

ESG INTEGRATION IN LISTED EQUITY: A TECHNICAL GUIDE

APRIL 2023

THE SIX PRINCIPLES

PREAMBLE TO THE PRINCIPLES

As institutional investors, we have a duty to act in the best long-term interests of our beneficiaries. In this fiduciary role, we believe that environmental, social, and governance (ESG) issues can affect the performance of investment portfolios (to varying degrees across companies, sectors, regions, asset classes and through time). We also recognise that applying these Principles may better align investors with broader objectives of society. Therefore, where consistent with our fiduciary responsibilities, we commit to the following:

- 1 We will incorporate ESG issues into investment analysis and decision-making processes.
- 2 We will be active owners and incorporate ESG issues into our ownership policies and practices.
- 3 We will seek appropriate disclosure on ESG issues by the entities in which we invest.
- 4 We will promote acceptance and implementation of the Principles within the investment industry.
- 5 We will work together to enhance our effectiveness in implementing the Principles.
- 6 We will each report on our activities and progress towards implementing the Principles.



PRI's MISSION

We believe that an economically efficient, sustainable global financial system is a necessity for long-term value creation. Such a system will reward long-term, responsible investment and benefit the environment and society as a whole.

The PRI will work to achieve this sustainable global financial system by encouraging adoption of the Principles and collaboration on their implementation; by fostering good governance, integrity and accountability; and by addressing obstacles to a sustainable financial system that lie within market practices, structures and regulation.

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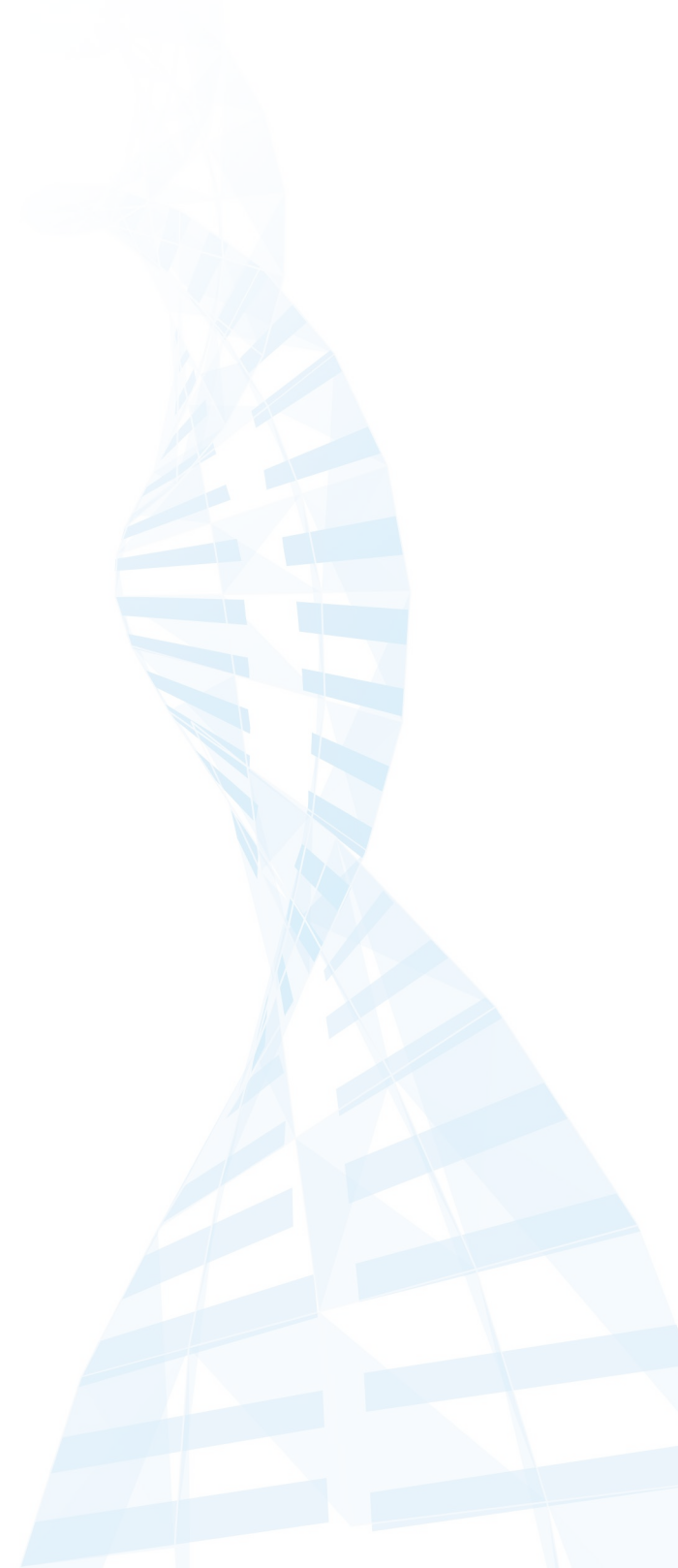
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FOREWORD

Responsible investment has truly entered the mainstream since the PRI was established in 2006, and listed equity practitioners have been at the forefront.

While investors are now pursuing the integration of environmental, social and governance analysis across their portfolios, it remains most widespread in equity investment processes.

It is not hard to understand why. Stock markets are one of the largest and most visible parts of the financial world, and are subject to a great deal of public scrutiny and regulatory attention.

As society's demands upon investors increase – to help tackle the climate crisis, respect human rights, and pursue the UN Sustainable Development Goals – it is often listed equity issuers and investment professionals who feel them first.

The industry has responded. There is growing awareness and experience of integration techniques, together with ongoing evolution of the standards and metrics used. There has also been a dramatic increase in the volume and quantity of ESG data available.

We first published *A Practical Guide to ESG Integration for Equity Investing* in 2016, and it has consistently been one of our most popular technical guides. But the world has moved on, and so this new guide aims to capture and share the latest leading practice.

The guide provides links to a multitude of PRI and external resources to help investment managers and asset owners with setting investment objectives, governance arrangements, and stewardship and reporting practices. But the primary focus is on ESG integration in equity analysis, valuation, investment decision and portfolio construction.

We are encouraged by the advanced integration practices featured in this publication. They show the increasing sophistication of ESG practice across investment decision-making, performance analysis and reporting to clients, as well as the powerful role that stewardship plays in the equity market.



David Atkin
CEO, PRI

As momentum builds toward more sustainability in the wider economy, it is a more pressing priority than ever to build a bridge between financial markets and outcomes in the real world, and to understand the way those outcomes feed back into the financial risks we face.

But this need will only be met where it is underpinned by robust ESG integration. The PRI hopes this guide will help listed equity practitioners remain at the cutting edge of responsible investing.

EXECUTIVE SUMMARY

This guide aims to support listed equity investors in integrating environmental, social and governance (ESG) considerations into their strategies. It is intended as a resource for those looking to review or update ESG policies and practices over time, but will also cater to those developing a responsible investment approach for the first time.

BACKGROUND AND DRIVERS

PRI data shows that the integration of ESG factors into listed equity analysis and investment is widespread among our signatories. Investors are also increasingly willing to wield their voting power and collaborate in holding companies to account.

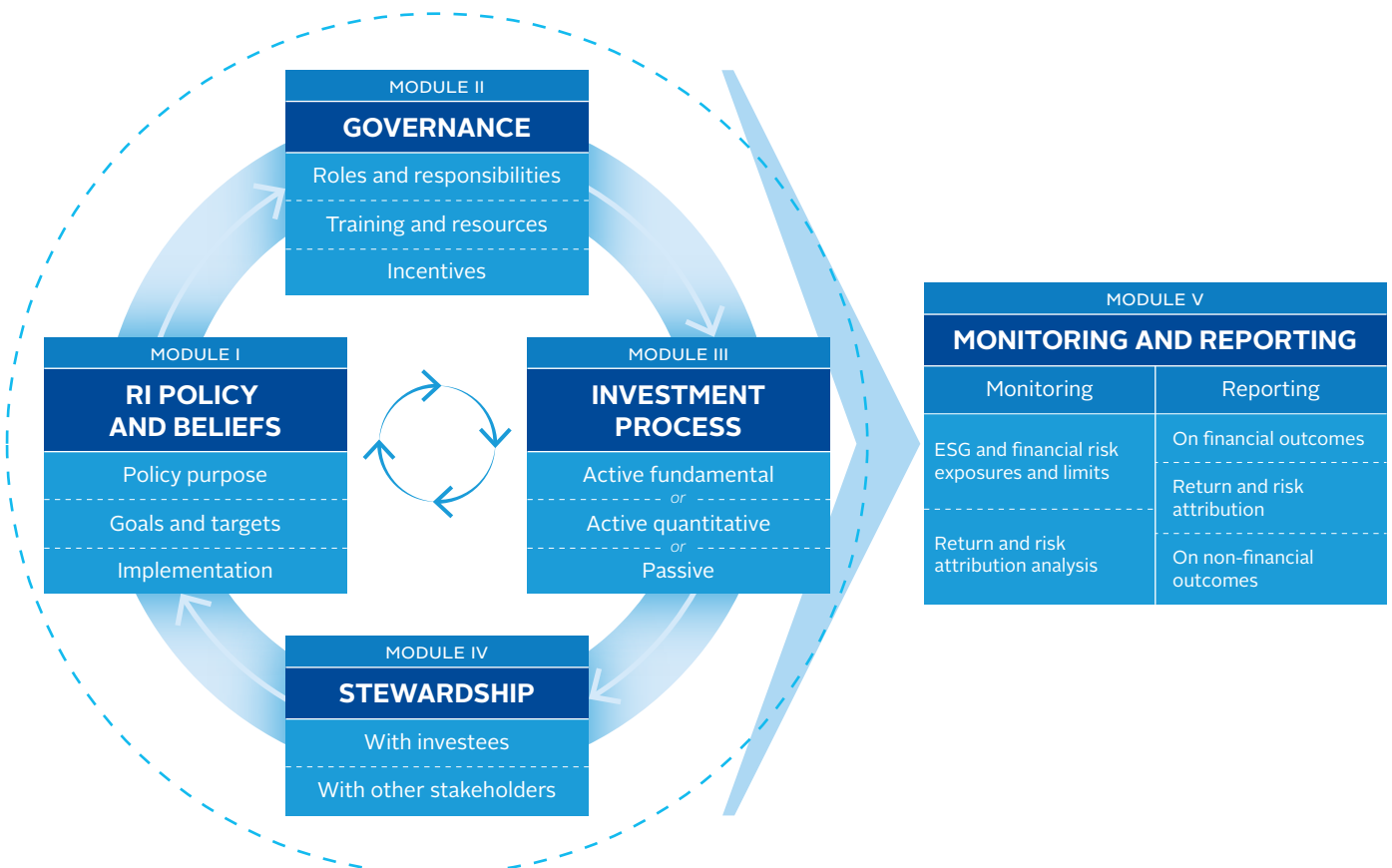
There are four principal drivers of this progress:

- **Client demand:** Growing demands from beneficiaries and clients for greater transparency about how their money is invested
- **Regulation:** More guidance from regulators that considering ESG factors is part of an investor's fiduciary duty
- **Sustainability outcomes:** Growing interest from investors and other stakeholders in examining how investment decisions affect real-world outcomes
- **Materiality:** Increasing recognition that certain ESG factors can affect risk and return

ESG INTEGRATION IN LISTED EQUITY: A FIVE-PART PROCESS

The PRI defines ESG integration as “the process of including ESG factors in investment analysis and decisions to better manage risks and improve returns”. The listed equity investment process can be split into five stages, which in practice form an investment cycle, as shown in Figure 1 below. This guide will explore how PRI signatories are integrating ESG into each.

Figure 1: ESG integration in listed equity: a five-part process



MODULE I: POLICY

First, investors will set their intentions, and make public commitments, through a responsible investment policy. These have evolved rapidly in recent years into sophisticated documents with a wealth of detail on ESG practices. The PRI has compiled a searchable database of responsible investment policies from more than 1,500 investors, which our signatories can review, adapt or develop from as they consider their own approaches.

MODULE II: ORGANISATIONAL GOVERNANCE

Governance arrangements ensure that the commitment to responsible investment is followed through by firms. Sound governance is therefore key to ensuring accountability. This includes clearly defined roles and responsibilities; staff training and education on ESG issues; and appropriately structured fee and remuneration arrangements.

MODULE III: INVESTMENT PROCESS

This module consists of three sections, each focused on a particular investment style: active fundamental, active quantitative and passive investments. Additionally, stewardship activities (voting and engagement) are not easily separable from the investment process, because stewardship is informed by, and feeds back into, insights gained during the investment process. Therefore, these sections also look at how to implement stewardship activities.

ESG INTEGRATION IN ACTIVE FUNDAMENTAL STRATEGIES

ESG considerations can be brought into the processes of fundamental analysis, forecasting, valuation and portfolio construction in a variety of ways; but responsible investors should treat it as core to the process, not an add-on.

- **Stage 1 – Analysis:** Investors can include ESG megatrends such as climate change alongside their consideration of economic and geopolitical conditions. These can be considered at regional and sector level, as well as their impact upon individual stocks. When considering ESG factors, analysts also need to consider their materiality – how significant they are for the company in question. Resources such as the [financial materiality maps](#) from the Sustainability Accounting Standards Board can be used as a starting point.

The analysis stage is also key for investor stewardship, as investors can identify potential operational improvements that can be pursued through engagement with company management.

- **Stage 2 – Forecasting and valuation:** Traditionally, many investment managers would make forecasts of a company's key financial metrics (earnings, cash flow) and then subsequently adjust these to take ESG factors into consideration. But a more thorough integration of ESG factors takes these into account during the process of analysis and forecasting in the first place. Analysts then use a variety of valuation models to determine an estimated *intrinsic* or *fair* value of the stock; all can be adjusted to reflect ESG factors.
- **Stage 3 – Portfolio construction:** The analysis performed in stages 1 and 2 lead to buy, sell or hold decisions. But professional investors also need to consider the impact of these upon the overall makeup of their portfolios. ESG risk factors can be included too; for example, a check that a given buy or sell decision would not breach a set limit on the level of CO₂ emissions associated with stocks in the portfolio. The outcomes of company engagement can also influence decisions on whether to continue to hold or sell stocks.

ESG INTEGRATION IN ACTIVE QUANTITATIVE STRATEGIES

ESG considerations can be incorporated into quantitative strategies as factors (or characteristics) of stocks, where they are quantifiable and grounded in evidence. ESG data availability has improved significantly in recent years, prompting greater exploration of ESG factors by quant managers.

Quant processes can also be split into three stages:

- **Stage 1 – Investment strategy design:** The process begins with a hypothesis that should be grounded in economic theory and supported by empirical evidence. Investors use statistical analysis to identify possible drivers of returns. For many ESG factors, the evidence base is still evolving; emissions data or gender and diversity statistics, for example, typically lack long-term evidence of being persistently rewarded or punished by the market.

Quant investors can also use ESG filters to put parameters around their portfolios, such as a minimum score on a range of environmental, social or governance factors.

- **Stage 2 – Model testing and evaluation:** This involves feeding historical financial data into the model to understand how it would have performed had it been implemented in the past. This can be a challenge with new datasets, including some ESG data.
- **Stage 3 – Portfolio construction and implementation:** Once the model is launched and running, it may need updating if market conditions change substantially. The ongoing development of ESG data may also spur refinements in the strategy over time.

ESG INTEGRATION IN PASSIVE STRATEGIES

Using passive strategies does not preclude an investor from considering ESG issues. Choosing to allocate to a fund that mimics an index is itself an active decision by the investor, and there are large numbers of ESG indices that have been developed for this purpose. ESG-conscious investors can also create or commission custom-built ones. Such indices may employ exclusions, such as removing all tobacco companies, or be based on an ESG rating or scoring system. Some regulators, such as the European Commission's Technical expert group on sustainable finance, have set guidelines for the creation of new climate-transition benchmarks.

Passive strategies also have implications for investor stewardship, which include:

- **long-term relationships with issuers:** because passive investors do not actively trade in and out of stocks, they may be able to pursue longer-term engagements,
- **incentives to consider systematic issues:** such investors also benefit from rising share prices across an entire market, and so may consider using stewardship to address market-wide issues,
- **differences in strategy:** given their large numbers of holdings, it may not be practical for passive managers to pursue detailed engagements with company management in the same way an active manager can. Passive investors may consider different levers to achieve their stewardship objectives, such as engaging policy makers.

MODULE IV: STEWARDSHIP

Stewardship comprises three principal activities: engagement, voting, and escalation and divestment. The links between these activities and the processes of analysis, stock selection and portfolio construction are explored throughout Module III.

Module IV provides an overview of additional PRI guidance on these stewardship activities, as well as ways to influence other stakeholders beyond investee companies.

MODULE V: MONITORING AND REPORTING

Once a fund or strategy is launched, investors will monitor their portfolios to ensure they perform as desired. Investors are increasingly using ESG measures in portfolio monitoring, particularly with regard to climate. Initiatives such as the [Task force for Climate-related Financial Disclosures](#) have led to extensive development of climate metrics, and their widespread adoption.

Investors are also making efforts to integrate ESG considerations into their performance attribution processes (identifying what active management decisions have driven their returns). Managers have developed several techniques in this area, but isolating the impact of ESG factors on portfolio returns remains very challenging.

ABOUT THIS GUIDE

The content is based on a range of sources, including:

- Data gathered from PRI reporting
- Examples of signatory practice drawn from case studies or provided through PRI reporting
- Input from the PRI [Listed Equity Advisory Committee](#)
- An academic and industry literature review
- Input from external consultants

COMPLEMENTARY PRI RESOURCES

The PRI has compiled a number of resources for listed equity investors in recent years. These include [Due Diligence Questionnaires](#), [Listed Equity leadership podcasts](#) and [blog posts](#), and a [series of case studies](#) showing how signatories incorporate ESG considerations. Relevant stewardship resources include a [Practical guide to active ownership in listed equity](#), and [Discussing divestment: developing an approach when pursuing sustainability outcomes in listed equities](#). Links to further case studies are provided throughout the guide. Investors may also find the Listed Equity Module of the [PRI Reporting Framework](#) useful.

This technical guide reflects the most recent leading practice, and it builds on the earlier published [regional guides to ESG integration](#) as well as [Guidance and case studies for ESG integration](#).

This guide is also intended as a companion-piece to the technical guides on ESG integration in [hedge funds](#) and [private equity](#), as part of the PRI's ongoing programme of investor resources across asset classes. Asset owners and consultants may also wish to refer to PRI guides on incorporating ESG factors into the [selection, appointment](#) and [monitoring](#) of investment managers. In addition, the [Inside PRI data: asset owner action](#) and [Inside PRI data: investment manager practices](#) guides include discussion of responsible investing in listed equities as reported by PRI signatories.

All feedback is welcome – please contact us at listedequity@unpri.org.

BACKGROUND: THE RISE OF ESG IN LISTED EQUITY

This section provides a brief overview of the state of play in responsible investment for listed equities, covering PRI signatories' actions and recent developments in the industry and markets.

For most investors, listed equity is the asset class where responsible investment is most firmly embedded. The proportion of PRI signatories' public equity assets subject to ESG incorporation rose from 88% in 2017 to 95% in 2020, according to [our data](#), and all indications are that this trend has continued in more recent years. Our [Inside PRI data: asset owner action](#) report finds that when selecting managers for active listed equity strategies, 72% of asset owners now require that they incorporate ESG factors in all investment analyses and decisions.

The increased prominence of ESG issues means that investors are talking to companies more about them. They are also working together when they do so. Participation in collaborative stewardship initiatives leapt from 68% to 83% among those reporting between 2017 and 2020, with asset owners particularly driving the change. A prominent example is the formation of [Climate Action 100+](#), which entered its second phase in 2023.

"It is clear that the fund management industry must commit to a far more active and continuous level of long-term engagement to achieve authentic corporate sustainability progress."

Alex van der Velden, Ownership Capital, and PRI Listed Equity Advisory Committee Member

Investors are also making increasing use of their voting power. Environmental and social issues are appearing on the agenda at more company annual general meetings (AGMs), either filed by investors or by companies themselves. The number of ESG-related resolutions has increased dramatically in recent years.¹ For more on the PRI's work on share voting, please refer to the paper [Making voting count: principle-based voting on shareholder resolutions](#).

¹ PRI (2022), [The 2022 AGM season](#); Harvard Law School (2022), [2022 Proxy Season – Shareholder Proposal Review](#)

INSIDE PRI DATA: ASSET OWNER ACTION

This [report](#), based on asset owners' reporting to the PRI, finds that over 90% of asset owners have a public responsible investment policy; and more than 85% of asset owner boards now have some oversight of climate-related challenges. Meanwhile, three-quarters have started to take steps to implement the recommendations of the [Task Force on Climate-Related Financial Disclosures](#) (TCFD).

The most cited motivations for pursuing responsible investment are long-term value/returns, risk management, opportunities and fiduciary duty.

Climate change is the most common issue where asset owners say they have made recent progress, although few are thinking about a "just transition" – the concept that climate goals should be pursued in a socially equitable way.

In looking ahead, asset owners talk about increasing the breadth and sophistication of their ESG integration, measuring and reducing greenhouse gas emissions and mitigating climate-related risks.

"The relative lack of ESG consideration in passive strategies... points to the continued importance of active investment management to asset owners concerned with environmental, social and governance issues."

Elizabeth Levy, Trillium Asset Management, and PRI Listed Equity Advisory Committee Member

"Often people think 'engagement is engagement', but the degrees of intensity and the breadth are huge variables of difference between active concentrated equity approaches and index approaches."

PRI Listed Equity Advisory Committee Member

THE RISE OF PASSIVE

Another development with big implications for ESG investing has been the rapid growth of passive, or index-tracking funds in recent years. These now account for a sizeable portion of the world's equity assets under management. This is particularly pronounced in the US, where the [Federal Reserve Bank of Boston](#) has cited Morningstar data suggesting that 41% of US mutual-fund and ETF assets were managed passively in March 2020, up from just 14% in 2005. Although active funds remain in the majority in most markets, particularly in Asia and Europe, new-money flows have favoured index-trackers in regions such as Europe, where sustainable passive funds saw the majority of inflows in 2022. ([Morningstar Global Sustainable Fund Flows: Q4 2022 in Review](#)).

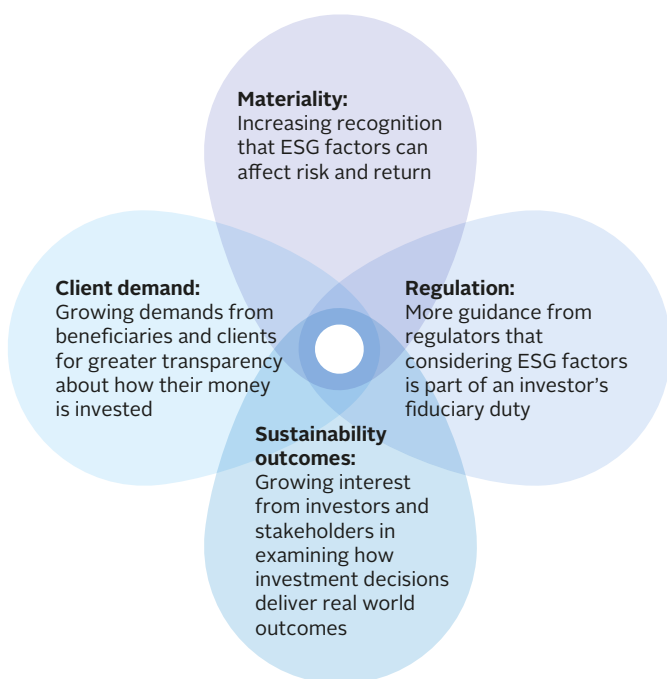
Despite this, more than half of PRI's signatories (57%) report either that none of their passive funds incorporate ESG factors, or only a minority do. While this proportion has dropped since 2017 – when 69% said the same – there is still scope for progress here. Similarly, while 72% of asset owners require active listed equity managers to demonstrate ESG incorporation (as mentioned above), only 55% require the same from passive equity managers.

As the question of how passive investors can be responsible investors is a topic of significant interest, the PRI has been [actively seeking to develop further guidance to passive investors](#) on ESG incorporation.

DRIVERS

This section outlines some key drivers of ESG integration, including the materiality of ESG factors for risk and return; increasing demand from beneficiaries and clients; and regulatory developments – as well as an increasing focus on [sustainability outcomes](#).

Figure 2: Key drivers of ESG integration in listed equity



MATERIALITY

PRI signatories show strong interest in the link between companies' share-price performance and their ESG credentials. According to PRI's 2020 data, just under two-thirds of our signatories use research on environmental and social issues in their listed equity analysis; the proportion rises to 78% for governance issues. Still, this means that a substantial minority of investors do not systematically research ESG factors in their equity portfolios. Improvements in data and disclosure may drive growth in this area in the future.

The [Inevitable Policy Response \(IPR\)](#), a climate transition forecasting consortium, forecasts a continued acceleration of climate policies and expects them to be increasingly forceful, abrupt and disorderly. This is likely to increase their impact upon investment returns, particularly in critical sectors such as energy. Systematic sustainability issues – those that pose risks beyond a single company, sector or geography – can also significantly impact market and portfolio returns.

In recent years, a growing body of industry and academic research has explored this topic. The PRI has [explored industry research on sustainable investing](#) in relation to its impact on returns and risk of losses, and examining correlations, causations and gaps in knowledge. The PRI also collates academic resources on responsible investment through [the PRI academic database](#).

REGULATION

There has been a significant effort by global policy makers in recent years to encourage sustainable investment. [PRI's regulation database](#) has tracked dozens of new or revised policy instruments in 2022, bringing the total to close to 900. They are applicable to a range of stakeholders. A selection is summarised in Table 1:

Table 1: Regulatory categories

ASSET OWNERS	ASSET MANAGERS	CORPORATE DISCLOSURE
<p>Regulations are usually focused on disclosure requirements for pension funds (e.g. as part of a statement of investment principles) or key state-owned asset owners. Prudential regulators are beginning to consider climate risk in the insurance market.</p>	<p>Guidelines and requirements from regulators and governments relating to fund disclosures and labelling of investment products, investment advice requirements and organisational policies on issues such as considerations of sustainability risks.</p> <p>Stewardship codes govern the interactions between investors and investee companies, to encourage better governance and protect shareholders.</p>	<p>Guidelines, typically from governments or stock exchanges, encourage or require companies to disclose the information on ESG risks and opportunities that investors need. Disclosure can also raise awareness of the ESG issues within a company, which can lead to them being managed better.</p>

The European Union has been especially active, with two landmark responsible-investment regulations entering into force in 2020 and 2021: the [EU Taxonomy on Sustainable Finance](#) and the [Sustainable Finance Disclosures Regulation \(SFDR\)](#). In the US, the transition to the Biden administration brought [new leadership on ESG issues](#), and other countries and regions are also pushing ahead. China, Japan, Singapore, Israel and the UK are among those to have introduced or strengthened regulations to improve corporate disclosure or increase requirements on the financial sector.

FIDUCIARY DUTY

Regulators around the world are increasingly agreed that considering ESG issues is part of investors' fiduciary duty, as set out in our report [Fiduciary Duty in the 21st Century](#). The PRI commissioned ground-breaking [legal analysis](#), authored by Freshfields Bruckhaus Deringer, to clarify how regulators view *investing for sustainability impact*². The report found that while there are differences across jurisdictions, the law in most jurisdictions requires or permits this "to a significant extent", especially where it helps achieve, or is aligned with, an investor's financial goals.

CLIENT AND PUBLIC DEMAND

Investors are also responding to their customers' priorities. According to Morningstar, the global sustainable fund universe reached US\$2.5trn by the end of 2022³. Sustainable equity funds continued to attract inflows during 2022 at a time when conventional funds saw outflows.

Asset owners are also increasingly seeking their beneficiaries' views and preferences on sustainable investment. The PRI has found plentiful evidence that [pension savers' interest in sustainable investment has grown](#) "significantly" around the world.⁴

2 This term refers to the use of investment powers, stewardship and engagement with policy makers to produce assessable positive sustainability impacts.

3 Morningstar (2022), [Global Sustainable Fund Flows – Q4 2022 in Review](#)

4 PRI (2021), [Understanding and Aligning with Beneficiaries' Sustainability Preferences](#), p.9

SUSTAINABILITY OUTCOMES

Standing behind this increased demand from clients, and action by regulators, is a growing recognition that investors play a key role in responding to the global sustainability challenges we face. These have become increasingly visible over the past decade, expressed through frameworks such as the [SDG targets and indicators](#), [the Paris Agreement](#), and the [International Bill of Human Rights](#).

Investors' decisions and influence can and will shape these real-world outcomes, for good or ill. And a focus on outcomes allows investors to understand the risks and opportunities that are likely to exist in the transition to an SDG-aligned world. They can:

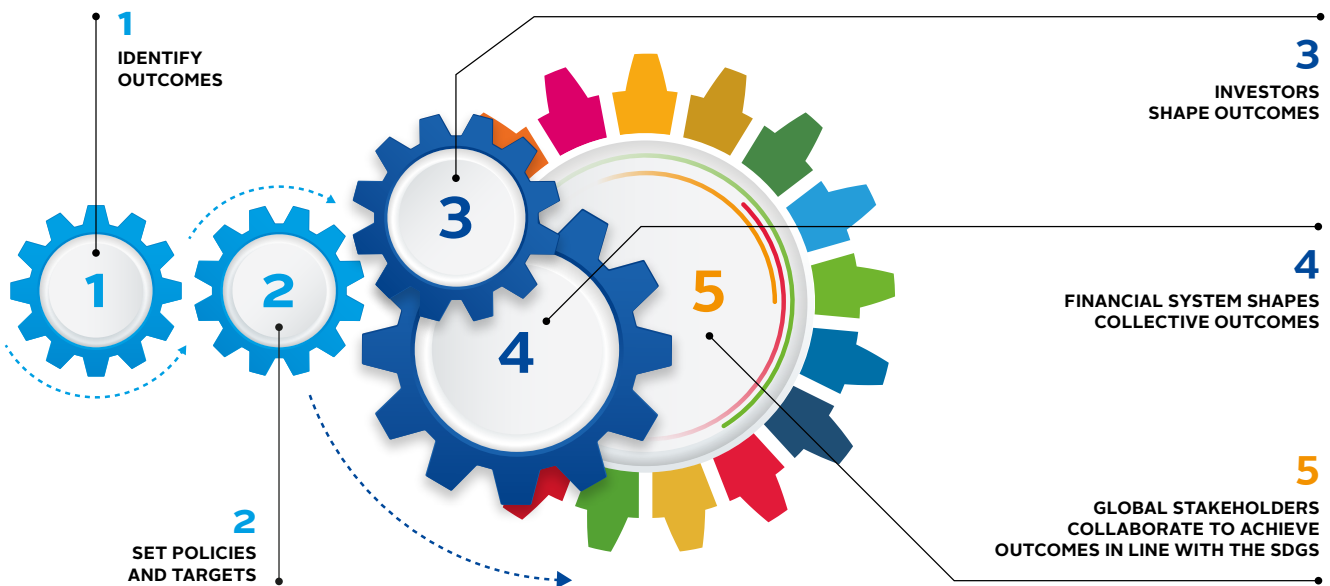
- identify opportunities in business models, supply chains and products/services
- prepare for legal and regulatory developments
- protect their reputation and licence to operate
- meet commitments to clients and beneficiaries – and communicate progress
- consider materiality over longer time horizons, to include transition risks, tail risks, financial system risks etc.
- minimise the negative outcomes and increase the positive outcomes of their investments

The PRI has published [Investing with SDG outcomes: a five-part framework](#), which can be used by those seeking to consider and incorporate outcomes. Investors may also use the [Impact Management Platform](#), a collaboration between leading providers of public good standards and guidance for managing sustainability impacts. [Signatories' reporting](#) on sustainability outcomes shows that there is a clear and growing appetite within the investor community to ensure that investments deliver positive outcomes for people and the planet.

Aligning investment portfolios with sustainability outcomes is a new and evolving practice within the industry. A number of metrics have emerged, as well as additional tools to manage such outcomes, including targets. These include those developed by:

- the SASB (part of the IFRS Foundation), which has mapped each of its industry standards to the SDG targets
- the GRI (Global Reporting Initiative), which has mapped its standards to the SDGs
- the Global Investors for Sustainable Development (GISD) Alliance

Figure 3: A five-part SDG outcomes framework for investors



The following case studies give examples of signatory practices in this area:

CASE STUDY

East Capital: Assessing SDG outcomes across the value chain


This Swedish investment manager developed an SDG value-chain analysis tool, incorporating metrics from the Sustainability Accounting Standards Board.



CASE STUDY

Schroders: Quantifying social and environmental impact


Schroders developed its SustainEx tool to estimate social and environmental impacts, and later extended its scope to capture country-level effects.



CASE STUDY

Nomura Asset Management: Health

Nomura used its public equity investment, combined with engagement, to shape outcomes in line with the SDGs.



CASE STUDY

AP2: Human rights

This Swedish asset owner assessed the human rights outcomes of its internally managed, quantitative, global listed equities portfolio, to identify which of its companies to engage with further.



CASE STUDY

Sycomore Asset Management: Assessing the societal contribution of companies

Sycomore looks at how companies' products and services address societal challenges, by calculating a Societal Contribution metric.

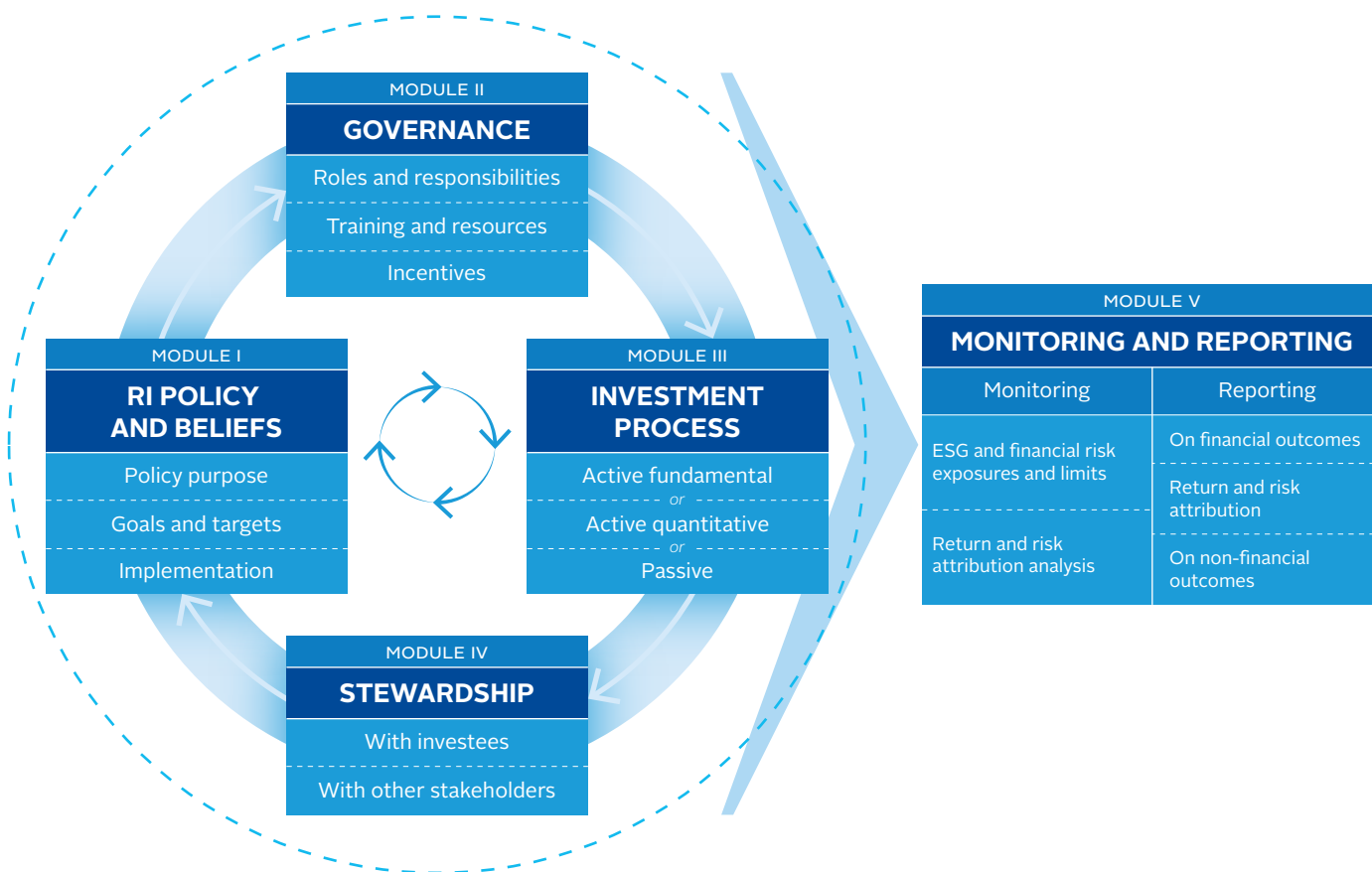


Many investors also consider sustainability outcomes in their stewardship practices, with extensive collaboration through initiatives such as [Climate Action 100+](#) or [Advance: a stewardship initiative for human rights and social issues](#).

ESG INTEGRATION IN LISTED EQUITY: A FIVE-PART PROCESS

The five modules that follow set out the five stages of the listed equity investment process (see Figure 1 below) and explore how PRI signatories are integrating ESG considerations into each. Many of the steps in this process are transferable to other liquid asset classes and elements may also be relevant to private markets.

Figure 1: ESG integration in listed equity: a five-part process



WHAT IS ESG INTEGRATION?

The PRI defines **ESG integration** as “including ESG factors in investment analysis and decisions to better manage risks and improve returns” ([PRI Reporting Framework Glossary](#)). This means that investors assess ESG risks and opportunities when deciding whether or not to buy a stock, for example.

It is one of three ways to **incorporate** ESG considerations into investment processes, alongside [thematic investing](#) and [screening](#). All three practices can be applied concurrently. A common approach might start with a screening process to exclude undesirable securities, followed by detailed analysis (including ESG factors) on the remaining universe of securities.

For more detail, see Table 2 below:

Table 2: An overview of approaches to PRI Principle 1 (Incorporation) and Principle 2 (Active ownership)

ESG INCORPORATION			STEWARDSHIP	
Screening	ESG Integration	Thematic	Stewardship with investees	Stewardship with other stakeholders
Applying filters to a universe of securities, issuers, sectors or other financial instruments to rule investments in or out based on criteria, such as an investor’s preferences or specific investment metrics, that are part of an investment process or reflect a client or fund mandate. <ul style="list-style-type: none"> ■ Positive (best in class) ■ Norms-based ■ Exclusionary (-ve) 	Inclusion of ESG factors in investment analysis and decisions to better manage risks and improve returns. Environmental Social Governance	An approach which focuses on predicted long-term trends rather than specific companies or sectors.	The use of influence by institutional investors to maximise overall long-term value, including the value of common economic, social, and environmental assets, on which returns and client and beneficiary interests depend.	
			Examples of ways to influence investees: <ul style="list-style-type: none"> ■ Engaging with current or potential investees/ issuers, across all asset classes ■ Voting at shareholder meetings ■ Filing shareholder resolutions/ proposals ■ Fulfilling direct roles on investee boards and board committees ■ Litigating 	Ways to influence other stakeholders: <ul style="list-style-type: none"> ■ Engaging with policy makers and standard setters ■ Contributing to public goods (i.e. research) ■ Engaging in public discourse and disclosures that support stewardship goals ■ Negotiating with, and monitoring others in the investment chain (e.g. asset owners engaging with investment managers)

The three ESG incorporation practices are supplemented with [stewardship](#) (also known as active ownership). While screening, integration and thematic investing are different approaches to making investments and building portfolios; stewardship is the use of influence over existing holdings. Stewardship activities include voting at general meetings and engaging with companies and other relevant stakeholders, such as policy makers.

While this guide is focused primarily upon ESG integration, we will also refer to stewardship activities throughout Module III, showing how investors can make active ownership an integral part of their processes. Module IV will then give an overview of further specialist PRI resources on stewardship.

In practice, these stages form an investment cycle, feeding back into one another on an ongoing basis as shown in Figure 1. The integration of ESG considerations at every stage of the cycle will be explored in more detail in the sections that follow.

SCREENING

While screening can be a standalone investment approach, it is also often undertaken as the first stage in a comprehensive ESG process.

Screening tools allow investment managers to exclude or identify stocks based on ESG metrics. They can help narrow down the investment universe to manageable size, generate ideas and create watch lists for more in-depth analysis. Screening processes are explained in greater depth in [An introduction to responsible investment: screening](#).

Below are several examples⁵ taken from PRI reporting:

Signatory approaches to screening	
Exclusion of controversial stocks	<p>A European investment manager undertakes exclusion of stocks based on:</p> <ul style="list-style-type: none"> ▪ controversial behaviour severe breaches of UN Global Compact guidelines ▪ controversial products weapons, tobacco ▪ controversial countries
	<p>One Scandinavia-based financial services provider excludes companies involved in weapons, alcohol, tobacco, pornography, cannabis, gambling, and fossil fuels in most of its funds. Additional screens are applied to responsible investment strategies.</p>
Exclusions based on minimum levels of ESG performance	<p>One Chinese investment manager signatory uses several globally recognised and domestic metrics in its ESG screens, which serve as the minimum level of ESG performance for invested companies. Additional screens are applied to responsible investment strategies.</p>
	<p>One South American financial services provider applies negative screening to avoid investing in specific activities and sectors that are considered controversial for their high environmental or social impacts. It also excludes companies within the lower range of ESG performance.</p>

⁵ Sources: [Transparency Report](#) (p.98); [Transparency Report](#) (p.89); [Transparency Report](#) (p.41); [Transparency Report](#) (p.48)

MODULE I: RESPONSIBLE INVESTMENT POLICY AND BELIEFS

This module introduces responsible investment beliefs and policies, sets out the purposes they serve, and indicates how they can influence the organisation's governance, investment process, stewardship, and monitoring and reporting.

Responsible investment policies have evolved rapidly in recent years, from simple statements setting out an investor's policy commitments and approach to share-voting, to sophisticated multi-page documents and websites with a wealth of detail on ESG integration, disclosure and goal-setting. Qualitative and quantitative targets with deadlines are increasingly common among equity investors. Some investors have taken the approach of wholly integrating ESG factors into their processes, and thus embedding responsible investment considerations throughout their core investment policy. The firm-level policy should apply to the firm-wide assets under management and provide clear details on how ESG considerations are integrated into the investment strategy. This might be incorporated into formal agreements such as the Investment Management Agreement. The International Corporate Governance Network (ICGN) provides a [Model Mandate](#) that asset owners and investment managers may use for guidance.

An outline of a typical approach:

1. The policy's purpose – including how the organisation defines responsible investment – and its context, or the drivers and constraints that lie behind the policy, such as legal requirements or fiduciary duties
2. The policy's goals and targets, qualitative and quantitative
3. How the organisation will implement its policy in practice and how those practices are governed
4. How it will report on this to clients and the public, and regularly review

The PRI has compiled a searchable database of responsible investment policies from more than 1,500 investors, which investors can review, adapt or develop from as they consider their own approaches.

**SIGNATORY RESPONSIBLE INVESTMENT
POLICY DATABASE**



We have also developed further resources specific to developing and implementing responsible investment policies, including:

[An introduction to responsible investment: policy, structure and process](#)

[Writing a responsible investment policy](#)

MODULE II: ORGANISATIONAL GOVERNANCE

This module outlines the organisational governance arrangements investors put in place around responsible investment, including clearly defined roles and responsibilities, training, resources and incentives.

Once an investment firm has made a commitment to clients and the public through a [responsible investment policy](#), sound governance is the way it ensures accountability, i.e. that the commitment is followed through. The organisation needs to develop internal governance arrangements to monitor a policy, and to supervise the activity undertaken to comply with it.

Roles and responsibilities

Responsibilities should be split into oversight duties and executive duties. The exact hierarchy, reporting and accountability lines may vary, but the responsibilities assigned to each role might look like those outlined in Table 3:

Table 3: Typical ESG governance roles and responsibilities

ROLE	RESPONSIBILITIES
Organisation's board of directors	Responsible for high-level assessment: Is the organisation's investment process working to meet the objectives expressed in the responsible investment policy? The board, or a specialist sub-committee may consider ESG issues.
Trustees and directors of fund boards	Fulfil fiduciary, governance and client interest roles that include responsible investment.
Chief executive officer	Responsible for policy approval; monitors policy execution.
Chief investment officer	Development and implementation of investment policy throughout the investment chain. Ensure consistency between investment teams.
Chief responsible investment officer	
Head of ESG	
Chief financial officer	Responsible for executing risk management and measuring ESG risks in applicable portfolios.
Chief risk officer	
Investment committee	Responsible for overseeing investment policy execution and implementation.
Compliance team	Ensuring practices and processes meet both the firm's own standards and any relevant responsible-investment regulation.
Investment teams	Responsible for applying responsible investment policy to the circumstances of their operations, and executing it in individual investment decisions.
Specialist ESG research teams or experts	Responsible for inputs such as tools, information and training provided to investment teams, and potentially reviewing investment process.

Examples include investment manager Robeco's [sustainability policy](#), which contains a detailed section on the governance of its own operations, setting out where responsibilities lie, and addressing topics such as performance and remuneration.

The UK's Pension Protection Fund has included an annex to its [Statement of Investment Principles](#) which outlines its governance structure. Roles and responsibilities are specified for the board, investment committee, asset and liability committee, investment advisors, investment managers, custodians, and transition managers.

Training and resources

ESG investing is a complex and evolving field, and non-specialist investment staff will require regular support and information to keep them up to speed. This is particularly true in areas where consideration of ESG issues is less well embedded, as used to be the case in certain emerging or frontier markets, or where detailed financial data is not always available. Training and resources are often supplied by ESG specialists and experts to the wider investment team. Fund analysis firm Morningstar includes the level of co-ordination, support, and training provided to staff on ESG issues in [its assessments of investment managers' commitment to ESG](#). The PRI provides a wealth of training resources and support through the [PRI Academy](#).

Incentives

A well-governed investment organisation has remuneration and/or fee structures that align its interests with those of clients and beneficiaries. This often now goes beyond returns achieved, and increasingly includes commitments such as alignment with climate targets.

Organisations should have public conflicts of interest policies that acknowledge the possibility for such conflicts and detail a process for addressing and minimising them. To further ensure that the incentives of staff and clients are aligned, the investment manager may also want to consider introducing relevant quantitative or qualitative responsible investment-related key performance indicators (KPIs) for its portfolio managers, and its sales, marketing and client-relations staff, and making these KPIs part of the variable or fixed compensation programme.

MODULE III: INVESTMENT PROCESS

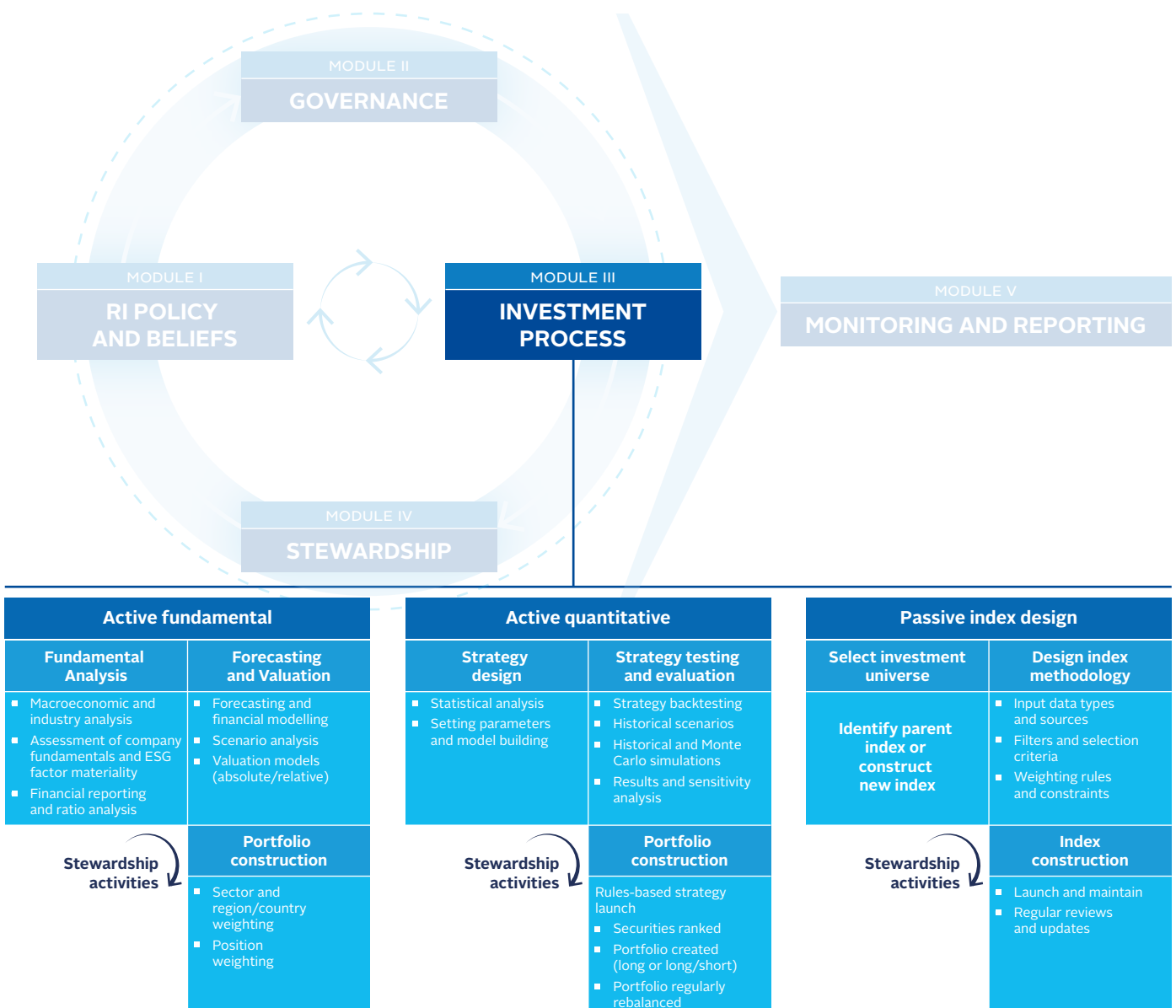
This module outlines how to integrate ESG considerations into a listed equity investment process. It consists of three sections, each focused on a particular investment style:

- ESG integration in [active fundamental](#) strategies
- ESG integration in [active quantitative](#) strategies
- ESG integration in [passive](#) strategies

The most common as well as the more advanced ESG integration techniques are explained, and examples are provided throughout.

Because stewardship activities – voting and engagement – are informed by the insights gained from the investment process, and also feed back into them, the two are not easily separable. Therefore, the three sections also look at how to implement stewardship activities in practice.

Figure 4: Investment process details



ESG INTEGRATION IN ACTIVE FUNDAMENTAL STRATEGIES

This section explores how ESG considerations are integrated into the three key stages of an active fundamental investment process: analysis, forecasting and valuation, and portfolio construction.

Fundamental investors pick stocks by undertaking extensive analysis of companies and industries. They will look at the company's products and services, its competition, and the quality of its management, as well as the prevailing economic trends.

Fundamental analysis of issuers and industries (Stage 1 below) is sometimes referred to in the industry as "qualitative analysis". In practice, assessment of the economic, sector and company specific fundamentals requires both qualitative analysis and scrutiny of quantitative data.

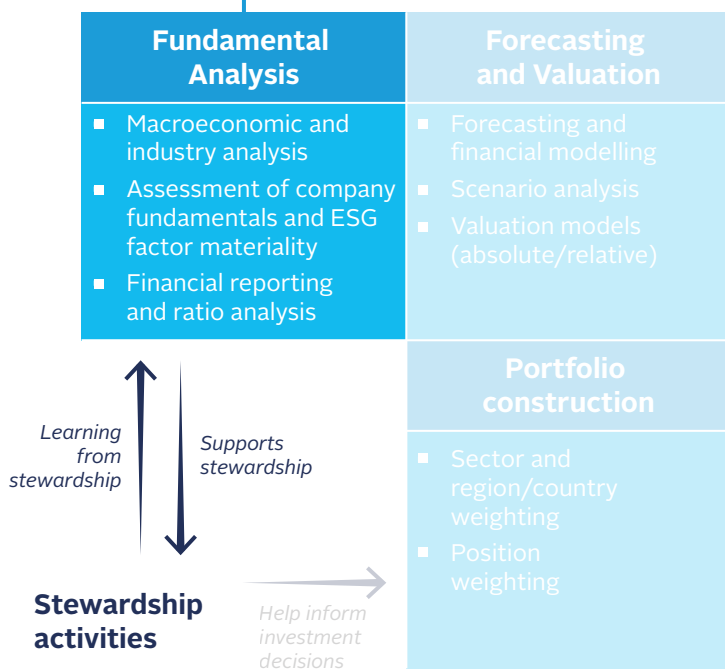
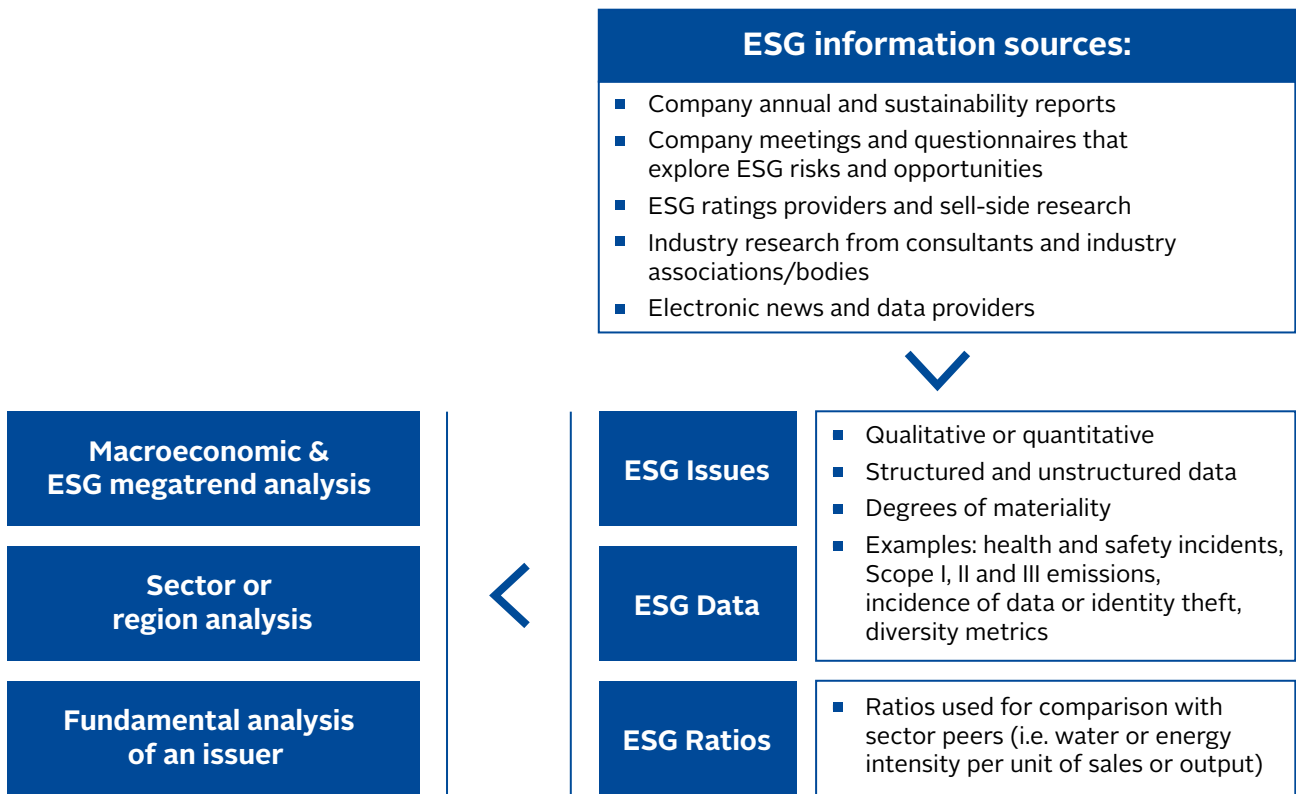
Investors then apply this information to establish a view on the future prospects (Stage 2 below) of the issuer and to help select valuation models, which allow them to assess a company's 'absolute' or 'intrinsic' value, and thereby identify securities that are over-valued or under-valued by the market.

Fund managers then use their views on individual securities to begin constructing their portfolios (Stage 3 below). They will also look at metrics such as their aggregate portfolio exposure to decide on holding weights, ensuring they are not overly-exposed to one sector, for example.

There is a wide range of possible mechanisms to integrate [material ESG factors](#) into this investment analysis. Investors should treat ESG analysis as core to the process, rather than an add-on, requiring a disciplined and tangible approach.

STAGE 1: FUNDAMENTAL ANALYSIS

Figure 5: The elements of fundamental analysis



Macroeconomic and ESG megatrend analysis

To carry out effective analysis of companies and sectors, an investor first needs to understand the broader economic and geopolitical conditions, which can bring opportunities as well as risks for businesses.

ESG megatrends include environmental themes such as climate change, pressure on natural resources, and concerns such as pollution and waste. There are also social megatrends, such as the rise of social media, growing inequality, changes to work and leisure time, urbanisation, and changing demographics (including health and longevity). The relevance and recognition of such issues in mainstream investment decision-making is [evident](#) from their explicit inclusion in investment managers' [outlook publications](#).

Below are two examples⁶ taken from PRI reporting:

Signatory approaches to megatrends and themes

One European investment manager considers three megatrends: Climate change, rising inequality and cybersecurity. Its climate policy consists of five pillars:

- integrating ESG considerations into the investment process
- using active ownership to effect change
- decarbonising portfolios
- divesting carbon-intensive thermal coal
- reducing the company's own carbon footprint

One investment manager maintains climate change as a consistent theme and analyses the carbon and climate related risks on companies across different timelines:

- short term – 0-2 years: legal and regulatory risks
- medium term – 2-5 years: legal and market transformation risks
- long term – 5 years and beyond: legal, market transformation risks, and extreme weather

Sector and region analysis

Having assessed macroeconomic conditions and broad environmental and social megatrends, analysts should be in a position to assess their impact on particular industries or regions. Various ESG issues may impact the industry's growth opportunities, competitive dynamics, and business risks. For example, climate change adaptation, including related regulatory change, may require disruptive changes to industrial production processes. Analysts should consider the different time horizons over which changes in sector conditions such as growth, competition and regulation are likely to play out.

CASE STUDY

Itaú AM: Integrating climate scenarios into investments

This Brazil-based investment manager has developed an industry materiality matrix that considers which climate impacts will be the most relevant for each industry.



Fundamental analysis of an issuer

Company analysis takes place after the analyst has gained an understanding of a company's external environment. It includes assessment of the drivers of a company's profitability, operating efficiency and financial position (its solvency and liquidity), and relies heavily on published financial statements.

An integral part of company assessment is a SWOT analysis (strengths, weaknesses, opportunities, and threats). This should also reflect any relevant ESG factors. Such factors (such as working conditions, governance structures or climate change exposures) represent risks and opportunities, but social factors in particular can be difficult to assess. Although some aspects can be numerically measured and tracked (such as a company's health and safety record), many aspects of a company's overall impact upon society are not so easily defined. Data is more difficult to come by and there is a lack of consensus on how it should be viewed. This presents a challenge for analysts trying to assess company performance in this area.

⁶ Sources: [Robeco Big Book of SI](#), 2018, p.11 and [Transparency Report](#), p.67; [Transparency Report](#), p.30

USE OF ARTIFICIAL INTELLIGENCE

Compared to traditional financial data, ESG data has often been poorly defined. It can be complex and unstructured, and careful due diligence is required before it can be used in investment analysis and decision-making. But technologies such as machine learning (ML) and artificial intelligence (AI) have the potential to transform ESG data into meaningful, useful information.⁷

Corporate sustainability reports often include raw data in different formats, while some useful data may be missing. Analysts can use data-science methods such as data wrangling and cleansing to create a more structured dataset.

Machine learning/artificial intelligence techniques such as natural language processing can be applied to text-based, audio or video ESG data. It is possible, for example, to search for key ESG words such as “health and safety” or “working conditions” in companies’ corporate earnings calls, and thus quickly establish whether firms are focused on these aspects of the “S” pillar of ESG.

Materiality assessment

When considering ESG factors, analysts need to establish not only what the relevant factors are, but also their [materiality](#) – how significant they are for the company in question. At a corporate or issuer level, the disclosure of a material ESG issue or factor would be reasonably expected by investors, as its omission would result in an incomplete understanding of current or future financial prospects.

The [Sustainability Accounting Standards Board](#) provides financial [materiality maps](#) that cover a range of industries and sub-industries, highlighting the most relevant ESG factors for companies operating in those industries. While each company’s circumstances differ, the maps are often used by analysts as a starting point. Once the relevant material risks and opportunities are identified they are then assessed for impact on the issuer. Analysts will want to understand how the management are managing the risks.

CASE STUDY

Northern Trust Asset Management: Developing an NT ESG Vector Score

Northern Trust’s ESG Vector Scores marry two leading sustainability reporting frameworks: the SASB standards, which are industry-specific and focused on financial materiality; and the thematic structure of the recommendations of the Task force on Climate-Related Financial Disclosures (TCFD).



Reliance on external ESG ratings providers

Many investors use ESG assessment and ratings of issuers (companies) from external data providers to help assess the materiality of ESG risks, understand how they are managed and develop a better understanding of the companies. Data providers use a range of methodologies, ratings scales, approaches to peer-relative assessment or varying weights ascribed to various ESG factors. Analysts may want to recalibrate those external ratings to match their own approach or build on the external provider’s views and then focus attention on a smaller number of the most relevant issues or risks. Many investment managers use their own proprietary materiality maps, developed in collaboration with equity, fixed income and ESG analysts.

Fundamental analysis and stewardship

Fundamental analysis equips analysts with knowledge and opinion on material ESG issues that are relevant to the company. This is not only useful for developing financial forecasts and valuation; it can also inform stewardship activities. It is at the analysis stage that investors can identify operational improvements that could be pursued through engagement with management, for example. At a minimum, the investment analysis equips the investor with the knowledge and awareness of issues that is necessary for subsequent investment monitoring activities and voting decisions.

⁷ Amundi (2022): [Artificial Intelligence and ESG: How do they fit?](#)

HOW PRI SIGNATORIES DESCRIBE THEIR FUNDAMENTAL ANALYSIS PROCESSES

Below we provide a selection of examples^{8,9} taken from PRI reporting, and from investors’ own sustainability reports:

Approaches designed to identify and mitigate ESG risks	
Proprietary ESG scores	<p>One investment manager signatory develops and embeds proprietary ESG scores in order to:</p> <ul style="list-style-type: none"> ■ reflect how well a company manages its ESG exposure, identify its trend in managing ESG risks, and penalise poorly governed companies ■ help the team identify better run companies <p>It integrates sustainability assessments fully into the investment process. It also assesses and models future ESG policy and regulatory changes and their impact on the investments.</p>
Evaluating climate risk	<p>This Australian organisation evaluates risk over multiple time periods:</p> <ul style="list-style-type: none"> ■ short term – 0-3 years: near-term physical risks, effects on climate sensitive sectors, changes in customer demand, changing government energy policies and regulation ■ medium term – 3-10 years: progressive physical impacts and impact on technology, supply chain, human well-being, disruption of global trade, changing patterns of growth ■ long term – 10-100+ years: social, political, and economic disorder from climate harm, increased inequality, potential and actual conflict between countries

Approaches designed to identify ESG investment opportunities:	
ESG assessment of corporates	<p>One European manager takes the climate-related risks and opportunities of all investee companies into account, based on sector specific models. Models are forward-looking (5 year time horizon) to help identify the companies that are the best positioned in their sector and region.</p> <p>The firm considers that a company’s business activities are sources of both opportunities and risks that cannot be fully evaluated using traditional financial metrics alone. Taking into account E, S and G criteria in the evaluation of a company’s business model (Macro criteria) and stakeholders’ management (Micro criteria) is a source of long term value.</p>

CASE STUDY

ClearBridge Investments:
 Understanding stock performance and financial characteristics of fundamentally derived ESG ratings

Clearbridge’s analysts and portfolio managers integrate industry- and company-specific ESG factors into its fundamental research process.



8 Sources: [Transparency Report](#) (p.103); Excerpt from [Sustainability Report 2022](#) (p81)
 9 Source: [Transparency Report](#) (LEI 01.2 and FI 01.2)

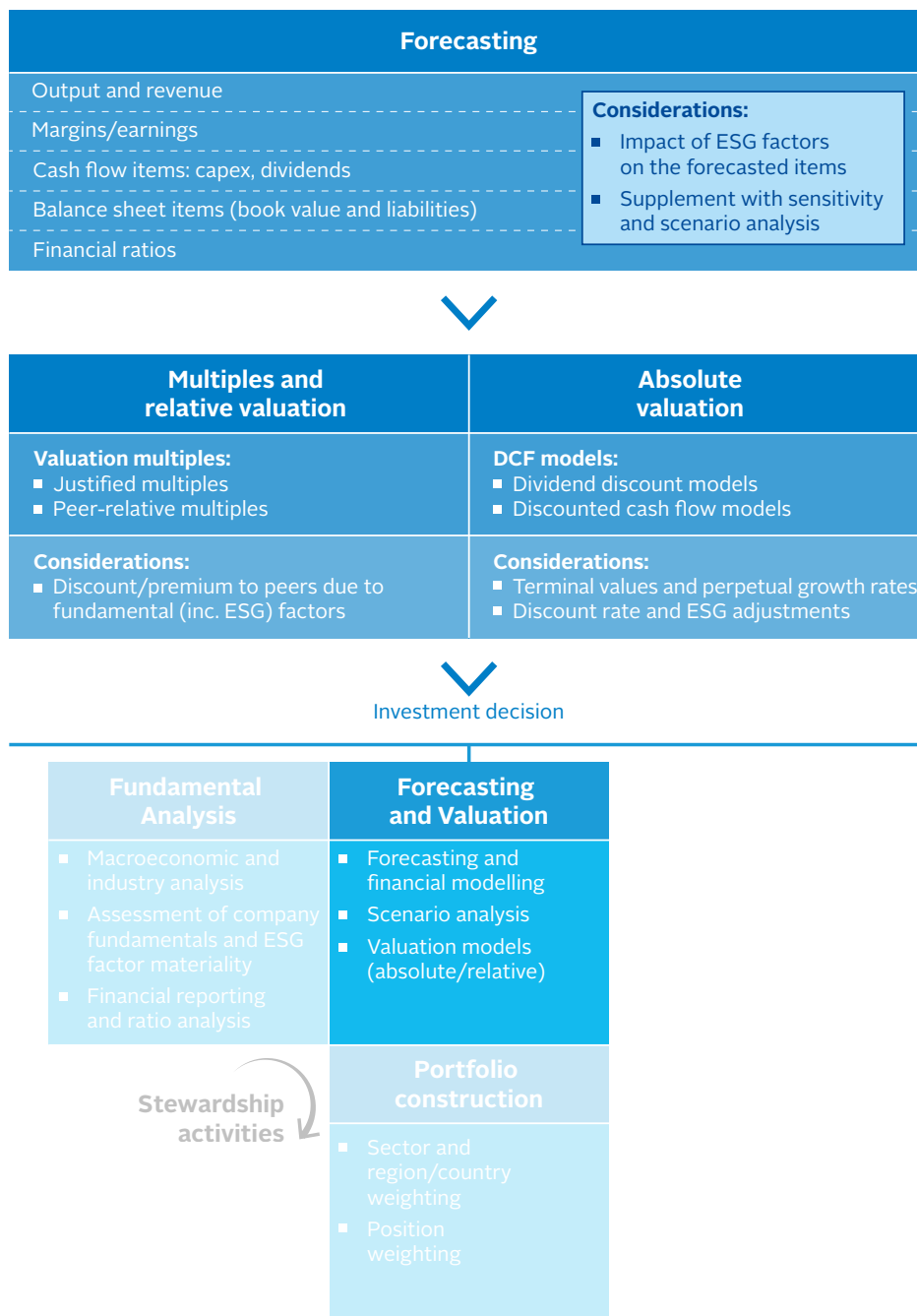
STAGE 2: FORECASTING AND VALUATION

Having carried out fundamental analysis of the economic environment, the industry and the company, the investor will use that assessment to make forecasts of the company's future prospects and profitability. In turn, this will then be used in valuation models to estimate the shares' intrinsic value.

Traditionally, many investment managers would forecast the company financials (or at least establish views on likely future paths) and subsequently adjust those to reflect a set of ESG considerations.

But a more thorough integration of ESG factors would take these into account when forecasting sales, earnings and cash flows in the first place; rather than applying ESG adjustments afterward.

Figure 6: The elements of forecasting and valuation



Forecasts

The below table provides an overview of four main types of financial forecasts and gives examples of how ESG considerations could affect them.

Table 4: Financial forecasts

Output and revenue forecasts	Example
<p>Future revenue growth rates have a significant impact on the fair value of a security. To forecast revenues, investors will typically take a view on how fast the industry is growing and whether the specific company is likely to gain or lose market share. ESG factors can be integrated into these forecasts by increasing or decreasing the company's sales growth rate over discrete time periods, or into perpetuity, by an amount that reflects the level of ESG risk or opportunity.</p>	<p>An automotive company may have to stop selling cars with combustion engines in particular regions, as governments introduce bans on sales of such cars. An investor might estimate the percentage impact on the company's sales, or assess the company's ability to successfully launch and ramp up sales of electric vehicles.</p>
Margin and profit forecasts	Example
<p>Investors can make assumptions about the influence of ESG factors on future operating costs and either adjust them accordingly or adjust the operating profit margin. Some operating costs may be forecast explicitly, for example the change in number of employees, but depending on the level of disclosure by companies, it may be more practical to make an adjustment to the operating margin instead.</p>	<p>A manufacturing company's operating margin may be reduced to reflect the loss in production caused by high injury and fatality rates and poor health and safety standards. Or the implied cost of its products may have to be revised upward, given more expensive but safer production or service delivery methods.</p>
Cap-ex and cashflow forecasts	Example
<p>An investor may believe that ESG factors will lead a company to decrease or increase future capital expenditure (cap-ex). Investors would then alter their forecasts by adjusting the formula that links cap-ex to revenue. Alternatively, if the investor is aware of specific expansion plans (such as new factories, shops or mines), they can apply one-off, absolute cost adjustments to the forecasted cashflow statement.</p> <p>Analysts should also estimate what the cost of future ESG incidents is likely to be; and based on that, also estimate the required ongoing cap-ex that may be realistically required to address any relevant environmental or social issues.</p>	<p>An analyst concludes that a company is not addressing environmental risks from its operations adequately. The company may face fines or compensation liabilities as a result of such ESG risks materialising, i.e. pollution or loss of natural habitat.</p> <p>This analyst may include such liabilities (or assign probability to such liabilities) in the forecasting model. The analyst may also use such findings as an issue to engage with the company on.</p>
Asset value adjustments	Example
<p>ESG factors can influence assets' anticipated cashflow, such as by forcing long-term or permanent closure, and therefore alter their net present value. The impact is most likely to be a reduction, resulting in an impairment charge being made to bring the book value down accordingly. Such move would reduce not only the asset value but the company's earnings for the year in which the non-cash, one-off impairment charge is recorded on the income statement.</p> <p>An asset revaluation can result in lower future earnings, a smaller balance sheet, additional operating/investment costs and a lower company fair value.</p>	<p>The future cash flow from a mining company's coal assets may be significantly less than estimated, due to insufficient demand or regulatory change. Alternatively, new technology could make it possible for a miner to extract commodities that were previously economically unviable.</p>

Analysts know that some ESG risks will only materialise with a degree of probability (reflecting the likelihood of new legislation or temperature rise scenarios). They will therefore need to use probability-weighted estimates of the impact of ESG risks being realised. Various scenario analysis tools exist to aid understanding of the likelihood of different future scenarios (for example different levels of carbon prices) and the extent of the impact on individual issuers.

Valuation models

Valuation models, such as the present value dividend discount model or the discounted cash flow model, can all be adjusted to reflect ESG factors.

Table 5: Valuation methods

Terminal value adjustments	Example
<p>Discounted cash flow (DCF) models require calculating a terminal value for a company. It is the estimated value of the company at a particular point in the future, based on assumptions about how much cash flow the company is likely to generate into perpetuity given the likely future ESG risks and opportunities. The terminal value, often a major part of the company's fair value, is then discounted back to present value. Given their long-term nature, ESG factors are particularly relevant to the perpetual growth considerations.</p>	<p>In circumstances where investors believe that ESG factors will cause the company not to exist forever, terminal value can be zero. This could happen for example if an energy company's assets are considered stranded and there is doubt over the sustainability of the business model.</p>
Beta and discount rate adjustment	Example
<p>Some investors adjust the beta or discount rate used in present value models to reflect concerns such as poor corporate governance arrangements, or concerns about tax transparency or ethics. This adjustment is usually made in situations where the ESG risks cannot be reflected in future forecasts. As the discount rate in listed equities normally reflects the degree of systematic risk, the analyst may want to judge how much of the identified ESG risks are likely to be correlated with market conditions – noting that some ESG risks such as climate-related events or regulations indeed affect the broad market.</p>	<p>To judge how much the discount rate should be adjusted, the analyst may want to carry out peer analysis of companies within the sector. He or she would then rank the companies using ESG factors. The discount rate can be increased or decreased for companies subject to high or low ESG risk, in turn reducing or increasing the estimated fair value.</p>
Relative valuation models	Example
<p>Equity investors using relative valuation models (instead of, or in addition to present value models) may wish to incorporate ESG characteristics of the security into these models. Such models rely on peer group comparisons of the security's earnings, cashflows or asset-based multiples (Price-to-earnings, Price-to-cash flow or Price-to-Net asset value).</p>	<p>Companies in the peer group may be ranked by an aggregate ESG metric or its subcomponent. The ranking should complement other fundamental financial metrics to determine which companies deserve to trade at a premium or discount to the peer group average.</p> <p>Looking at historical security characteristics (such as overall ESG ratings or occurrence of ESG incidents) and corresponding historical multiples, analysts may learn about the extent of premium or discount observed in the past. They should judge whether or not such peer-relative discount or premium is likely to hold in the future.</p>

Below we provide a selection of examples¹⁰ taken from PRI reporting:

Signatory approaches to financial analysis and security valuation	
Use of a 'bottom-up' ESG integration process	A UK insurer and investment manager uses proprietary ESG tools and a dialogue between specialist ESG teams and equity teams as part of a bottom-up process. This complements a top-down process through CIO-led initiatives to develop an integration agenda, and “deep dives” into thematic issues.
Adjust investment analysts' income forecasts and valuations	An Australian investment manager's teams make the adjustments based on ESG factors that have a significant influence on company value and its ability to drive shareholder returns over the long term.
Quantify the return potential for an individual stock	<p>A European manager's investment teams identify value drivers and then quantify the impact of ESG factors on companies' valuations in three steps:</p> <ul style="list-style-type: none"> ■ identify the most material issues ■ analyse the impact of these material factors and red flags on the individual company ■ estimate the impact of the ESG factors on the value drivers of the company

COMMON QUESTIONS FOR ANALYSTS

Which items should be adjusted for ESG risks and opportunities – financial forecasts or discount rates?

For items such as revenues costs, or capex, especially those that can be quantified, the forecasts that serve as input into discounted cash flow models should reflect (or be adjusted for) ESG risks or opportunities.

For many risks the analyst will need to estimate the probability of different scenarios and the extent of the impact in each scenario, and potentially carry out sensitivity analysis.

When the ESG factors are difficult to quantify or are otherwise uncertain, analysts adjust the discount rate. There are no common industry guidelines for making this decision.

How should relative valuation models be treated?

Where peer-relative valuation multiples are used, if ESG factors cannot be reflected in sales, earnings, cash flow or book value components of the multiples (perhaps because the ESG risks or opportunities relate to future time periods), then those ESG risks should be reflected in the required peer-relative premium or discount.

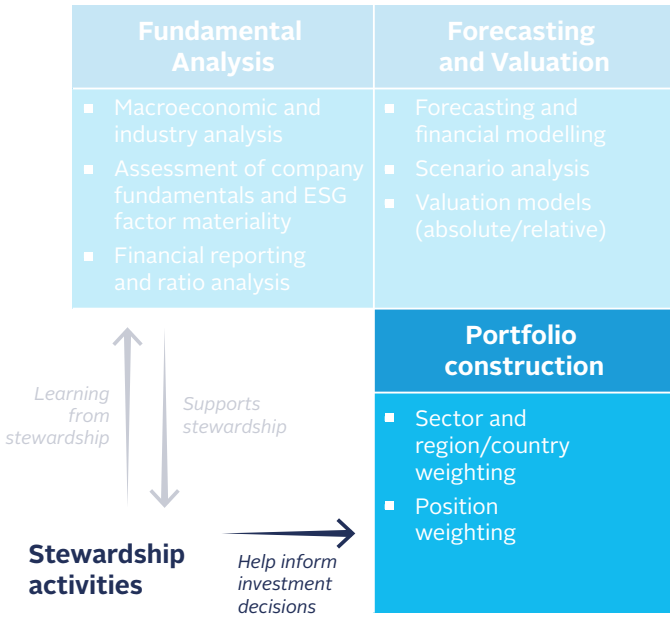
How can one determine what premium or discount to apply to the peer relative price multiple, and hence the target price for the issuer?

The required peer premium or discount relates to how the company scores on its fundamentals, including ESG characteristics, relative to the peer group companies. This is usually done with the help of a system that ranks securities on their characteristics, including ESG ones. The rankings may be aggregate ESG scores or a sub-category score. The securities in the peer group would be ranked from poor to very good. The scale of the required peer-relative valuation premium or discount to be applied to the security in question could be assessed using statistical analysis of past association between the premium/discount and the relative ESG score.

¹⁰ [Transparency Report](#) (p.76), [Transparency Report](#) (p.83), [Transparency Report](#) (p.108)

STAGE 3: LISTED EQUITY PORTFOLIO CONSTRUCTION

Figure 7: The elements of portfolio construction



When applied to individual stocks and securities, the analysis performed in stages 1 and 2 (fundamental analysis, forecasting and valuation) will lead to security buy, sell or hold decisions. The actual portfolio construction process is unique to each institution.

Issues to consider in portfolio construction

- **Aggregate portfolio metrics:** how the chosen securities fit together when viewed as a whole portfolio. This can include measures such as active share (an estimate of how much the portfolio differs from a market benchmark); or various measures of risk and volatility, such as ex-ante tracking error and value-at-risk.
- **Portfolio style factors:** these help investors understand the underlying drivers of returns. A style factor analysis of a portfolio could help an investor determine the extent that its returns are due to following the value style (even unwittingly) – or any other style.
- **Pre-trade analysis:** what would a particular trade, such as a purchase, sale or partial sale of a security mean for the portfolio?
- **Benchmark comparison:** overall ESG characteristics of the portfolio, and how these compare to those of the benchmark.
- **Risk analysis:** what contributes to the ESG risk of the portfolio.
- **Alignment with portfolio mandate:** how the portfolio compares to the investment mandate, and any regulatory limits.

Equity investment managers use a range of in-house or external tools to tackle the above issues. They should have a good overview of the portfolio metrics, and be able to assess how those would change if a position was bought, added to, trimmed or sold.

Weightings of companies, sectors and countries can be adjusted to mitigate ESG risk exposures and avoid breaching risk limits. Asset managers commonly test the sensitivity of a portfolio against scenarios (such as climate scenarios) on a pre- and post-trade basis. The fund's required factor (or style) characteristics are also taken into consideration when new securities are added, or their position is increased. The portfolio construction process is therefore a constant, ongoing activity. An overview of ESG and non-ESG portfolio metrics used to monitor portfolios is provided in Module V: Monitoring and Reporting.

CASE STUDY

State Super: Developing an ESG risk dashboard

State Super's portfolio risk and responsible investment teams collaborated to develop an internal dashboard that captures ESG data together with portfolio risk metrics.



Integrating stewardship into portfolio construction

Investor stewardship often has a dynamic relationship with portfolio construction and ongoing portfolio maintenance. As investors monitor and engage with portfolio companies, they learn more about their preparedness for ESG risks, and their ability to benefit from ESG opportunities. Through such learning, stewardship activities enhance evolving investor knowledge of the issuer and support the quality and depth of fundamental analysis.

In addition, some investors see the opportunity to conduct stewardship as a key factor in influencing the initial decision to hold a company's stock. For these investors, a company may be missing a key ESG policy or practice when they initiate a portfolio position. Engaging with the company to adopt the desired policy or practice then becomes part

of the value these managers generate for clients – either because the issue is one that aligns with clients' values and desired impact for their portfolios; or because the stewardship is addressing a material ESG issue and actively seeking to improve the company's underlying fundamentals.

In this sense, stewardship activities, including outcomes from engagements, help inform investment decisions. These include whether to continue holding the stock or add to the size of the position and, where relevant, to continue to engage – or whether to divest the stock. The PRI's report [Discussing divestment: Developing an approach when pursuing sustainability outcomes in listed equities](#) explores these considerations and discusses the context where divestment may be effective.

HOW PRI SIGNATORIES DESCRIBE THEIR APPROACHES TO PORTFOLIO CONSTRUCTION

Below we provide a selection of examples¹¹ taken from PRI reporting:

Signatory approaches to incorporating ESG considerations in portfolio construction	
Sector weighting approaches	A UK insurer and investment manager compiles an ESG “heatmap” drawing on ESG data from external and internal research. It ranks companies using a traffic light system, which flags companies with low ESG scores to portfolio managers. ESG factors led the firm to take an ‘underweight’ position in the autos sector. These included increased European emissions regulations, governance concerns and costs associated with the electrification of fleets.
	A North American investment manager’s team viewed fossil fuel companies as having high business and operational risk and therefore took a structural underweight position on the sector in portfolios.
	Stock and ESG analyst teams at an Australian investment manager work together at the sector and stock level to assess ESG-related impacts on earnings drivers, earnings outlook, valuation, and investment view – and ultimately the investment recommendation.
Position weighting approaches	A UK insurer utilises a proprietary ESG heatmap to review company risks identified from ESG analysis. This affects the level of conviction in an investment recommendation, and this judgement in turn often translates into the portfolio manager’s level of comfort in position sizing.
	One investment manager signatory uses ESG factor assessments to provide a colour label for investments. Only companies with particular label (i.e. “green” or “orange”) are eligible for inclusion in the portfolio, and their benchmark relative positions are a function of both the colour flag and the valuation assessment.

¹¹ [Transparency Report \(LEI10.3; LEI12.2\)](#), [Transparency Report \(LEI13.1\)](#), [Transparency Report \(LEI01.2, p.42\)](#), [Transparency Report \(LEI10.3\)](#), [Transparency Report \(LEI10.3\)](#)

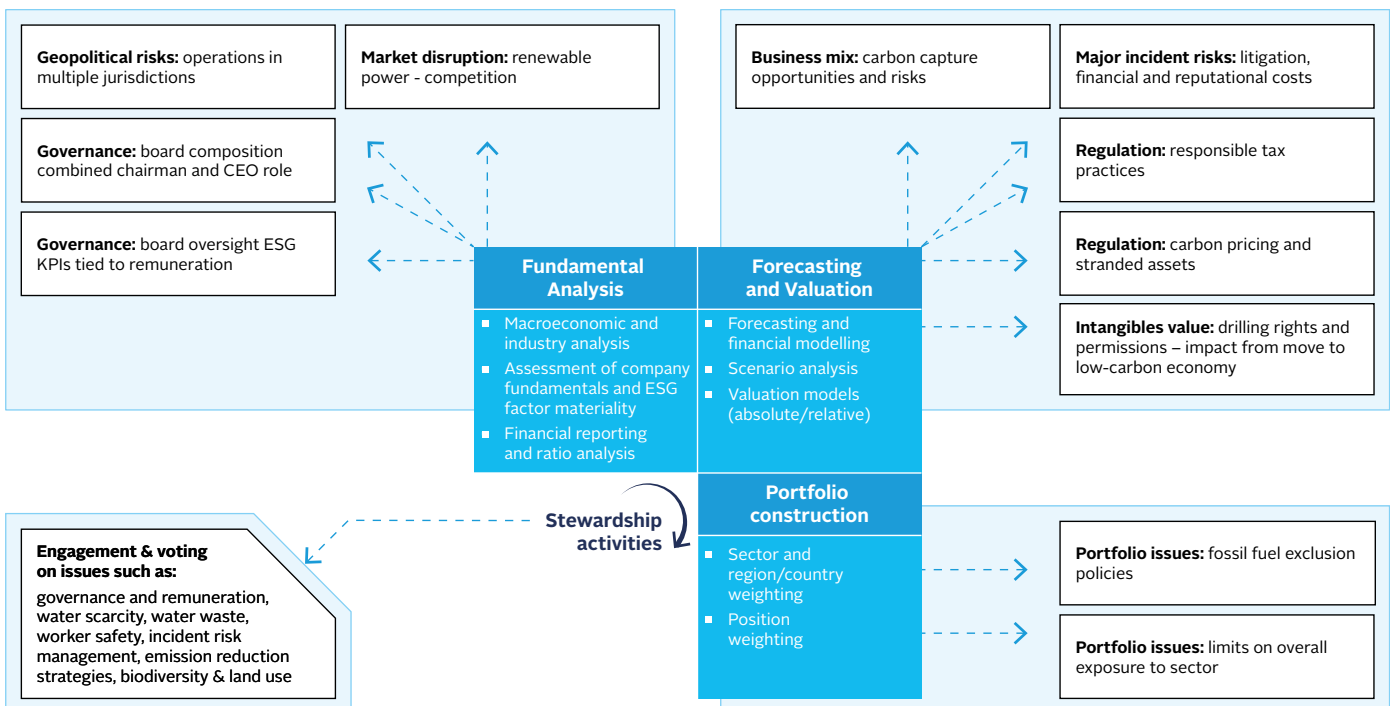
Signatory approaches to incorporating ESG in portfolio risk management¹²

Proprietary dashboards and portfolio snapshot tools to assess and monitor aggregate ESG risks	<p>A London-headquartered investment manager makes a range of ESG analysis tools available to investment teams, including:</p> <ul style="list-style-type: none"> ▪ a proprietary ESG Dashboard (gives a “QESG Score” per stock) ▪ a Portfolio Snapshot Tool, which provides a view of ESG performance at a portfolio level and allows the organisation to observe the aggregate ESG risks across portfolios relative to their respective benchmarks. The tool also examines ESG ratings and controversies and identifies contingent risks ▪ a Carbon Tool, which provides the breakdown of the carbon emissions of the portfolio and calculates the profit at risk for portfolios under different carbon pricing and policy scenarios ▪ a Corporate Governance tool, which highlights key governance characteristics at the company and portfolio level
Assessment of style tilts to support risk management	<p>A Bermuda-headquartered investment manager uses a Global Risk Management team that evaluates ESG style tilts as part of its monthly risk management review of equity portfolios across the firm. This data compares a portfolio’s ESG style factors to the relevant index on a sector and overall portfolio basis. This investment manager has also developed a tool to compare a portfolio’s carbon footprint to the relevant index.</p>

PRACTICAL EXAMPLES

The examples below are selected to provide illustrations of how investors can incorporate relevant ESG issues into a fundamental investment process. They do not capture an exhaustive set of issues or imply any investment views on any particular securities.

Figure 8: The ESG concerns of a major oil company



¹² [Transparency Report](#). (LE01.2), [Transparency Report](#) (ISP 29)

Figure 9: The ESG concerns of a large technology and online retailing company

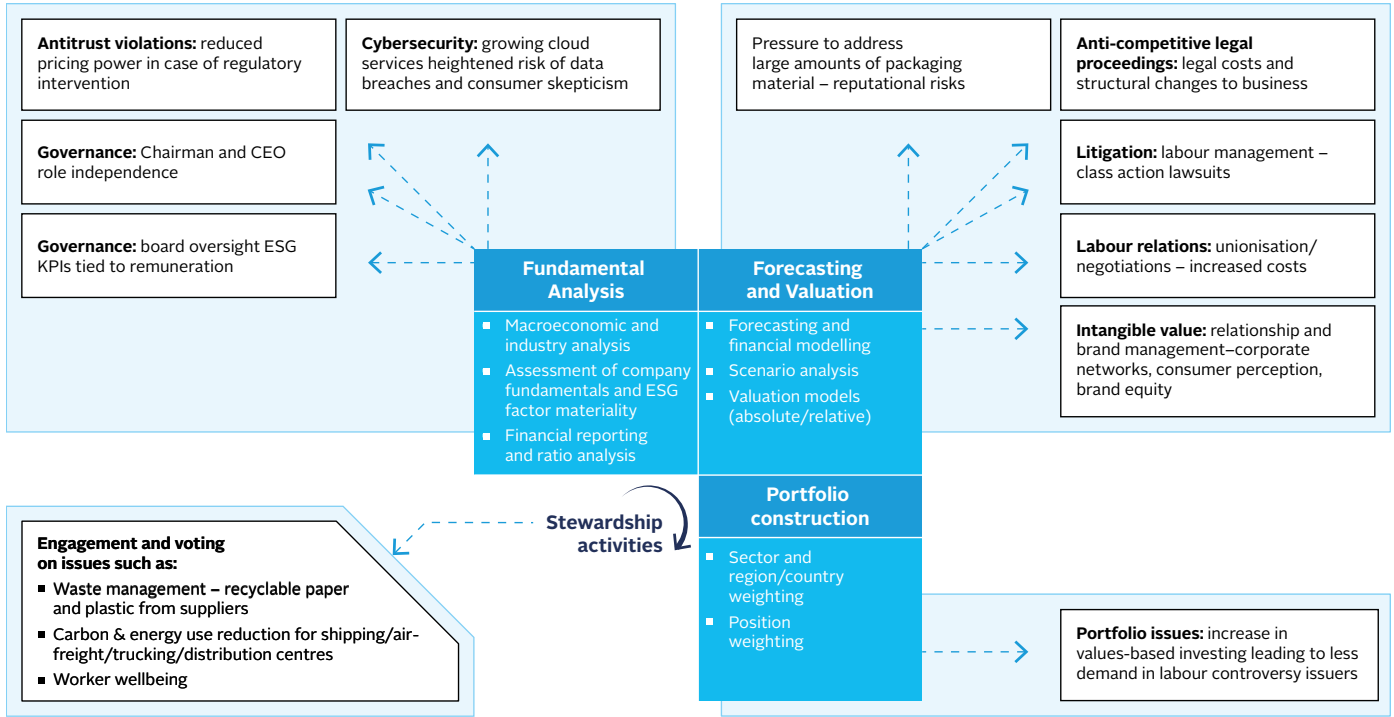


Figure 10: The ESG concerns of a food, household and personal care producer

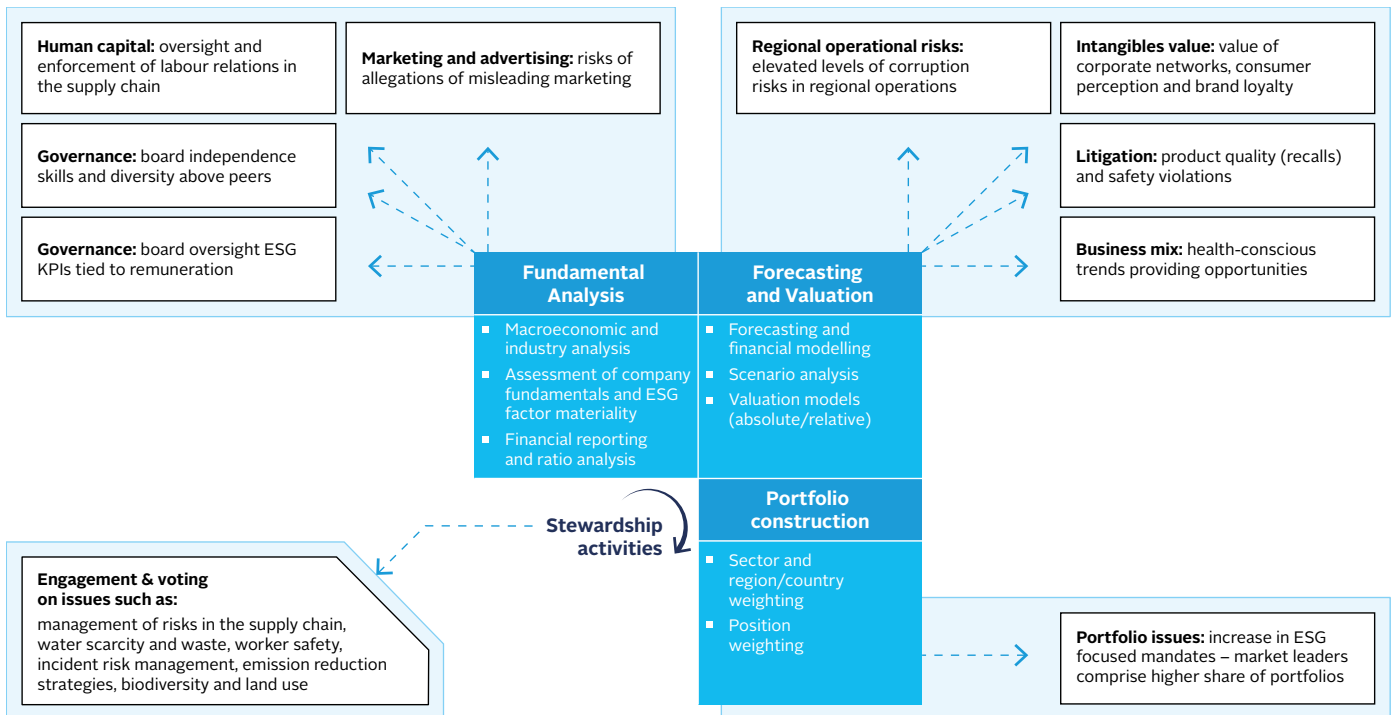
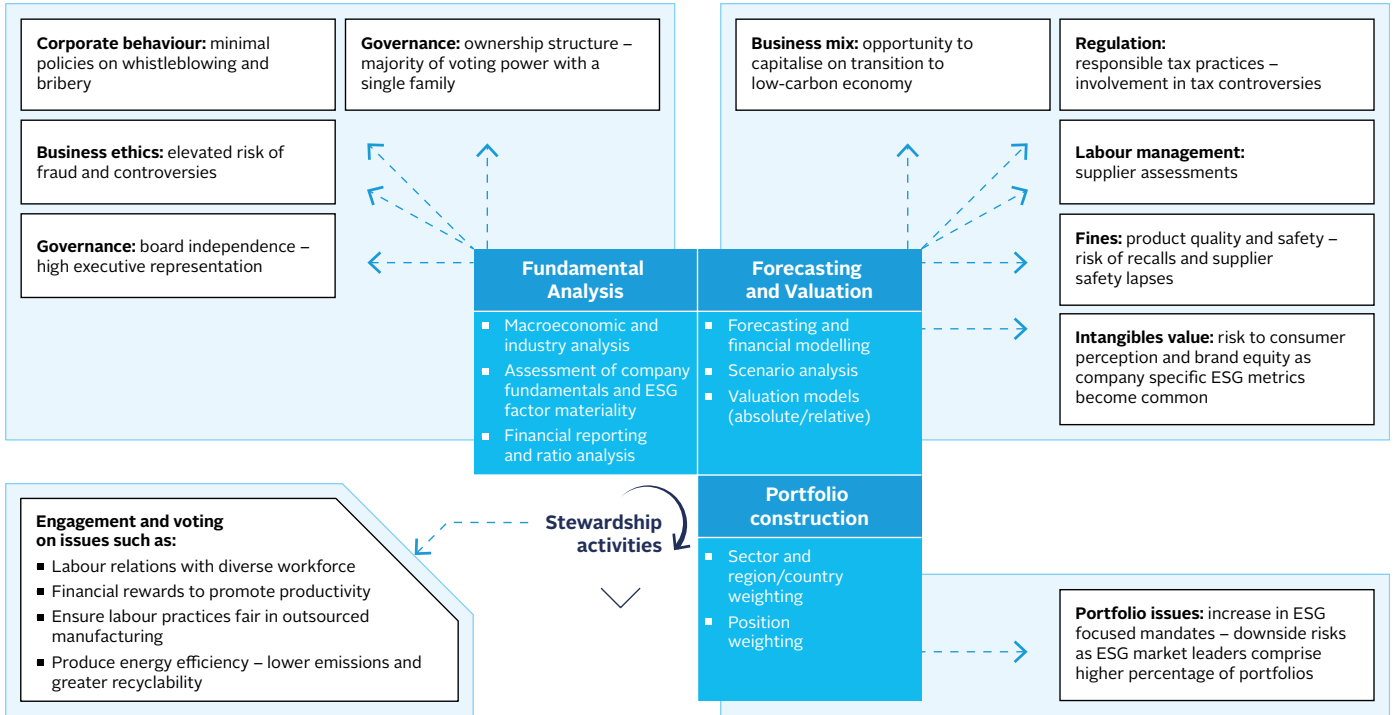


Figure 11: The ESG concerns of a consumer goods manufacturer



ESG INTEGRATION IN ACTIVE QUANTITATIVE STRATEGIES

This section explores how ESG considerations can be integrated into the three stages of an active quantitative investment process. Examples of how signatories describe their quantitative investment strategies are also provided.

Figure 12: Quantitative investment processes



Key characteristics of quantitative strategies: the role of judgment

A key feature of quantitative, systematic investing is that it uses rules-based investment algorithms. Managers build computer-based models that regularly determine which stocks and sectors to include in a portfolio, based on the factors they believe drive their returns. Once launched, the models run independently, without regular intervention, except for the maintenance of the quant infrastructure. This eliminates human cognitive biases, which has proven useful to generating financial returns. But it does not guarantee investment success, and the strategy may struggle if there is a change in market conditions.

In practice, quant investment managers will be constantly refining the strategies and enhancing their inputs. This is highly relevant for quant ESG strategies, as data availability improves.

Key characteristics of quantitative strategies: the role of data

Most quantitative strategies rely on large amounts of data. The strategies utilise traditional financial information such as accounting metrics, but have grown to include ESG data and other alternative (non-financial) datasets such as satellite images and logistics data. The data may be structured or unstructured, in which case it needs further processing. Inevitably, data cleaning plays an important role. As more high-quality data becomes available, managers can find and test more statistical relationships. On the other hand, this also increases the risk of finding false patterns. In addition, insights that were unique last year may become available to others and swiftly priced into markets, making innovation a critical aspect of any investment process.

What quantitative strategies are

Active [quantitative investment strategies](#) are systematic rules-based investment strategies. They are based on observed statistical relationships between stocks; or more precisely, between characteristics of those stocks. A characteristic that could be a driver of return and risk is known as a “factor”.

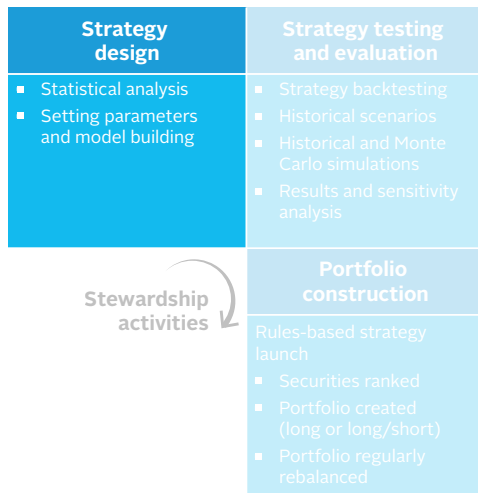
Quantitative strategies analyse and combine many such factors, with the aim of building portfolios that can outperform a market benchmark. In addition to well-documented financial factors such as size or value¹³, stocks’ ESG characteristics can also be factors where they are quantifiable and grounded in evidence. A change in the company’s level of greenhouse-gas emissions might be considered an environmental factor, for example.

Quantitative portfolios typically hold more securities than fundamental strategies, enabling investors to better tailor portfolios to their clients’ preferences. ESG data availability has improved significantly in recent years, prompting greater integration of ESG considerations within quant strategies.

¹³ Shares of companies with a smaller market capitalisation tend to outperform those of larger firms in the long run. See Norges Bank Investment Management (2012), [A Survey of the Small-firm Effect](#)

STAGE 1: INVESTMENT STRATEGY DESIGN

Figure 13: The elements of investment strategy design



Sound idea, quantitative research, and statistical analysis

The process begins with an investment idea, or hypothesis, which should be grounded in sensible economic theory. It also needs to be supported by empirical evidence, so analysts use statistical analysis to explore relationships between variables in datasets, and identify patterns and possible drivers of security returns. If this analysis supports the original idea, then it is developing into a sound, quantitative investment thesis. They may use regression analysis or study correlations to understand linkages between security characteristics (factors) and returns, as well as real-world outcomes, to understand causality and develop the hypothesis. Evaluation of relationships between variables is used to ensure that the investment strategies employed are based on evidence and a sound investment rationale. Quant strategies therefore often reflect fundamental beliefs, but allow investors to apply these insights in a scalable and consistent way.

Integrating ESG factors

The statistical analysis described above makes use of a range of common characteristics that drive returns – so-called factors. Performance of a factor is evaluated for usefulness and significance. The table below outlines the main differences between the traditional factors in quant investing and the emerging ESG factors. While the former are widely accepted in the industry as explaining returns, for ESG stock characteristics the evidence is still evolving.

Table 6: Traditional factors compared to ESG factors

Traditional factors	ESG factors
<p>The traditional factors such as momentum, size, quality, value and low volatility¹⁴ satisfy a number of criteria:</p> <ul style="list-style-type: none"> each factor has a solid academic rationale for the existence of a return premium (rewards for bearing risk, structural or market impediments, or investors' behavioural biases) there is ample empirical evidence that supports the factor premium (they are so-called "rewarded" factors) they can be implemented at scale they exhibit low correlations with other factors over the long-term 	<p>ESG factors such as those based on emissions data, or gender and diversity statistics typically lack long-term evidence of being persistently rewarded or punished by the market. They also:</p> <ul style="list-style-type: none"> can be identified and incorporated into strategies alongside more traditional financial data - in order to design portfolios that seek to capture the factor premiums while displaying favourable ESG metrics often rely on technology that has only been available for a few years, such as: <ul style="list-style-type: none"> textual data for natural language processing emissions or water consumption data derived using web-scraping data from images

14 Corporate Finance Institute (2022), [Factor Investing](#)

ESG considerations can be integrated into quantitative analysis in a number of ways. Where the environmental, social or governance characteristics of a stock are both quantifiable, and observably drive returns, they can be verified as ESG factors worth building into an investment model. The following table sets out how this is done:

Table 7: ESG factors

Simple model	Multi-factor model	Factor switching/timing
<ul style="list-style-type: none"> Study the relationship between a specific ESG characteristic of issuers and security returns. Compile various ESG characteristics into an overall ‘ESG score’ for each stock. This score, or the rate of improvement in scores, could be used as a model input. 	<ul style="list-style-type: none"> Assess the relationship between ESG factors and more established, traditional factors such as value, size, quality or momentum. An alternative to combining traditional factors with the ESG ones is to embed ESG data in factor definitions themselves. 	<ul style="list-style-type: none"> Identify statistical relationships between variables indicating market conditions, and the performance of stocks with particular characteristics (including ESG ones). Aim to develop a model that changes portfolio exposure to different factors as market conditions change.
<p>Example: The ESG characteristics are a factor in this sense, developed in-house or provided by ratings providers. Such “best in class” vs “worst in class” approach would be the simplest single-factor strategy.</p>	<p>Example: The so-called quality factor could be expanded to capture ESG characteristics such as employee satisfaction, or the management’s regard for human rights.</p>	<p>Example: A strategy may be based on automatically switching between quality and momentum exposures, based on changing market conditions.</p>

Setting parameters and model building

Having developed an investment thesis and carried out statistical analysis, the next step is to put investment parameters in place. Typical parameters that need to be specified are provided in the table below:

Table 8: Investment parameters

Parameters	Examples
<p>The investment universe (the domain of securities from which portfolios are to be constructed). This includes:</p> <ul style="list-style-type: none"> any size, liquidity or geographic constraints any client-driven ESG constraints, such as exclusionary screening or filtering 	<ul style="list-style-type: none"> Securities listed on a particular exchange (NYSE, LSE, Euronext) Securities represented in a benchmark (i.e. FTSE 100, FTSE4Good, MSCI AC World, MSCI Europe ESG Leaders Index) ESG constraints and filters: <ul style="list-style-type: none"> exclusion screens best-in-class selection criteria
<p>The investment objectives:</p> <ul style="list-style-type: none"> investment goals and hypotheses – benchmark relative, absolute or risk-adjusted returns ESG constraints and outcomes 	<ul style="list-style-type: none"> Maximise Sharpe ratio Deliver alpha (outperform a relevant market benchmark) Limit Value at Risk (VaR), Climate VaR (CVaR) or maximum drawdown Reduce carbon footprint Target a defined sustainability outcome

Parameters	Examples
<p>Choice of factors and weighting process:</p> <ul style="list-style-type: none"> ■ a single factor or a more common multifactor structure (typically a linear combination of factors) ■ how the factor (or stock selection criteria) will be weighted: <ul style="list-style-type: none"> ■ equal weights of multiple fundamental factors, or ■ risk parity factor portfolios – which weight factors based on an equal risk contribution 	<p>Traditional fundamental factors:</p> <ul style="list-style-type: none"> ■ growth (i.e. year-on-year growth in Earnings Per Share) ■ price momentum: 3 or 12 months' return ■ value: book value to market value, or a measure of financial stability ■ sentiment: 3 month EPS revision <p>ESG factors:</p> <ul style="list-style-type: none"> ■ stock ESG rating (aggregate score, proprietary or from ratings provider) ■ individual E, S or G score ■ rate of change (or “momentum”) of individual or aggregate ESG scores over the past 12 months ■ alternative data such as employee or customer sentiment, based on text analysed using natural language processing
<p>Method of implementation</p> <p>Decide whether the strategy will pursue a defined deviation from a market benchmark (known as “tilting”) or build a bespoke portfolio aimed at achieving absolute returns, whether:</p> <ul style="list-style-type: none"> ■ long only ■ long and short ■ long-short <p>Decide on portfolio construction options: (i) quartiles or deciles (ii) ranking of individual stocks (iii) optimised.</p> <p>Set any limits on portfolio-level exposure to ESG metrics.</p>	<p>Long-short factor strategies rank stocks according to the selected factor. They may sort them into quartiles or deciles. They will then buy the more highly-rated stocks and may short-sell the lower-ranked ones.</p> <p>Portfolio optimisation is the process of using computer analysis to consider a very large number of combinations of holdings giving a range of potential portfolios in order to select the one likely to produce the best returns.</p> <p>Limits on risk or constraints including ESG objectives (i.e. a minimum ESG score), tracking error vs. benchmark, or sector or region benchmark deviations are built into the process.</p>
<p>Frequency of rebalancing</p> <p>Considered in conjunction with assessment of transaction costs.</p> <p>Frequency of changes in ESG metrics may be considered too.</p>	<p>Monthly, quarterly or annually</p> <p>The model selects every rebalancing period and holds stocks until the next one. At every rebalancing period portfolio holdings change based on recent financial or ESG data and market conditions.</p>

STAGE 2: MODEL TESTING AND EVALUATION

Figure 14: The elements of testing and evaluation



Investment strategy backtesting

Once the parameters are decided upon, the strategy is backtested to confirm its effectiveness. This involves feeding historical financial data into the model to understand how it would have performed if it had been implemented in the past. This relies on there being a sufficient history of past data, which can be a challenge with newer datasets, including some ESG data. Back-testing approximates real life investment process by using actual historical financial and ESG data.

The key outputs of backtesting are return and risk metrics (Sharpe or Sortino ratios; maximum drawdown). The process can also produce portfolio ESG metrics, such as an aggregate ESG score, or more specific measures such as GHG emissions intensity or aggregate Implied Temperature Rise (ITR). Visual tools are an intuitive way to summarise and assess results and are increasingly common. Strategy backtesting should be done over long enough time periods to cover structural breaks in market conditions (such as financial crises), geopolitical events, milestones in ESG reporting or regulations, or changes in macroeconomic policies.

A number of problems can arise when backtesting quant strategies. These include survivorship and look-ahead biases; difficulties that can be compounded by a lack of availability or consistency in the data itself, as with some ESG data. Data snooping, which arises when managers make inferences only after looking at statistical results rather than testing a prior inference, should be avoided. Importantly, past or backtested performance is not a reliable predictor of future performance and should not be the sole consideration for investors when selecting a product or strategy.

Historical scenario analysis

Historical scenario analysis is a type of backtesting that explores the performance and risk of an investment strategy in different structural regimes and at structural breaks. Those can be economic expansions and recessions, periods of highly accommodative/restrictive monetary policy or periods before and after the introduction of major ESG regulations impacting operations of or disclosures by listed companies.

Simulations

Simulations explore how a strategy would perform in a hypothetical environment. They are used in recognition of the fact that the past may not recur, and that only a limited number of all possible future observations for important variables is represented in history. Simulations are usually followed by sensitivity analysis.

- Historical Simulation:** Returns selected at random from many different historical periods – without regard to time-ordering. The analyst would specify the characteristics of the distribution of possible variables.
- Monte Carlo simulation:** Each key input variable is assigned a statistical distribution. Such simulation is complex and computationally intensive. Multiple scenarios are simulated in order to analyse and study the behaviour of the strategy across different possible paths.

STAGE 3: PORTFOLIO CONSTRUCTION AND IMPLEMENTATION

Figure 15: The elements of portfolio construction



If backtesting is completed and results are in line with expectations, showing potential for the strategy, quant managers will implement the model. The system automatically picks the securities to go long and which, if applicable, to go short. Following the launch the portfolio will be regularly rebalanced to ensure it remains true to the strategy.

Maintaining and evolving quantitative strategies

Although quantitative strategies are designed to run without intervention, they may need to be updated if market conditions change substantially. In any case, many quant managers will be looking to refine the strategies over time. The techniques used to define and construct both traditional and ESG factors will certainly evolve over time, even if the overall strategy, fund name and high-level description remains the same.

The role of stewardship in quantitative investing strategies

In fundamental investing, stewardship activities are often deeply intertwined with investment and analysis. This is less true of quantitative investing, which stems from quant investors not analysing securities individually. Instead, they identify factors present across many stocks and build portfolios of large numbers of securities that feature the desired factor attributes, or a combination of them. This means that quant investors do not typically identify the kind of company-specific knowledge that informs engagement with management.

Nevertheless, asset management firms employing quant strategies often offer them alongside active fundamental ones. It is common for such entities to have a stewardship team in place that draws knowledge and insights from the fundamental strategies teams. Such a stewardship team is then in a good position to exercise voting rights and engage with the issuers held by the quant portfolios as part of its stewardship programme. Alternatively, the organisation may make use of third-party voting advice providers. The stewardship teams may also choose to engage on sector-wide issues across a number of companies held in the portfolio.

CASE STUDY

Rockefeller Asset Management:
ESG improvers – an alpha enhancing factor

RAM built a proprietary process, which it calls Rockefeller's ESG Improvers Score, to calculate a firm's ESG trajectory.



EXAMPLES OF ACTIVE QUANTITATIVE STRATEGIES

The examples below illustrate how quant strategies are designed in practice, and how ESG considerations can be integrated within them.

ARABESQUE ASSET MANAGEMENT

Arabesque Asset Management is one of the first asset management companies that is fully specialised in sustainable investing based on quantitative models (“ESG Quant”) for public equities. ESG analysis has been at the core of all Arabesque investment strategies since their inception, with 100% of investment strategies integrating sustainability considerations. Arabesque believes that incorporating ESG data into the investment process improves the information environment and enables better investment decision-making, whilst also driving progress towards a more sustainable future.

Its rules-based investment process combines an evidence-based approach to sustainability; quantitative and artificial intelligence (AI)-driven analysis; and sophisticated risk management technologies. Arabesque incorporates non-financial data provided by its sister company ESG Book. ESG Book gathers information from a variety of sources, including company reports, public information, news, and NGO campaigns, in order to evaluate companies’ sustainability performance. The results are expressed through a suite of proprietary scores:

- **ESG Score:** This gauges company performance according to financially material environmental, social and governance criteria, on a sector-specific basis. Stocks with the top 75% ESG scores per sector are eligible for the investment universe.
- **United Nations Global Compact Score:** This is an assessment of each company based on the core principles of the UNGC: human rights, labour rights, the environment and anti-corruption. The companies with the worst 5% GC scores are excluded from the investment universe.
- **Temperature Score™:** This measures the extent to which companies are contributing to global temperature rise. It is calculated by translating a company’s publicly reported greenhouse gas emissions to a temperature based on sector-specific emissions pathways (IEA scenarios¹⁵). Companies with business involvement in fossil fuels in the energy, utilities, materials, and industrials sectors that are not aligned with the Paris Agreement or have no Temperature Score are removed from the investment universe.
- **Preference filters:** This filter flags business involvement in areas such as gambling, weapons, tobacco, etc. The exact exclusion varies on the investment strategy.

Based on information provided by Arabesque Asset Management

¹⁵ The scenarios analysed by the International Energy Agency’s [Global Energy and Climate Model](#)

PANAGORA ASSET MANAGEMENT

PanAgora Asset Management uses a range of techniques to identify so-called ESG alpha factors and design quantitative strategies that pick stocks sensitive to those factors, referring to the process as “signal discovery”. Using these techniques, the portfolio managers regularly rank the stocks from worst to best, and systematically go long the ones showing best scores.

One technique focuses on assessing employee motivation. It involves web-scraping techniques to read millions of direct comments from employees, giving their thoughts on management and job satisfaction. One such strategy utilised employee reviews from Glassdoor, a website where current and former employees write anonymous reviews about their companies. The model quantifies the positivity in each sentence to identify a set of companies that benefit from employee satisfaction.

Institutional Investor (2021), [How PanAgora is Quantifying ESG Investing](#)

Another technique uses natural language processing (NLP) and other advanced computer-analysis techniques to assess whether companies are aligned with the UN SDGs. Many of the intangible assets are only disclosed in narrative sections of the financial reports. With natural language processing techniques, PanAgora is able to analyse the texts and create a model that measures corporate alignment with sustainable development goals.

Amir Amel-Zadeh, Mike Chen, George Mussalli and Michael Weinberg (2021), [NLP for SDGs: Measuring Corporate Alignment with the Sustainable Development Goals](#)

Another alpha factor that PanAgora uses is based on the notion that corporate executives avoid disclosing bad news too early. Once they disclose negative news, they tend to work to remedy their ESG-related issue, improving ESG Alpha. The fund relies on a proprietary ESG dictionary, using NLP to read through documents and then applying machine-learning techniques to assess the relative impact of ESG comments.

Mike Chen and George Mussalli (2018), [Integrated Alpha: The Future of ESG Investing](#)

ESG considerations at PanAgora are not limited to stock selection. PanAgora believes that starting an investment process with ESG considerations and then focusing on returns is likely to be suboptimal. Instead, they recommend using an ESG budget that should be spent where the model alpha confidence is weaker.

Eric Sorensen, George Mussalli, Sebastian Lancetti and Daniel Belanger (2022), [ESG, Fundamentals, and Stock Returns](#), published in The Journal of Portfolio Management, Volume 48, Issue 10.

BLACKROCK

BlackRock's approach to factor investing includes ESG considerations in several ways:

- i. **By applying ESG and carbon intensity constraints as part of the portfolio construction process.** Under this approach, BlackRock optimises portfolios to select the best mix of traditional financial factors within a set of ESG and carbon-intensity constraints, which depend on the particular fund or client's investment strategy. The firm has found that quantitative portfolios optimised in this way can have virtually identical realised returns and risk, compared to factor portfolios optimised without ESG constraints. This is partly due to the fact that multifactor portfolios tend to have an improved ESG score and a lower carbon emissions intensity relative to the market.¹⁶
- ii. **By explicitly using ESG data in the factor definitions.** BlackRock's factor research generates enhanced insights using new data sources and systematic techniques. The goal is not to discover new factors, but instead to bring fresh ESG insights to existing ones, while remaining true to the economic rationale underpinning each factor. In this way, newly-available ESG data can be used, when consistent with fund or client objectives, to evolve measures of factors beyond the financial information found in balance sheets and earnings statements. For example, BlackRock uses machine-learning techniques to search earnings call transcripts for frequency of words positively associated with strong company culture (i.e. innovation, integrity and teamwork). This adds a new ESG dimension to the traditional quality factor, which looks for companies with more stable earnings and stronger balance sheets. ESG data-driven insights are also incorporated into the value factor definition where patents are used as measure of intangible assets. The insight overweights companies with higher green patents – patents promoting ESG innovation – relative to market capitalisation. These alternative quality and value insights are diversifying and additive to traditional factor insights.

Overall, BlackRock's experience integrating ESG data into traditional factors suggests:

- i. For **macro factors** (drivers of returns across asset classes), it is possible to construct portfolios with similar or better returns (than those based on market capitalisation-weighted index exposures) while improving upon sustainability characteristics – in particular, lower carbon emissions and higher ESG scores.¹⁷
- ii. For **style factors** (drivers of return within asset classes), a multi-factor portfolio structurally has a modestly higher ESG score and reduced carbon emissions intensity than its benchmark. Additionally, style factors such as low volatility and quality have a persistent pro-ESG profile.¹⁸

Adapted from [FTI Strategic Communications Spotlight on Sustainability Series: BlackRock](#)

¹⁶ Ying Chan, Ked Hogan, Katharina Schwaiger and Andrew Ang (2020), [ESG in Factors](#), published in the Journal of Impact and ESG Investing

¹⁷ Philip Hodges, He Ren, Katharina Schwaiger and Andrew Ang (2022), [Net Zero Investing for Multi-Asset Portfolios seeking to satisfy Paris Aligned Benchmark Requirements with Climate Alpha Signals](#)

¹⁸ Ying Chan, Ked Hogan, Katharina Schwaiger and Andrew Ang (2020), [ESG in Factors](#), published in the Journal of Impact and ESG Investing

INVESCO'S QUANTITATIVE STRATEGIES (IQS)

Invesco's Quantitative Strategies (IQS) business also uses portfolio optimisation to integrate ESG information into its multi-factor strategies, which seek to outperform their benchmarks while enhancing ESG profiles. They integrate ESG measures in the multi-factor approach that builds on the proprietary factors quality, momentum, value and low volatility.

For its carbon-optimised portfolio solutions, the ESG criterion of choice is the active management of carbon emissions. It tracks CO₂ emitted per million dollars of revenue in order to make emissions comparable across different companies.

The strategy involves two core steps:

1. Building a portfolio of stocks which performs very similarly to the market benchmark (it has low tracking error) but which has significantly lower carbon emissions
2. IQS' usual multi-factor investment process is then applied to this portfolio.

This process seeks to replace stocks with negative ESG scores (i.e. high carbon intensity) with stocks that exhibit more positive ESG characteristics, while keeping the overall mix of factors (and therefore return and risk expectations) unchanged.

IQS tested the proposed new Carbon-Managed UK Multi-Factor Strategy against the incumbent UK Multi-Factor Strategy over time. The firm found the two funds' average factor exposures were almost identical, and so were returns. This remained the case when the new strategy was actually launched in early 2020, but the new strategy also showed significantly lower CO₂ emissions, as intended.

Based on [Multi-factor strategies and ESG – perfect partners](#) by Invesco

ESG INTEGRATION IN PASSIVE STRATEGIES

This section covers the integration of ESG considerations into passive strategies, through the selection or design of ESG indices and through stewardship.

Passive investing is a term that covers a large number of funds and strategies, but they all have one goal in common: to mirror the makeup and performance of an index. The choice of passive strategies is an active decision by an investor, with a wide range of ESG indices available for those who wish to pursue investments with ESG characteristics. Once the index is selected or designed, the investment manager works to execute a strategy that mirrors the performance and volatility of the index at low cost and with low tracking error. The actual techniques, such as full index replication, stratified sampling, or a partial replication process, as well as other approaches such as the use of derivatives, are not the subject of this guide.

ESG indices and their design are described next, followed by a discussion of stewardship, an important part of passive investing and one that is growing in prominence.

ESG INDICES

ESG indices come in many varieties and are usually designed by index providers (see examples below). Thousands of ESG (and non-ESG) indices are available, and investment managers are also able to create custom benchmarks, either internally or commissioned from service providers. Indices are then made investable when an investment manager launches a fund which tracks them. These can include off-the-shelf products like ETFs, or bespoke passive mandates for institutional investors. (Please see the Robeco case study below).

This index-tracking approach is similar to quantitative investing in that both are systematic, involving little or no human judgement over stock selection once the index is designed and launched. The key difference is that active quant approaches seek to systematically outperform market benchmarks, while passive funds seek to systematically match them.

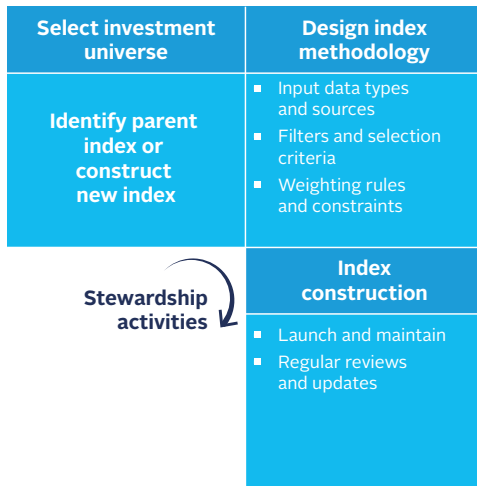
Table 9: ESG index roles

Roles of indices	Examples
To gauge the performance of a specific capital market or market segments	<ul style="list-style-type: none"> ■ Understand the broad market performance ■ Compare the financial performance of high ESG score companies against the market ■ Historical statistics generated by ESG index data support a deeper understanding of sustainable investing and how ESG affects performance, risk and financial fundamentals
To measure relative risk and return performance	Compare performance of actively managed portfolios (segregated mandates or investment products) to a benchmark.
To support investors seeking to align their benchmarks with their objectives.	An asset owner may wish to allocate funds into passive strategies that reflect sustainability-themed objectives, such as climate.
To serve as the basis for the construction of specific products.	Most ETFs and index funds are based on a specific index.
To serve as a basis for the design of derivative instruments	Exchange traded or OTC index futures, options or swaps.

In addition, ESG indices can be used to define an investment universe from which active managers may want to select stocks, knowing that the universe has a better ESG risk profile than the wider market. It can also be argued that

responsible investment indices encourage constituent companies to improve their practices or disclosures, in order to remain in the index. In this way, the indices can reinforce minimum standards for responsible corporate behaviour.

Figure 16: Passive index design



The index design process

The typical ESG benchmark design process (shown in Figure 17 below) usually starts with a universe and/or parent index that is geographically broad and market-cap weighted.

Index designers then apply exclusions, either reflecting the preferences and values of the desired investors (e.g. excluding tobacco companies), or based upon an ESG rating or scoring system.

Alternatively, indices can also be designed with a positive screen; by identifying companies with particularly high ESG scores or other desirable characteristics (e.g. a certain percentage of revenues judged to be “green”). Indices are constructed this way in order to capture opportunities arising from environmental or social trends.

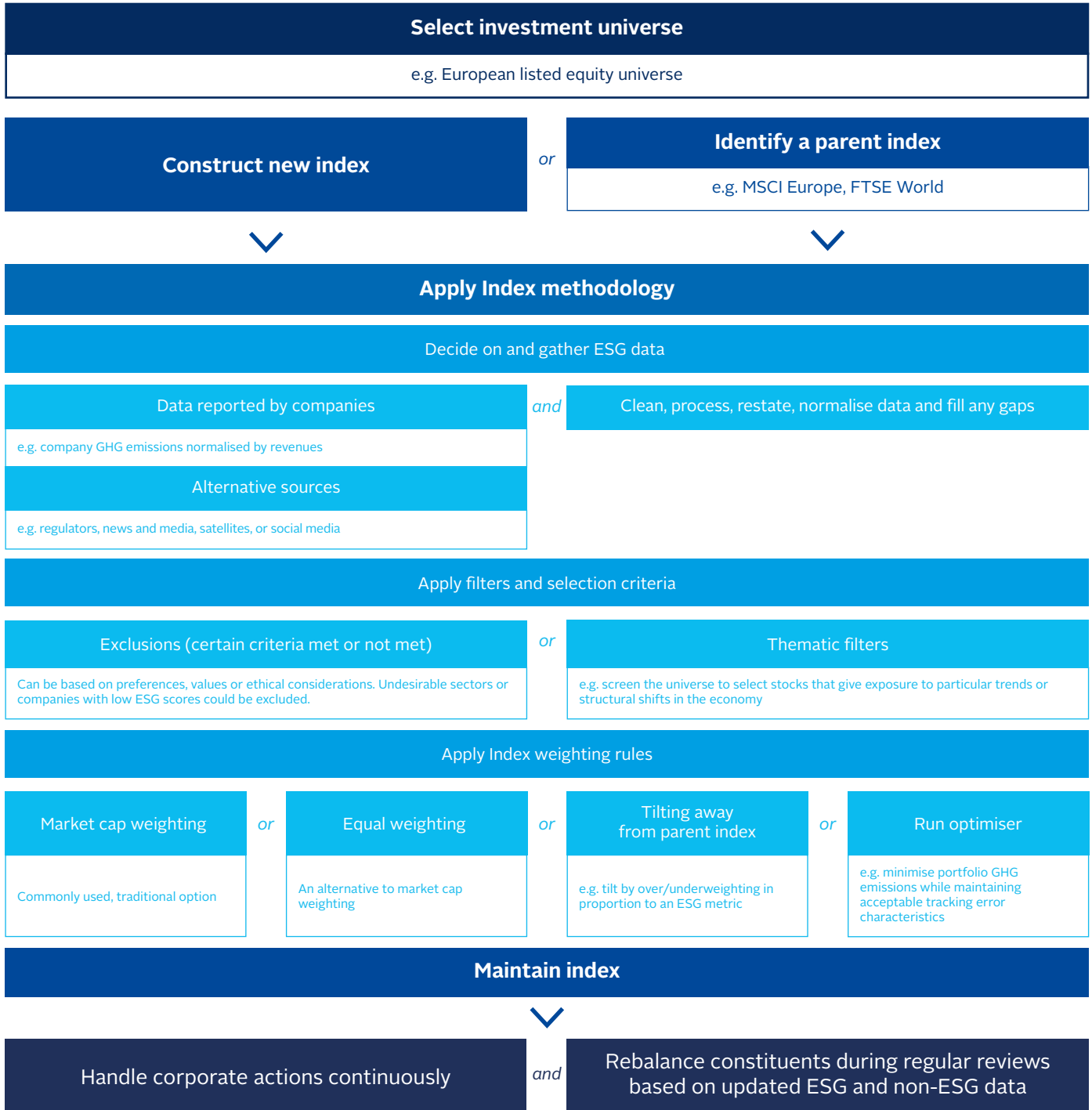
The index may also be designed to give a larger weight to high-ESG stocks, or to underweight poor ESG performers: a process known as “tilting”. For example, exposures to companies with higher-than-average GHG emissions can be reduced by lowering their weights. This can be done when applying an emissions cap to the index.

The challenge, and a common objective of the ESG index design process, is to construct an index that not only reflects the required ESG preferences or criteria, but that otherwise maintains the other characteristics of the parent index, particularly diversification, return, volatility and factor exposures.

The most complex designs use optimisation: a statistical process that analyses very large numbers of potential index constructions and selects the best one based on the desired criteria. Typically, this is done where the designer wants to optimise for two or more objectives, e.g. to maximise exposure to a particular ESG characteristic while maintaining a similar level of return and risk as the parent index. The downside is that it can be unclear why a particular stock is underweighted or overweighted, because this decision is an output of the statistical models that the optimiser has used.




Once the index is constructed, it must be maintained and rebalanced using rules that govern the treatment of mergers, acquisitions and corporate actions, just as in a non-ESG index. In addition, it must also have a process for rebalancing based on changes in the ESG data used to include, exclude or weight stocks.

Figure 17: Common steps in ESG index construction process



Index providers offer a very large number of ESG indices; the table below shows a small selection.

Table 10: Approaches to ESG index design

MSCI SRI Indexes 
<ul style="list-style-type: none"> ■ are based on a parent MSCI index (World, ACWI or EM) ■ exclude sectors such as: alcohol, tobacco, gambling, civilian firearms, military weapons, nuclear power, adult entertainment and genetically modified organisms ■ weight companies by ESG ratings: companies with the highest ratings make up 25% of the index's adjusted market capitalisation
FTSE TPI Climate Transition Index Series 
<ul style="list-style-type: none"> ■ are based on market-cap weighted FTSE index ■ vary (“tilt”) constituent weights according to five climate considerations using the following data inputs: <ul style="list-style-type: none"> ■ fossil fuel reserves: underweight companies with fossil fuel reserves ■ carbon emissions: over- or underweight companies according to their greenhouse gas emissions, whilst remaining neutral between sectors ■ green revenues: overweight companies generating revenues from the transition to a green economy ■ management quality: over- or underweight companies according to how they are managing the risks and opportunities of the low-carbon transition, and how they are addressing the Task force on Climate-related Financial Disclosures (TCFD) ■ carbon performance: over- or underweight companies according to the extent to which they are committed to managing their carbon emissions in line with keeping global warning below 2°C
S&P Global Water Index 
<ul style="list-style-type: none"> ■ is derived from a global universe of companies whose shares are listed on developed market exchanges ■ selects companies involved in water related businesses ■ selects 50 companies and distributes them equally between two distinct clusters of water related businesses: water utilities & infrastructure, and water equipment & materials ■ uses free-float adjusted market capitalisation to set the weights, subject to cluster weight constraints

CASE STUDY

FTSE Russell: Incorporating climate considerations into a multi-factor equity index

FTSE Russell's index provides balanced exposure across targeted factors, and significantly reduces the index-level exposure to carbon dioxide emissions and fossil fuel reserves.



CASE STUDY

Robeco: Embracing ESG investing through a sustainable multi-factor equity index

Robeco's index solution blends ESG aspects with well-documented factor premiums to achieve predefined risk/return and ESG objectives.



CASE STUDY

BlackRock: Balancing ESG ratings, carbon footprints and risk in index portfolios

BlackRock found that ESG optimisation can be used to help maximise a portfolio's ESG rating and/or minimise a portfolio's carbon footprint – within specific active risk constraints.



CASE STUDY

FTSE Russell: TPI climate transition index – aligning a global equity portfolio with the climate transition

This index provides investors with benchmarks informed by cutting edge analysis to align a broad equity portfolio with climate transition, the goals of the Paris Agreement, and the TCFD recommendations.

**CASE STUDY**

FTSE Russell and Pensioenfonds Detailhandel: Aligning a passive equity portfolio with the SDGs

Pensioenfonds Detailhandel engaged FTSE Russell and BlackRock to develop ways to implement an SDGs policy within the investment strategy, and the partners created an SDG Aligned Index.

**CASE STUDY**

UBS: Integrating climate change in passive investments: A developed markets equity strategy

In order to collaborate with its clients in addressing climate change risks for passive allocation, UBS designed a rules-based equity solution to capitalise on the long-term transition to a low greenhouse gas (GHG) emissions economy.

**EU PARIS-ALIGNED BENCHMARKS AND CLIMATE TRANSITION BENCHMARKS**

The European Commission's Technical expert group (TEG) on sustainable finance has developed two types of climate benchmarks that lay out basic expectations for indices seeking to support the European Union's climate objectives.

These are the **EU Paris-Aligned Benchmarks** (EU PABs) and **EU Climate Transition Benchmarks** (EU CTBs). They are guidelines for what benchmarks should look like, not an actual list of constituents and weights; and are intended for use by index designers and providers.

The guidance calls for candidate indices to be able to:

- offer at least 50% lower (EU PABs) or 30% lower (EU CTBs) carbon-emissions intensity in their starting year, relative to their investable universe or parent index
- continuously demonstrate their ability to further cut GHG emissions intensity in subsequent years, relative to the universe or parent index

The benchmarks are also subject to a “no significant harm” requirement, meaning they must exclude certain stocks. They must also satisfy a number of “green to brown” ratio requirements, which are based on estimates of the “green” and “brown” revenues from companies, relative to the universe or parent index.

Further information is available from a [FTSE Russell Study on EU Paris-aligned Benchmarks](#) and [EU Climate Benchmarks: A Guide](#), by SSGA

CASE STUDY

AP2: Aligning the portfolio with the EU Paris-aligned Benchmark

Andra AP-fonden (AP2) has aligned its foreign equity and corporate bond portfolios to meet the Paris Agreement's 1.5°C goal, by using the EU Paris-aligned Benchmark (PAB) framework to develop its own multi-factor indices.



STEWARDSHIP IN PASSIVE STRATEGIES

Because passive investors do not make active investment decisions to trade in and out of stocks, they may enjoy uninterrupted relationships with issuers that support longer-term engagements. Since passive investing is a low-cost service that benefits from economies of scale, the market for index funds tends to be dominated by a few large players. They are often among the biggest shareholders at many companies, and their votes carry weight.

Such investors benefit from rising share prices across an entire market, and so may consider using stewardship to address systematic sustainability outcomes – for example, by attempting to raise standards of corporate governance, or improve general corporate behaviour on human rights.

However, given the large number of shares they hold, passive investors may pursue stewardship in different ways to active managers¹⁹. For example, it may not be realistic for an index manager owning thousands of stocks to engage with company management at the same level of detail as an active manager with a more focused portfolio. Such investors can consider different levers to achieve their stewardship objectives. Engaging policy makers may be effective, particularly when addressing sector-wide or systematic problems, or where the asks are similar in nature across sectors (e.g. sustainability disclosure requests).

The PRI discussion paper [How can a passive investor be a responsible investor?](#) explores these questions in greater depth. The related [signatory consultation](#) found that leading passive investment managers, as universal owners, should look to reduce barriers to collaborative engagement, and focus on the most pressing and systemic ESG issues.

¹⁹ Bebchuk, L and Hirst, S (2018), [Index Funds and the Future of Corporate Governance: Theory, Evidence and Policy](#).

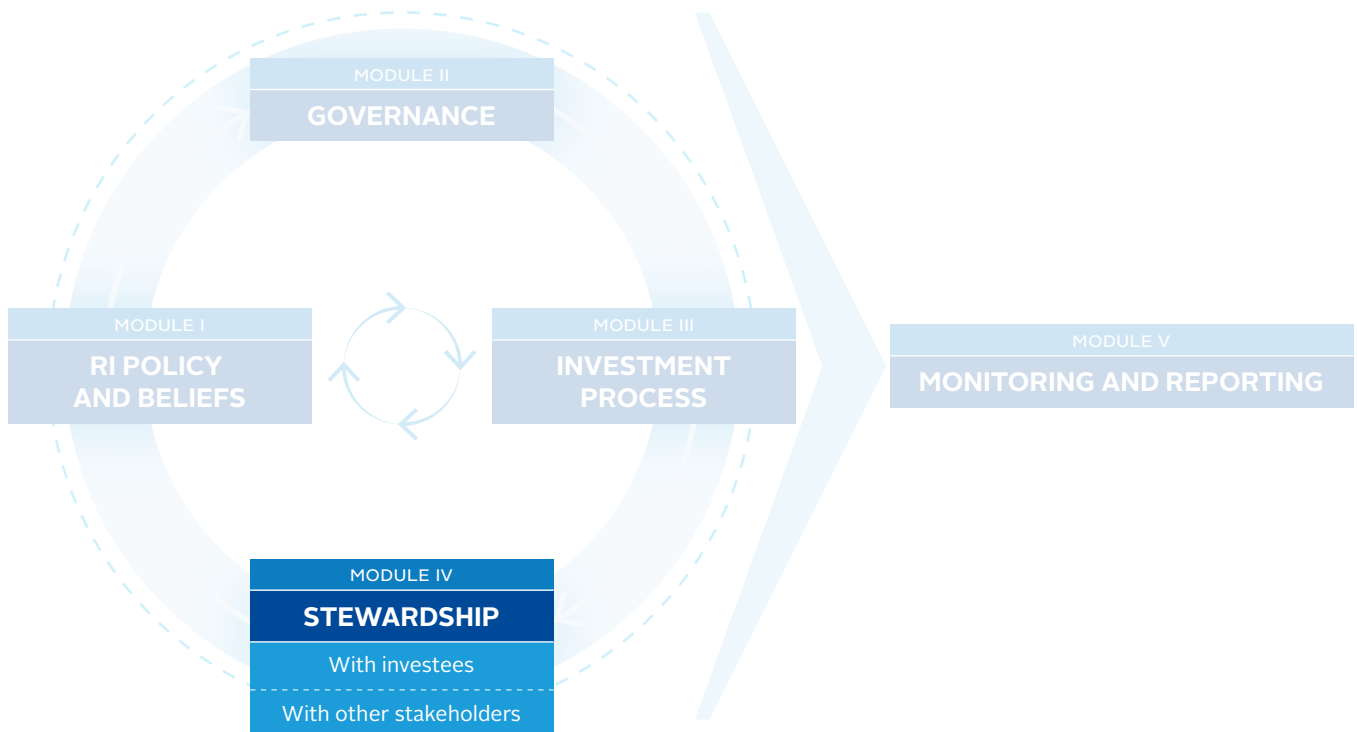
MODULE IV: STEWARDSHIP ISSUES AND PRI GUIDANCE

This module provides further information about stewardship, together with an overview of extensive PRI resources on the topic.

The links between these activities and the processes of analysis, stock selection and portfolio construction are explored in Module III.

Module IV also highlights the PRI's Active Ownership 2.0 – a framework for the more ambitious stewardship needed to deliver against beneficiaries' interests, and improve the sustainability and resilience of the financial system.

Figure 1: ESG integration in listed equity: a five-part process



Stewardship is an integral part of the investment process. It is where investors exercise their powers of influence to add value to their holdings. This can be in the narrow sense of asking one company to adopt a better board makeup or strategy; or in the broad sense of contributing to the long-term sustainability of an entire sector or economy.

The PRI [defines stewardship](#) as:

“The use of influence by institutional investors to maximise overall long-term value, including the value of common economic, social and environmental assets, on which returns and client and beneficiary interests depend.”


Typically, this is done through engaging in dialogue with companies, filing shareholder resolutions and by voting at general meetings. But stewardship can take other forms, such as taking up board roles, or even litigation. Investors can also engage with non-issuer stakeholders, policy makers and standard setters, or engage in public discourse and disclosure.

Asset managers and asset owners should develop and disclose a stewardship policy consistent with local regulation, stewardship codes and the six Principles for Responsible Investment.

PRI resources:


AN INTRODUCTION TO RESPONSIBLE INVESTMENT: STEWARDSHIP

Provides an overview of key elements of stewardship.



A PRACTICAL GUIDE TO ACTIVE OWNERSHIP IN LISTED EQUITY

Detailed guidance for investors in public equities.



ENGAGEMENT: ONGOING DIALOGUE

Engagement primarily refers to dialogue where the intention is to improve ESG practices, sustainability outcomes or public disclosure. Interactions with companies for other reasons (e.g. seeking data or questionnaires for investment research, or attending presentations without interaction) are not considered engagement.

PRI RESOURCES: COLLABORATIVE ENGAGEMENT

Collaborative engagements involve many investors engaging with one or more companies on the same issue. By acting collectively, investors can pool their knowledge, share the time commitments and cost, and increase their influence on company management.

Facilitating collaborative engagements is one of the PRI's key activities. We have a number of active multi-year engagements, including:

MULTI-YEAR ENGAGEMENT

Climate Action 100+

Ensuring the world's largest corporate greenhouse gas emitters take action on climate change.



MULTI-YEAR ENGAGEMENT

Advance

Investors taking collaborative action on human rights and social issues



Investors can also review our archive of [past engagements and results](#).

The PRI Collaboration Platform

The PRI also runs a [private forum](#) that allows our signatories to pool resources, share information and enhance their influence on ESG issues. It offers a range of global engagement initiatives that involve investors seeking dialogue with listed companies, policy makers and other actors in the investment chain.

VOTING

Voting on agenda items at annual general meetings (AGMs) is one of the most significant opportunities many investors have for influence. It is a particularly important tool for those who lack the resources or access to conduct direct dialogue with the company.

In most ordinary circumstances, company boards will propose a set of resolutions to the AGM (including the nomination of directors and how they propose to pay them). Shareholders then vote to approve the resolutions, or not.


Some investors use their voting powers tactically, to drive action on issues of concern. They may inform companies they intend to vote against the re-election of a particular director on ESG grounds (for example, voting against the re-election of the chair if targets for board diversity are not met). They may even nominate alternative director candidates for election.

Shareholders can also propose their own resolutions on ESG or other topics. Any shareholder resolution may be approved by the company and presented to the AGM with the board's recommendation to vote in favour. This is more likely where a shareholder resolution is preceded by a productive engagement.

PRI resources:


A PRACTICAL GUIDE TO ACTIVE OWNERSHIP IN LISTED EQUITY (p.41)

Explains the different models of share-voting that are employed by investment managers and asset owners.



MAKING VOTING COUNT: PRINCIPLE-BASED VOTING ON SHAREHOLDER RESOLUTIONS

How principles-based voting on shareholder resolutions can contribute to effective stewardship.



SHAREHOLDER RESOLUTION DATABASE

Hosted at the Collaboration Platform (see above), this resource promotes ESG-related resolutions around the world.



ESCALATION AND DIVESTMENT

If initial stewardship activities are unsuccessful, investors can consider escalating their efforts by using increasingly assertive techniques, such as:

- collaborating with like-minded investors to increase pressure
- issuing a public statement and/or organising a media campaign
- seeking legal remedies or arbitration

If escalation strategies also fail, investors may ultimately choose to reduce their exposure or divest from the stock entirely.

PRI resources:

DISCUSSING DIVESTMENT

Explores why investors consider divestment and when it can be an effective tool.



Active Ownership 2.0

[Active Ownership 2.0](#) is a framework for the more ambitious stewardship needed to deliver in line with beneficiaries' interests and improve the sustainability and resilience of the financial system. Under this framework, investors use their influence to shape sustainability outcomes by engaging in more effective and assertive stewardship activities.

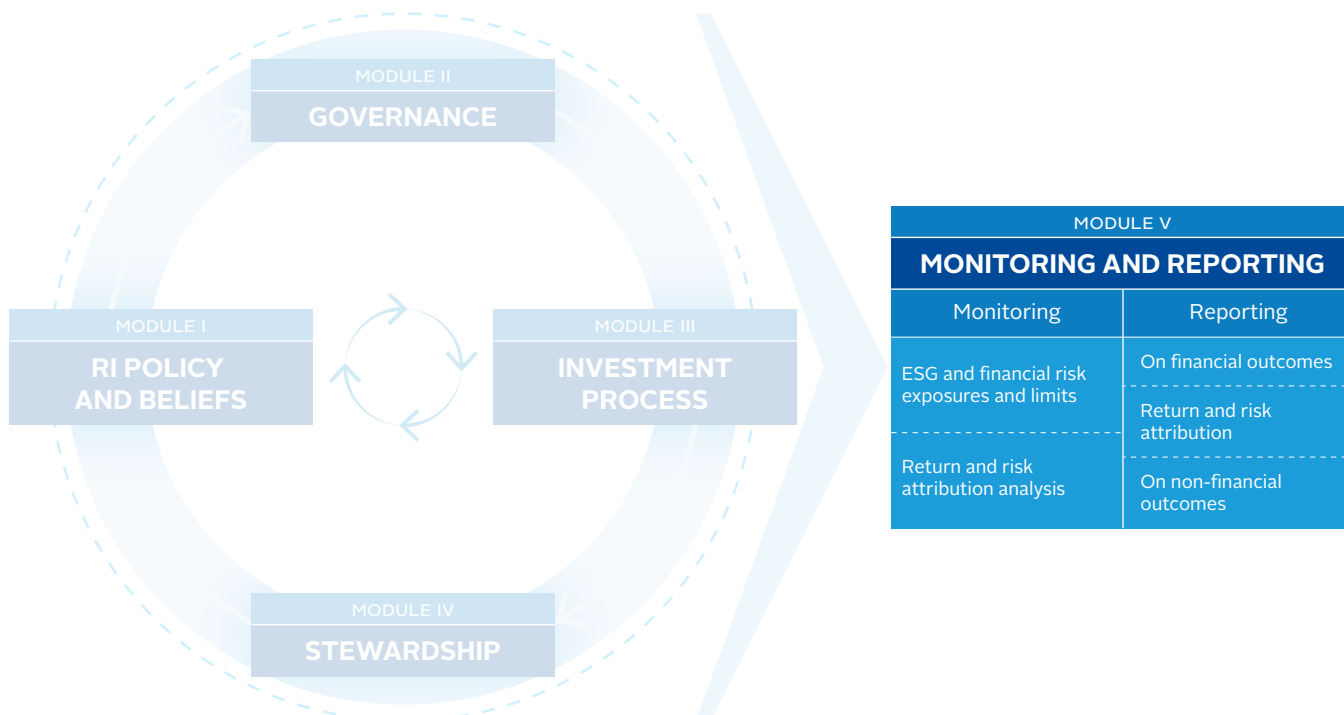
It explicitly moves the focus of PRI's active ownership programme from looking at whether signatories have the right policies and processes in place, to what outcomes their stewardship activities are having in the real world.

Consistent with the [blueprint for responsible investment](#), the PRI recognises the need to focus on the effectiveness of active ownership in producing real-world outcomes at scale, and its own role in better supporting signatories to deliver them.

MODULE V: MONITORING AND REPORTING

This module outlines the key elements in monitoring and reporting on listed equity portfolios managed under responsible investing strategies. It describes the key metrics used by investment managers to ensure that the portfolio remains aligned with the investment mandate and desired ESG and non-ESG risk characteristics. The section also outlines some difficulties investment managers can encounter when including ESG considerations in their performance attribution and reporting.

Figure 1: ESG integration in listed equity: a five-part process



PORTFOLIO MONITORING METRICS

Once the fund or strategy is launched, investment managers monitor their portfolios on an ongoing basis to ensure the strategies follow the intended objectives and comply with constraints and requirements set by the client or by regulators (see [Portfolio Construction](#) for a discussion of portfolio maintenance in active fundamental strategies).

In addition to established financial metrics such as active share (a measure of the difference between a portfolio's holdings and its benchmark index) or value-at-risk (which quantifies the extent of possible loss under specific conditions, or with a certain probability), investors are increasingly using a number of aggregate ESG metrics in portfolio monitoring; particularly with regard to climate. Modern portfolio management and monitoring systems allow investment managers to check the impacts of a suggested trade on ESG portfolio characteristics before they undertake it, as well as afterward. A subset of the metrics used internally for risk management and monitoring is subsequently used for client reporting, or as part of public disclosures.

MONITORING CLIMATE RISK

One of the most pressing challenges for investors is to measure, monitor and understand the climate-related risk of their portfolios. The PRI has published two key resources on this topic:

- [An introduction to responsible investment: climate metrics](#)
Provides an overview of climate metrics currently used by investors
- [Climate risk: an investor resource guide](#)
Outlines resources and tools investors can use to address the four pillars of risk management identified by the Task force on Climate-Related Financial Disclosures (TCFD)

Scenario analysis, described earlier in this guide (See [Portfolio Construction](#) and [Arabesque Asset Management](#) example), is also used in monitoring to help the manager understand the risk sensitivity of the portfolio. Scenario analysis tools provide forward-looking quant assessments of the impact on a portfolio, from a range of plausible climate pathways.

Table 11 provides a snapshot of the most common metrics used in responsible investing, but it is by no means an exhaustive list. The climate-focused metrics are sourced from the following guides:

- [TCFD Guidance on Metrics, Targets and Transition Plans](#)
Gives guidance on disclosures of climate-related metrics, targets and key disclosures from transition plans.
 - [S&P Dow Jones Indices: Index Carbon Metrics Explained](#)
Sets out S&P’s use of data and analysis from environmental analysts Trucost to inform its index data on carbon emissions – including where companies do not disclose their own.
 - [Financed Emissions: The Global GHG Accounting and Reporting Standard](#)
Produced by a partnership of banks and investors, this report sets out detailed methodological guidance on measuring and reporting financed emissions.
- It is common to also disclose the percentage coverage – what percentage of holdings or portfolio weight is covered by the metrics.

Table 11: ESG portfolio metrics

ESG metrics disclosed	Description and comments
Portfolio ESG score or rating (can also be split into E, S, or G component scores)	The individual scores are combined into an aggregate portfolio score (a weighted average is typically used).
Deviation level: the deviation of the portfolio ESG score from the benchmark score	Portfolio score compared to that of the benchmark or peer group.
Economic emission intensity	A common measure of portfolio carbon footprint. Reflects absolute emissions associated with investments normalised for the total size of the portfolio assets under management.
Absolute emissions	Total amount of GHG emissions of assets in the portfolio.
Weighted average carbon intensity (Metric tons of CO _{2e} per million dollars of revenue; tCO ₂ e/€M or US\$M)	Portfolio’s exposure to emission-intensive companies.
Climate value-at-risk (Climate VaR)	A forward-looking and return-based valuation assessment of climate-related risks and opportunities in an investment portfolio.
Implied temperature rise (°C)	Indicates how well the portfolio’s holdings align with global climate goals. This metric assesses the collective carbon budget allocated to portfolio companies, and their undershoot or overshoot of that budget during the reporting period. This undershoot/overshoot is then converted to a degree of temperature rise.
Fossil fuel reserves (per US\$1 million invested)	Describes the quantities of greenhouse gas emissions that could be generated if the proven (1P) and probable (2P) fossil fuel reserves owned by portfolio or index constituents were realised and burned. Indicates relative levels of stranded asset risk.
Green revenues (as a percentage of total revenues)	Green revenues are derived from products and solutions which contribute positively to the transition to a low carbon economy. Aggregate figures from the portfolio could be compared to a benchmark.

ESG metrics disclosed	Description and comments
Business involvement in controversial activities (percentage of portfolio holdings)	Percentage of stocks in the portfolio with exposure to activities such as UNGC violations; the manufacture of controversial weapons, nuclear weapons, civilian firearms or tobacco; the production of thermal coal or extraction from oil sands. This can be assessed using in-house research or an external ESG data provider.
Portfolio alignment metrics (percentage of holdings)	The percentage of the portfolio aligned with the EU taxonomy, or with particular SDGs.

PERFORMANCE ATTRIBUTION

To help clients better understand the performance of active strategies, it is common for investment managers to carry out analysis of what active management decisions led to the achieved returns. This is known as performance attribution, and increasingly, ESG considerations are being included here too. The most common approaches, described below, attempt to attribute benchmark-relative returns to the ESG elements of investment strategies. Risk attribution, which identifies ESG sources of risk (volatility or tracking risk), supplements such analysis.

Investment managers may make qualitative use of case studies to illustrate how particular actions involving ESG considerations have affected portfolio returns. But ESG factors can also be included in the traditional quantitative attribution calculation methods. A performance report might seek to tell a client that their portfolio returned 5% during the quarter, for example, and that 0.27 percentage points of this was due to a decision to exclude high-polluting companies from the portfolio.

However, isolating the impact of ESG integration on portfolio performance is extremely difficult. In addition, ESG scores and results of attribution are very sensitive to the methodologies of different data providers. Active quantitative managers may be more transparent to investors in this area; in that they can explicitly quantify the weight put on ESG signals or attribute performance to the ESG factors in their process.

There are two main approaches to attempting to attribute portfolio returns to ESG effects:

HOLDINGS-BASED ATTRIBUTION MODELS

These models quantify the effects of asset allocation and security selection decisions on investment returns. They break down the return based on a portfolio's active weights (the differences between the size of a position in the portfolio and the benchmark).

In order to introduce ESG factors into a holdings-based model, the manager needs to be able to isolate the ESG effect and separate it from the sector, country, or security-selection effects that are commonly included in performance attribution models. The way this is done will depend on the investment process. Investors may assign various characteristics (climate or social) to individual securities and calculate the contribution of a particular group of securities (low carbon intensity) to the portfolio performance vs the benchmark.

One possible way to isolate the ESG effect from the sector and security selection effects is outlined in the paper [Measuring the Contributions of SRI/ESG Investment Strategies](#). The author suggests:



1. isolating the ESG effect by calculating the contribution of the move from the original benchmark to an ESG benchmark (which reflects the ESG criteria chosen);
2. then applying standard attribution models to measure allocation, selection and interaction effects.

FACTOR-BASED ATTRIBUTION

Factor analysis allows investors to quantify the impact of specific active investment decisions within the portfolio, showing how they add or remove value relative to the benchmark. To identify the excess return generated by the active investment decisions, the models remove the effects of the market.

A risk-factor approach measures investment returns based on a portfolio's active factor exposures. These can be well-established style factors (such as size or value) or factors like liquidity or low volatility. Models currently under development attempt to quantify ESG considerations as factors to be considered alongside the traditional factors.

The following case studies give examples of factor-based attribution:

<p style="text-align: center; margin: 0;">CASE STUDY</p> <hr style="border: 0; border-top: 1px solid white; margin: 5px 0;"/> <p>Quotient Investors: Attributing performance to ESG factors</p> <hr style="border: 0; border-top: 1px solid white; margin: 5px 0;"/> <p><i>Quotient Investors outlines a quantitative performance attribution approach based on environmental, social and corporate-governance factors derived from ESG ratings.</i></p> <div style="text-align: center; margin-top: 20px;">  </div>	<p style="text-align: center; margin: 0;">CASE STUDY</p> <hr style="border: 0; border-top: 1px solid white; margin: 5px 0;"/> <p>Auriel Capital: Identifying ESG factors' contribution to performance</p> <hr style="border: 0; border-top: 1px solid white; margin: 5px 0;"/> <p><i>In its attribution analysis, Auriel measures return contributions from its portfolio's four underlying trading books – ESG, earnings forecasts, analysts' revisions and mean-reversion.</i></p> <div style="text-align: center; margin-top: 20px;">  </div>
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Examples of Signatory Attribution Practices

Signatory	Attribution practice
<p>American Century Investments Adding Value Through Large-Cap ESG Investing</p>	<p>Uses a technique similar to traditional “Brinson attribution” to measure the contribution or detraction of overweight positions in companies with higher ESG scores.</p>
<p>Robeco Measuring ESG's impact on stock performance</p>	<p>Robeco measures ESG attribution by combining the performance impact from:</p> <ul style="list-style-type: none"> ■ the ESG contribution of issuers owned (calculated by multiplying each stock's relative performance contribution by each stock's ESG contribution to stock valuation over the selected period) ■ the impact of exclusions on performance (calculated by summing the attribution of the excluded stocks over the period).

ESG performance attribution is an evolving topic. In [ESG Investment Outcomes, Performance and Evaluation](#) (Horan et. al. 2022) the authors propose a performance evaluation and attribution framework that incorporates return, risk, and ESG outcomes.

REPORTING ON PERFORMANCE, RISK AND OUTCOMES

Reporting on responsible investment activities is centrally important for PRI signatories, as can be seen from our [founding principles](#):

6 We will each report on our activities and progress towards implementing the Principles.

Integrating ESG considerations into investment performance reporting is therefore only one element of a broader conversation with clients about responsible investing practices. But for many organisations, performance reports will be their easiest and most regular channel of communication.

Reporting on portfolio positioning and returns is an essential requirement, whether an active manager is showing performance compared to a benchmark or a passive one is showing how closely they matched it. In addition, investors may report other portfolio metrics to their clients, including some of the financial and risk metrics mentioned earlier in this module. Increasingly, many of the ESG metrics outlined earlier are being added to reports as well.

The content of reports is also governed by regulation, particularly in the retail investment products sector. Recent years have seen the emergence of rulebooks governing whole classes of investment products wishing to market themselves under green, sustainable or ESG labels. The EU's [Sustainable Finance Disclosure Regulation](#) and [Sustainable Finance Taxonomy](#) require particularly detailed disclosures to clients of ESG data. The [Global ESG Disclosure Standards for Investment Products](#) are the first global voluntary standards for disclosing how an investment product considers ESG issues in its objectives, investment strategy, and stewardship activities.

Listed equity investment managers who report on real-world outcomes do so either qualitatively, through case studies, or through more quantitative approaches, such as disclosures of portfolios' carbon footprints or alignment with the [EU Taxonomy](#).

Reports on individual portfolios can be produced in parallel with firm-wide or asset-class-wide disclosures of policies and practices. Such reports can outline progress on issues such as land use, biodiversity, water and resource efficiency, workplace diversity, modern slavery and climate change. Information on voting and engagement is also provided in fund-specific as well as in firm-wide reports.

SUGGESTED REPORTING PRINCIPLES:

The contents of reports will vary between companies and investment products due to different mandates or local regulations. Below, we draw on suggestions from members of the PRI Listed Equity Advisory Committee to suggest some desirable characteristics of reports, which should be:

- **timely and recurring:** reporting might follow a similar schedule to performance or mandatory reporting
- **consistent and comparable:** enabling asset owners to track changes and improvements, and to compare against other funds following similar investment strategies. Differences in data providers alone could lead to spurious results
- **clear on metrics used:** metrics should be accompanied with definitions, methodologies and data sources, because different data providers use different methodologies
- **inclusive of climate risks:** given that data and methodologies used to estimate climate risk are evolving, it is valuable to review metrics periodically and consider updating them when appropriate
- **aware of real world outcomes:** in addition, investment managers are increasingly incorporating information on portfolios' real-world outcomes. This in turn helps asset owners measure the impact of their ESG policies on outcomes in the real world (see [Active ownership 2.0](#))

Complementary PRI resources that include sections on reporting:

[ASSET OWNER GUIDE: INVESTMENT MANAGER MONITORING](#)



[RESPONSIBLE INVESTMENT DDQ FOR LISTED EQUITY INVESTORS](#)



Examples of Signatory Reporting Practices

Signatory	Reporting practice or disclosure
AXA Investment Managers 2021 Climate and Biodiversity Report: Accelerating Transition (p.56)	Discloses a range of metrics including climate VaR figures under a 1.5°C scenario for its portfolio and the reference benchmark
RBC Global Asset Management TCFD Report 2021 (rbcgam.com)	Reports Climate VaR impact estimates under different scenarios.
Amundi Climate and Sustainability Report 2021 (p.42)	Publicly discloses implied temperature rise in the form of a per-asset-class score within portfolios
Trill Impact Annual Impact Review (p.41-56) and PRI case study	Sets impact KPIs tailored to each company, with common themes including greenhouse gas emissions, diversity and business ethics. Progress against these targets is tracked and reported quarterly, and also in the investor's annual Impact Review, both individually and for the whole portfolio.

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The Principles for Responsible Investment (PRI)

The PRI works with its international network of signatories to put the six Principles for Responsible Investment into practice. Its goals are to understand the investment implications of environmental, social and governance (ESG) issues and to support signatories in integrating these issues into investment and ownership decisions. The PRI acts in the long-term interests of its signatories, of the financial markets and economies in which they operate and ultimately of the environment and society as a whole.

The six Principles for Responsible Investment are a voluntary and aspirational set of investment principles that offer a menu of possible actions for incorporating ESG issues into investment practice. The Principles were developed by investors, for investors. In implementing them, signatories contribute to developing a more sustainable global financial system.

More information: www.unpri.org



The PRI is an investor initiative in partnership with UNEP Finance Initiative and the UN Global Compact.

United Nations Environment Programme Finance Initiative (UNEP FI)

UNEP FI is a unique partnership between the United Nations Environment Programme (UNEP) and the global financial sector. UNEP FI works closely with over 200 financial institutions that are signatories to the UNEP FI Statement on Sustainable Development, and a range of partner organisations, to develop and promote linkages between sustainability and financial performance. Through peer-to-peer networks, research and training, UNEP FI carries out its mission to identify, promote, and realise the adoption of best environmental and sustainability practice at all levels of financial institution operations.

More information: www.unepfi.org



United Nations Global Compact

The United Nations Global Compact is a call to companies everywhere to align their operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption, and to take action in support of UN goals and issues embodied in the Sustainable Development Goals. The UN Global Compact is a leadership platform for the development, implementation and disclosure of responsible corporate practices. Launched in 2000, it is the largest corporate sustainability initiative in the world, with more than 8,800 companies and 4,000 non-business signatories based in over 160 countries, and more than 80 Local Networks.

More information: www.unglobalcompact.org

