing and minimizing the exposure of a portfolio to ESG risks. Sometimes these risks are referred to as tail risks. In an ESG context, tail risks are generally long term in nature and describe a significant change or move by several standard deviations in the risk profile of an asset. Depending on the position size in a portfolio, the potential volatility of such an asset may carry significant implications for the portfolio's overall risk profile and to its potential risk-adjusted returns.

71 Bernstein, A., M. Gustafson, and R. Lewis. 2019. "Disaster on the Horizon: The Price Effect of Sea Level Rise." *Journal of Financial Economics* 134 (2): 253–272. Available at: https://doi.org/10.1016/j.jfineco.2019.03.013

For example, a real estate portfolio that is heavily invested in beachfront property at risk of coastal retreat should actively assess the potential impact to the portfolio's risk-adjusted returns and consider mitigating or minimizing its exposure.

In another example, a portfolio with significant holdings in the European utilities sector should routinely assess its exposure to understand its short-term risk to carbon price volatility and, in the long term, to a potential stranded asset write-down risk.

Much scrutiny is required when linking the correlation between ESG integration and investment returns. Fundamentally, any strong claim regarding ESG-driven performance requires a robust means to measure ESG. While firms may have certainly developed proprietary approaches to this problem, the ability to measure performance attribution for ESG does not commercially exist.

To this end, it is worth a short review of some general theory about risk within portfolio management and where ESG fits into the discussion. Financial risk in the traditional sense is generally expressed as a number. This number could assume many different forms:

- a variance;
- volatility; or
- value-at-risk (VAR).

Over the last half decade, numerous approaches have emerged to measure and price risk. The capital asset pricing model (CAPM) measures the proportional risk of a security or portfolio relative to market risk in the form of a premium.

More recently, Eugene Fama and Kenneth French introduced three-factor and, subsequently, five-factor models that both describe how certain risk premiums (investment risk, market risk, size risk, profitability risk, and value risk) are able to explain the probability distribution of investment returns.[72] Well-established evidence for these risk premiums — the differential between market returns and the risk-free rate, or the differential between high- and low-valued companies on a price-to-book basis — exists not only to drive factor-oriented investment strategies, but also to enhance risk factor portfolio attribution. In short, these efforts have contributed to the manner in which financial markets can identify, assign, and manage risk for single assets as well as portfolios.

Risk also appears as either idiosyncratic or systematic risk:

- Idiosyncratic risk describes firm- or stock-specific risk. In an ESG context, idiosyncratic risk could be posed by a company's staggered board of directors or a mining company that is repeatedly fined for its untreated mine tailings. In order to reduce or mitigate this kind of idiosyncratic risk, a portfolio manager may diversify the portfolio, diluting the exposure to the mining company. The portfolio manager may instead simply exit the poor-performing company outright, eliminating the risk.
- Systematic risk represents market risk, such as economic recession, that cannot be resolved through portfolio diversification alone.

These two perspectives on risk within financial markets are important for the expectations that we set for how we think about risk in an ESG context and for the questions they necessarily provoke. For instance:

- What evidence exists to demonstrate that ESG represents a risk premium?
- Broadly speaking, does ESG represent systematic risk or idiosyncratic risk?

72 Fama, E., and K. French. 2014. "A Five-Factor Asset Pricing Model." *Journal of Financial Economics* 116 (1): 1–22. Available at: www.sciencedirect.com/science/article/abs/pii/S0304405X14002323

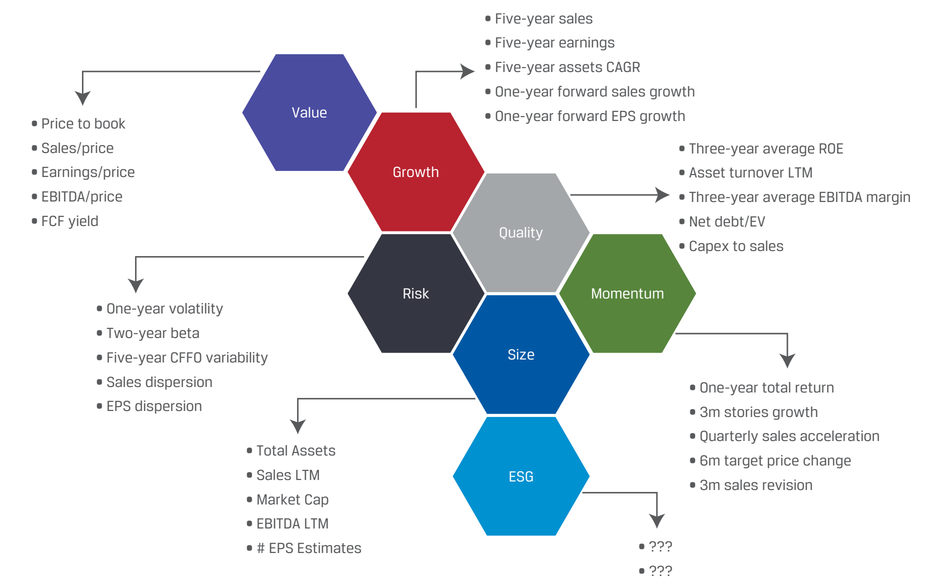
- Or does it, in a narrower form like climate risk, represent systematic risk to the financial system and wider global economy?
- If it does not represent a factor similar to those presented by Fama–French, does that mean that ESG integration is essentially process-oriented?

Studies demonstrating that almost 80% of alpha (returns in excess of market performance) can be attributed to portfolio factor risk rather than stock-specific risk would seem to support research efforts to identify and define ESG as a standalone factor.[73]

Needless to say, these are incredibly difficult questions that continue to raise significant debate among academics and practitioners alike. However, they are particularly important in the context of the often cited maxim 'what is measurable is manageable' for those trying to understand the implications of allocation to ESG-oriented assets and strategies. Furthermore, if the objective is to measure ESG, how is it defined relative to other factors, and how can it better inform investors' ability to manage a portfolio?

Despite the growing sophistication in ESG analysis across different asset classes and investment strategies, ESG is still largely characterized by its process-oriented approach for much of the investment management industry. This remains distinct from traditional approaches to risk, which, although reductive in nature, are also quantitative and generalizable. Moreover, treating ESG within portfolio management solely as a process turns it into a qualitative exercise that is subjective and difficult to measure.

Exhibit 29: ESG – Process, Premium (Risk Factor), or Both?



Source: Man Group.[74]

This not only increases the potential risk of greenwashing, but it also deprives asset allocators of the power of attributional analysis. It also means that outside of absolute value-based metrics like weighted-average carbon intensity, subjective ESG scores and rankings will continue to represent the prevailing means to approximate ESG risk in a portfolio.

73 Bender, J., P.B. Hammond, and W. Mok. 2013. "Can Alpha Be Captured by Risk Premia?" *Journal of Portfolio Management* 40 (2): 18–29. Available at: https://jpm.pm-research.com/content/40/2/18
74 Man Group. 2019. *ESG: Bringing Order to Uncertainty*. Available at: www.cfauk.org/-/media/files/pdf/pdf/3-events/jason_mitchell_slides.pdf

Integrating ESG to Generate Investment Returns

Although investors have traditionally employed ESG analysis for risk mitigation, many are growing more comfortable with framing ESG as a means to generate alpha. Indeed, many investors would intuitively agree with the broad assertion that a portfolio of better-managed, better-governed companies and assets would likely outperform a portfolio of poorly managed and governed peers — and potentially the market over the long term.

Yet, one of the challenges that remains is how to measure ESG-attributed performance, not just risk, at a portfolio level. Current evidence for ESG as performance enhancing often comes in the form of single-security or single-asset case studies. In many respects, these are incredibly useful. They may highlight innovative approaches for embedding ESG in valuation techniques or demonstrate new stewardship tactics when engaging company management on ESG issues. However, while a case study may convincingly explain, even causally, the linkage between investment returns and ESG operational performance, it represents a single anecdote and was most likely chosen because of selection bias. A case study does not explain ESG returns in formal attribution terms for the overall portfolio.

Generally speaking, institutional investors apply two popular approaches towards decomposing performance attribution: Brinson attribution and risk factor attribution. Attribution models serve to quantify and demonstrate the effects of asset allocation and selection decisions on investment returns. Brinson attribution decomposes performance returns based on a portfolio's active weights. For a given time series, this generally represents performance returns attributed to regional, sector, and stock-specific exposure.

There are efforts to embed ESG within risk factor analysis. A risk-based performance approach measures investment returns based on a portfolio's active factor exposures. These can be well-established Fama–French style factors or less-established factors like liquidity, low volatility, and currency carry.[75] Where the Brinson model emphasizes stock-specific attribution, which generally makes it popular for discretionary managers, risk factor attribution emphasizes both factor and security-specific exposures. Currently, neither model includes the capability to decompose factor risk exposure or performance attribution returns on an ESG basis.

13 QUANTITATIVE APPROACHES THAT EMBED ESG FACTORS

- [ ] **8.1.6** apply ESG screens to the main asset classes and their sub-sectors: fixed income; equities; and alternative investments

We have reviewed quantitative strategies that apply a tilt or overlay through a screening methodology to drive greater portfolio exposure to some element of ESG. Quantitative strategies shape and direct the portfolio in aggregate or on a top-down basis rather than an individual issuer or asset basis. A more sophisticated approach directly embeds ESG into the algorithmic model, driving the stock selection for the portfolio. In effect, ESG operates much like any other factor within a multi-factor algorithmic investment strategy.

75 Fama, E., and K. French. 1993. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics* 33 (1): 3–56. Available at: https://doi.org/10.1016/0304-405X(93)90023-5

Quantitative managers build proprietary multi-factor models often based on a combination of well-established factors and more idiosyncratic factors. Each factor is prescribed an individual weight that, in turn, proportionally drives the multi-factor signal.

One of the advantages of a multi-factor model over a smart beta or beta plus strategy is diversification. Smart beta and beta plus investment strategies represent the compromise between passive, index-oriented investment and active investing at a lower cost than a traditional actively-managed strategy. The active element within these strategies generally emphasizes a single or dominant investment factor, such as value, quality, growth, or momentum.

A multi-factor strategy, on the other hand, seeks to maximize the benefits of diversification through the combination of a number of different factors. This is generally accomplished by allocating to factors on a top-down basis, or on a bottom-up basis, by allocating to individual securities that share certain common factor attributes. Factors that are negatively correlated to one another are combined to produce greater portfolio protection against a potential reversal by any one given factor.

Exhibit 30 and Exhibit 31 are examples that depict stylized multi-factor frameworks. Exhibit 31 includes an additional ESG factor within its equally-weighted, multi-factor algorithm.

Exhibit 30: Multi-Factor Combined Framework (Stylized)

	Alpha models				
Company	**Value**	**Momentum**	**Quality**	**Combo**	**Rank**
A	0.90	0.90	0.90	0.90	1
B	0.80	0.90	0.50	0.73	2
C	0.60	0.60	0.60	0.60	3
D	0.60	0.60	0.60	0.60	4
E	0.00	0.00	0.00	0.00	5

Source: Man Group.[76]

Exhibit 31: Multi-Factor Framework Integrating an ESG Factor (Stylized)

	Alpha models				Combo	
Company	**Value**	**Momentum**	**Quality**	**ESG**	**ESG Combo**	**Rank**
C	0.60	0.60	0.60	1.00	0.70	1
A	0.90	0.90	0.90	0.00	0.68	2
B	0.80	0.90	0.50	0.10	0.58	3
D	0.60	0.60	0.60	0.00	0.45	4
E	0.00	0.00	0.00	1.00	0.25	5

Source: Man Group.[77]

76 Man Group. 2019. *ESG Integration – No Silver Bullet*. Available at: www.man.com/maninstitute/esg-integration-no-silver-bullet

Beyond the fundamental question of how to measure ESG performance and risk exposure, investors must also consider the practical and operational issues when seeking to integrate ESG screens into portfolios and mandates. More specifically, the asset class and regional exposure of a portfolio may have significant implications on the coverage and integration of the ESG screen. Equities strategies, particularly those in developed markets with a focus on mid- to large-capitalization companies, generally benefit from greater, more mature ESG research coverage by third-party data vendors. More recently, corporate fixed-income portfolios are benefiting from more expansive ESG coverage as well as from a commitment by the CRAs to better integrate ESG factors into their credit analysis.[77]

Exhibit 32 illustrates the ESG ratings coverage gap of a high-yield credit portfolio where roughly 25% of the strategy's positions are unrated. Again, this coverage gap may be due to a number of reasons:

- the corporate bond issuer may be too small for ESG ratings providers to score;
- the bond may be a new issuer that has not yet been scored; or
- it may be unlisted debt.

Regardless of the reason, it is an important example for why and how multiple ESG data sources should be considered when assessing the ESG exposure profile of a portfolio. Noting coverage gaps when reporting to the investors of a portfolio is not only informationally helpful, but it also preserves the integrity of the ESG screening process.

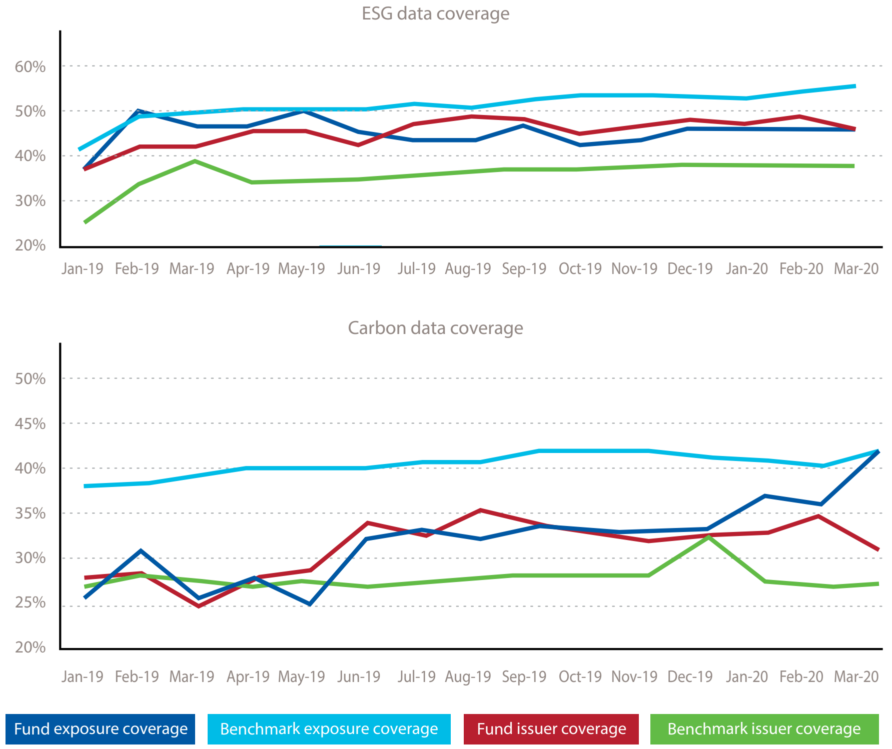
That said, no best practice currently exists in terms of how to treat ESG coverage gaps within a portfolio. However, there are two potential approaches to address this issue:

- The simplest approach is to simply rescale the scoreable portion of the portfolio to 100% by proportionally resizing each scoreable position.
- The second approach is to apply Bayesian inference to the coverage ratio, effectively grossing it up to 100% by probabilistic inference.

Note that both approaches are reasonable with coverage gaps of up to 25%. Although no hard rule or best practice exists, normalizing for a gap in excess of 25% should be reviewed for whether it over- or under-represents a portfolio's true ESG exposure. This potentially undermines the integrity of ESG analysis at the portfolio level for the manager and may misrepresent the ESG exposure of the portfolio to the fund's investors.

77 PRI. 2021. *Statement on ESG in Credit Risk and Ratings.* Available at: www.unpri.org/credit-ratings/statement-on-esg-in-credit-ratings/77.article

Exhibit 32: Illustrative ESG Coverage Ratio for a High-Yield Credit Portfolio



Sources: Man Group, Sustainalytics, and MSCI.

Efforts to Develop Standards for ESG Investing: EU Regulatory Implications

The finance industry is currently undergoing a period of significant regulatory change in terms of ESG investing. Indeed, they represent the broadest, most comprehensive set of legislative action in sustainable finance. The EU Sustainable Finance Action Plan, which includes the EU Taxonomy and the Sustainable Finance Disclosure Regulation (SFDR), promises to carry profound implications for the investment management industry.[78,79]

The EU Taxonomy is a classification system organizing economic activities into environmentally sustainable activities. Policymakers see it as vital in steering the private sector participating in the funding of the European Green Deal. It provides a definitional baseline for ESG investing as a protection against greenwashing. Investors stand to benefit as the quality, prevalence, and comparability of non-financial data improve through other pieces of EU legislation like the Non-Financial Reporting Directive (NFRD), which is designed to improve European corporate disclosure.

78 European Commission. 2019. *EU Taxonomy for Sustainable Activities*. Available at: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en

79 European Commission. 2019. *Regulation on Sustainability-Related Disclosures in the Financial Services Sector*. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2088&from=EN

The EU SFDR focuses on disclosure at the entity (manager) and the product (investment strategy) levels. Notably, the EU SFDR also makes tremendous effort to normalize sustainability risk within all in-scope products. It organizes in-scope sustainability investment products into three major groups:

1. Article 9 or 'dark green' funds are products that have sustainable investment as their objective. As defined under the SFDR, sustainable investment may either contribute an environmental or social objective. However, they must "do no significant harm" (DNSH) to either of these objectives. Generally speaking, Article 9 funds will tend to be more impact-oriented.
2. Article 8 or 'light green' funds are products that more broadly promote environmental and/or social characteristics. While taking ESG criteria into consideration as one factor among many, they do not have to make sustainable investment the defining objective. It is expected that the majority of ESG investment products — particularly in the listed space — designate as Article 8.
3. Article 6 or 'Other' funds describes those funds that do not actively promote sustainable investment objectives or integrate sustainability criteria in ways that can be overtly marketed as such. That said, Article 6 funds may in fact integrate sustainability purely as a means to manage risk. In other words, SFDR assumes that all investors treat sustainability risks as part of their larger, ongoing risk management framework. If in-scope funds do not consider sustainability, they are required to provide a clear explanation for reasons in the fund's pre-contractual disclosures.

A summary of SFDR classification is as follows:

Article 6 – All Funds	Article 8 – All ESG	Article 9 - Sustainable
All managed products	'Light green' funds	'Dark green' funds
No integration of sustainability	Promotes, among other characteristics, environmental or social characteristics, or a combination but is not a main focus	Investment in economic activity that contributes to environmental objective
Can include stocks that are excluded from ESG funds, such as tobacco and coal producers, and should be clearly labelled as non-sustainable		Fund manager may be required to track an EU climate transition benchmark
		"Do no significant harm"

Increasing Level of Disclosure

Source: Davy Group.[80]

80 See https://www.davy.ie/market-and-insights/insights/capital-markets/horizons/sustainable-financial-disclosure-regulation-means-for-plcs.html.

Because this legislation will reshape much of EU sustainable finance within the EU and influence other regional regulatory approaches, it is worth including some of the seminal legislative elements.

EU legislation marks a distinct shift away from self-regulation towards a top-down, EU-driven organization of economic activities defined as sustainable investments. Broadly speaking, the policy objectives of these legislative pieces are to:

- provide protections against greenwashing for investment products sold into the EU;
- further embed sustainability within risk management for all investment products; and
- direct capital towards sustainable investment activities and away from unstainable investment activities to support the EU's commitment towards a 2050 climate neutral economy.[81]

SFDR is a cornerstone of the EU Commission's ambitious Sustainable Finance Strategy. It applies to so-called "Financial Market Participants" ("FMPs"), notably fund and asset managers, insurers, pension funds, banks, and investment firms, that offer "Financial Products" subject to SFDR. Financial Products include funds, investment-based insurance products ("IBIPs"), and certain pension products and also extend to the portfolio management of segregated accounts. Under the SFDR, FMPs must make pre-contractual, periodic, and website disclosures on sustainability risks and factors and on certain environmental and social aspects of their Financial Products.

The European Commission has published Regulatory Technical Standards (RTS) under the SFDR. The RTS complement the provisions of SFDR applying from 10 March 2021 by providing detailed guidance on disclosures relating to principal adverse impacts ("PAIs") on sustainability factors at the FMP level and pre-contractual, periodic, and website disclosures of Financial Products promoting environmental or social characteristics (called "Art. 8 SFDR Products") or having sustainable investment as their objective (called "Art. 9 SFDR Products").

While the text of the RTS is now final, the RTS are not yet formally in force since the EU Council and the EU Parliament are granted a three-month scrutiny period (extendable by another three months) in which they can approve or reject the RTS as a whole. Since the RTS are technical and have been subject to a long consultation and redrafting process since February 2021, it is not expected that the Council or Parliament will object. If no objection is made, the RTS will apply from 1 January 2023.

Structure of the RTS

The RTS are composed of the RTS text and five separate annexes that contain the standardized disclosure templates, which FMPs must use to make the disclosures under Art. 4 SFDR and Art. 8 to 11 SFDR ("Templates").

The RTS text (and annexes 1, 2, 3, 4, 5) specify the exact content, methodology, and presentation of the information to be disclosed with the aim to improve the quality and comparability of reporting, as well as to address greenwashing. Specifically, the RTS define the details needed to meet disclosure obligations for manufacturers of financial products and financial advisers toward end-investors and disclosure obligations regarding adverse impacts on sustainability matters at entity and financial product levels.

81 European Commission. 2020. *Committing to Climate-Neutrality by 2050: Commission Proposes European Climate Law and Consults on the European Climate Pact*. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_335

In five chapters, the RTS text deals with general disclosure rules (Chapter I), PAI reporting at the FMP level (Chapter II), pre-contractual disclosures for Art. 8 SFDR Products and Art. 9 SFDR Products (Chapter III), website disclosures for such products (Chapter IV), and periodic disclosures for such products (Chapter V). Different from the previous draft RTS, the requirements for pre-contractual and periodic disclosure of Art. 8 SFDR Products and Art. 9 SFDR Products are now set out directly in the respective Templates and, aside from the more complex Taxonomy disclosures, there are no additional provisions in the text of the RTS repeating the content of the Templates. This will facilitate working with the Templates because FMPs will no longer have to scrutinize both RTS text and Templates, which in some instances contained diverging guidance.

The first detailed disclosure on PAI for FMPs complying with Art. 4 SFDR based on the RTS is only due by 30 June 2023. Annex I to the RTS contains pre-defined mandatory and voluntary PAI indicators that FMPs must integrate into their data collection processes, down to the ultimate asset. Several mandatory PAI indicators for investee companies (equity and debt) are particularly challenging for investments in private companies. Data need to be collected at least on a quarterly basis.

Data Collection

FMPs must apply "best efforts" to obtain PAI indicator data for all investments from available sources, including investee companies, their own research, third-party data providers, or reasonable assumptions of the FMPs. The collection of PAI indicator data is also one of the main elements of the "do no significant harm" (DNSH) analysis for sustainable investments, and it may be difficult to qualify investments as "sustainable investments" if no data on PAI indicators (not even proxies or assumptions) are available.

Challenges in Integrating Taxonomy Disclosures into SFDR

- **Language:** FMPs will have to learn new vocabulary as the easily understandable term "Taxonomy-aligned investments" has been replaced by the much longer "investments in environmentally sustainable economic activities." This is in line with the wording in the Taxonomy Regulation, and the divergence in the draft RTS has led to some questions in the market. However, the concept has not been followed through for the Templates, which are now using both the old and the new term, potentially causing even more confusion for customers/investors.
- **Taxonomy KPIs:** FMPs are required to disclose the share of their investments in environmentally sustainable economic activities on the basis of all three Taxonomy KPIs (turnover, CapEx, and OpEx). While the pre-contractual disclosure can be based on only one single KPI (usually turnover), the period disclosures will have to be more detailed and use all three KPIs. This is due to the methodology used in the Art. 8 Taxonomy Delegated Act. Some of the environmentally sustainable economic activities will only show when using CapEx or OpEx as relevant KPI (e.g., expenditures to improve energy efficiency of buildings).
- **Taxonomy disclosure templates:** An additional issue to consider has been whether Art. 8 SFDR Products promoting environmental characteristics but not committing to make sustainable investments must also do the full Taxonomy disclosures. While the wording of Art. 6 Taxonomy Regulation seems to imply this, the ESAs have in the past mentioned on several occasions that such Art. 8 SFDR products would not have to disclose on Taxonomy. This issue has not been resolved by the RTS. The RTS and the Templates merely refer to Art. 6 Taxonomy Regulation. However, the

Taxonomy disclosures in the Templates are part of the section dealing with sustainable investments, which according to the Template guidance notice should only be filled out by Art. 8 SFDR Products making sustainable investments. For periodic disclosures of Art. 8 SFDR Products, there is a clear statement in the RTS that Taxonomy only needs to be included if the Art. 8 SFDR Product had committed to making sustainable investments contributing to an environmental objective. This has, however, not been picked up in the respective Template, and the EU Commission has yet to resolve.

- **Website disclosure:** FMPs have already been obliged under the SFDR to make certain disclosures on their websites. These included disclosures on the FMPs (notably, sustainability risk policies, consideration of PAI, and remuneration policies) as well as on Art. 8 SFDR Products and Art. 9 SFDR Products. The RTS now provide significantly more detailed website disclosures for PAI consideration and for Art. 8 SFDR Products and Art. 9 SFDR Products. In relation to PAI consideration, the detailed Template in Annex I will have to be used from 1 January 2023, including the collected PAI indicator data as well as actions taken, actions planned, and targets to address and mitigate the respective impacts. There are no Templates for the website disclosure of Art. 8 SFDR Products and Art. 9 SFDR Products, but the RTS require that FMPs disclose according to specific sections and contain guidance on the content of each of these sections.

  These website disclosures are designed to complement the pre-contractual and periodic disclosures and must contain additional information on the continuous monitoring of sustainability indicators during the product lifecycle, methodologies, data sources and processing, possible limitations to methodologies and data, as well as a description of the investment due diligence and the FMPs engagement policies.

  Another important feature of the new website disclosure requirements relates to language. The summary sections for the PAI consideration and for the product-related website disclosures need to be provided in multiple languages, including:

  - In an official language of the FMP's or Financial Product's home member state;
  - If different, in an additional language customary in the sphere of international finance (usually English); and
  - If the FMP offers Financial Products in other EU member states or the respective Financial Product is marketed in other EU member states, in an official language of all of these host member states. For example, for a Luxembourg fund with English documentation marketed in Germany, France, and Spain, the summaries need to be provided in English, German, French, and Spanish.

Key elements of SFDR

- **Entity-level principal adverse impact (PAI) reporting:** The RTS (Chap 2) defines the content, methodology, and presentation of information for the sustainability indicators on adverse impacts on the climate and other environment-related adverse impacts and adverse impacts in the field of social and employee matters, respect for human rights, anti-corruption, and anti-bribery matters.

- **Indicators:** Annex 1 details a mandatory reporting template for the statement on the consideration of principal adverse impacts of investment decisions on sustainability factors. The indicators are divided into a core set of universal mandatory indicators as well as additional opt-in indicators for both environmental and social factors. Indicators are included for adverse impacts on sustainability factors from investment in investee companies, sovereigns, and real estate assets.
    - **Investment in investee companies mandatory indicators include:** GHG emissions (Scope 1,2,3), carbon footprint, GHG intensity of investee companies, exposure to companies active in the fossil fuel sector, share of non-renewable energy consumption and production, energy consumption intensity per high impact climate sector, activities negatively affecting biodiversity-sensitive areas, emission to water, hazardous waste and radioactive waste ratio, violation of UN global Compact principles and OECD Guidelines for Multinational Enterprises, lack of processes and compliance mechanisms to monitor compliance with the aforementioned, unadjusted pay gap, board gender diversity, and exposure to controversial weapons.
- **Information:** Alongside disclosure for the indicators, financial market participants should also include narrative elements on a summary, policies on the identification of principal adverse impacts, actions taken and planned to mitigate the principal adverse impacts, and adherence to international standards and historical comparison covering at least five previous reference periods.
- **Reporting schedule:** Reporting should be carried out by 30 June each year, with the previous year as a reference period.
- **Comply or explain:** Market participants that do not consider principal adverse impacts of investment decisions must disclose a statement and explanation on their website.

► **Pre-contractual product disclosures:** The RTS (Chap 3) set out the content and presentation of information to be disclosed at the pre-contractual level in sectoral documentation**.** Annexes 2 and 3 outline the templates to be used to specify how environmental or social characteristics or sustainable investment objectives are achieved.

- For financial products making sustainable investment, requirements are laid out for the compliance of the "do no significant harm" principle in relation to the principle adverse impact indicators. In order to connect the SFDR "do no significant harm" principle and the Taxonomy minimum safeguards, the report must also cover information on whether the investments are aligned with the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights, including the principles and rights set out in the eight fundamental conventions identified in the Declaration of the International Labour Organisation on Fundamental Principles and Rights at Work and the International Bill of Human Rights.

► **Articles 5 and 6 Products under the Taxonomy Regulation:**

- The RTS (Chap 3) include specific requirements for financial products under Art. 5 and Art. 6 of the Taxonomy Regulation related to identification of the environmental objective(s) the financial product contributes to. The extent to which economic activities invested in qualify as environmentally sustainable must be shown in graphical representations of KPIs.

- The RTS (Chap 5) also lay out requirements for periodic disclosures by financial products where they are captured under Art 5 and 6 of the Taxonomy Regulation concerning the identification of environmental objective(s) the product contributes to and the extent to which the economic activities the product is invested in qualify as environmentally sustainable (shown in graphical representation of KPIs).

- **Product disclosures on website:** The RTS (Chap 4) detail the content and presentation of the information that financial market participants must publicly disclose on their website for these financial products. Disclosure must include a focus on the methodology and any screening criteria and data sources used, where and how information should be reported online, and a requirement to publish a two-page summary.
- **Periodic product-level disclosures:** Requirements for product-level periodic disclosure are laid out in Chap 5 of the RTS and use mandatory templates from Annexes 4 and 5:
  - Reporting should include how the financial product succeeded in meeting its environmental or social characteristics (Art. 8 Products) or attained its sustainable investment objective (Art. 9 Products). The disclosures require a historical comparison covering up to five reference periods and the disclosure of the top 15 investments made during a particular reference period.
  - Financial products that have sustainable investments must include information on how they have complied with the "do no significant harm" (DNSH) principle.
- **The principle of DNSH** was introduced in the Technical Expert Group Final Report of the EU Sustainable Finance Taxonomy:
  - Under the DNSH principle, economic activities that make a substantial environmental contribution to the climate change mitigation or adaptation must not cause significant harm to the other designated environmental objectives. These include:
    - sustainable use and protection of water and marine resources;
    - transition to a circular economy, waste prevention, and recycling;
    - pollution prevention and control; and
    - protection of healthy ecosystems.[82]

The PRI has produced a number of case studies applying the DNSH principles and examining its implications.[83]Private equity and real estate investors appear to have constructed the most robust DNSH analysis, given their oversight on building-specific projects and construction. However, many of the case studies point to a number of challenges, from sourcing available and comparable data to identifying and verifying DNSH activities to isolating the specific share of revenue affected by a controversy.

82 European Commission. 2020. *TEG Final Report on the EU Taxonomy*. Available at: https://ec.europa.eu/info/files/200309-sustainable-finance-teg-final-report-taxonomy_en

83 PRI. 2021. *EU Taxonomy Alignment Case Studies*. Available at: www.unpri.org/policy/eu-sustainable-finance-taxonomy/eu-taxonomy-alignment-case-studies

Listed investors recognized that DNSH can be applied in either quantitative or qualitative manners, potentially leading to inconsistent approaches when compared to cross-sections of investors. In addition, investors are applying myriad proxy data, ranging from systematically examining controversy incidents to individually reviewing company filings, sustainability reports, product brochures, and minimum safety standards submission to the Statistical Classification of Economic Activities in the European Community (NACE) to verify whether activities, products, or services qualify.[84] While data providers offer controversy datasets, these controversies should be considered in terms of materiality, whether they remain outstanding, and how they relate to specific NACE DNSH.

Last, because DNSH-related thresholds are ultimately self-determined, there is a diverse set of metrics and thresholds to apply either at the underlying investment or at the portfolio level.

Other Efforts to Develop Standards for ESG Investing

In addition to EU regulatory change, a number of other initiatives and organizations are also working towards developing ESG standards for different use cases aimed at different stakeholder groups.

CFA Institute has published the Global ESG Disclosure Standards for Investment Products.[85] These standards specify the type of information that investment managers should provide to clients and investors about how ESG information or ESG issues are incorporated into a fund's or strategy's objectives, investment process, and stewardship activities. They include disclosure requirements related to the:

1. systematic consideration of financially material ESG information in investment decisions;
2. use of an ESG index as an investment universe;
3. use of an ESG screening criteria;
4. use of ESG targets and constraints in portfolio construction;
5. benchmarking of ESG characteristics or performance;
6. incorporation of ESG information or ESG issues into stewardship activities; and
7. incorporation of specific environmental and social impact objectives alongside risk and return objectives.

The standards' disclosure-oriented approach was informed by current ESG regulatory trends, but the standards are not anchored by any one regionally-specific regulation or prescriptive standard. Hence, they have the advantage of being truly global standards for all markets and all types of asset classes, investment strategies, and ESG approaches. The standardization of investment product ESG disclosures is important because it helps to set common expectations about the type of information that investment managers should provide. Standardization also helps protect investors by helping them to better understand, evaluate, and compare investment products.

84 The EU uses NACE, derived from the French *Nomenclature statistique des activités économiques dans la Communauté européenne*, as its statistical classification of economic activities. For more information, visit: https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF
85 See https://www.cfainstitute.org/en/ethics-standards/codes/esg-standards.

The European Commission-supported European Financial Reporting Advisory Group (EFRAG) has set out recommendations to the European Commission for possible EU sustainability reporting standards that would complement the EU's corporate Non-Financial Reporting Directive (NFRD) with a multi-stakeholder reporting framework.[86]

The International Organization of Securities Commissions (IOSCO) is the international body that brings together the world's securities regulators and is recognized as the global standard setter for the securities sector. At COP 26, in collaboration with IOSCO, the International Financial Reporting Standards (IFRS) Foundation established a new International Sustainability Standards Board (ISSB) to develop globally adopted sustainability disclosure standards, incorporating the Value Reporting Foundation and the Climate Disclosure Standards Board within its structure.

This new body will facilitate the development of a comprehensive global baseline of high-quality sustainability disclosure standards. ISSB will have a multi-location structure to ensure that the differing needs of the various regions are reflected as the standards are developed. Similar to the role of the IFRS Accounting Standards in setting out how a company prepares its financial statements, IFRS Sustainability Disclosure Standards will set out how a company discloses information about sustainability-related factors.

14 APPLYING ESG SCREENINGS TO INDIVIDUAL LISTED AND UNLISTED COMPANIES AND COLLECTIVE INVESTMENT FUNDS

☐ **8.1.7** distinguish between ESG screening of individual companies and collective investment funds: on an absolute basis; relative to sector/peer group data

Listed Companies and Collective Investment Funds

Screening for ESG or other criteria, whether among individual securities or across collective investments funds, will yield different results depending on the methodology. Moreover, the emergence of dedicated or branded ESG investment funds has now made it necessary to examine how these funds differ in terms of ESG characteristics.

Broadly speaking, the PRI recognizes three main approaches to screening:

1. **Negative screening** represents the avoidance of the worst performers. Functionally speaking, an investor might apply screening towards:
   - sectors;
   - regions;
   - issuers;
   - business activities and practices;
   - product and services; and
   - even security types, such as certain commodities.

86 European Financial Reporting Advisory Group (EFRAG). 2021. *Proposals for a Relevant and Dynamic EU Sustainability Reporting Standard-Setting*. Available at: www.efrag.org/Lab2

2. **Positive screening** is investment into the best ESG performers relative to industry peers across, as in point 1, different criteria.
3. **Norms-based screening** applies existing normative frameworks in order to screen issuers against internationally-recognized minimum standards of business practice. Screening generally applies globally-recognized frameworks like treaties, protocols, declarations, and conventions, including:

   - the *UN Global Compact*;
   - the UN Human Rights Declaration;
   - the ILO's *Declaration on Fundamental Principles and Rights at Work*;
   - the Kyoto Protocol; and
   - the Organisation for Economic Co-operation and Development (OECD) *Guidelines for Multinational Enterprises.*

In addition, the PRI has outlined a sequence of six steps for when investors implement screening as an investment approach:[87]

1. **Identify client priorities**: Investors should clearly disclose the objectives of screening within fund documentation.
2. **Publicize clear screening criteria**: Investors should disclose screening approaches in contractual agreements, such as the investment management agreement (IMA).
3. **Introduce oversight**: Investors should establish an internal control or compliance function that:
   - oversees screening;
   - conducts reviews; and
   - considers any changes in screening criteria.
4. **Adapt investment process**: Investors may want to consider refining the screening approach with greater sophistication and/or flexibility consistent with the fund documentation. Depending on the desired portfolio exposure, investors may choose to employ absolute, threshold, or relative exclusion methodologies.
5. **Review portfolio implications**: Investors should regularly assess and review the implications of screening on the portfolio, including changes in exposure to volatility, tracking error, and common risk factors.
6. **Monitor, report, and audit**: Investors should implement process and data assurance control functions that are either internally or even externally (third party) assured.

Screening generally requires a quantitative lens as well as an ESG dataset that offers wide coverage of global securities. Morningstar, the retail fund distributor, now includes a sustainability rating for funds alongside its core fund evaluation. Its sustainability rating is based on ESG risk metrics derived from Sustainalytics company-level data,

87 PRI. 2020. *An Introduction to Responsible Investment: Screening.* Available at: www.unpri.org/an-introduction-to-responsible-investment/an-introduction-to-responsible-investment-screening/5834.article

applying the scoring methodology. Indeed, several other platforms have introduced ESG analytics aimed at measuring and grading both equities and fixed-income funds based on ESG criteria for end investors.[88,89]

For individual companies, screening on an absolute basis will automatically attribute low scores to certain industries and sectors depending on the criteria. Asset-heavy industries (and by association, companies within that industry or sector) that happen to be carbon emissions-intensive will likely score poorly on environmental metrics. This is useful for an investor to understand and quantify the exposure at risk within a portfolio of companies that produce high GHG emissions. For instance, if the price of carbon on the EU's Emissions Trading System (ETS) suddenly appreciates, a portfolio's exposure to such companies as utilities with a high dependency on coal-fired power generation will be at risk. This approach allows an investor to run simultaneous sensitivity analyses against ESG-related shocks, like the carbon price, to test the resilience and correlation of a portfolio.

However, this approach potentially sacrifices the benefit of a balanced portfolio relative to the market or benchmarks to which it is indexed to. In other words, an absolute values approach has the potential to not provide the context necessary to manage a diversified portfolio.

On the other hand, ESG screening premised on relative and peer-group datasets provides better context for building and maintaining a balanced, diversified portfolio. This approach potentially prevents wholesale exclusions of poorly-rated industries like mining on absolute value-based data, which may represent not only a meaningful driver of the economic cycle but also a significant weighting within main indexes. As we have discussed before, exclusions of this nature contribute to lower diversification and, consequently, higher active risk within a portfolio.

Despite the clear organizational benefits of ESG screening, whether on an absolute or relative basis, its approach does carry several challenges. One common criticism is its reductive approach. In other words, its quantitative measure does not consider softer forms of ESG, such as stewardship and engagement activities. In fact, an investor whose portfolio focuses on long-term stewardship opportunities in poorly rated ESG companies in order to improve performance will likely suffer from the poor optics of these companies at the portfolio level.

Exhibit 33 and Exhibit 34 depict two screens of global equities funds.

Exhibit 33 captures the top ten performing funds on a one-year basis, which are classified as being a 'sustainable investment' by Morningstar. The sustainable investment label indicates if the fund has prospectus language that explicitly calls out its focus on:

- sustainability;
- impact; or
- specific environmental, social, and/or governance factors in its investment process.

A sustainable investment-tagged fund may take a pro-active stance by selectively stating that they invest in, for example, low carbon or fossil fuel-free companies or firms that seek to address gender and diversity disparities in their workforce.

88 Benjamin, J. 2019. "Lipper Plans ESG Scoring System for Mutual Funds." *Investment News* (12 March). Available at: www.investmentnews.com/lipper-plans-esg-scoring-system-for-mutual-funds-78547

89 Iacurci, G. 2018. "UBS Global Wealth Management Will Give ESG Scores to Funds." *Investment News* (3 December). Available at: www.investmentnews.com/ubs-global-wealth-management-will-give-esg-scores-to-funds-77223

Despite the sustainable investment label, note the variability in the funds' respective sustainability ratings, which are based on ESG risk, as scored independently and quantitatively by Morningstar. Star ratings are a measure of a fund's risk-adjusted return against its peer group.

Exhibit 33: Morningstar-Ranked Global Equities Funds (by Sustainable Fund by Prospectus and One-Year Performance)

Rank	Fund Standard Name	AUM USD (mn)	Total Return Base Annualised (%)			Sustainable Fund by prospectus	Star Rating	Sustainability Rating
			One Year	Three Years	Five Years			
1	NEI Global Dividend	393	51.1	9.0	9.7	Yes	* * * *	Above average
2	Berenberg Sustainable World Equities	31	44.4	--	--	Yes	--	Average
3	Artisan Global Discovery	3	42.9	--	--	Yes	--	Below average
4	DNB Fund Global ESG	16	42.3	14.4	12.7	Yes	* * *	Average
5	Kames Global Sustainable Equity	130	41.0	16.3		Yes	* * * * *	Below average
6	Janus Henderson Horizon Global Sustainable Equity	199	39.6	14.1	11.3	Yes	* * * * *	High
7	Morgan Stanley INVF Global Opportunity	9,492	38.7	21.5	19.9	Yes	* * * * *	Above average
8	NN Duurzaam Aandelen Fonds	2,196	38.2	12.1	10.8	Yes	* * *	Above average
9	NN (L) Smart Connectivity	182	37.7	18.9	14.1	Yes	* * *	High
10	Öhman Global Marknad Hållbar	4,597	37.6	--	--	Yes	--	High

Source: Morningstar, 31 December 2019; Sustainable Fund by Prospectus as of 31 March 2020.[90]

Another issue that may exist is the award of a high sustainability rating for a fund that may in fact not have any of the essential ingredients to ESG integration — such as an ESG policy or systematic process — embedded within its process. This fund may be highly ranked on a coincidental basis by the fact its portfolio reflects low exposure to carbon-intensive industries or high ESG-rated companies purely by chance. This is not an explicit example of greenwashing as the investment manager is not intentionally over-representing their ESG credentials. But this misalignment or mischaracterization does have the potential to confuse the market, particularly for retail.

Exhibit 34 captures the top ten-performing funds on a one-year basis that have received a five-star rating by Morningstar. Note the coincidental ratings between several five-star-rated funds with correspondingly high sustainability ratings, corresponding to low ESG risk.

90 These are examples of fund searches within Morningstar, which is the largest platform. It is a database of funds that you can search according to different criteria. The link to this database is: www.morningstar.co.uk/uk/screener/fund.aspx#?filtersSelectedValue=%7B%22sustainabilityRating%22:%7B%22id%22:%225%22%7D%7D&page=1&perPage=10&sortField=legalName&sortOrder=asc

Exhibit 34: Morningstar-Ranked Global Equities Funds (by Star Rating and One-Year Performance)

Rank	Fund Standard Name	AUM USD (mn)	Total Return Base Annualised (%)			Sustainable Fund by prospectus	Star Rating	Sustainability Rating
			One Year	Three Years	Five Years			
1	Robeco QI Global Developed Conservative Equities Fund	373	17.1	10.6	12	Yes	* * * * *	Average
2	Nordea 1 – Global Portfolio Fund	160	15.3	17.1	14.9	No	* * * * *	Average
3	Nordea 1 – Global Opportunity Fund	261	15.3	15.5	13	No	* * * * *	Average
4	Double Dividend Equity Fund	--	15.2	11.4	11.2	Yes	* * * * *	High
5	SPP Global Solutions	290	15.1	15.9	14.3	Yes	* * * * *	High
6	Ethos Fund – Ethos Global Equities	177	14.9	16.6	14.5	--	* * * * *	High
7	Lindsell Train Global Equity Fund	11,043	14.7	20.1	21.9	--	* * * * *	High
8	Davy Global Brands Equity Fund	--	14.4	10.2	11	--	* * * * *	Above average
9	Mirova Global Sustainable Equity Fund	764	14.3	13.7	13.4	Yes	* * * * *	High
10	Amundi Funds Global Equity Conservative	251	14.3	10.2	10.5	No	* * * * *	Below average

Source: Morningstar, 8 October 2019; Sustainable Fund by Prospectus as of 31 March 2020.[91]

Unlisted Companies and Collective Investment Funds

Despite its widespread use in listed markets, screening can also be employed in the unlisted or private markets with many of the same principles and approaches applied. However, private markets and companies bring with them unique challenges. Chief among these is data: The capability to compare an investee company against cross-sectional competitor data or wider industry and sector data is often less robust because of lower degrees of disclosure and reporting.

MANAGING THE RISK AND RETURN DYNAMICS OF AN ESG INTEGRATED PORTFOLIO: OPTIMIZING PORTFOLIOS FOR ESG CRITERIA, STRATEGIES, OBJECTIVES, INVESTMENT CONSIDERATIONS, AND RISKS

15

☐ **8.1.8** explain how ESG integration impacts the risk–return dynamic of portfolio optimization

Practitioners in finance are increasingly benefiting from recent research that examines the relationship between ESG integration and its effects on risk–return dynamics. However, much of it focuses on the correlation between a particular ESG criterion and individual securities rather than the effects of ESG across an entire portfolio.[91] Some research has emerged, suggesting a correlation between ESG integration and greater diversification benefits,[92] but this is largely focused on equities strategies; there is little to point at how to optimize portfolios for ESG and measure the risk–return compromise.

ESG integration should not be seen as detrimental to the risk–return dynamic of portfolio optimization. Rather, it should be understood as simply another factor that potentially may enhance the risk and return profile. Like other ESG considerations, its construction and weighting in the context of the overall portfolio ultimately rests on how high a priority the investor assigns it, relative to other factors. Because of this, portfolio optimization is an increasingly important means to apply ESG criteria. Nonetheless, investors must weigh the trade-offs when quantitatively applying constraints to optimize for ESG outcomes within a portfolio. The process of portfolio optimization requires defining an upper and lower bound for a given variable and then applying it on an absolute or benchmark relative basis.

ESG optimization via constraints distinguishes itself from exclusionary screening in that it does not apply a fixed decision on specific securities. Rather, it is organizing the securities by their individual ESG profile to solve a specific ESG optimization at the overall portfolio level.

Exhibit 35 illustrates an example of a portfolio optimized for any given carbon emissions level below the fund's benchmark (BM). Because of the absolute nature of the data and more standardized reporting metrics, environmental data are generally easier to optimize in portfolios. Applied as a linear constraint in optimization, it demonstrates how the holdings overlap measured against an optimal portfolio that does not have any carbon restriction decreases as constraints become increasingly stringent across the x-axis.

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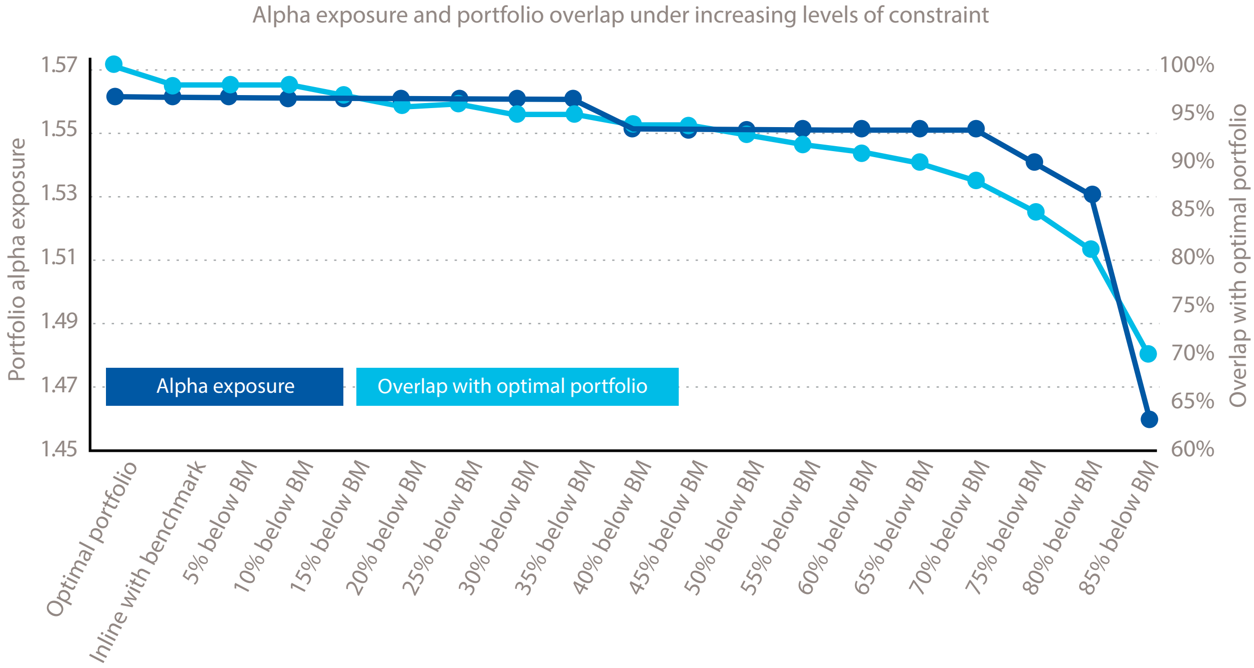
91 Bouslah, K., L. Kryzanowski, and B. M'Zali. 2011. *Relationship between Firm Risk and Individual Dimensions of Social Performance*. Proc. of the Annual Conf. of the Administrative Science Association of Canada, Montreal, Canada.

92 Hoepner, A. G. F. 2010. "Portfolio Diversification and Environmental, Social or Governance criteria: Must Responsible Investments Really Be Poorly Diversified?" *Social Science Research Network Electronic Journal* (May). Available at: www.researchgate.net/publication/228231974_Portfolio_Diversification_and_Environmental_Social_or_Governance_Criteria_Must_Responsible_Investments_Really_Be_Poorly_Diversified \

Exhibit 35: The Impact of Carbon Constraints on Portfolio Alpha Exposure and Optimality



Sources: Man Numeric and Trucost.[93]

Optimization is by no means confined to carbon data. Portfolios may seek to optimize broader ESG datasets taken from third-party vendors relative to active risk. Again, though, it is important to understand that targeted exposure that requires tighter constraints may likely result in an increase in deviation from an optimal portfolio. However, greater or lesser degrees of skewness in a particular ESG dataset may provide multiple paths to realizing the investor's targeted exposure. To this end, optimization strategies can design a fund to target either end of the distribution of a given ESG dataset. That might produce a strategy that solely invests in the top quartile of funds, or it may mean excluding the bottom quartile of companies based on ESG performance while understanding the impact of the constraint relative to portfolio optimality. It is worth highlighting that CFA Institute recently published *Climate Change Analysis in the Investment Process,* which includes a collection of case studies applying climate analysis to different asset classes and strategies.[94]

Indexes are increasingly optimized for a given degree of ESG improvement while solving a targeted tracking error relative to its core benchmark. It should be noted that optimizing for broader, more subjective ESG data — which commonly operate on a sector-relative ratings basis — may introduce higher active risk depending on the dataset used. For example, a company in the oil and gas sector may achieve a high environmental rating because of lower carbon emissions intensity relative to its sector peers. However, environmental data by itself — measured as tons of carbon emissions — will produce a greater absolute carbon exposure risk to a portfolio in the context

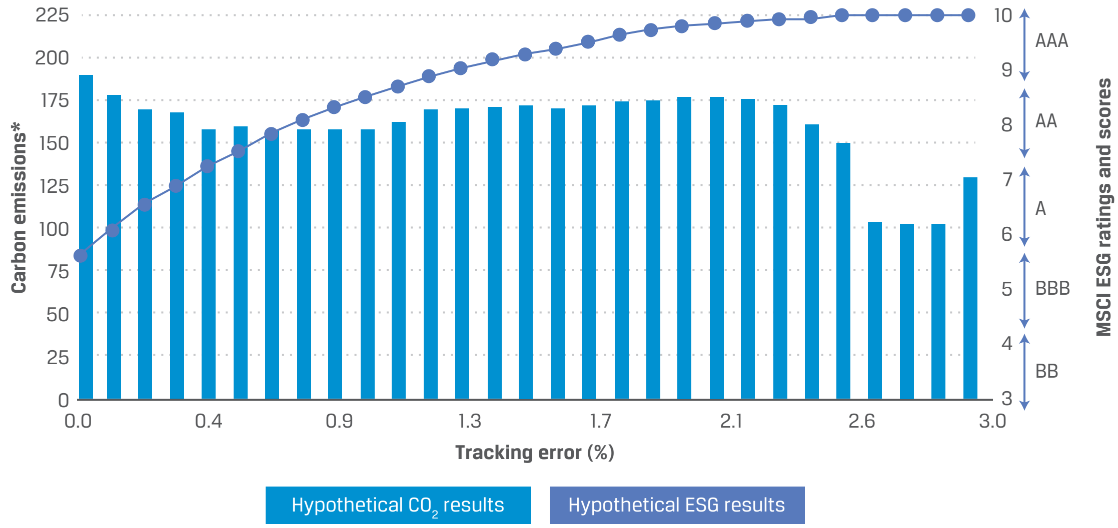
93 Man Group. 2019. *ESG Integration – No Silver Bullet*. Available at: www.man.com/maninstitute/esg-integration-no-silver-bullet

94 CFA Institute. 2020. *Climate Change Analysis in the Investment Process*. Available at: www.cfainstitute.org/en/research/industry-research/climate-change-analysis

of the market overall. Equally, a company — for example, an asset light company in the financial services sector — might have a poor ESG rating within its sector while simultaneously producing a low absolute carbon intensity in the context of the market.

Not surprisingly, portfolios that optimize for multiple factors — particularly a combination of absolute data and subjective rankings — may have to accept higher active risk to achieve both targets. Under this simulation, a portfolio manager may choose to optimize the portfolio to achieve the highest MSCI ESG ratings while reducing carbon emissions (100 to 150 basis points [bps]) with an associated increase to tracking error of 220 to 300 bps. A more conservative approach that seeks to minimize tracking error might instead target a tracking error of 150 to 200 bps, which achieves top ESG scores and a higher carbon emissions reduction.

Exhibit 36: Comparing Tracking Error, ESG Ratings, and Carbon Emissions



Sources: MSCI and BlackRock calculations as of 30 November 2017.[95]

Where Exhibit 35 depicts a portfolio optimized solely around carbon constraint, and Exhibit 36 shows an ESG-optimized portfolio and its hypothetical effects on both ESG ratings and carbon emissions/tons against tracking error to the MSCI World. The trajectory suggests some correlation between incrementally higher ESG scores and lower emissions, but this is more pronounced over the first 100 bps of tracking error. This correlation gradually diminishes as an ESG-optimized portfolio rebalances to underweight the tail of companies that are both lower ESG scoring and higher carbon-emissions intensive. While an ESG-optimized portfolio can carry early, advantageous effects when taking into account a combination of absolute carbon emissions data and subjective ESG rankings, investors should recognize the trade-offs against drift in tracking error.

95 BlackRock. 2019. *Creating a Sustainable Core: Balancing ESG and Risk in Index Portfolios*. Available at: www.blackrock.com/institutions/en-gb/insights/investment-actions/balancing-esg-and-risk-in-index-portfolios

16 ESG STRATEGIES, OBJECTIVES, INVESTMENT CONSIDERATIONS, AND RISKS: FULL ESG INTEGRATION, EXCLUSIONARY SCREENING, AND POSITIVE ALIGNMENT

☐ **8.1.9** evaluate the different types of ESG analysis/SRI investment in terms of key objectives, investment considerations, and risks: full ESG integration; exclusionary screening; positive alignment/best-in-class; active ownership; thematic investing; impact investing; other

ESG integration focuses on measurability and comparability, often applying those tools in an iterative engagement with corporate management. PRI defines ESG integration as:

> *The systematic and explicit inclusion of material ESG factors into investment analysis and investment decisions.*[96]

While this definition is aimed at equity investors, its fundamental principle can be applied across most asset classes and strategies. In other words, ESG integration should be systematic in nature within the portfolio management process rather than applied as an ad-hoc exercise. This means that ESG, both as an investment framework and as an embedded process, should govern portfolio construction and management alongside other investment selection and risk management evaluation processes (such as financial, valuation, and factor-exposure analytics). This enables investors to better identify, assess, and quantify the materiality of ESG risks and ultimately understand the sensitivities and potential shocks within their portfolio.

The traditional argument for integrating ESG analysis has centered on its risk mitigation ability. Towards this end, negative screening seeks to avoid or minimize exposure to sectors that are more prone to risks, such as regulatory risks within the tobacco sector or economic risks like fossil fuel-related stranded assets.

Full ESG Integration

Full ESG integration enlarges the scope of ESG analysis beyond the focus of risk mitigation. It recognizes that ESG analysis will produce a better understanding of both risk and opportunity of both losers and winners.

Full ESG integration represents the systematic process of fully embedding financial and ESG analysis into investment decision making and portfolio management. It examines the materiality of ESG information across different investment horizons in order to identify portfolio risks as well as investment opportunities.

As defined by Robert Eccles and Mirtha Kastrapeli, full ESG integration is:

> *Investing with a systematic and explicit inclusion of ESG risks and opportunities in investment analysis.*[97]

Full ESG integration distinguishes itself by creating a circular process of financial and ESG analysis and iterative engagement activities with company management, concluding with these effects ultimately integrated into the valuation of a company.

96 PRI. 2019. *A Practical Guide to ESG Integration for Equity Investing*. Available at: www.unpri.org/listed-equity/a-practical-guide-to-esg-integration-for-equity-investing/10.article

97 BlackRock. 2019. *Creating a Sustainable Core: Balancing ESG and Risk in Index Portfolios*. Available at: www.blackrock.com/institutions/en-gb/insights/investment-actions/balancing-esg-and-risk-in-index-portfolios

Specialist investors often differentiate full ESG integration from the more general practice of ESG incorporation, which encompasses varying and often less formal degrees of ESG.

Fully integrated ESG strategies often combine quantitative approaches in order to exploit ESG datasets alongside fundamental tactics, like active engagement with company management at a securities level. At a portfolio level, the combination of quantitative and fundamental ESG integration provides an objective means to overlay ESG considerations with underlying, engagement-oriented interactions that help to reinforce and communicate both the stock selection and portfolio management process to end investors.

These ESG investment strategies often face fewer constraints than other ESG strategies impose. They tend not to be rules-based or box-ticking exercises. If external ESG ratings are used, they inform or complement the investment decision-making process rather than drive securities selection themselves as, say, a best-in-class strategy would do. Moreover, they carry an expectation that their ESG research and integration is far more rigorous and systematic, particularly their level of active engagement with corporate management. For these reasons, their portfolios tend to be more concentrated and composed of high-conviction holdings based primarily on internal investment research.

The following (Exhibit 37) provides an example of a holistic approach that combines negative screening and a more rigorous, ESG-driven approach that distinguishes both the financial and ESG profiles.

Exhibit 37: Negative Screening Combined with ESG Analysis

However, full ESG integration does face its own challenges. Because it depends on deep-rooted, often proprietary ESG research, it often lacks the easily understandable optics — for instance, a high blended ESG portfolio score or low carbon exposure — that screened and best-in-class approaches provide. For these reasons, full ESG integration strategies often take greater efforts to:

- evidence internal and external research resources;
- document how ESG is embedded, typically in a process slide;
- track and report on engagement activities with company management;

- include portfolio exposure and weightings into sustainability themes like the SDGs;
- provide positive impact measurements of the portfolio against metrics like resource efficiency, water, and energy consumption; and
- support the process with investment case studies.

LOW BLENDED ESG SCORE

If a full ESG integration strategy produces a low blended ESG score or higher than average carbon exposure, the investment team should be fully prepared to explain the logic for this circumstance. They may demonstrate, through their engagement with company management, why the market has mischaracterized a company's ESG profile or why the market has misjudged the underlying rate of improvement based on their proprietary ESG data.

Exclusionary Screening

Exclusionary screening is the oldest and simplest approach within responsible investment. Emerging under the moniker of **socially responsible investment (SRI)**, the original objective was to impose a set of values or preferences to screen through an ethical or normative framework a portfolio's exposure to specific sectors. For example, a 'sin stocks' screen would typically exclude exposure in a portfolio to corporate issuers — stocks and bonds — in sectors like tobacco, pornography, gambling, and weapons.

For example, a pension plan belonging to a religious order will often exclude investment in gambling-, alcohol-, and pornography-related securities, while a pension fund that represents healthcare workers may exclude investment in the tobacco sector.

This approach has evolved from values-based screening to increasingly sophisticated approaches that now negatively screen across a much larger set of ESG criteria. Exclusions-based approaches continue to represent the large portion of dedicated AUM. This growth in exclusions reflects an expansion from traditionally screened areas (such as controversial arms and munitions) to more recently adopted areas that include tobacco and much of the energy extraction complex (including thermal coal, oil sands, and unconventional oil and gas).

It is important to understand that the degree of exclusions may carry significant implications from a portfolio management perspective — not just in terms of higher tracking error and active share, but also in unintended factor exposure. Investors (particularly asset managers) are generally more reluctant to adopt exclusions. With no beneficiaries directing a specific worldview and often a very diverse base of investors with exclusion preferences that may conflict, asset managers tend to default to as unconstrained an investment universe as possible.

Several other historical and structural drivers are behind this tendency towards sector- and market-neutrality. Within this approach, they will often manage segregated investment mandates for asset owners that prescribe exclusions. Within the alternative, specifically hedge fund, space, managers will generally have a preference for as unconstrained an investment universe as possible in the interest of potential available alpha generation, both on the long and the short side. The argument most often used for shorting stocks that would otherwise be on exclusions lists is a classical academic argument: that shorting securities potentially raises the cost of capital for firms in areas commonly excluded.[98]

Positive Alignment or Best-in-Class

Positive alignment or best-in-class represents, to some degree, the inverse of exclusionary screening. It employs a given ESG rating methodology to identify companies with better ESG performance relative to its industry peers. This approach is typically expressed by investing in the top decile, quintile, or quartile based on prescribed ESG criteria. The consistency of the ranking methodology and the portfolio's position-weighted exposure to higher-ranked companies are vital for this class of ESG strategies.

The diversity of ESG ratings methodologies and lack of ratings convergence are a key challenge these strategies face. They may score highly based on the portfolio manager's methodology but more poorly on another set of ESG metrics used by the fund's investor or, for instance, a fund distribution platform like Morningstar. Hence, best-in-class portfolios will be tested on transparency as well as consistency.

Because of this rating or score-imposed constraint, best-in-class strategies will generally have much less latitude to perform and apply proprietary research on lower-scoring companies that happen to exhibit positive momentum or improvement in their ESG metrics. For example, recent research has begun to demonstrate a correlation between positive momentum in ESG scores and financial returns.[99]

Finally, a common criticism for best-in-class ESG strategies is that their focus yields diminishing ESG returns with little opportunity to demonstrate incremental gains via active ownership efforts.

17 ESG STRATEGIES, OBJECTIVES, INVESTMENT CONSIDERATIONS, AND RISKS: THEMATIC AND IMPACT INVESTING

☐ **8.1.9** evaluate the different types of ESG analysis/SRI investment in terms of key objectives, investment considerations, and risks: full ESG integration; exclusionary screening; positive alignment/best-in-class; active ownership; thematic investing; impact investing; other

Thematic Investing

Thematic investing targets sustainability-aligned themes as a means to construct a portfolio. While often designed around long-term, resource scarcity-oriented themes, such as water or clean energy, thematic funds may also focus on sustainable sectors

98 Hvidkjær, S. 2017. *ESG Investing: A Literature Review*. Available at: https://dansif.dk/wp-content/uploads/2019/01/Litterature-review-UK-Sep-2017.pdf

99 Dunn, J., S. Fitzgibbons, and L. Pomorski. 2018. "Assessing Risk through Environmental, Social and Governance Exposures." *Journal of Investment Management* 16 (1). Available at: www.aqr.com/Insights/Research/Journal-Article/Assessing-Risk-through-Environmental-Social-and-Governance-Exposures

like healthcare. This approach may be expressed both fundamentally and quantitatively through active quant strategies or more passive vehicles, such as exchange-traded funds (ETFs).

Common sustainable themes are:

- clean energy;
- water;
- demographic change; and
- healthcare.

Addressed in the impact investing section that follows, frameworks like the SDGs increasingly provide a way to simultaneously invest across various sustainable themes for greater diversification.

The concentrated nature of thematic investing — particularly if it is based around a single theme like clean energy — sacrifices the benefits of portfolio diversification. The sectoral bias of the portfolio will drive the underlying factor exposure of the fund, potentially carrying relative performance and tracking error implications. Investors in thematic funds should be aware of the potential volatility and higher or lower associated risk.

Historically, clean energy thematic funds experienced greater volatility due to a number of factors, including:

- exposure to changing regulatory incentives (subsidies);
- a scarcity premium that reflected capital flows into and out of the sector; and
- poor cash flow profiles.

Hence, clean energy tends to be a pro-cyclical growth sector that underperforms when capital spending and the economic cycle contract. As an opposite example, water funds have a much more stable, regulatory outlook generally underpinned by strong cash flow and cash conversion. Often used as hedges against inflation, they will underperform during expansions in economic cycles when investors rotate towards growth.

Impact Investing

Although **impact investing** is attracting strong AUM flows and enjoying greater visibility due to the SDGs framework, impact investment has a long legacy. As discussed in Chapter 1, impact investing describes investments made with the intention of producing positive, measurable socio-environmental impacts without sacrificing financial returns.

Impact investors represent diverse interests and expectations for financial returns. More narrowly, mission investments are made by foundations and endowment funds to fulfill charitable objectives. They have commonly employed impact strategies with the aim of improving living standards while delivering market returns or even sub-market, concessional returns.

Impact strategies may include the development of low-cost community housing or critical waste and water infrastructure. Because of the prioritization of socio-economic objectives alongside, or above, financial returns, it is vital for impact strategies to build out and review reporting frameworks. The emergence of frameworks like the SDGs has popularized and broadened impact investing beyond its historical roots to different assets, including listed securities. Within this mandate, investment strategies align themselves to some portion of the SDG's 17 themes (see Exhibit 38) by providing portfolio exposure to individual themes and reporting on the fund's SDG impacts and improvement in any underlying KPI, as defined by the SDG text.

Exhibit 38: United Nations SDGs

Source: United Nations.[100]

However, it should be noted that reporting and measuring SDG methodologies vary widely among data providers. For instance, some providers measure SDG impact based on alignment to a firm's products as well as the operational aspect, while other data measures align more broadly as a percentage of revenue exposure.

As an example, one form of portfolio analysis and reporting against the SDGs compares:

- fund exposure relative to benchmark exposure;
- overall, sectoral, and thematic contribution by the SDGs;
- performance metrics by underlying security; and
- a more detailed breakdown of how the provider classifies SDG contribution.

In this case, the data provider, Vigeo Eiris[101], an affiliate of Moody's, recognizes the individual alignment of the product and of issuer behavior alongside controversies.

Again, though, this form of reporting is generally designed for portfolio managers of investment mandates where the SDGs are either an explicit or implicit feature. Reporting in a listed context will generally lack the granularity and depth of reporting of conventional, unlisted impact portfolios. Nonetheless, it serves to support thematically consistent portfolio exposure and to signal commitment to reporting transparency. Its purpose is not to attribute investment returns in any causal form nor to add to the portfolio's risk exposure in any quantitative manner.

It is worth noting that applied approaches of the SDGs in certain asset classes, listed equities, for example, are more challenged in evidencing the presence of additionality and intentionality. A portfolio of listed securities should take efforts to clarify how

100 United Nations. 2020. *Sustainable Development Goals Knowledge Platform*. Available at: https://sustainabledevelopment.un.org (Please note that the content of this publication has not been approved by the United Nations and does not reflect the views of the United Nations or its officials or Member States.)

101 Vigeo Eiris. 2019. *Portfolio Analysis: Summary Report – SDGs* (March). Available at: http://vigeo-eiris.com/

the SDGs come into play regarding fund exposure in developed markets. Investors may choose to emphasize such areas as the portfolio's exposure across various metrics that are aligned with the SDGs. This would include exposure to:

- relevant product and services (revenue) exposure;
- regions, notably developing economies that the SDGs were originally designed for;
- sectors, such as water utilities, renewable energy, and healthcare;
- the relevance of supply chains;
- the additionality benefits of one or more of the SDGs, which may manifest in KPIs, such as job formation, renewable energy power generation, and potable water production; and
- additional sustainable forms of agriculture and aquaculture.

It is worth highlighting that new analytical approaches of the SDGs are emerging because of its tremendous adoption as an investment framework. For example, the Sustainable Development Investments Asset Owner Platform (SDI AOP) — a collective of asset owners including APG, AustralianSuper, British Columbia Investment Management Corporation (BCI), and PGGM — have established an artificial intelligence-driven platform that synthesizes SDG-related contribution information for investors. The AOP dataset is unique in that it covers more than 12,000 assets across all asset classes.

Active ownership "is the use of the rights and position of ownership to influence the activities or behaviour of investee companies."[102] Its investment approaches employ a number of different shareholder strategies aimed at driving positive change in the way a company is governed and managed. In effect, it takes the opposite approach of negative screening, as it views the act of divestment alone as incapable of collectivizing and directing investor preferences towards change.

Active ownership may leverage direct engagement between investor and company management, collaborative engagement where investors collectively drive for change, filing shareholder proposals and resolutions as well as a proxy voting strategy that is driven by a clear agenda to:

- encourage greater disclosure;
- improve transparency; and
- increase stronger awareness around ESG issues.

Companies that trade at meaningful discounts to their peer group or whose debt is distressed often have poor ESG metrics. Through influencing companies' behavior, the strategy is based on the theory that a linkage exists between improvements in corporate ESG metrics and the re-rating in equity value or credit through tighter spreads.

Academic support for the efficacy of active ownership is relatively sparse. While there are numerous case studies around company-specific engagements, there is more limited data measuring prolonged engagements and outcomes on their effects across dedicated active ownership strategies.

EXERCISE

Place yourself in the position of a large UK pension fund that is re-evaluating its pension strategy and looking to better integrate ESG investing.

102 PRI. 2016. *A Practical Guide to Active Ownership in Listed Equity*. Available at: www.unpri.org/listed-equity/a-practical-guide-to-active-ownership-in-listed-equity/2717.article

Exhibit 39: SDG Intensity Profile of Portfolio and Benchmark

	No Poverty	Zero Hunger	Good Health and well-being	Quality Education	Clean Water and Sanitation	Affordable and Clean Energy	Industry, Innovation, and Infrastructure	Sustainable Cities and Communities	Responsible Consumption and Production	Climate Action	Life Below Water	Life on Land
Communication Services				0.09%		0.00%	0.24%					
Consumer Discretionary			0.11%	-0.01%		1.11%	0.02%	0.00%				
Consumer Staples		-0.04%	0.02%			0.00%						
Energy												
Financials						0.04%	0.04%					
Health Care		0.27%	12.80%	-0.39%	0.09%		-0.40%	-0.02%	0.16%		-0.48%	
Industrials		-0.05%	-0.23%	0.08%	-0.11%	1.44%	-0.46%	-0.01%	0.02%	-0.08%	0.08%	-0.01%
Information Technology		-0.01%	-0.06%	-0.02%	-0.01%	-0.24%	-0.01%	-1.00%			-0.03%	
Materials		-0.10%	-0.06%		0.02%	0.14%		0.02%	0.04%		0.00%	0.05%
Real Estate						-0.11%						
Utilities					0.31%	-0.06%			0.00%		0.00%	

SDG Active Intensity by Sector

** Simulation equal-weighted portfolio across all assets under coverage versus the STOXX Global 1800 as a benchmark.*

Source: Entis – SDI Asset Owner Platform. 2021. Available at: www.qontigo.com

For UK defined contribution (DC) plans, annual manager fees are capped at 75 bps, which pays for:

- management;
- performance; and
- the administration costs.

This fee is often too low to attract alternative active fund managers or alternative managers in areas like real estate, hedge funds, and infrastructure.

Considering these problems, how would you begin building out the ESG capabilities into the pension fund's process, given the fee limitations?

- What ESG strategies discussed in this chapter will likely not be suitable?
- What ESG analytics can be embedded in the pension fund's overall risk management process?
- What is the best way for the pension fund to build a comprehensive understanding of manager ESG capabilities?
- What area of ESG risk should the pension fund focus on developing?
- What ambitions should the pension set for engagement and stewardship by its underlying managers?

18 INTEGRATING ESG IN PASSIVE PORTFOLIOS AND ESTABLISHED DATASETS

☐ **8.1.10** describe approaches to managing passive ESG portfolios

The shift from active to passive investment strategies represents a substantial change in the allocation and composition of overall AUM. Indeed, passively managed assets have more than doubled as a percentage of total global AUM in the last decade.[103] The shift is even more pronounced in the United States, where assets in passively managed ETFs and mutual funds have increased from USD220 bn (GBP158 bn) to USD7 tn (GBP5 tn),[104] representing roughly 43% of the value of the S&P 500.[104]

Passive investment differentiates itself from actively managed strategies by the nature of its low costs and the simplicity of a determined, rules-based approach. Likewise, passive ESG approaches also seek to provide low cost alternatives to more expensive, actively managed investment funds. However, the relative nascent state of ESG and its data costs potentially mean that ESG passive strategies may run at a slightly higher fee structure relative to traditional passive strategies, although still significantly lower than actively managed ESG funds.[105]

103 Sushko, V., and G. Turner. 2018. "The Implications of Passive Investing for Securities Markets." *BIS Quarterly Review* (11 March). Available at: www.bis.org/publ/qtrpdf/r_qt1803j.htm

104 McCabe, P. 2018. "The Shift from Active to Passive Investing: Potential Risks to Financial Stability? Harvard Law School Forum on Corporate Governance and Financial Regulation." *Harvard Law School Forum on Corporate Governance* (29 November). Available at: https://corpgov.law.harvard.edu/2018/11/29/the-shift-from-active-to-passive-investing-potential-risks-to-financial-stability

105 PRI. 2022. "How Can a Passive Investor Be a Responsible Investor?" Available at: https://www.unpri.org/passive-investments/how-can-a-passive-investor-be-a-responsible-investor/4649.article

Noteworthy examples of asset owners circumventing actively-managed ESG strategies and directly investing or independently creating passive ESG strategies include the following:

- **California State Teachers' Retirement System (CalSTRS)** employs indexes to meet ESG objectives and achieve lower cost and efficiency for its beneficiaries, including the MSCI ACWI Low-Carbon Target Index.[106]
- Taiwan's **Bureau of Labour Funds (BLF)** pension scheme selected the FTSE4Good TIP Taiwan ESG Index for a five-year passive mandate.[107]
- Japan's **Government Pension Investment Fund (GPIF)**, the world's largest pension fund, is well known for its use of ESG-dedicated indexes. This follows the creation of the Nikkei 400, which linked corporate governance reforms under Prime Minister Shinzo Abe to improved capital efficiency metrics like return on equity (ROE). GPIF's indexes include global and domestic environmental strategies, which overweight carbon-efficient companies, as well as a socially-oriented index, the MSCI Japan Empowering Women Index. Exhibit 40 illustrates the diversity of approaches and sources that GPIF has employed within its passive investment strategy.

Exhibit 40: Indexes Adopted by Japan's GPIF

	FTSE Blossom Japan Index	MSCI Japan ESG Select Leaders Index	MSCI Japan Empowering Women Index (WIN)	S&P/JPX Carbon Efficient Index	S&P Global Ex-Japan LargeMidcap Carbon Efficient Index
Index concept	This uses the ESG assessment scheme used in the FTSE4Good Japan Index Series, which has one of the longest track records globally for ESG indexes. As a broad ESG index, it selects stocks with high absolute ESG scores and adjusts industry weights to neutral.	This is a broad ESG index that integrates various ESG risks into today's portfolio. It is based on MSCI ESG Research used globally by more than 1,000 clients. The index is comprised of stocks with relatively high ESG scores in each industry.	MSCI calculates the gender-diversity scores based on information disclosed under the Act on Promotion of Women's Participation and Advancement in the Workplace and selects companies with higher gender diversity scores from each sector. The first index designed to cover a broad range of factors related to gender diversity.	Based on carbon data provided by Trucost. S&P Dow Jones develops the index methodologies. The indexes are designed to increase index weights of the companies that have low carbon-to-revenue footprints (annual GHG emissions divided by annual revenues) and actively disclose carbon emission information.	
Subject of investment	Domestic equity	Domestic equity	Domestic equity	Domestic equity	Foreign equity
Parent index (number of stocks)	FTSE JAPAN INDEX (513 stocks)	MSCI JAPAN IMI TOP 700 (694 stocks)	MSCI JAPAN IMI TOP 500 (496 stocks)	TOPIX (2,124 stocks)	S&P Global ex-Japan Large-Mid Index (2,556 stocks)

106 Mussuto, M. 2018. *CalSTRS Green Initiative Task Force Report Evaluates ESG Risks*. Available at: www.calstrs.com/news-release/calstrs-green-initiative-task-force-report-evaluates-esg-risks

107 FTSE Russell. 2018. *Taiwan Bureau of Labor Funds Selects FTSE4Good TIP Taiwan ESG Index for $1.4 Billion Mandate*. Available at: www.ftserussell.com/press/taiwan-bureau-labor-funds-selects-ftse4good-tip-taiwan-esg-index-14-billion-mandate

	FTSE Blossom Japan Index	MSCI Japan ESG Select Leaders Index	MSCI Japan Empowering Women Index (WIN)	S&P/JPX Carbon Efficient Index	S&P Global Ex-Japan LargeMidcap Carbon Efficient Index
Index constituents	152	268	213	1,738	2,199
AUM (JPY bn)	642.8 (GBP 4.4 bn)	804.3 (GBP 5.5 bn)	474.6 (GBP 3.2 bn)	387.8 (GBP 2.6 bn)	1,205.2 (GBP8.2 bn)

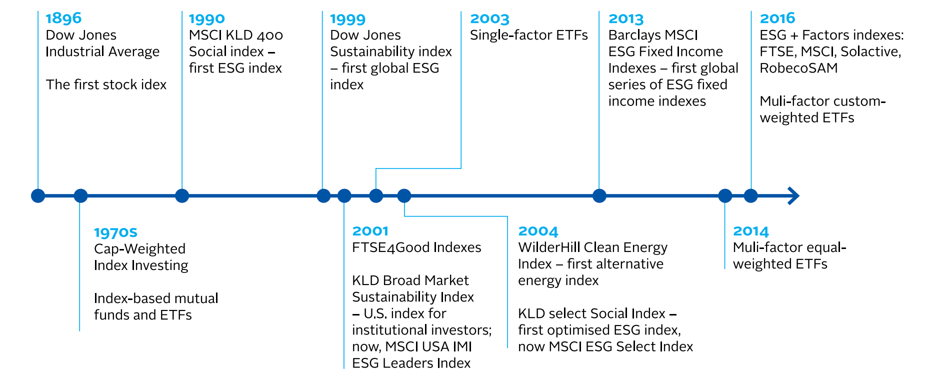
Sources: GPIF and based on data from each index provider.[108]

Passive investing approaches have evolved from the replication of established indexes, like the S&P 500 or FTSE, to more sophisticated strategies. Because of the ease of use and low cost, exclusions-oriented responsible investment approaches were early adopters of passive investing:

- beginning with the MSCI KLD 400 Social Index;
- graduating to more mainstream indexes like the Dow Jones Sustainability Index; and
- now expanding to other asset classes and strategy types.

Passive ESG approaches now range from exclusions-oriented strategies, such as the MSCI World Ex-Tobacco, to approaches that target minimized exposure to fossil fuel either by excluding carbon emission and GHG-intensive industries or by applying a carbon emissions cap relative to the main index. Investors' willingness to deviate from the core index based on ESG and sector or security exclusions criteria will determine the degree of differential in tracking error.

Exhibit 41: Evolution of Passive Approaches and the Inclusion of ESG



Source: PRI.[109]

The wider availability of ESG data and greater investor interest in responsible investment has also led to the development of new, alternative approaches within passive investing. Single-factor ESG strategies (smart-beta and beta-plus) provide investors a passive means to weight an index towards a style factor while also screening for companies that perform better on ESG metrics. This is highly dependent on the

108 Japanese Government Pension Investment Fund. 2018. *ESG Report 2018 for All Generations.* Available at: www.gpif.go.jp/en/investment/190905_Esg_Report.pdf

109 PRI. 2022. "How Can a Passive Investor Be a Responsible Investor?" Available at: https://www.unpri.org/passive-investments/how-can-a-passive-investor-be-a-responsible-investor/4649.article

screening methodology and the ESG dataset employed. For example, the new MSCI Factor ESG Target Indexes target traditional style factors, like value and low volatility, while weighting the portfolio towards corporates with higher MSCI ESG ratings.[110]

Exhibit 42 illustrates the range and depth of ESG indexes developed by FTSE Russell. It addresses several investor motivations through a mix of indexes that prioritize:

- ESG on a holistic basis;
- subsets of ESG themes, such as climate and environmental markets;
- ethical and normative exclusions; and
- single ESG themes, like diversity as measured by female board representation.

It also includes investment styles, such as a minimum variance strategy with an ESG-screened overlay.

Exhibit 42: Breadth of FTSE Russell ESG Indexes

Source: FTSE Russell.[111]

Nonetheless, the inherent nature of passive investment strategies presents some challenges when integrating ESG.

Relying on Established Datasets

Traditional passive investment strategies rely on more established datasets for construction. These range from the uncontroversial, such as reconstituting indexes to apply style factors as overlays or tilts, for instance in smart beta strategies.

Though investors develop proprietary quantitative models, these models are often underpinned by both academic theory as well as supported by historical data to performance back tests. As an example, more than a century of US financial markets data exists to analyze business cycles and sensitivities to traditional factors like value and

110 Skypala, P. 2017. "ESG Investing and Smart Beta Combination Grows in Popularity." *Financial Times* (27 November). Available at: www.ft.com/content/3f236546-c9f8-11e7-ab18-7a9fb7d6163e

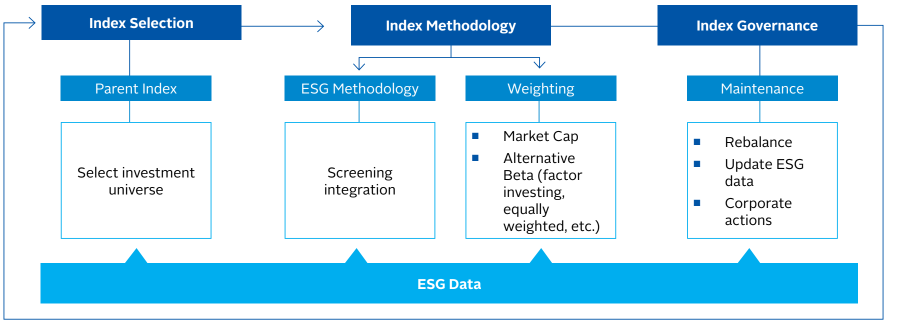
111 FTSE Russell. 2020. *Sustainability and ESG Indexes*. Available at: www.ftserussell.com/data/sustainability-and-esg-data/sustainability-esg-indexes

growth. And while the nuances of value continue to be debated and redefined, there is a general agreement for the fundamental identifiers of value, such as price-to-book and free cash flow multiples.

By comparison, ESG datasets are poor as they lack history, comparability, and regional breadth. For example, the most extensive ESG datasets provide little more than a decade of data.

ESG disclosure also remains largely voluntary, and there is still little global convergence around ESG accounting standards, such as the SASB. As a consequence, the methodology behind a passive ESG strategy is highly individualistic and interpretive. The construction of an ESG passive strategy is typically based around a third-party ESG dataset, which is premised on its own underlying selection methodology. While the diversity of available ESG datasets has helped drive the innovation and popularity of passive ESG strategies, it also creates the potential to confuse the market with differing and opaque integration approaches to ESG data.

Exhibit 43: Typical ESG Index Construction



Source: PRI.[110]

It is often said that, casually speaking, the only free lunch in investment is diversification. Hence, incorporating any given set of exclusions or ESG datasets into a passive investment strategy potentially carries unintended consequences, notably by limiting one's ability to diversify. This may result from portfolio distortion to unwanted factor and market exposure.

Despite their weight within a given broader index, reducing or eliminating exposure to certain sectors represents a natural re-weight to the remaining sectors and index constituents. Commonly excluded sectors, like tobacco and fossil fuels, represent a specific profile. Generally speaking, companies in these sectors are more mature and face less pressure to reinvest cash flow into growth-related, capital expenditure programs. As a result, stable operating margins equate to consistent cash flows and dividend pay-out ratios, which provide defensive, counter-cyclical exposure within portfolios. Indexes that exclude or minimize exposure to these sectors will naturally tilt portfolios towards a more cyclical, growth-oriented profile.

Excluding meaningful sectors or industries within an index, such as fossil fuels, will generate a higher tracking error. To be sure, targeting high tracking error is a commonly used tactic by active portfolio managers in an effort to beat their benchmark index, but this is generally employed by deviating from the index through idiosyncratic portfolio positioning and concentration.[112] The wholesale exclusion of sectors like fossil fuels represents an altogether different magnitude of tracking error that may dramatically alter the diversification and factor exposure of a portfolio. As discussed in the section titled "Optimizing Portfolios for ESG Criteria", portfolio optimization offers the means by which to mitigate these effects.

Active engagement and stewardship are key ESG ingredients. While passive investment strategies are capable of proxy voting, the nature of their strategies innately limits their ability to engage with portfolio companies unless coordinated by an established stewardship team. One implication of this is that passive investing may translate into shallower forms of stewardship activities with companies rather than more focused, often sustained, active engagement opportunities that are typical of actively managed ESG strategies. In fact, recent academic work increasingly yields evidence that active ESG shareholder engagement activities have the potential to manage down risk.

Despite the growth in passive investing AUM, academic research examining the performance considerations and trade-offs of ESG integration into passive portfolio management remains relatively scarce. Of the work that does exist, there is evidence of regional disparities in performance and risk-adjusted returns showing little difference between Europe and the United States.

112 For more information on tracking error and active share: Cremers, K. J. M., and A. Petajisto. 2009. *How Active Is Your Fund Manager? A New Measure That Predicts Performance*. AFA 2007 Chicago Meetings Paper; EFA 2007 Ljubljana Meetings Paper; Yale ICF Working Paper No. 06-14. Available at: https://ssrn.com/abstract=891719

KEY FACTS

1. Investment approaches can be characterized as discretionary and quantitative. ESG integration in discretionary approaches is process-oriented, while quantitative approaches, whether active or passive, are generally rules-based and factor-oriented.
2. Dynamic asset allocation tactically rebalances relative to its long-term allocation target mix. Strategic asset allocation, which only intermittently rebalances relative to its target mix, is more aligned to ESG integration, but investors will have to consider the diversification trade-offs by allocating more to an ESG or sustainability risk budget.
3. The Task Force on Climate-related Financial Disclosures (TCFD) includes a specific recommendation for climate scenario analysis. Asset allocation strategies can stress test their overall portfolios to understand the implications of physical climate risks (operational and strategic dislocations to business) and transition climate risks (regulatory, legal, policy, technology, and market-related) by simulating a number of scenarios with a baseline of 1.5 to 2ºC (2.7 to 5.4ºF).
4. Exclusionary screening can be organized into four basic categories:
   - universal;
   - conduct-related;
   - faith-based; and
   - idiosyncratic exclusions.
5. The exclusionary preferences are generally specified by the asset owners, not asset managers. As a rules-based investment approach, exclusionary screening is reductive by nature and does not generally consider softer, more qualitative forms of responsible investment, such as stewardship and engagement activities.
6. Imposing an exclusion screen or targeting an ESG score may introduce unintended factor exposure or skewness to a portfolio.
7. ESG data and ratings methodologies are still nascent. With correlations among ESG data providers relatively low, at 0.35 to 0.40, investors should recognize the lack of convergence. One way investors can differentiate themselves is by building ESG analytics platforms that combine off-the-shelf ESG data with proprietary approaches.
8. Portfolio managers should recognize the challenges within ESG datasets and methodologies. These include short historical data, lack of comparability, and coverage gaps within some asset classes and regions.
9. Simply put, passive ESG investing describes rules-based strategies to produce low cost indexes and benchmarks.
10. Portfolio optimization allows portfolio managers to target a specific ESG rating or environmental objective, such as carbon emissions reduction, while simultaneously managing the portfolio to tracking error range.
11. Full ESG integration involves the systematic and explicit inclusion of ESG risks and opportunities within stock selection and portfolio management.
12. Exclusionary screening imposes ethical or normative criteria to a portfolio investment universe.
13. Positive alignment introduces an inclusionary bias to a portfolio as it invests generally in better-performing companies on ESG metrics.