



Incorporating
**ENVIRONMENTAL,
SOCIAL and GOVERNANCE (ESG)**
Factors into **FIXED INCOME
INVESTMENT**

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ACRONYMS AND ABBREVIATIONS

ABS	Asset-backed Securities		
AI	Artificial Intelligence		
AIGCC	Asia Investor Group on Climate Change		
AIM	Affirmative Investment Management		
ALM	Asset and Liability Management		
AODP	Asset Owners Disclosure Project	ICGN	International Corporate Governance Network
CAT	Catastrophe Bonds	ICMA	International Capital Market Association
CCM	Convention on Cluster Munitions	IFC	International Finance Corporation
CDP	Carbon Disclosure Project	IG	Investment-grade
CDS	Credit Default Swap	IGCC	Investor Group on Climate Change
CFP	Corporate Financial Performance	IIGCC	Institutional Investors Group on Climate Change
CRA	Credit Rating Agency	ILS	Insurance-linked Securities
CSR	Corporate Social Responsibility	IRIS	Impact Reporting and Investment Standards
EAPF	Environment Agency Pension Fund	JFSA	Japan's Financial Service Authority
EIB	European Investment Bank	LDI	Liability-driven Investment
ETF	Exchange Traded Funds	MBS	Mortgage-Backed Security
ESG	Environmental, Social and Governance	OECD	Organization for Economic Co-operation and Development
GBP	Green Bond Principles	PE	Private Equity
GIC	Global Investor Coalition on Climate Change	PRI	UN Principles of Responsible Investing
GIIN	Global Impact Investing Network	RI	Responsible Investing
GP	General Partner		
GPIF	Government Pension Investment Fund		
GRI	Global Reporting Initiative		
GSIA	Global Sustainable Investment Alliance		
GSSB	Global Sustainability Standards Board		

SASB	Sustainability Accounting Standards Board	SPV	Special Purpose Vehicle
SBP	Social Bond Principles	SRI	Socially Responsible Investment
SDGs	Sustainable Development Goals	TCFD	Task Force on Climate-related Financial Disclosures
SDSN	Sustainable Development Solutions Network	TIPP	The Investment Integration Project
SI	Sustainable Investing	UNEP	United Nations Environment Programme
SIB	Social Impact Bonds	UNGC	UN Global Compact



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The partnership reflects GPIF's strategic commitment to advancing the integration of ESG considerations into all asset classes of its portfolio. The research report is focused on integration of ESG considerations for fixed income. From the World Bank Group side, the research contributes to the commitment to maximizing finance for development and catalyzing the development towards more sustainable capital markets.

The authors of the paper are Georg Inderst and Fiona Stewart. Georg Inderst is an independent Expert Consultant, specializing in green finance and infrastructure investment (Inderst Advisory, London). Fiona Stewart is a Lead Finance Sector Specialist in the Finance, Competitiveness and Innovation Global Practice of the World Bank. The authors would, in the first place, thank all the asset owners, investment managers, international associations, private sector service providers and

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EXECUTIVE SUMMARY

A growing body of research shows that Environmental, Social and Governance (ESG) factors are material credit risk for fixed income investors. The evidence suggests that incorporating ESG into fixed income investing should be part of the overall credit risk analysis and should contribute to more stable financial returns. It also dispels the myth that incorporating ESG means having to sacrifice financial returns. ESG investing is increasingly becoming part of the mainstream investment process for fixed income investors, as opposed to a specialist, segregated activity, often confined to green bonds.

Though fixed income has its own challenges with integrating ESG issues, it is catching up fast with the equity space (particularly corporate and supranational bonds but less - so far - sovereign issuers, asset-backed or private debt). Leading investors are going further and viewing ESG not just as an aspect of risk and return, but merging ESG and ‘impact’ investing. This includes measuring the impact of their portfolios on targeted environmental and social outcomes, and beyond, such as mapping impact using the Sustainable Development Goals (SDGs).

Different methods for applying ESG are being adopted by fixed income investors: from purchasing ‘labelled’ (green, social, and/or sustainable) bonds and setting up or investing in ESG/SRI (Socially Responsible Investment) funds; to following ESG indices; to hiring ESG active managers; to incorporating and embedding ESG across the whole investment process. This can be done by either following the methodology of different

external service providers and /or by customizing such products with the institutional investor’s own philosophy and goals.

Yet, many investors find implementing ESG in practice a challenge, which can be exacerbated when it comes to their fixed income portfolios. There are still no standard definitions of ESG – with diverse views particularly in the ‘social’ area. Data – though improving and coming from increasingly varied sources – is still wanting particularly in emerging markets. In fixed income, there are additional issues such as how to pursue engagement with issuers (particularly sovereigns), the role ESG plays in credit ratings, the lack of choice of indices compared to the equity space, as well as a dearth of specific ESG-focused products. There are also challenges in the green bond markets with demand outstripping supply. Conceptual work on ESG and fixed income also needs to go beyond credit risk (such as the relationship of ESG issues with liquidity and other market risks).

ESG investing is developing from a purely process-driven to a more outcome-driven activity. Going forward, first, initiatives to improve the breadth and depth of ESG data should continue to be supported. Second, more rigorous research on the relationship between ESG factors and financial risks and returns in fixed income is also required. Third, standards,

principles and metrics for applying ESG and impact investing can be refined to allow investors to customize their approach from a robust basis. Finally, more innovative, scalable products to accommodate the growing demand for fixed income sustainable investments could be developed.



1. INTRODUCTION AND BACKGROUND

Capital markets play a vital role in channeling investment into the economy to help drive growth and prosperity. Asset owners and financial intermediaries are asked to contribute to financing sustainable development that meets the need of the present, without compromising the ability of future generations to meet their own needs.

Sustainable investment, including socially responsible, ethical, and ESG (environmental, social and governance) investing, is increasingly gaining a foothold in mainstream financial markets. Globally, sustainable investments grew by a quarter to \$23 trillion over the last two years, according to the Global Sustainable Investment Alliance (GSIA 2017). This equates to around one-quarter of ‘professionally managed’ assets globally.¹

ESG investing has been gathering attention since the 1990s. From its origins in the equity markets with religious, values-based or thematic (environmental) investors, the movement spread with the launch of the UN Principles of Responsible Investment (UN PRI) in 2006 and was catalyzed for fixed income with the issuance of labelled bonds by multilateral organizations from 2007. The issue has received renewed high-profile support in recent years through the European Commission’s High-Level Expert Group on Sustainable Finance and the Financial Stability Board’s (FSB) Task Force on Climate-related Financial Disclosure (TCFD) initiative, as well as public interventions by stakeholders such

as the Bank of England Governor Mark Carney.²

Traditionally, the main focus of ESG investing has been on equity markets. In recent years, however, ESG has spread out increasingly to other asset classes, in particular fixed income, given that bonds constitute a substantial percentage of institutional investors’ assets.³ Considerable academic and industry research has been conducted on the relationship between ESG investing and performance in equity markets, but far less is available on its effect on the fixed income markets.

As a further development, many asset owners are looking to increase investments that make a positive social and environmental impact on top of their financial objectives. Some have also started to re-assess their investment policies in the light of climate change risks and policies post Paris COP21, as well as the 2015 UN Sustainable Investment Goals (SDG). All assets, including fixed income, will increasingly be measured also by social and environmental outcomes and externalities.

This research report provides an overview on sustainable investing in fixed income that is developing fast these days. It discusses the core areas of:

- the specific nature and issues of ESG investing in this asset class;
- the rationale for ESG analysis in fixed income – including research findings;
- ESG investment tools and ways of implementing ESG strategies in fixed income;
- on-going challenges to greater integration of ESG into mainstream investing; and
- suggestions for how to catalyze the further adoption of ESG approaches.

The study builds on both research and practical experiences to date on ESG approaches for fixed income portfolios. An extensive literature review was conducted to inform the findings. It was not possible to undertake new primary research for this paper, but suggestions for further analysis are made. The paper also includes findings which draw on the practical experience of a number of stakeholders (asset owners, asset managers, data providers etc.) who are integrating ESG factors into fixed income investments and were interviewed and participated in a workshop and roundtable discussions as part of this research project. Their insights are reflected across the paper, and their input is most appreciated.⁴

The focus of the report is primarily on the main fixed income investment instruments, such as sovereign, supranational, and corporate bonds. Research and application of ESG for other fixed income investments (sub-sovereigns, covered bonds and other asset backed securities, private debt etc.) are still very limited. However, thematic investments such as green, social and sustainable bonds are growing and are facilitating the integration of ESG for fixed income. Therefore, the discussion is not limited only to the labelled bond market, but is also on incorporating ESG factors into fixed income portfolios more broadly.

Definition of ESG Investing

ESG investing incorporates environmental, social, and governance issues into the analysis, selection and management of investments. Key issues for consideration typically include:

E: climate change, carbon emissions, pollution, resource efficiency, biodiversity;

S: human rights, labor standards, health & safety, diversity policies, community relations, development of human capital (health & education);

G: corporate governance, corruption, rule of law, institutional strength, transparency.

Historically, governance-related investment codes were probably first relevant for investment strategies, with green and social issues, and more generally a view to sustainable investing, growing in relevance over the last two decades. There are many different, and more specific, definitions in the market place. Appendix 2 shows a list of standard ESG criteria applied by the CFA (2015), and for sovereign and corporate bonds by the UN Principles of Responsible Investing (PRI) (2014), and those used in the IFC Performance Standards (2012) and Corporate Governance Methodology.

A definitive list of ESG issues does not exist – and it looks impossible to agree on. Markets, technologies, policies, values and social preferences change all the time, and vary from region to region, country to country and even within countries. Therefore, an open and dynamic approach to defining “green” or “sustainable” investments is preferable – and is used in this paper – embedded in a clear and transparent governance framework (Inderst, Kaminker and Stewart 2012).⁵

For fixed income, a survey by PRI (2017a) found slightly more investors follow governance than social and environmental factors. Russell (2017) also found that governance is widely being considered the most important factor.

Other common terms in this context include *sustainable investing (SI)*, *responsible investing*

(RI) and socially responsible investing (SRI). They are often being used synonymously in the market place. So does this report, for simplicity, being aware that some industry practice and academia differentiate these terms.

There are other related investment strategies with a somewhat different focus (such as *long-term investing*, *universal ownership*⁶), or strategies that concentrate on a particular aspect of ESG (e.g. *green*, *climate change*, *social*, *ethical*, *religious investing*).⁷

Finally, there is an increasing focus on non-financial outcomes and externalities of investments. *Impact investing* aims to generate a measurable, beneficial social or environmental result alongside a financial return.⁸ *Blended finance* is the strategic use of development finance and philanthropic funds to mobilize private capital flows to emerging and frontier markets (e.g. OECD 2018). The newly developing *SDG investing* takes considerations of issues beyond traditional ESG, using the United Nations' Sustainable Development Goals (SDGs) as a framework.

Investor Motivations

Each investor has specific investment objectives and strategy, its own legal mandate, and particular expectations placed on it by its beneficiaries and the society within which it operates. Therefore, responsible investment has no singular motivation, and there is no single strategy or set of approaches that is followed universally (Dimson et al. 2013).⁹

There are many investor questionnaires undertaken on ESG, and they vary widely in many respects, which may reflect different universes, concepts and languages, among other reasons. Most surveys confirm that ESG is most prevalent in listed equities. According to CFA (2017), 45% of fixed income investors integrate ESG analysis compared to 76% for listed equities (and much fewer for other asset classes). However, many investors plan to enhance ESG in the future in fixed income, private assets and alternative asset classes. There are several drivers for this development: preferences of

members, clients and other stakeholders; increasing awareness of climate change risks and policies by investor boards; social and political concerns; legal and regulatory changes; voluntary codes; fiduciary duty; technology change and disruption; and reputational risks; public and peer pressure.

Financial and non-financial objectives

Institutional investors must be able to reconcile their actions in terms of ESG issues with their obligations to members, beneficiaries, policyholders and clients, and look to use their investments for a positive social purpose. For most investors, the main objectives are financial results (e.g. risk-adjusted returns, liability-matching cash flows). Some investors also have non-financial objectives (e.g. ethical, religious, political, cultural values and preferences) beside financial objectives. 'Reputational/ brand' motivations can also play a part. The potential trade-off between financial return and ESG is still being debated by investors. This is not so clear, even in theory, and therefore the debate is mostly driven by 'beliefs'. On the one hand, considering ESG as risk factors should contribute to more stable returns over time. However, by narrowing the potential universe of investments, ESG could lower returns. Further theoretical and empirical work on this issue – particularly for the fixed income universe – is required.

Short-termism and long-term investing

The priority, or even exclusiveness, of financial objectives does not preclude the *consideration* of non-financial factors in the analysis and management of investments. This may lead to an improved understanding of long-term trends. Asset owners are trying to move towards longer-term investment frameworks than in the past.

ESG as risk factors vs ESG as an investment opportunity

Investor motivations are often driven by *risk management*, i.e. the relevance of environmental, social or governance risks. The risk aspect is naturally a main concern of insurance companies and

other low-risk investors. However, some investors also look at ESG as an investment opportunity, seeking “alpha”. For example, ESG analysis may improve the understanding of longer-term trends. Some investors even find new investment targets in the green and social space.

In practice, ESG investors can broadly be classified into three groups:

- For a large group of investors, the sole purpose remains financial performance, but with a belief that ESG factors have a material effect on investment risks and returns.

- Increasingly investors seek to combine certain non-financial objectives (e.g. ethical, religious, political, cultural, societal values and preferences) without hampering financial objectives.
- Certain investors are willing and able to sacrifice some or all financial return to achieve other social or environmental benefits (impact/community investing; charity investing).

There is plenty of general ESG guidance already available for all types of investors, offered by various organizations (Box 1).

Box 1: ESG Investor Associations, Standards and Codes

Asset owners and investment managers have formed or joined a range voluntary associations and networks in the field of ESG, corporate governance, climate change, and related issues. There are also other voluntary codes many investors comply with. Many of them are at the national level (e.g. by pension fund organizations). Here are some important international examples:

Responsible and sustainable investment

- UN Global Compact (UNGC)
- UN Principles for Responsible Investment (PRI)
- EuroSIF, UKSIF, USSIF, SIF Japan, ASrIA, RIA Canada, RIA Australasia, etc.
- Global Sustainable Investment Alliance (GSIA)
- Equator Principles
- International Capital Market Association (ICMA) Green Bond Principles (GBP) and Social Bond Principles (SBP)

Corporate governance, accounting and disclosure

- International Corporate Governance Network (ICGN)
- Global Reporting Initiative (GRI); Global Sustainability Standards Board (GSSB)
- Sustainability Accounting Standards Board (SASB)
- The FSB Task Force on Climate-related Financial Disclosures (TCFD)

Green and climate change investment Associations

- Institutional Investors Group on Climate Change (IIGCC)
- Investor Group on Climate Change (IGCC)
- Asia Investor Group on Climate Change (AIGCC)
- GIC global platform
- Ceres

Initiatives

- Carbon Disclosure Project (CDP)
- Asset Owners Disclosure Project (AODP)
- Montreal Carbon Pledge
- Portfolio Decarbonization Coalition
- Action 100+

Impact investing

- Global Impact Investing Network (GIIN)

Industry guides

Practical investor guidance on ESG investing can be found in many publications by the industry and organizations such as the CFA, PRI, SSF (2017), BNP Paribas (2016). More specifically on fixed income, see, e.g., PRI (2014), Klein (2015). For guidance on climate change investing, including the implications for fixed income, see, e.g., IIGCC (2015), Mercer (2015), Forum Ethibel (2017).

ESG and regulation

Regulation can be both a driver and a barrier for ESG investing. For example, a relatively prescriptive approach is being proposed in Europe, whilst interpretations of regulation in Asia have been more voluntary but supportive. In North America, a lack of interpretation around existing laws is still felt to be a barrier to further ESG integration by some investors. Some main trends are summarized in Box 2.

The debate over whether ESG investing is compatible with investors fiduciary duty¹⁰ has also

been developing over time. From initial rulings requiring fiduciaries to only consider financial returns when acting in the interest of beneficiaries, interpretation developed so that consideration of other factors was not seen a fiduciary breach. Guidance is now going a step further and in some cases requiring fiduciaries to incorporate ESG factors into their investment decisions. For example, the United Nations Environment Programme (UNEP publication (UNEP 2015) concluded that: “failing to consider all long-term investment value drivers, including ESG issues, is a failure of fiduciary duty”.

Box 2: ESG and Regulation

It is important to distinguish between ESG-specific regulation (e.g. for companies), investor regulation, and other rules and laws that may affect ESG investing positively or negatively. Investor regulation may include funding and accounting regulation, or even outright investment constraints on certain asset classes and instruments. Regulation also applies at different levels: company, investment manager/fund, asset owner (e.g. PRI 2016a, Northern Trust 2015). OECD (2017) summarizes the main developments:

- Regulatory frameworks for investment governance rarely make explicit reference to ESG issues, although this is changing in a number of jurisdictions such as France, the Netherlands, Chile.
- Several countries have some form of ESG reporting and disclosure requirements for investors (e.g. Australia, France, Germany, Sweden, UK).
- Regulatory frameworks for the most part do not prevent ESG integration, and other legislation or voluntary codes may encourage institutional investors to take ESG factors into account (e.g. USA, UK, South Africa, Ontario).
- However, institutional investors may lack clarity as to how ESG integration fits with their country's legal, regulatory and other obligations. Many asset owners considered fiduciary duty as an obstacle to ESG integration but there seems to be a shift from a “narrow” to “broader” interpretations (OECD 2017).

- The EU High-Level Expert Group on Sustainable Finance published several investor-related proposals (EU 2018). In 2018, The European Commissions announced plans for establishing an EU taxonomy/classification system for sustainable activities, creating EU labels for green financial products, clarifying fiduciary duties of asset managers and institutional investors, enhance corporate reporting, among others.
- In 2015, Article 173 of France's law on ‘Energy Transition for Green Growth’ introduced mandatory climate change reporting for financial institutions. This has been hailed as ground breaking with potentially far reaching implications.
- Furthermore, many countries have stewardship codes, corporate disclosure codes or stock exchange rules that cover governance and other ESG issues. The Stewardship Code issued by Japan's Financial Services Authority (JFSA), released in 2014 (revised 2017) is said to have been particularly influential, and indeed was one of the drivers for the GPIF to adopt ESG principles within their investment approach. In addition, there are various principles and best-practice guides available for governments and investors by international organizations such as the UN and the OECD.

At the end of 2017, central banks and regulators initiated a new Network on Greening the Financial System, aimed at sharing supervisory practices on climate change and other environmental risks.

ESG and Impact Investment Approaches

Investors use a range of methods for bringing ESG considerations into their decision-making. They were traditionally applied to equity investments, but are also being used for fixed income and other asset classes. These methods are not mutually exclusive and are often used in combination. Furthermore, the various ESG approaches can be implemented with active or passive investment styles. ESG integration, engagement and screening capture about 99% of assets, with themed and impact investments making up the remaining 1%.¹¹

Negative/exclusionary screening:

This involves excluding securities of specific activities or industries (e.g. controversial weapons, tobacco, fossil fuels) deemed unacceptable. Reasons may be ethical, legal or other norms and standards (e.g. human rights, labor conditions, corruption).

Positive screening/best-in-class selection:

This is a positive selection or overweighting of companies or countries with better or improving ESG performance relative to sector peers. It can be implemented on either the level of ESG measures or their potential for change (ESG momentum).

An immediate concern with exclusions or best-in-class is the potential reduction of the investment universe. Also, screening may lead to unintended

sector and factor biases in the portfolios. Such issues need to be well managed.

Active ownership/voting/engagement/stewardship:

This refers to the practice of entering into a dialogue with companies or countries on ESG issues and exercising both ownership rights (including voting) and “voice” (especially relevant in cases where investors do not have voting rights, such as bondholders) to effect change. This is an alternative to “exit”, i.e. selling off the investments with questionable practices, or divesting based on specific issues (e.g. removing exposure to fossil fuels as ‘stranded assets’). Some investors also like to lobby for ESG themes more widely in politics.

ESG integration:

This is the systematic inclusion of ESG risks and opportunities in investment analysis, portfolio construction and risk management. It is being implemented in different ways across investment organizations.¹²

Thematic investing:

A number of investment themes are based on ESG issues, including clean technology, renewable energy, energy efficiency, sustainable forestry and agriculture, water, education, health and diversity. Climate investing more broadly is receiving increasing attention (see Box 3).

Box 3: Climate Investing

Since Paris COP21, more investors have developed practical climate change policies. They are often simple green thematic investing or included in traditional ESG policies. For some investors, they go well beyond. They include, among others:

- climate change scenario analysis in asset allocation;
- measurement of carbon emission/carbon footprint;

- gradual decarbonization targets for portfolios;
- exclusions/underweight of particular industries/companies (e.g. coal, fossil fuels);
- energy efficiency targets (e.g. in real estate);
- green infrastructure investments (e.g. clean energy, climate change adaptation);
- green and climate bonds;
- divesting, and the concept of “stranded assets”.¹³

Impact investing:

In general terms, this is investing with the intention to generate and measure social and environmental benefits alongside a financial return.¹⁴ Impact investors typically set outcome goals or targets ex ante, make and monitor the investment and then measure ex post results. They try to strike a balance between an economic and social return – with a varying emphasis, depending on the specific impact project/fund.

There are different approaches to impact investing. The early developments were more in the way of “community investing”, i.e. investments by small funds to help fund smaller social or environmental projects in municipalities/regions. As a new development, impact investing has spread also to non-specialist investors. Mainstream investors now feel urged to measure the ‘impact’ of their portfolios, but are generally not mandated to give up financial return.

There are various motivations behind this move, but two in particular stand out (Figure 1). First is the increasing influence of millennial investors. According to a survey conducted in the United States by Morgan Stanley (The Economist 2017), 75% of millennials agreed that their investments could influence climate change, compared with 58% of the overall population. They are also twice as likely as investors in general to invest in companies that espouse social or environmental objectives. As ‘The Economist’ article quotes: *“boomers see doing good as separate from investing; whereas millennials don’t see how you could possibly separate the two.”*

Impact investing covers all asset classes, including bonds (e.g. social impact bonds), private equity and private debt (GIIN 2017). Returns can show low correlations with mainstream asset classes as income is typically not related to financial markets (SSF 2017).

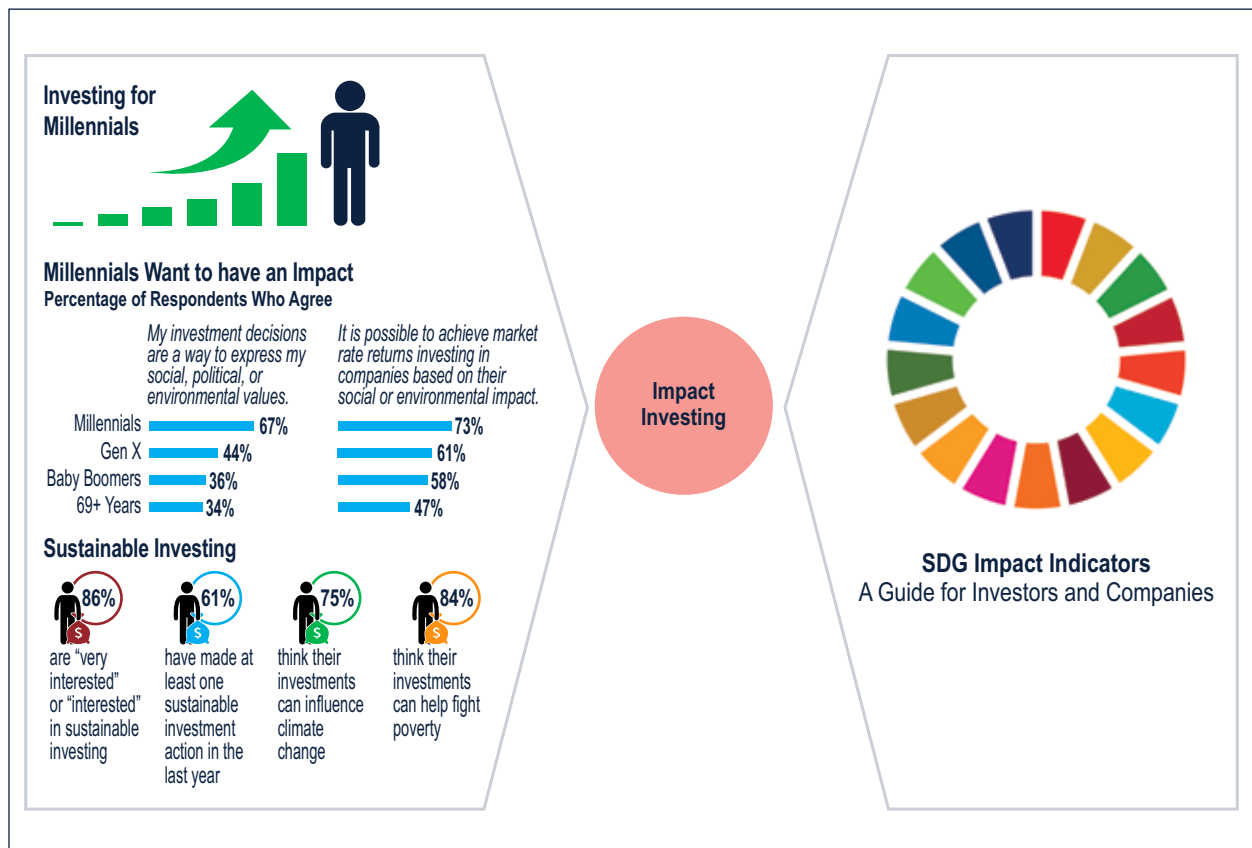
Measuring “impact” is not an easy task. Many investors are still not clear what appropriate metrics should be for the measuring impact on E, S and G individually, and collectively or indeed whether there should be a ‘one size fits all’ approach. The most advanced metrics in this respect appears to be carbon emissions/footprint. GIIN developed impact reporting and investment standards (IRIS), i.e. a catalogue of performance metrics for various sectors. New research is being undertaken in this field.¹⁵

SDG investing

The second major driver for impact investing has been the publishing of the SDGs. In 2015, the United Nations approved the 17 SDGs and 169 individual targets. The SDGs were not primarily made for investors but achievement of the Goals recognizes the necessary contribution of all, including the private sector and investors. It is less clear what these contributions look like for such a broad range of targets. Sometimes it is easier to address an SDG through investment decisions; sometimes it is easier to incorporate the SDG in active ownership (PRI 2017b).

SDG-related investment is still in its infancy. The analysis currently focuses on mapping investors corporate holdings to a selection of the SDG. Several investors such as the Dutch APG and PGGM, or the Swedish AP2 are trying to work out investment possibilities associated with SDGs. One of the commonly stated obstacles is the challenge surrounding impact measurement. Some organizations are working on investor-relevant SDG impact indicators and metrics (e.g. DNB 2017, Trucost 2017). The Investment Integration Project (TIIP) is a further initiative looking to help investors map the link between the investments in their portfolio and the SDGs (TIIP 2018).¹⁶

Figure 1: Impact Investment Drivers



Source: U.S. Trust Insights on Wealth and Worth, 2014, Harvard Business Review (October 3 2014), Morgan Stanley (on-line presentation August 9 2017), Visual Capitalist (on-line presentation August 11 2017), and DNB (2017)



2. WHAT IS ESG ANALYSIS IN FIXED INCOME INVESTING?

Since most ESG research has been undertaken on equities, it is less clear to what extent, how and when ESG considerations can be applied to fixed income investments. Applying ESG to other asset classes requires adaptation (e.g. Johnson 2017). Fixed income management consists of several building blocks, including the analysis of interest rates, inflation, credit quality and liquidity risks. Fixed income investment is very much a quantitative process. Managers find it difficult to include ESG criteria in their financial models, and may therefore be more ‘resistant’ to ESG-related change.¹⁷

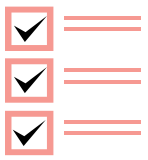





There are a number of key differences between equities and fixed income, especially the focus on downside capital risk and cash flow stability vs. upside, capital appreciation:

- Creditworthiness and the ability to pay back debt are key - therefore, there is a focus on credit and default risk
- Asymmetrical downside risk vs. upside potential of fixed income investments;
- Duration (fixed income investments have a finite period vs. equity holdings which can be perpetual);
- Position in capital structure, and with different layers (e.g. senior, subordinated debt, hybrid);
- Trading of fixed income products largely OTC/off-market;
- The difference between bondholder rights and shareholder rights;
- The importance of sovereign, sub-sovereign, supranational and agency issuers;
- Different analytical approaches (e.g. duration, yield curve, spread management);
- The specifics of asset-backed securities, project bonds and other instruments;
- The high share of institutional participation in corporate bond issuance;
- The use of bonds in long-term liability management by insurance companies and pension funds;
- Issues around market capitalization-weighted indices (with heavy weights to debt-ridden issuers);
- The rising importance of private debt in investor portfolios.

There are implications of these differences for ESG investing in fixed income compared to equity analysis (see Appendix 3 for an overview by the PRI 2014):

- Engagement policies will look different for equity and bond holders;
 - Sovereign (along with sub-sovereign and supranational) issuers are fundamentally different from corporate issuers;
 - Event risks can dominate issuers' creditworthiness and downgrades;
 - In fixed income, liquidity can suddenly dry up even for large issues;
 - Risk analysis needs to apply to various corporate levels (holding company, subsidiaries, special purpose vehicles (SPVs), originators);
 - Bonds can be complex contracts (e.g. attached covenants, embedded options), also in relation to ESG risks;
 - Concentration risk rises for issuers with multiple securities;
 - Debt-related benchmarks may be even more problematic from an ESG perspective (e.g. the relationship between a high debt load and poor governance/institutions);
 - Fixed income indices are more difficult to compile (as fixed income indices include multiple bonds per issuer, multiple issuers per corporate family, private companies where data is hard to gather, and non-corporate entities, covered bonds and other asset-backed securities etc.).
- The relevance of the various ESG approaches varies across asset classes and across types of fixed income securities, although views seem to differ on this. Ngo (2016), e.g., finds significant scope for integration but limited scope for other strategies with sovereign issuers (Figure 2). SSF (2017) also distinguishes between active and passive corporates, but comes to rather different conclusions.

Figure 2: Suitability of ESG Investment Strategies for Equity and Fixed Income Investing

Equity Versus Fixed Income Investing						
						
ESG investment strategies/asset class	Ethical (negative/exclusions) screening	Norms-based screening	ESG integration	ESG engagement/activism	ESG best in class	ESG (positive/thematic) investing
Equities	Significant scope	Significant scope	Significant scope	Significant scope	Significant/some scope	Significant/some scope
Fixed income: corporates	Some scope	Some scope	Significant scope	Some/limited scope	Limited scope	Significant/some scope
Fixed income: sovereigns	Limited scope	Some scope	Significant scope	Limited scope	Limited scope	Limited scope

Source: Ngo (2016)

We now look at the various types of securities in more detail.

Corporate Issuers

Corporate governance factors (e.g., a company's accountability, risk management and director independence) have strong links to credit strength. Good corporate governance should lead to a higher credit rating and lower cost of debt, and vice versa. Well-managed companies tend to be more aligned with bondholder interests, and corporate transparency keeps bondholders better informed of exposure and management of risk.

Poor environmental or social management may lead to lower credit ratings and higher cost of debt. The materiality of E and S factors vary considerably across sectors and industries. For example, environmental issues are often relevant in energy, utilities, resources and other heavy industries. Water stress is likely to be material for certain sectors, such as extractives, food and beverage, and agricultural companies. For airline companies, fuel efficiency may be a key environmental and financial metric.

ESG investing for corporate bonds is closely related to established ESG process for listed equities. For example, exclusion lists and ESG screens tend to be very similar. However, there are some significant differences.

Bondholder rights

As lenders of capital and not owners of shares, bondholders generally have fewer obvious opportunities to engage with companies, such as exercising voting rights and speaking at AGMs. However, bondholders can, in specific situations, demand transparency. They can consider engagement during investor roadshows, at debt reissuance and in collaboration with other bondholders (Table 1). Bond issuers repeatedly come to the market; therefore, a new debt issuance can be a good time around ESG issues. On those occasions, it is possible to demand borrower disclosure of information on ESG risk.

It can be argued that bondholders, in some aspects, may actually be more powerful than equity holders. In market conditions such as currently where companies are buying back rather than issuing new shares, equity investors ultimately have the power of divesting their holdings is an engagement is unsuccessful. Bond holdings, by way of contrast, frequently have to be refinanced at maturity. At that point, the bondholder potentially has a lot of leverage over the company if they choose not to reinvest or only to provide capital at much higher rates.

In practice, investors have shown different approaches to bondholder engagement that range from – the predominant – passivity to aggressive activism used by some hedge funds (Celik et al. 2015). It should not be overlooked, though, that bondholders' interests may be conflicting with shareholder interests, especially in the short term.

Table 1: Engagement for Equity and Bond Investors

Product Feature	Equity	Bond
Dialogue	✓	✓
Request for increased transparency	✓	✓
Media	✓	✓
Buy and sell holdings	✓	✓
Voting	✓	X

Source: Aberdeen (2017)

Duration management

Different ESG factors will present greater risks over different time periods. In the short term, investors face a greater threat from the fallout of low-frequency, high-impact events such as extreme weather or industrial disasters. Longer term, ESG trends such as demographic changes and climate change, are likely to have a significant impact on bond yields, but the extent of this is more uncertain.

Liquidity

Liquidity tends to dry up when needed most, i.e. at times of crisis, leading to expensive restructurings of portfolios. Liability-driven investment (LDI) strategies have typically long-time horizons. A buy-and-hold strategy for investing in relatively illiquid bonds requires consideration of all pertinent risk factors - ESG and others - over the relevant period.

Low liquidity of bonds can also be a potential threat against a poor company. The sale of bonds by one investor can lead to price volatility, and subsequently, to higher costs of capital for such a company.

High yield bonds

Specific segments are potentially more exposed to ESG risks. For example, high-yield issuers tend to be smaller; many are private companies and, therefore, do not have to report the same information or operate to the same standards. They are more likely to have unconventional governance structures that may be misaligned with creditor interests. The amount of leverage used by high yield issuers makes bondholders a critical source of capital alongside equity owners and can provide meaningful opportunities for engagement with company management teams (Aristotle 2016).

Private placements

They tend to have low transparency, large ticket sizes, long maturities, and are difficult to divest. However, large creditors may be able to negotiate more favorable covenants and reporting requirements to address ESG concerns.

Sovereign Issuers

Analysis of company and sovereign creditworthiness is markedly different in all aspects of ESG. The political and institutional system, macroeconomic development, and government policies play a key role in assessing a country's ability and willingness to repay its debt on time. The relationship of risk and return in sovereign instruments is complex, and not linear (Schroders 2017a).

In terms of G, among the crucial factors are the rule of law, the strength of the country's institutions, political stability, regulatory consistency and corruption. Energy/water/other resource reserves and management, as well as green/climate change policies are of varying importance for creditworthiness across countries and periods.

Social factors tend to be given greater weight by analysts than environmental factors because of links between political stability, governance and a country's ability to raise taxes or make reforms. Key social factors include human rights, labor standards, education system, health care, and demographics.

There are pronounced differences in the application of ESG investment approaches to sovereign bonds, and they can be politically sensitive. For example, it implies the possible exclusion of whole country issuances based on being outside of certain treaties or conventions (Table 2). A widespread practice is to overweight "good" countries and underweight "bad" countries based on an ESG scoring system.

Table 2: Screening Criteria for Different Types of Issuers

Screening Approach	Corporate Criteria	Government Criteria	Financial Sector Criteria
Ethical/reputation screens	<ul style="list-style-type: none"> Revenue derived from: <ul style="list-style-type: none"> • Tobacco • Controversial weapons • Nuclear energy • Pornography • Arms • Gambling • Alcohol • Animal testing 	<ul style="list-style-type: none"> • Adherence to international standards on human rights and environmental issues (see below) • Use of capital punishment 	<ul style="list-style-type: none"> • Financing or ownership of business activities listed under corporate criteria (on left) • Origination of ABS financing business activities listed under corporate criteria (on left) • Predatory lending • Aggressive tax avoidance schemes or consultancy
Norms, standards and international laws	<ul style="list-style-type: none"> • Illegal activities • Export controls • International Labour Organisation conventions • UN Global Compact Standards 	<ul style="list-style-type: none"> • Trade embargoes • US, EU, UN sanctions • ILO conventions • Human rights conventions • Montreal Treaty • Kyoto Protocol • World Governance Indicators • Ottawa Treaty (anti-personnel mines) • Convention on Cluster Munitions (CCM) 	<ul style="list-style-type: none"> • Export controls • Whistle-blower policy • Regulatory compliance • Community Reinvestment Act (US) • IFC Performance Standards • Equator Principles • International sanctions

Source: PRI (2014)

Naturally, engagement with sovereigns is quite different from engaging with companies, and undertaken less in practice. Investors may seek a dialogue with regulators, policy-makers and standard-setters (including officials from treasury departments, government agencies and debt management offices). The “size gap” between investor and issuer may even be more of an issue here than with large corporations. Collaborations between investors may be particularly useful in bond holder engagements.

ESG information on governments is available from UN bodies, the OECD, CIA World Factbook, Transparency International, the World Bank and similar organizations. Certain segments of sovereign bonds require particular attention.

Emerging market debt

Many investors find that ESG factors tend to be particularly useful in the assessment of emerging and frontier market bonds. Political and social developments are often difficult to grasp, and they may not be fully reflected in credit ratings or in current market prices. Regulatory frameworks and transparency can be poor. Issuers may be following the IFC’s Performance Standards or the Equator Principles.

Sub-sovereign issuers

States, regions, cities and other entities can issue bonds at a sub-sovereign level. Municipal bonds are a very sizeable market (of about US\$4tn) in the

USA, and used in other countries. Local government bonds can be divided into two categories: general obligation bonds backed by tax inflows, and revenue bonds backed by revenues from a specific project such as toll roads. Such instruments are often used for economic infrastructure (e.g. transport, energy, water, waste) or social infrastructure (e.g. schools and hospitals). Local and project-specific ESG factors come into play.

Supranational issuers

Supranational organizations, such as the World Bank (IBRD), IFC, Asian Development Bank, European Investment Bank, European Bank for Reconstruction and Development, regularly issue bonds to finance development-related projects and businesses. These organizations are typically considered low risk, with good ESG practices and issue investment-grade (AAA) bonds. As a result, ESG analysis on supranationals tends to be more focused on their use of proceeds rather than on the creditworthiness of the issuer itself. Supranational have issued labelled bonds such as green, social and/or sustainable bonds to raise awareness for certain types of development programs and priorities, responding to investor interest in investing for purpose.

Other Debt and Securities

There is a range of other fixed income securities in investor portfolios, often issued by banks or financial sector companies.

Asset-backed securities (ABS)

ESG analysis of ABS needs to capture risks relating to the originator of the securities, the servicer and the ‘cover pool’ of assets, respectively. Investors should also consider how ESG factors might affect the financial sustainability of ‘asset pools’ or standalone projects covering the security, such as auto loans and mortgages. In some cases, investors focus on the use of proceeds for a particular ABS issued (monitoring the composition and changes in the pool of assets).

Covered bonds

Covered bonds are a particular type of ABS, predominantly financing residential mortgages and public-sector loans. As with ABS, investors should consider ESG risks relating to the issuer and the sustainability of the assets themselves. If a bank seizes a defaulted issuers’ assets, it also takes on its liabilities, which may include fines, ongoing legal costs and environmental clean-ups.

Insurance-linked securities

Insurance-linked securities (ILS) are financial instruments tied to certain risk events, e.g. weather. Catastrophe bonds (CAT bonds) are risk-linked securities that transfer a specified set of risks from (re)insurance companies to investors. There is a natural connotation to climate change risks here, and, as proceeds are used to rebuild communities after disasters, a link is sometimes also made to social investing.

Structured products

There are many other structured fixed income products that are being used in investor portfolios. They typically carry augmented risks of complexity and transparency. The mapping of ESG factors will be particularly tricky.

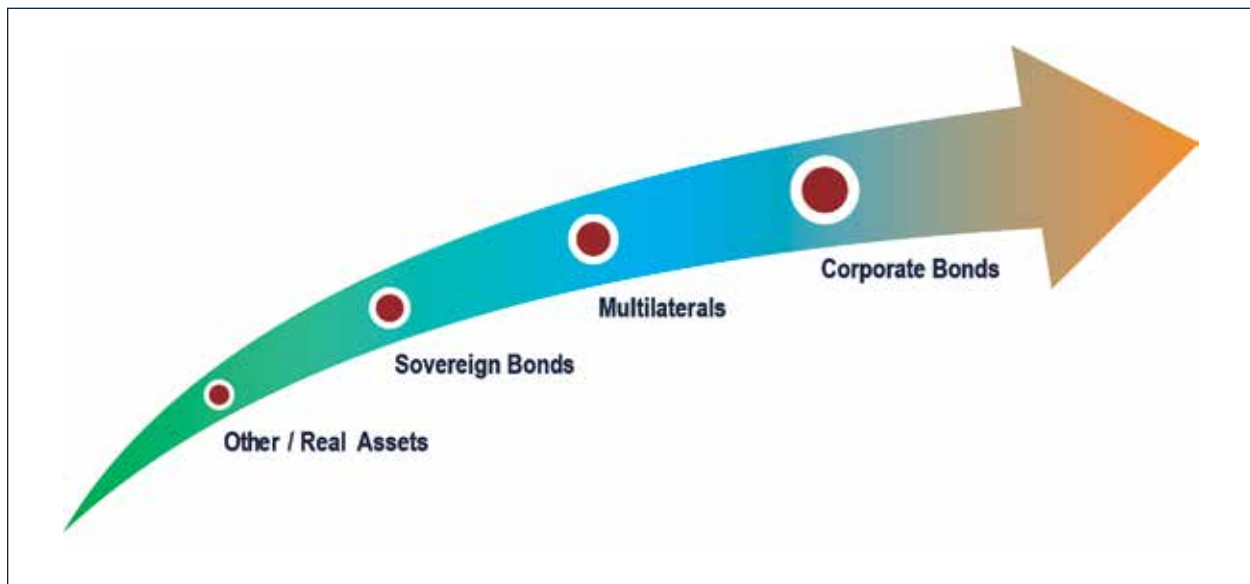
Private debt

Private equity appeared much later on the ESG radar screen than listed equity. Private debt plays an increasing role in the portfolios of insurance companies and pension funds, e.g. corporate, real estate and infrastructure loans. This has been spurred by a lengthy period of low interest rates and by the partial withdrawal of traditional banks from longer-term lending following tighter regulation (e.g. Basel III). As for all private assets, there are augmented issues of liquidity and transparency. There is still little experience on the side of investors on the connection to ESG issues.

To summarize, ESG investing in the fixed income space is gradually catching up with equities - although it is facing its own challenges. It is more advanced for corporate bonds where, for example, engagement teams are working across asset classes and interacting with companies where they have

debt as well as equity holdings. A survey by PRI (2017a) finds corporate bonds are better covered than sovereign bonds by ESG analysis, while securitized assets are far behind in this respect – but more research and developments can be expected in these other classes (Figure 3).

Figure 3: Level of ESG Incorporation in Fixed Income



Source: Authors



3. ESG AND FINANCIAL PERFORMANCE – MAIN RESEARCH FINDINGS

Many studies have been published with the purpose to establish an empirical link between ESG and financial indicators. Much of the research focus in the past was on equities but more studies relevant for fixed income have been undertaken in recent years.¹⁸

A comprehensive survey article summarizes the results of 2,200 primary and review studies (Friede et al. 2015). Roughly 90% of studies find a nonnegative relation between ESG and corporate financial performance (CFP). However, the findings are more neutral/mixed for ‘portfolio studies’, i.e. using portfolio data¹⁹ (including ESG funds and indices) rather than single firm data. There are only a comparatively small number of studies for non-equity asset classes. “The share of positive votes for the 36 analyzed bond studies stands at 63.9% – with 13 neutral or mixed findings (36.1%).” (p. 222)

How do ESG factors influence the financial performance of fixed income investments?

The various researchers take different approaches, and use very different methodologies, data sets and time frames. They try to give a better understanding on a number of key questions of the relationship between ESG factors and:

- cost of capital (debt and equity);
- credit risks; credit spreads;
- credit ratings;

- default risk; credit default swap (CDS) spreads;
- bond price performance; yields;
- market risk;
- company value;
- country economic growth and other macro variables;
- other proxy variables for performance.

Fixed income investors are particularly interested in the relationship between ESG and credit risk, i.e. how environmental, social and governance factors may affect creditworthiness. There are two further strands of research as studies typically concentrate on either companies/corporate issuers or countries/sovereign issuers. The former appears to be more advanced while the latter had been surprisingly overlooked for a long time.

Corporate Bonds

Several studies have looked at the relationship between corporate bond performance and ESG. Here are some examples of industry and academic research.

Barclays (2015, 2016) studied the impact of ESG on the performance of US investment-grade corporate bonds (between 2007 and 2015) and found that a high ESG rating results in a small but steady performance advantage. The effect was strongest for a positive tilt towards the G factor, while favoring issuers with a strong E and S rating was not detrimental to bond returns. Also, issuers with high G scores experienced lower incidence of downgrades by credit rating agencies.

In a different approach to pricing ESG risk, Hermes (2017) relates its proprietary measure of ESG risk – the QESG Score – for companies to credit default swap (CDS) indices. Companies with the lowest QESG Scores tend to have the widest CDS spreads and broadest distributions of average annual CDS spreads. Moreover, credit ratings do not accurately reflect ESG risks and thereby do not serve as a sufficient proxy for ESG risk.

Insight Investment (2016) looks at one particular approach, i.e., exclusions, in a corporate bond portfolio. Broad ethical screens are likely to have a minimal effect on long-term returns but more focused screens could have a larger impact. The direction of impact – i.e. whether the exclusions lead to performance being better or worse than the relevant index – cannot be predicted.

For corporate bond issuers, good/bad ESG management corporate social responsibility (CSR) behavior is rewarded/penalized by lower/higher bond yield spreads, according to research by Oikonomou et al. (2014). Similar results apply to bond ratings. In their research, Bauer and Hann (2010) conclude that environmental concerns are associated with a higher cost of debt financing and lower credit ratings, and that proactive environmental practices are associated with a lower cost of debt.

Hsu and Cheng (2015) found that socially responsible firms usually perform better in terms of their credit ratings and have lower credit risk (in terms of loan spreads, defaults). Positive ESG

ratings are associated with reduced financial risk while negative ESG performance scores lead to increased financial distress. Investors respond more to positive ESG ratings.²⁰

In contrast, Amiraslani et al. (2017) detected no relationship between corporate social responsibility and bond spreads over the period 2005-2013. However, during the 2008-2009 financial crisis, high-CSR firms benefited from lower bond spreads. Hoepner and Nilsson (2017a) argue that bonds issued by companies with “no strengths, no concerns, and no controversies” significantly outperform the market. These findings are particularly strong in times of market turmoil.

Infrastructure bonds are a growing segment in investor portfolios. Kiose and Keen (2017) tested the financial risk implications of social and environmental risk factors. Carbon emissions and independent directors on the board are significant in this respect.

A review of research for investment grade (IG) corporates by Allianz (2017a) summarizes:

- Within investment grade bonds, issuers with material ESG risks and persistently low ESG scores are to be avoided (also for tail risks);
- Expected ESG momentum (positive or negative) may not be fully priced into the markets;
- An exclusion filter seems to lead to no significant performance impairment.

There are contrasting views. Cantino et al. (2017) conclude, from their review of ESG and financial capital structure, that there is some consensus on the positive effect of ESG on the cost of equity. However, “results concerning the relationship between ESG sustainability and debt financing are ambiguous and no clear-cut defined” (p. 124). In his theses, Bektić (2018) argues that the conclusions on ESG factors in corporate level returns are still mixed and therefore premature.

Sovereign Bonds

In sovereign debt analysis, in addition to assessing an issuer's ability to repay its debt, investors are using ESG information to assess an issuer's willingness to repay. To date, most of the attention has been on governance factors, such as institutional strength and political risks.

One of the few academic research papers to study the relationship between ESG and sovereign bond performance is Capelle-Blancard et al. (2017). In a comprehensive analysis of OECD sovereigns, it concludes that countries with good ESG performance tend to have less default risk and thus lower bond spreads. Moreover, the economic impact is stronger in the long-run, suggesting that ESG performance is a long-lasting phenomenon. The environmental dimension appears to have no financial impact whereas governance weighs more than social factors.

New industry research had been undertaken on sovereign bonds, much of it focused on ESG and credit ratings. Allianz (2017b) finds evidence that ESG risk factors are not fully reflected in sovereign credit ratings. Bad governance is a key risk, followed by social risks. Tail risk may be better mitigated through ESG factor integration into sovereign issuer credit analysis.

Sustainalytics (2017a) reveals a positive correlation between countries' ESG and credit rating agency (CRA) ratings, and their ESG momentum and GDP per capita growth. Blending CRA ratings with ESG scores and momentum may help identify countries that are undervalued or overvalued.

Other industry research focuses on ESG and credit spreads. Lazard (2017) estimates the portion of the yield spread attributable to ESG considerations. A strong relationship between a country's ESG standards and its creditworthiness/cost of borrowing is particularly discernible in emerging markets.

High institutional quality is widely seen as an important factor for sovereign creditworthiness.

Research by international institutions provides some evidence. For example, using a data set of 90 countries, Qian (2012), shows that strong institutions are associated with fewer sovereign default crises. In addition, when institutions are weak, a more polarized government tends to default more often.

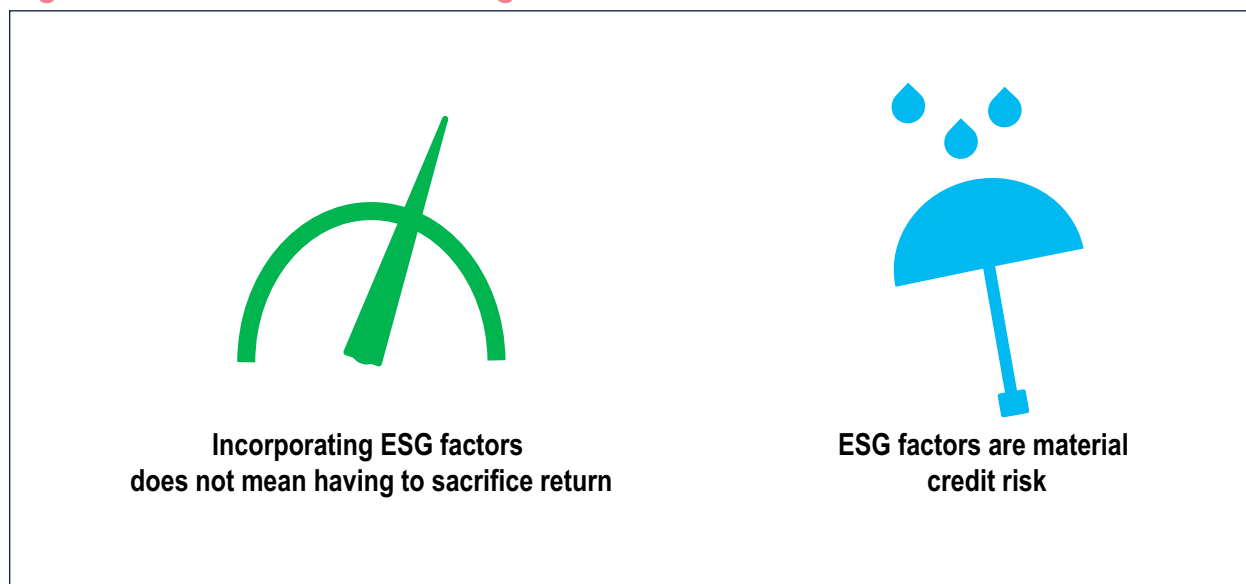
Several individual governance factors such as corruption or transparency have also been scrutinized in this context. For example, Union Investment (2014) considers corruption a key indicator of sovereign credit strength in fundamental evaluations because of the relationship between fraud, tax avoidance, financial management and an issuer's ability to repay its debt obligations. There are strong correlations between corruption and the number of sovereign defaults. Choi and Hashimoto (2017) show that data transparency policy reforms, reflected in subscriptions to the IMF's Data Standards Initiatives, reduce the spreads of emerging market sovereign bonds.

Fixed Income Funds

Some researchers looked at the performance of ESG/SRI fixed income funds and fund managers. For example, Henke (2016) detected that during the period 2001–2014, socially responsible bond funds outperformed by half a percent annually. This is mainly due to the exclusion of corporate bond issuers with poor corporate social responsibility activities. Outperformance is especially likely to occur during recessions or bear market periods. Leite and Cortez (2016) detect cyclical patterns: European SRI funds provide some protection in market downturns, but otherwise the verdict is mixed.

Hoepner and Nilsson (2017b) investigated the ESG engagement activities of fixed income managers. Funds from fund management companies not involved in ESG engagement activities perform significantly worse indicating the materiality of ESG expertise and ESG engagement in fixed income investments.

Figure 4: Main Research Findings



Source: Authors

In summary, there has been a growing research effort to analyze the relevance of ESG factors in fixed income. Whilst the methodology for individual studies varies greatly and may be questioned, overall, the growing body of research supports a more widely held view that: 1) ESG factors can constitute material credit risk, and 2) incorporating ESG factors does not mean having to sacrificing return (Figure 4). There are some interesting early results in this process but much more will need to be done. PRI (2017a) produced some ‘takeaways’ at this juncture:

- Both academic and market research supports the notion that there is a link between ESG factors and the credit risk of a borrower;
- Most academic research is based on credit ratings to measure credit risk and very few papers use alternative measures (such as credit default swaps);
- Anecdotal observation of defaults, particularly of investment-grade corporates, highlight that governance has a clearer link to corporate failures, while environmental and social issues are more difficult to capture;

- Academic research exploring the link between ESG factors and sovereign creditworthiness is less well supported. Nevertheless, there is evidence on the impact of ESG factors on macroeconomic variables and potential growth.

It is important to qualify the importance of research findings to date, and their application in the investment practice:

- Most of the ESG research use past data. Past results may not hold in future. Investment policy cannot solely rely on a “majority vote” of past research results.
- Difficulty in back testing some of the results given limited historical data.
- Research typically finds correlation, and not necessarily causality (DB 2012);
- There is still little understanding and consistency about how ESG “factors” relate to the established factors in asset pricing models, such as value/growth, size, liquidity;
- The structure of economies and markets changes over time, and so do policies. Investors need to make decisions looking forward;

- There may be (selection, data, size and other) biases at work. As ESG research matures, it will face stronger scrutiny;
- Research on ESG in fixed income is still very limited;
- Most of it is focused on credit risks. There is still little analysis of the relationship of ESG factors on market risks, inflation, liquidity, maturity, term structures and yield curves, income stability, total returns, and other risks/opportunities such as default risk or recovery rates;
- Implementation costs (e.g. for transactions, management, reporting) need to be considered;
- Investors are advised to apply their own additional research and insights;
- Different reporting standards results in a lack of comparability between findings.

Finally, some observers feel that – while certainly relevant – financial performance has received too much attention in recent times compared to conceptual research and empirical evidence on extra-financial performances (e.g. Capelle-Blancard and Monjon 2012). Overall, it is still early days for research on financial performance, and even more so for non-financial performance, of ESG in fixed income.

More robust research is needed on the link between ESG and financial performance of fixed income investments. Further academic, as opposed to industry studies are needed, looking at the link between fixed income and ESG factors using transparent methodologies, over longer time periods, across a broader range of fixed income assets and countries. Considering factors other than credit risk is required to provide a solid base of evidence as ESG fixed income investing becomes more mainstream.



4. ESG INVESTMENT TOOLS FOR FIXED INCOME

A number of tools have been created over time to assist investors in the analysis of ESG risks and opportunities. Here, too, fixed income is lagging equities.²¹ Nonetheless, a number of ESG frameworks have been developed in recent times for bonds, in particular ESG scores²² and rankings for companies, countries and other issues as well as ESG fixed income indices. First, an immediate question arising is, how ESG relates to the traditional credit ratings that are a core element in traditional fixed income management.

Credit Ratings and ESG

A discussion is ongoing on the extent to which ESG factors are relevant for credit risks, and in particular credit ratings. Some investors have asked for a clarification of the role of ESG factors in credit ratings, or demand an explicit integration of ESG by credit rating agencies (CRA) (PRI 2017a).²³

ESG incorporation

All major rating agencies say they already incorporate ESG considerations in their traditional analysis (S&P Global Ratings 2017, Moody's 2017, Fitch Ratings 2017). At the same time, they are deepening and widening the research of ESG topics, in particular on climate change risks. They also want to improve communication on these matters.

Materiality

"Fitch Ratings' criteria and analysis incorporate environmental, social and governance (ESG) risk

factors, but only where they are relevant to the assessment of credit risk." (FitchRatings 2017, p.1) "Our objective is not to capture all considerations that may be labelled green, sustainable or ethical, but rather those that have a material impact on credit quality." (Moody's 2017, p.3)

Time horizon

The focus is not on an exact time frame but on "the most forward-looking view that visibility permits" (Moody's 2017, p.3). S&P's forecasts generally cover a time horizon of up to two years for speculative-grade corporate entities (that is, those rated 'BB+' and below), and no more than five years for investment-grade entities, but they can go longer. For example, for E factors that affect sovereign ratings, the time horizon is 5-10 years.

Sectors

ESG themes vary widely across sectors. According to Moody's, for example, 14 sectors have elevated

credit exposure to carbon regulations. S&P counted 106 cases in the period 2015-2017 when environmental and climate risks were a key reason for a rating action, most notably in the energy, resources and vehicle industries.

Sovereign issuers

For all CRAs, different sets of ESG factors are relevant for corporate, sovereign and other issuers. For sovereigns, S&P considers ESG factors in the context of the assessment of institutional quality and governance effectiveness, but also social cohesion, climate change and other key factors. Moody's names 5 key ESG trends for sovereigns: country competitiveness, government effectiveness, control of corruption, rule of law or physical climate change. For Fitch, governance indicators have the greatest weighting for sovereign ratings.

Overall, credit ratings can only partially account for long-term sustainability risks, mainly because of the focus on materiality for credit risk and the relatively short time horizon. Other methodologies have been developed to compensate for that limitation, but fall outside the credit rating space. Some investors would like the CRA to extend their ESG output, including:

- longer time horizons for ratings;
- separate E, S and G factors;
- more extensive ESG disclosures;
- an ESG rating alongside the traditional credit rating.

CRAs have started to develop separate assessments specifically for environmental and ESG risks. One example of a specialist “E” product for a popular financial instrument is Moody's Green Bonds Assessment.²⁴ In 2016, S&P published two proposals for a potential new ESG evaluation tool as well as for a green bond scoring framework, both separate from traditional credit ratings.

ESG Scores/Rankings

Generally speaking, an ESG score is a measure of environmental, social, and governance factors.

Each ESG category has numerous underlying factors that are analyzed and ranked, and then combined in an aggregate ESG score for a sector, region and an overall portfolio score. The scoring methods and weightings for the E, the S and the G, and the underlying factors may vary across sectors and countries.

The most common ESG scores are at the micro level and provide some measure of a company's ESG performance. There are also country-level ESG scores that complement traditional methods of assessing a country's long-term economic prospects, creditworthiness as well as potential reputational risks.

There are external, commercial providers of ESG scores. Although the methodologies are quantitative, the assessments are inherently qualitative. Some investors therefore also set up in-house, proprietary ESG scoring systems, overlaying external information with their own analysis. According to Russell (2017), 52% of the respondent fixed income managers utilize third-party vendors exclusively to obtain ESG scores. 35% utilize external vendors with an in-house ESG analysis overlay. 15% only use internal analysis. The two market leaders in fixed income are currently Sustainalytics and MSCI, with investors and product providers overwhelmingly relying on these sources.

Sustainalytics

Sustainalytics' ESG scores give individual points for companies' E, S and G elements (0-100). The overall ESG score provides an absolute measure of a company's ESG performance as well as its relative position within an industry. The set of issues and specific weights vary by industry; at least 70 indicators in each industry are covered (Sustainalytics 2017b).

For sovereign bond investors, there is also a country ESG score that is based on 36 third-party indicators that should complement traditional macro analyses. It results in country scores for E, S and G separately, and an overall ESG score (0-100). Finally, there is

a country ESG rating ranging from A to E that is allocated on set standard deviations from the average.

MSCI

MSCI ESG Ratings identify 10 ESG themes with 37 key ESG issues where companies can face large environmental or social externalities. Corporate governance is assessed for all companies, whereas the rating model determines the most financially significant environmental and social issues for each sub-industry (Table 3). It ranks companies on

a 7-point 'AAA' to 'CCC' scale according to their exposure to industry-specific ESG risks and their ability to manage those risks relative to peers. A detailed description is given in MSCI (2017a).

The MSCI ESG Government Ratings assesses government and certain government-related issuers. Countries are rated on a 7-point 'AAA' to 'CCC' scale and reflect how countries' exposure to, and management of, ESG risk factors may affect the long-term sustainability of their economies. The ESG factors for government bonds include political

Table 3: MSCI ESG Key Issues for Companies²⁷

3 Pillars	10 Themes	37 Key Issues	
Environment	Climate Change	<ul style="list-style-type: none"> • Carbon Emissions • Product Carbon Footprint 	<ul style="list-style-type: none"> • Financing Environmental Impact • Climate Change Vulnerability
	Natural Capital	<ul style="list-style-type: none"> • Water Stress • Biodiversity & Land Use 	<ul style="list-style-type: none"> • Raw Material Sourcing
	Pollution & Waste	<ul style="list-style-type: none"> • Toxic Emissions & Waste • Packaging Material & Waste 	<ul style="list-style-type: none"> • Electronic Waste
	Environmental Opportunities	<ul style="list-style-type: none"> • Opp's in Clean Tech • Opp's in Green Building 	<ul style="list-style-type: none"> • Opp's in Renewable Energy
Social	Human Capital	<ul style="list-style-type: none"> • Labor Management • Health & Safety 	<ul style="list-style-type: none"> • Human Capital Development • Supply Chain Labor Standards
	Product Liability	<ul style="list-style-type: none"> • Product Safety & Quality • Chemical Safety • Financial Product Safety 	<ul style="list-style-type: none"> • Privacy & Data Security • Responsible Investment • Health & Demographic Risk
	Stakeholder Opposition	<ul style="list-style-type: none"> • Controversial Sourcing 	
	Social Opportunities	<ul style="list-style-type: none"> • Access to Communications • Access to Finance 	<ul style="list-style-type: none"> • Access to Health Care • Opp's in Nutrition & Health
Governance	Corporate Governance*	<ul style="list-style-type: none"> • Board* • Pay* 	<ul style="list-style-type: none"> • Ownership* • Accounting*
	Corporate Behavior	<ul style="list-style-type: none"> • Business Ethics • Anti-Competitive Practices • Tax Transparency 	<ul style="list-style-type: none"> • Corruption & Instability • Financial System Instability

Source: MSCI (2017a)

* Corporate Governance carries weight in the ESG Rating model for all companies. Other Key Issues are assessed on an industry-specific basis.

risks, human rights and environmental issues. As a practical example, Swiss Re (2017) applies a concept of minimum ESG rating standards in their asset liability management (ALM) approach.

Other providers

There are several more specialist services on the market of company ESG scores of some sort, including RepRisk, ISS-Ethix, Bloomberg, Thomson Reuters/Eikon.²⁵ Verisk Maplecroft, VigeoEiris and Oekom Research also offer a sustainability rating also for countries. Beyond Ratings and several French banks have announced plans for a first credit ratings agency to systematically integrate ESG factors into financial ratings and provide investors with an “augmented assessment of creditworthiness” in 2018. In practice, investors often use more than one external provider of ESG scores.

Sustainability rating for funds

ESG ratings for funds have been introduced by a number of companies, including MSCI, Barron's and Corporate Knights. One example, the Morningstar Sustainability Rating is a measure of how well the companies held by a fund are managing their ESG risks and opportunities when compared with similar funds. It is based on company-level ESG data from Sustainalytics. Scores are aggregated to a portfolio ESG score using an asset-weighted average of all covered securities (equity and fixed-income). Funds are sorted into five normally distributed groups (1-5 stars).

However, criticism has been levied that the analysis behind the ratings does not fully reflect the true ESG level of integration or impact of the funds. For example, no recognition is given to investors efforts on shareholder engagement and public advocacy. Furthermore, there is no consideration of the real impact and managers with specific impact-focused mandates – including those operating in emerging markets or developing countries – can be penalized (e.g., Krosinsky 2018).²⁶

Country Scores

In addition, several fund managers and asset owners have developed their own ESG scoring systems, or variations using raw data from MSCI or Sustainalytics in a different way, especially at company level. Here are some examples for ESG country scores. Developed countries typically fare better than emerging, frontier markets - especially when looking at ‘levels’ rather than ‘changes’. This raises serious questions on ESG analysis in the sovereign space.

RobecoSAM

RobecoSAM's is one of the more transparent country sustainability frameworks. It evaluates 65 countries (22 developed and 43 emerging markets). Standardized scores and indicator weights result in a country sustainability score ranging from 1 to 10 (RobecoSAM, 2015). The framework is based on 17 environmental, social and governance indicators (each of which is based on various data series, or sub-indicators). They are grouped in the three E, S, & G dimensions, which receive a weight of 15%, 25% and 60% of the total score, respectively (Figure 5 and Appendix 4). The selection and weightings of the indicators was primarily based on their financial relevance for the assessment of sovereign bond markets. The list is currently being led by four Nordic states, Switzerland, Canada and Australia.

DZ Bank

DZ Bank developed a sustainability rating for countries that combines an ESG methodology (with raw data from Sustainalytics) with an economic sustainability dimension, i.e. a four-dimensional EESG analysis model. The weighting of E factors is 20%, S 30%, G 30% and economic factors 30%. Countries are grouped into “sustainable”, “transformation states” and “unsustainable”. The current list is being led by Nordic and middle European states (DZ Bank 2015).

Figure 5: RobecosSAM ESG Weightings²⁷

ESG Weights in the CSR, from Environmental Factors to Social Unrest and Aging Populations		
E 15%	Environmental Status	10%
	Energy	2.5%
	Environmental Risk	2.5%
S 25%	Social Indicators	10%
	Human Development	10%
	Social Unrest	5%
G 60%	Liberty & Inequality	10%
	Competitiveness	10%
	Political Risk	10%
	Aging	10%
	Institutions	5%
	Six Other Factors	15%

Source: RobecosSAM

Candriam

Candriam's ESG country analysis is based on four 'capital' domains to cover all the United Nations SDGs: Human Capital, Natural Capital, Social Capital and Economic Capital. These four equally weighted factors have a number of sub-factors. The overall ESG score includes components for both the level and trend.

The Candriam ESG Country report (2017) analyzed 123 countries (35 advanced and 88 emerging economies). 74 countries were categorized as investible and 49 as non-investible. Of the 35 advanced economies analyzed, only Greece was considered non-investible. Of the 88 emerging economies (which have a lower inclusion threshold), 40 were classified as investible and 48 non-investible.

Similar approaches have been developed by other investment houses, including BY Mellon/Standish (2016), among others. Global Evolution, Neuberger Berman (2013) and Lazard (2017) are examples of ESG scoring models that concentrate on emerging markets.

SDG scores

The Bertelsmann Stiftung and the Sustainable Development Solutions Network (SDSN) developed an SDG Index. Its scores signify a country's position between the worst (0) and best (100) outcomes. The 2017 index is led by 10 European countries, followed by Japan (Bertelsmann 2017). No application of SDG scores to fixed income is known to date.

ESG Fixed Income Indices

Investment managers usually organize their investments around established investment indices. They are typically used as performance benchmarks in active investing and for replication in passive investing. Many fixed income indices are offered by global or local index providers, and they all differ in several respects. Some investors like to use indices that incorporate ESG risk and exposures in some form.

However, unlike equities, not many ESG indices are currently available for fixed income. This can partly be explained by the fact that ESG integration is newer in the fixed income field than in equities

(which was initially driven by shareholder voting and stewardship). In addition, more data is available on public companies than other debt issuers, particularly non-corporate entities. As noted, the index compilers are also the providers of ESG data, which clients then use to build their own methodologies. Finally, there may also be ‘cultural’ reasons, especially the fixation on traditional quantitative analysis in fixed income.

Barclays MSCI

In 2013, Barclays and MSCI (now Bloomberg Barclays MSCI) co-produced a new family of rules-based fixed income benchmark indices. They reflect three different ESG incorporation strategies (MSCI 2017b) (Appendix 45 for more detail):

- Socially Responsible Investment (SRI) indices negatively screen out issuers from existing Barclays indices that may be involved in business lines or activities that are in conflict with investment policies, values, or social norms (e.g. controversial weapons). They can be customized further for exclusion of specific issues (e.g. Catholic values) (Table 4)
- Sustainability indices use sector-specific positive ESG screens to adjust weights in the direction of “best-in-class” peers. Issuers must have MSCI ESG ratings of BBB or higher.
- ESG-weighted indices use MSCI ESG ratings levels and momentum to adjust or tilt index weights within an existing Barclays fixed income

index. This allocation rule is meant to reward issuers that exhibit stronger ESG fundamentals, as well as those that are demonstrating improving fundamentals.

These indexes are available for corporate and aggregate (corporate plus sovereign) but – interestingly – not for sovereign only benchmark indexes. There are sub-indexes for different regions, maturities, currency-hedged, etc.

S&P Dow Jones

- The S&P ESG Sovereign Bond Index family, started in 2015, is based on standard cap-weighted sovereign bond indices but tilts the country weights towards more sustainable countries, based on RobecoSAM’s Country Sustainability Ranking (S&P Dow Jones Indexes 2017).
- Incorporating long-term sustainability as a dimension of credit analysis aims to serve as an additional, risk-reducing tool, especially given that cap-weighted bond indices are highly exposed to highly indebted and therefore risky countries. Currently, there is only one such index available: The S&P ESG Pan-Europe Developed Sovereign Bond Index.

Other providers

- Several other index providers are currently working on ESG fixed income indices (e.g. FTSE

Table 4: Categories Available for Bespoke Screening

Abortion & contraceptives	Defense & weapons	Nuclear power
Adult Entertainment	Gambling	Pork
Alcohol	Genetic engineering	Predatory lending
Animal welfare	Global norms	Religious values
Board diversity	Global sanctions	Stem cell
Child labor	Human rights	Tobacco

Source: MSCI (2017b)

expected to launch in 2018/19, UBS are working on setting up sustainable indices for multilateral development bank bonds).

Green bond indices

- Since 2014, various providers created indices to exclusively cover green bonds. Eligibility criteria for inclusion, methodologies and coverage differ. Some examples:
- Bank of America Merrill Lynch Green Bond Index;
- Barclays MSCI Green Bond Index;
- S&P Green Bond Index and Green Project Bond Index;

- Solactive Green Bond Index;
- ChinaBond China Green Bond Index.

Low carbon indices

- Low carbon or carbon-efficient indices have been on the market for equities for some time but are less common for bonds. In 2016, a new Solactive SPG Euro IG Low Carbon Bond Index was launched. The index covers investment grade corporate bonds of companies that are less dependent on fossil fuels relative to higher carbon-emitting peers.



5. How is ESG BEING IMPLEMENTED BY FIXED INCOME INVESTORS?

ESG investing is being implemented in very different ways by investment managers and asset owners. Different types of investors will naturally have different approaches, according to their size (smaller institutions will be able to do less in-house), regulatory framework (which can impose greater restrictions according to financial sector, geographic location etc.), nature of business (some institutions are driven more by ALM considerations than alpha returns) etc.

As a stylized description, it can take place at any of these levels of investment operation, or any combination: policy, investment process, products, underlying assets (e.g. companies), marketing/public relations and reporting.

ESG investing in fixed income is developing fast these days. As a snapshot, a survey of 109 fixed income managers by Russell (2017) found that 68% of managers have integrated ESG somehow into the investment process. However, this means different things to different people, and there are question marks over the real implementation so far.

Which ESG strategies are most commonly applied by investors? For fixed income, a survey by PRI (2017a) finds integration ahead of screening and thematic investing. Only 6% of managers (by assets) use all three approaches (Table 5). Furthermore, corporate bonds are better covered than sovereign bonds by ESG analysis, while securitized assets are far behind in this respect.

Table 5: ESG Strategies in Fixed Income (by Volume of Assets)

Combined FI Approaches in US\$TRN	
Screening alone	\$2.3
Thematic alone	\$0.1
Integration alone	\$9.6
Screening + integration strategies	\$5.8
Thematic + integration strategies	\$0.1
Screening + thematic strategies	\$0.4
All three strategies combined	\$1.4
No incorporation strategies applied	\$2.3
Grand total (actively managed)	\$21.9

Source: PRI (2017a)

For some investors, ESG investing is limited to the use of ESG products (such as green bonds or an SRI fund). Other investors have decided to follow passively an ESG index for some asset classes. Many asset owners are going down the route of selecting active ESG managers or developing active ESG in-house strategies for certain asset classes. Finally, there is a ‘holistic’ approach with full integration across all asset classes and risk management (Figure 6). Here, the focus is on specific applications for fixed income.

How these different approaches to ESG investing are being applied by different categories of asset owners and other investors is a topic which deserves further research. Likewise, the success of the different approaches and tools is a topic which this overview paper has not been able to delve into, but also would be worthy of further study.

Green, Social, Sustainable and Other Thematic Bonds

Thematic bonds or labelled bonds are bonds with proceeds earmarked to specific themes, sectors

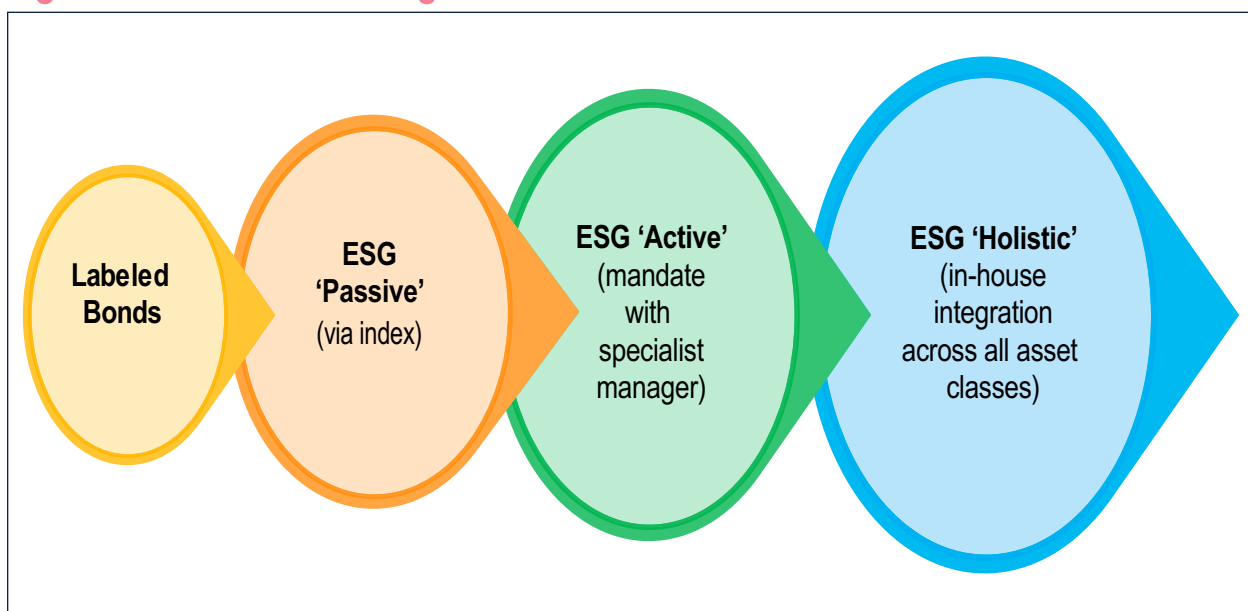
or projects. In the ESG context, by far the most popular are “green bonds” and “climate bonds”, but thematic “social bonds” and “SDG bonds” have also been developing in recent years. Fund managers also offer thematic green or social bond fund vehicles (e.g. the IFC/Amundi Planet Emerging Green One green bond fund for emerging markets, Threadneedle’s UK Social Bond Fund, AIM/ Lombard Odier Global Climate Bond Fund).

Although growing in importance and recognized as a catalyst for the integration of ESG into fixed income portfolios, the labelled bond market is still tiny – less than 0.1% of the total global bond market.

Green bonds

Green Bonds are defined as fixed-income securities that raise capital to support projects or activities with specific climate or environmental sustainability purposes. Multilateral institutions like the European Investment Bank (EIB) and World Bank led the issuance in the green bond market. Green municipal, state and corporate green bonds followed, and high yield green bonds are starting to develop.

Figure 6: Level of ESG Integration



Source: Authors

There are four types of green bonds: standard recourse-to-the-issuer debt obligation, non-recourse-to-the-issuer debt obligation, green project bond and green securitized bond (covered, ABS, MBS etc.). Proceeds are most commonly allocated to renewable energy projects, such as wind farms, or cleaner forms of public transport.

The labelled green bond market has taken off in recent years (Figure 7). In 2017, over \$160 billion was issued, with over US\$200 billion in green bonds already issued between 2007 and 2016 (World Bank). A further \$700bn outstanding were unlabelled climate-aligned bonds.²⁸ The World Bank Treasury alone has issued USD \$10.2 billion in 138 green bonds in 18 currencies. Despite the recent growth rates, green bonds only constitute a small fraction of the overall global bond market volume of \$90 trillion, i.e. about ½%.

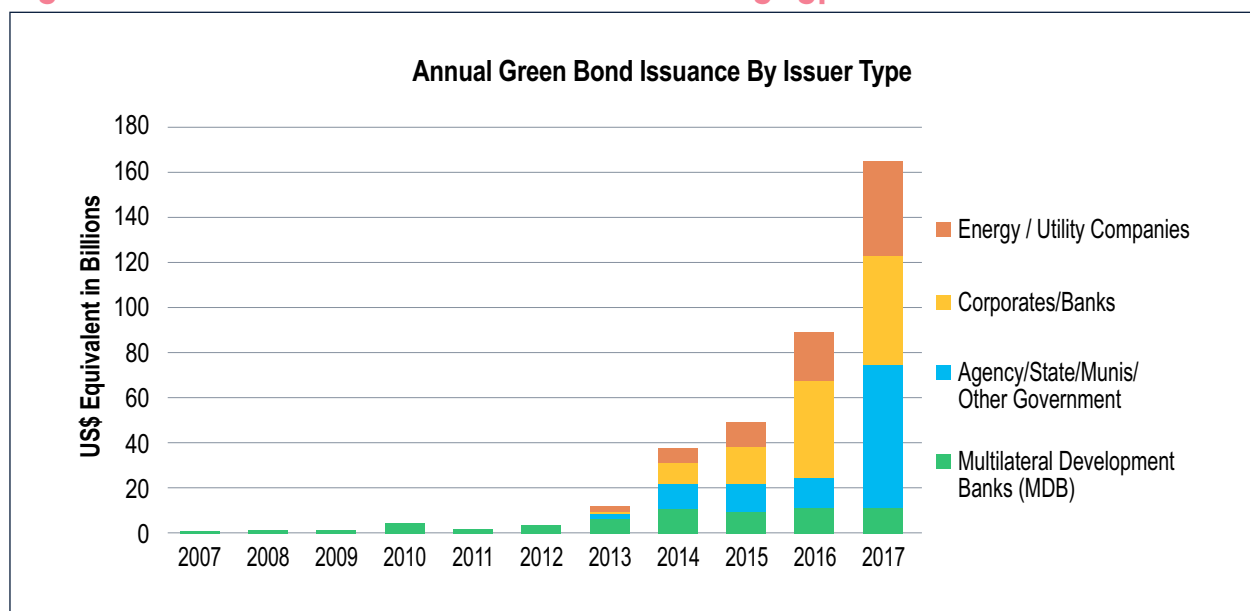
There is an ongoing discussion about the definition of green bonds, and the setting of standards to facilitate credibility and transactions (Ehlers and Packer 2017). The voluntary “Green Bond Principles” (ICMA 2017a) are widely used.²⁹

The “Climate Bonds Standard and Certification Scheme” provides sector-specific eligibility criteria for assets and projects that can be used for climate bonds and green bonds (CBI 2016). Green bond assessments are undertaken by companies such as Sustainalytics, VigeoEiris and Oekom Research, Moodys, Cicero and Trucost (now part of S&P Dow Jones Indexes).

As the popularity and interest in the green bond market rises, issuers are increasingly stretching the boundary of what qualifies as a green or social investment. There is also an on-going debate on whether ‘green’ projects from corporations with broader investment objectives should qualify – some viewing this as a positive sign of change within companies, others concerned that ‘green washing’ could reduce the credibility of the market as a whole. Second opinions on issuance, and stringent signals from market players will increasingly be necessary. Investors tend to hold green bonds over long periods, which raises the question of verification of “greenness” over time – at a cost.

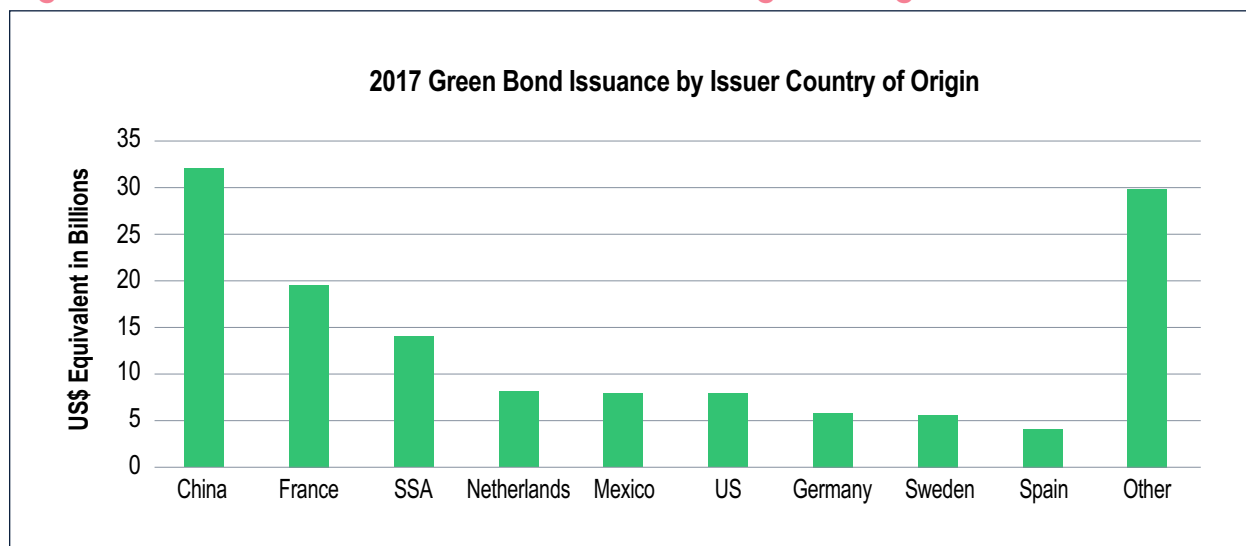
Issuance is also spreading across a broader range of countries (figure 8).

Figure 7: Labelled Green Bond Market Volume by Type of Issuer



Source: Bloomberg and World Bank (as of December 31, 2017)

Figure 8: Labelled Green Bond Market Volume by Country



Source: Bloomberg and World Bank (as of December 31, 2017)

There is also an on-going discussion on the pricing of green bonds. The question is whether green bonds do and/ or should price the same as non-directed use of asset bonds issues by the same company, or whether there is a ‘greenium’ (i.e. green bonds have a higher price/ lower yield than non-use of proceed counterparts). Green bonds rank *pari passu* (on equal footing) with bonds of the same rank from the same issuer and there is normally no credit enhancement. Climate Bonds Initiative and International Finance Corporation (IFC) with support from Rabobank, Pax and Obvion conducted a detailed analysis of green bond issuance for the period January 2016 to March 2017 comparing ‘vanilla’ and green bonds, looking for any differences in pricing performance (CBI/IFC 2017). Some indicators have shown some differences (e.g. some green bonds do price tighter than the Initial Price Talk when compared to some corporate vanilla bonds), but generally pricing is very similar.

At this stage concrete evidence to show or support that green bonds perform differently or better than other categories of bonds is non-conclusive. This could be attributed to the market still being immature and relatively small to provide a definite position on the matter (secondary market trading is very thin). However, the idea of a “greenium”

may not be farfetched when one considers the cost issuers must put in to structure these bonds, monitor and undertake periodic reporting during the tenure of the bond. On the other hand, investors too are facing ongoing monitoring costs and low liquidity.

Social bonds

Bonds labelled as ‘social bonds’ are thematic bonds that mirror the idea of green bonds. They are bond instruments where the proceeds are earmarked to support new and/or existing social projects (ICMA 2017b, IFC 2017). Criteria for their qualification relate to both financial and social aspects. Social themed bonds are used to fund social housing, education facilities, health care and other projects that are either public sector or public–private partnerships. ICMA also coordinate the Social Bond Principles and the Sustainability Bond Guidelines. This market is still nascent.

Social impact bonds

There are also other financing developments such as Social Impact Bonds (SIB), as launched in the UK, USA, Netherlands, Japan and other countries (OECD 2015). SIBs are not bonds in the traditional sense and do not offer a fixed rate of return. A social

impact bond is a “pay for success” instrument, i.e. a contract between a special purpose vehicle and the government that commits to pay for improved social outcomes (and that also result in public sector savings), such as reduced recidivism rates for prisoners.

A number of foundations, charitable trusts and pension funds have taken an interest in SIBs, alongside venture capitalists and other investors. There are currently nearly 100 SIBs in 19 countries, mobilizing more than £300m of investment into tackling complex social issues such as refugee employment support, loneliness among the elderly, rehousing and reskilling homeless youth, and diabetes prevention. The potential social benefits of SIBs are considerable, but the transaction costs are high, and there are challenges in finding structures with incentives that are properly aligned, making rapid growth in issuance of SIBs unlikely.

Sustainable and SDG bonds

Sustainable bonds include a wider range of green, social, environmental, development impact, microfinance bonds and loans, charity bonds and other debt instruments (European Impact Investing 2016). The World Bank, for example, communicates that every project it finances is designed to achieve specific social and/or environmental impacts, defined by indicators and respective results that are published and updated twice annually on the World Bank website. All projects that are financed by World Bank bonds must fit with the organization’s goals to end extreme poverty and boost shared prosperity, also naturally aligning such project objectives with the SDGs. From 2018 on, all World Bank (IBRD) bond documentation will include specific ‘Use of Proceeds’ language to explain how bond proceeds support sustainable development projects and programs.

In addition to their general issuance, the World Bank and IFC continue to be a major issuer of labelled and themed bonds. For example, in 2017, the first SDG equity-linked bonds were launched issued by the World Bank working with BNP Paribas.³⁰ HSBC

has also issued bonds connecting the issuance to SDGs.³¹ In 2018, the WBG also issued sustainable development bonds to raise awareness for women’s and girls’ empowerment. Catastrophe risk bonds can also be seen as sustainable investment products.³² The WBG is leading with other innovative financial products, such as the Pandemic Emergency Financing Facility, as well as products supporting human capital investments and universal health care.

The World Bank and IFC, amongst others, are contributing to the work on further refining the Green Bond Principles. Guidance is also being developed on social and sustainable bonds including as they relate to the SDGs.

Passive Investing

Passive fixed income funds play an increasingly key role in institutional portfolios. ESG has historically been first associated with active investing, e.g. with norm-based exclusions or an active selection of the best ESG-compatible stocks. More recently, however, the attention on ESG considerations in passive investing has been rising fast.

Pressure on large passive investment managers (such as Vanguard, BlackRock and State Street) has been rising to increase their stewardship efforts, especially by using their many votes in shareholder meetings and ongoing engagement with investee companies.³³ Passive asset owners can use active ownership and engagement to manage their ESG risks. However, they need a policy and systems to ensure that different investment managers do not take opposing positions while exercising active ownership on behalf of the same asset owner.

ESG in passive fixed income funds has, so far, been relatively little explored and used by investors. Fixed income indices can assist the development of low cost ESG strategies, e.g. screening via an exclusionary index or via an ESG tilted passive portfolio. Investors are currently constrained by the lack of choice in this field, as they may have different ideas about ESG factors and methodologies.

Exchange traded funds (ETF) are typically launched based on popular indices. The use of ETFs (but also mutual funds) is also rising in this space. MSCI (2018) found at least a dozen “self-labelled” ESG Fixed Income ETFs at the end of 2017.

Index customization / ‘Smart beta’

Indexes can often be customized to reflect the specific needs or preferences of investors better. Investors can, alternatively, deviate from established indices by using an internal “passive plus ESG overlay” approach. An immediate concern in relation to the increasing index customization in this field is the lack of comparability of strategies, and performance by asset managers. Higher fees may also come with it.

“Smart beta” or “alternative beta” investing is a variation of passive, using an index that is not weighted by market capitalization-weighted but by other risk factors, minimum volatility or equal weights. There are some ESG smart beta products in equity but not (yet) in fixed income.

Active Investing

ESG funds of all sorts have been mushrooming in the asset management industry in recent years. Active fund products are also growing in the fixed income space (e.g. Pimco’s ESG Global Bond Fund; BlueBay or M&G ESG global high-yield bond funds). Specialist ESG asset managers, such as AIM (Affirmative Investment Management) and Trillium, are also growing.

Active managers use a variety of tools to develop their ESG approach, all based on some form of ESG scoring (see earlier section). Asset owners can buy these products “off the shelf” but many also define bespoke ESG investment mandates for active investment managers. These can extend to all approaches of ESG investing, ranging from individual exclusions to best-in-class. A summary of guides on how to give mandate/ appoint external asset managers is provided by the PRI (2013).

ESG ‘Holistic’

Asset owners, especially larger ones, apply more comprehensive sustainability strategies. The intention is a full integration of ESG across all steps in the investment process and all asset classes. Different in-house integration techniques are being applied by different investors.

From an organizational perspective, ESG is often the job of a few “specialists”. Some investors, however, gear up the whole organization to ESG. Foremost, a ‘full’ ESG approach requires a clear strategic plan, including at all levels of governance, starting with the Board. In practice, various approaches have emerged:

- Separate team of ESG specialists;
- Integration of ESG expertise in analyst, portfolio and risk management teams;
- Confining ESG reporting resources in marketing/ PR/middle or back offices.

Looking at insurance companies, Swiss Re has recently implemented an ESG framework across asset classes for universe definition, performance measurement and portfolio monitoring, and switched to ESG benchmarks for both equities and fixed income (Swiss Re 2017). Examples of a comprehensive (and different) ESG strategy in the pension fund environment are PGGM and EAPF.

PGGM

An example of such an implementation framework is the three-pillar approach by the asset manager PGGM, which manages funds on behalf of the largest pension funds in the Netherlands (Figure 9). The framework uses six instruments (exclusions, ESG Integration, engagement, voting, legal proceedings and investing in solutions, including green bonds).

PGGM starts with a negative screening policy with investments in areas such as tobacco, types of weapons etc. excluded from all portfolios. In addition, three sustainability goals are embedded in the 2020 Strategic Policy.

Figure 9: PGGM ESG Approach

PGGM's Instruments for Responsible Investment		
NO What We Do Not Want	CHANGE What We Want to Improve	YES What We Want to Stimulate
Direct exclusions <ul style="list-style-type: none"> • Controversial weapons • Tobacco Exclusions after engagement on: <ul style="list-style-type: none"> • Human rights and social circumstances • Environment • Corporate governance Instrument: <ul style="list-style-type: none"> • Exclusions 	Making companies and markets more sustainable through ESG integration, active ownership and collaboration with financial service providers Instruments: <ul style="list-style-type: none"> • ESG integration (including ESG Index) • Engagement • Voting • Legal proceedings 	Creating social returns in the areas of: <ul style="list-style-type: none"> • Climate and environment • Water • Health • Food Instrument: <ul style="list-style-type: none"> • Investing in solutions

Source: PGGM (2017)

- **Reduce carbon footprint by half:** starting with listed equity, using a largely passive approach (Trucost data, ranking companies by carbon intensity within sectors, divesting from companies with the highest emissions per dollar revenue in carbon intensive sectors). The organization has the ambition of rolling out same the approach to fixed income and private assets – but finding consistent data sources is still a challenge.
- **Quadruple volume of positive impact investments:** this involves a separate portfolio targeting 4 investment themes – climate, water, food security and health – with the target of investing EUR 20 billion in these areas by 2020. Green bonds as well as direct (private) investments are included in this portfolio.
- **Further integrate ESG into the whole investment process:** through due diligence, selection and screening, with tools now used by all investment staff (not just a separate SRI team). For listed instruments, a passive + positive screening approach is used (best in class ESG overweighted vs. index using Sustainalytics and MSCI data). For private instruments, the approach is more active (due diligence questionnaires are used to

assess private equity (PE) general partners' (GPs) integration of ESG into their process; renovation and energy efficiency improvement of direct real estate investments). ESG country rankings are used for EM sovereign bonds holdings. Engagement is also starting to be used as a tool on the fixed income side.

Environment Agency Pension Fund (EAPF)

The UK pension scheme EAPF aims to integrate management of ESG issues throughout the investment and funding strategy. This includes asset allocation, mandate design, risk management, fund manager appointment and monitoring, collaborative engagement and reporting. Thinking about these issues at a strategic level is critical (EAPF 2017a).

This includes especially areas such as engagement, voting, environmental foot printing, carbon targets and metrics, and on dedicated green, social and other sustainable investments (Box 4). More specifically on fixed income, EAPF introduced carbon foot printing for its corporate bond portfolios in 2012, followed by green bonds, and a 'Buy & Maintain' bond mandate (with a focus particularly on climate risk and corporate governance). (EAPF 2017b)

Box 4: EAPF's Sustainable Investment and Carbon Targets

Social and sustainable investment

Social investment can be defined to include a wide spectrum of investment opportunities. The EAPF definition of social investment is an investment that addresses societal challenges but generates competitive financial returns. Societal challenges include all issues commonly regarded under social, environmental or governance headings.

A wide definition of sustainable investments includes:

- Social investments and those with significant revenues (in excess of 20%) involved in energy efficiency, alternative energy, water and waste treatment, public transport;
- Property, infrastructure, agriculture or forestry investments with a low carbon or strong sustainability criteria; and
- Companies (often equities and bonds) with progressive environmental, social or governance practices that may enhance investor value.

The Fund has set itself the target to have over 25% of the Fund invested, across all asset classes, in such opportunities.

Carbon targets

In our policy we set ourselves three goals for 2020 to invest, decarbonize and engage and we are making good progress on all three. (EAPF 2017a)

Climate Goals	Progress
Invest 15% of the Fund in low carbon, energy efficient and other climate mitigation opportunities.	10% invested with current commitments bringing it to 12.5%.
Decarbonise the equity portfolio, reducing our exposure to 'future emissions' by 90% for coal and 50% for oil and gas by 2020 compared to the exposure in our underlying benchmark as at 31 March 2015.	Coal is currently 65% less than our baseline. Oil and gas is currently 79% less than our baseline.
Supported progress towards an orderly transition to a low carbon economy through actively working with asset owners, fund managers, companies, academia, policy makers and others in the investment industry.	Active engagement across the industry with a strong focus on working collaboratively. More information on our website.



6. MAIN TRENDS AND CHALLENGES

State of the Art

The main trends for ESG in fixed income investing can be summed up this way:

- There are a number of fundamental differences for ESG in fixed income, in particular the relevance of sovereign issuers, and the focus on downside capital risks.
- More academic and industry research on fixed income-related ESG issues has been undertaken over the last few years – this is likely to continue. Overall, it is still early days for research on financial performance, and even more on non-financial performance, of ESG in fixed income.
- It is now more widely accepted that ESG factors can constitute material credit risk, and incorporating ESG factors in the investment process does not mean sacrificing return.
- More investors are trying to understand the link between ESG issues and traditional credit ratings, as well as ESG and credit spreads.
- New “motivators” since 2015 include climate change, the UN SDGs and a changing attitude of some regulators (e.g. reporting, disclosure) towards “sustainability”.
- ESG investing is growing fast, and is becoming part of mainstream investing for many pension funds, insurance companies, sovereign wealth funds and other asset owners.
- ESG for fixed income is catching up with equity – other/alternative asset classes are following, too.
- Fixed income-specific ESG investment tools such as ESG scores/rankings for companies and countries are being developed more intensively – both by commercial providers and inside asset management organizations.
- Work in the sovereign space is lagging corporate markets. Other areas of fixed income, such as private debt, covered bonds or asset backed securities, have little coverage, so far.
- Implementation strategies for ESG in fixed income vary widely. They range from thematic investments (mostly green bonds), passive ESG investing, active ESG mandates or in-house strategies, to full integration into fixed income portfolios – with investors also using a combination of these approaches.
- ESG indices are being used for both passive and active strategies, and they use mostly exclusionary screens or ESG-tilted weightings. However, investors are currently constrained by the lack of choice in this field – more indices are in development.

- Some advanced investors have developed, or are developing, a ‘holistic’ ESG approach across all asset classes, the entire investment/risk management process, and the whole asset management organization.
- Focus on environmental and social outcomes is increasing (e.g. carbon emissions, social impact). More investors are seeking new territories in “impact investing” or sustainable investment strategies also with fixed income instruments.
- Investors, especially index investors, are coming under more scrutiny (also in fixed income) for their ESG efforts, especially corporate (non) engagement), as well as their environmental and social impact.
- Investors are using the SDGs framework to focus their investments for purpose that is aligned with the SDGs.

Customization and standardization

What is becoming clear as ESG integration emerges and becomes more widespread practice is the balance which institutional investors are having to strike between ‘standardization and customization’. Many investors are increasingly looking to develop bespoke strategies to reflect their own philosophy and investment goals. The many different concepts allow for a customization of ESG investment strategies, indices and portfolios. However, this goes at the cost of comparability of performance.

On the other hand, a widespread complaint is on the lack of agreed ESG “standards”. Many investors also would like to see standardized ESG definitions, stock lists, indices etc. in order not to have to “re-invent the wheel”, and to save costs of customization. Some observers would also fear opportunistic “standards-shopping”.

As noted earlier, a definitive list of ESG issues does not exist – and it looks impossible to agree on. Even within the comparatively advanced discussion of “green” there are major areas of dispute, e.g. on nuclear, biofuels. Across experts, there is also a varying emphasis on processes and products, supply and disposal chains, on footprinting or

physical risks, on biodiversity and natural capital, etc. Such issues are even more difficult in the social and human rights territory. Competing concepts in the market place are more likely to allow for dynamic adjustments and quality competition in a fast-moving world. In this dynamic process, transparency and good governance are essential.

There are pros and cons of setting ‘official standards’. It looks premature for regulators to set full ESG standards at this juncture, if ever possible. More promising is to expect specific regulation at company/sector/project level, e.g. on carbon emissions, environmental footprint, energy efficiency, governance practices, workplace standards, and similar. Furthermore, disclosure requirements will tighten for both investee companies and investors. As social issues – which by their nature are less consensual - become more embedded into the investment process customization will remain, but consensus around frameworks is needed to provide a robust basis for ESG incorporation (and keep costs affordable). Over time, more robust methodologies would provide a better footing for ESG information, and deliver better inputs in the models used by the investment industry.

Issues with ESG Investing

Even with the growing body of research, increasing product offerings and developing methodologies by leading investors, a number of issues with ESG are being debated in the industry and in academia. This poses a series of challenges for fund managers and asset owners.

Many investors remain concerned about ESG-related investing for assorted reasons (Mooji 2017). Important impediments to the use of ESG information are the different reporting standards and as a result lack of comparability (Amel-Zadeh and Serafeim 2017). According to a survey of 500 investors globally (Schroders 2017b), performance and transparency are the greatest challenges. Difficulty in risk measuring/managing and costs are also mentioned, as is the lack of belief in “sustainable investments” (Figure 10).

Figure 10: Sustainability Challenges for Investors

	Overall	North America	Europe	Latin America	Asia
Performance concerns	44%	42%	47%	37%	45%
Lack of transparency and reported data	41%	33%	44%	34%	45%
Difficulty measuring and managing risk	28%	29%	26%	26%	31%
Cost	23%	28%	22%	26%	21%
Investment committee is not comfortable making sustainable investments	14%	6%	14%	23%	18%
Other	11%	12%	9%	6%	13%
I do not believe in sustainable investments	20%	22%	15%	29%	23%

Source: Schroders (2017b)

ESG critiques

It is worthwhile to briefly reiterate some of the more principled reservations and criticism of ESG such as:

- Lack of clarity around the ESG terminology; vagueness of ‘sustainability’;
- Stakeholders in different sectors (investors vs. economists vs. environmentalists) are using different terminology and not communicating well across disciplines;
- Potential trade-off between ESG factor preferences and investment performance;
- Possible reduction of investment universe, with lack of diversification;
- Need to clarify existing regulation, fiduciary duty;
- Who defines the “values” and how? Concerns over the growing ‘oligopolistic role’ of external agencies or service providers;
- Who regulates ‘sustainability’, and how? Questions about both ESG-specific regulation and investor regulation that affects ESG investing (e.g. fiduciary duties);
- Too much ESG “box ticking” on the side of companies and asset managers;³⁴
- Given the rising demand for climate change/ESG products, too much “green-washing” or “ESG-washing”;
- Does ‘sustainability’ investing facilitate or distract from essential climate change investing? (Some governments prefer ‘sustainable finance’ over ‘green finance’);
- Cost issues (e.g. charges for ESG data providers, certification or in-house expertise; higher management fees?);
- Questions about the effectiveness of governance codes/ESG policy (e.g. financial crisis; executive compensation and poor corporate oversight; ecological disasters).

ESG implementation in general

Once a decision in the direction of ESG is made, there are a broad range of questions on the implementation (see, e.g., Hawley 2017):

- Exact definition of ESG factors; is it too static – are adjustments needed over time?
- Diverging analytical approaches; detailed methodologies (e.g. weightings of E, S and G, or of sub-factors)³⁵
- Conflicting signals from E, S and G on individual companies/countries
- Limited transparency of ESG scores/methodologies (“black boxes”)
- Time lag of information (“behind the curve”)
- Disclosure and reporting issues with underlying investee companies/countries
- Whether broader supply chain considerations should be taken into account?
- What is the progress in terms of ESG outcomes and appropriate metrics?
- Problem of scale/ resources for smaller institutional investors, particularly in EMs
- Investment (im-)practicality of SDG goals.
- Long time horizon over which ESG factors can materialize vs. short-term performance measurement of asset managers.

As ESG investing is spreading more widely, most asset managers feel the need to become more active in this field. However, the reality is often detached from the image sought, especially outside equities. For fixed income, as the Russell survey (2017) revealed, “there often is a wide gap in what the survey respondents claim they do regarding ESG integration and what is actually happening”(p. 4). “Overall, we observed that ESG factor consideration appears to be not as a dominant driver in investment decision but rather as a supplemental piece of information at best as a part of credit analysis.” (p. 1)

ESG in fixed income

ESG investing in fixed income poses some additional challenges.

- Connection between ESG and credit ratings and credit spreads
- Mismatch of time horizon for fixed income investments and period over which ESG factor materialize (as these can be short-term, but often represent long-term trends)
- The relationship of ESG and other risks/opportunities (e.g. market, liquidity)
- How to organize “engagement” for bondholders, especially for small investors and with sovereign issues
- Political sensitivities with sovereign (sub-sovereign) bonds (e.g. exclusion of countries)
- Limited availability of underlying country data (also suitability? comparability? timeliness?)
- How to capture momentum as opposed to static level of ESG for companies and particularly countries
- Lack of ESG research coverage for high-yield, emerging market and private debt
- Lack of competition in ESG fixed income indices
- Awareness of (implicit or explicit) factor biases in ESG investing
- The effect of ESG on long-term strategies and asset-liability management (ALM)
- Whether to measure ESG by issuer or issuance?
- Organizational issues (e.g. building ESG fixed income expertise; different ESG company experts for stocks and bonds?).

Progress on data

One of the main concerns of investors is ESG data. The concerns are mainly two-fold:³⁶

- Lack of available data; timeliness; coverage of regions/market segments/instruments;³⁷

- Quality of data inputs (inconsistencies; incompleteness; reliance on self-reported data; subjective and unaudited information; obvious errors).

In terms of quantity, reporting initiatives are improving the depth, breadth and consistency of corporate reporting on ESG factors. The launch of the TCFD is a response to this call for more and better information. As of March 2018, over 250 organizations have expressed their support for the TCFD, and the first examples of organizations taking steps to report in line with the recommendations of the TCFD (e.g. Unilever, HSBC and SwissRe) have already been seen. The IFC has developed a Disclosure & Transparency Toolkit to support corporates in emerging markets enhance their ESG reporting. An IFC project is also currently underway to adapt the IFC Performance Standards and Corporate Governance Methodology into a framework which can be used by capital market investors. The World Bank is also working on a reporting framework to map project outcomes and impact to SDG indicators.

Importantly, the issue is not just about data quantity. Much more progress is needed in terms of data quality and relevance as an input to investment decision-making. The bar is being raised for corporate disclosure by regulators and stock exchanges. More investor ESG disclosure is being introduced in many places. Specialist services are growing to make the best use of such data in a competitive market. Crucially, more conceptual work will need to be done on defining ESG and SDG metrics, and especially on how to define and measure the impact of portfolios.

New technology is helping tackle the data challenge by adding both depth and breadth to ESG sources. This goes beyond using standard, self-reported corporate data to incorporate ‘big data’ and new information sources, such as satellites. It can also

reduce costs vs. intensive analytical approaches, and provide more real-time data, which is important for investors trying to adapt policy and other tools. Much more basic environmental and other data are available now than only one or two decades ago. Combined with artificial intelligence (AI) and machine learning techniques, real time evidence for investors is becoming more obtainable.

New data providers, such as True Value Labs and Arabesque,³⁸ are providing ‘sustainable quants’ based services, using big data and machine learning tools to go beyond corporate disclosure-based E, S, G information. MSCI and other data providers are noting that an increasing number of their clients are quants.³⁹ Already, a number of investors, including pension funds such as APG⁴⁰ and PensionDanmark, are testing and implementing artificial intelligence/robotics for certain processes. However, investors are also aware that “big data” may also imply “big risks”. Issues such as cyber-crime, data ownership, theft and misuse have already shown massive financial relevance.

Data availability and quality also need to improve to support better ESG integration into sovereign bond analysis. The national level data used is limited, and particularly suffers from significant time lags. Initiatives are underway to improve the National Capital Accounting of countries (to support financial accounting), but this is yet to become widespread. Work on the ‘Human Capital’ and other indices may provide a more holistic framework for sovereign and social analysis (Lange et al. 2018). There is still a need for governments to provide better basic environmental and social data – with faster delivery. Satellite data is being used by the World Bank and other institutions to track proxies for ‘E’ and ‘S’ measures through data such as environmental degradation and poverty measures.



7. CONCLUSIONS: FROM PROCESS TO IMPACT

Key Lessons for Investors

There are a number of key lessons for investors:

From single steps to a full organizational approach

Many investors – both asset owners and asset managers – have taken some single steps into ESG investing into their fixed income portfolios, e.g. by buying a SRI fund or a green bond, SRI engagement teams working on fixed income as well as equity holdings, subscribing to ESG organizations or producing ESG marketing/compliance literature.

Such single steps are often indeed the main options for smaller investors. Larger investors, however, to progress, need to take a full organizational approach (starting at board level), devote in-house analytical resources and apply appropriate aspects of ESG strategies in parallel, including incorporation across fixed income holdings.

Clear objectives

Clarity about the objectives is paramount. Some investors (and academics) primarily try to chase a few extra basis points via (changeable) ESG product/strategy outperformance. Instead, more efforts should go into setting ESG investment objectives: What is this particular asset owner trying

to achieve with ESG (if at all)? And how? There is often an excessive focus on sustainability and financial performance, and too little regard for performance in terms of E, S and G. Though arguably harder to measure, these considerations are also important for fixed income holdings.

From input to outcomes – from process to impact

In the past, ESG investing has been mainly concerned with inputs (e.g. finding ESG data, products) and internal processes (e.g. ESG analysis, compliance). While this process will continue, in future, more efforts will go into the ESG output, including:

- becoming clearer about how to conceptualize ESG outcomes;
- working hard to find appropriate ESG metrics;
- getting a handle on the environmental and social impact across portfolios, including fixed income holdings;
- determining how to measure and communicate ESG impact beyond labelled bonds; and
- mapping portfolios and SDG outcomes.

Ways Forward

ESG investing is developing from a purely process-driven to a more outcome-driven activity. This is true for all holdings, including fixed income. The concerns outlined above show that, whilst great strides have been made to incorporate ESG factors into fixed income investments, and across investors' portfolios, more needs to be done to truly mainstream this approach and have material impact.

In addition to investors themselves, a range of stakeholders have a role to play to achieve the goal of mainstreaming ESG into fixed income investments:

- **Governments** need to provide more timely, accurate national data on ESG and development issues, as well as financial national accounting to inform analysis of their sovereign issuance;
- **Corporations** need to continue to improve their reporting on ESG as well as financial factors to better assess their debt as well as equity issuance;
- **Multilateral development banks** have an important catalytic, intermediary and capacity building role to play on labelled bond issuance, and impact measurement more broadly;
- The **international associations** should strive in their thought leadership and the provision of robust evidence to support the mainstreaming of ESG investment in all asset classes, and work towards common frameworks.
- **Service providers** should continue to improve their ESG methodologies and analysis, pushing for more timely, accurate and extensive information to base this on – and they in turn need to be pushed by investors to increase the quality of their products, particularly in the fixed income space.
- **The academic community** can provide new ideas, new metrics and critical evaluation, with gaps in fixed income analysis particularly needing to be filled.

Further work is needed in four areas:

First, the on-going initiatives to improve the data upon which the ESG analysis and tools are based should continue to be supported. Corporate reporting initiatives are having results, with attention increasingly spreading to emerging market issuers. Likewise, evidence from new data sources (big data, satellite data etc.) needs to be tested for robustness and materiality to include and bring a real-time dimension to ESG analysis of sovereign bonds.

Second, more rigorous research on the relationship between ESG factors, financial risk and returns in fixed income is also required. Further, academic studies are needed, looking at the link between all aspects of fixed income, E, S and G factors, using transparent methodologies, longer time periods, and a broader range of fixed income assets and countries.

Third, frameworks for applying this ESG data should continue to be refined. Having standardized, international frameworks brings confidence to investors that ESG analysis is being placed on a robust footing. This will allow them to further include this analysis into their mainstream investing across asset classes, whilst adding customization on top to reflect their own beliefs and goals.

Finally, more innovative, sustainable investment products are needed – as evidenced by the appetite for green bonds. They should be scalable and more diverse in order to become meaningful portions of investors' asset allocation and benchmarks. The growing sustainable bond issuance – supported by the data and frameworks discussed – will allow investors to channel their portfolios and measure impacts on their chosen goals. More can be done to devise structured and other products to meet this demand. As with green bonds, supranational issuers are helping pave the way forward to grow sustainable bond markets through their own bond issuance and by mapping out impact reporting models and transparency and disclosure standards together with partners like ICMA.

Next Steps

Suggested next steps for the World Bank Group, GPIF and their partners include:

National Reporting

- Encourage and support use of National Capital Accounting, including in developing economies
- Explore how to provide more accessible, accurate, timely E, S, G risk and impact indicators for investors to incorporate into their analysis – in cooperation with stakeholders
- Conduct research into materiality and incorporation of E, S, G risk and impact factors in sovereign bond analysis
- Provide opportunities for investors to engage on E,S,G issues with sovereign issuers

Corporate and Impact Reporting

- Step up engagement with international initiatives (GRI, SASB) and investors to promote and develop standard corporate reporting
- Continue work with TCFD, including on climate-related scenario analysis and assessment by financial institutions
- Encourage corporate sustainability benchmarks aligned with SDGs
- Work with institutional investors and others to develop and refine reporting on impact from sustainable development investments (such as for IFC Social Bonds and World Bank Sustainable Development Bonds) and their alignment with the SDGs, that can be used as a model for reporting by other issuers
- Promote the use of the IFC Disclosure & Transparency Toolkit for EM corporates and design customized capacity building activities targeting specific countries or sectors

Frameworks

Continue to support the refining the green/social/sustainable bond principles and impact reporting (including alignment with SDGs) for investors through the Executive Committee chaired by ICMA

- Test IFC's ESG framework for EM corporate issuers with institutional fixed income investor partners.

Products

- Work with sovereigns, sub-sovereigns to support their interest in issuance of labelled bonds through advisory work
- Provide advisory to emerging market issuers on increasing transparency in measuring and tracking impact for financed projects – for labelled and non-labelled bonds
- Increase engagement with investors on sustainable use of proceeds for all bonds issued and related impact reporting, to expand and broaden the market (by issuer, issuance type, broader range of credit quality etc.) to scale up the market.
- Support products that help to raise awareness for pressing development issues such as environment, gender, human capital, universal health care and other themes that enable sustainable prosperity for all generations

In the end, investing is about dealing with opportunities and uncertainties – this not different for ESG investing. ESG issues constitute a major challenge for asset owners and asset managers but also provide new – financial and social - opportunities. Governments can set better frameworks and provide better as well as faster data to facilitate progress. International and industry organizations can help with basic, general guidance. Market competition will continue to drive the provision of ESG data, tools, strategies and products, and this should also improve the quality of investments over time.



APPENDICES

Appendix 1: Institutions Interviewed for This Report

Asset managers and institutional investors:

Affirmative Investment Management (AIM)
Amundi
APG
BlackRock
BNY Mellon Asset Managers North America
Breckinridge Capital Advisors
CalSTRS
Columbia Threadneedle Investments
Deutsche Asset Management
Everence /Praxis Mutual Funds
Folksam
Global Evolution
MN
Neuberger Berman
Nippon Life Insurance
OP Trust
PGGM
PIMCO
Schroders

TIAA Investments
Trillium Asset Management
UBS
Zurich Insurance Group

Rating agencies, data providers, standard setters:

Arabesque
De Nederlandsche Bank
IPE
FTSE Russell
Moody's
MSCI
PRI
R&I Information Japan
RobecoSAM
S&P
Sustainalytics
Trucost
Verisk Maplecroft

Appendix 2: ESG Criteria

Institution	E	S	G
CFA (2015)	Climate change and carbon emissions	Customer satisfaction	Board composition
	Air and water pollution	Data protection and privacy	Audit committee structure
	Biodiversity	Gender diversity	Bribery and corruption
	Deforestation	Employee engagement	Executive compensation
	Energy efficiency	Community relations	Lobbying
	Waste management	Human rights	Political contributions
	Water scarcity	Labor standards	Whistleblower schemes
PRI (2014) (Sovereign issuers)	Carbon intensity	Demographics	Institutional strength
	Water stress	Education and human capital	Corruption
	Energy resources and management	Health levels	Regime stability
	Natural disasters	Political and press freedoms	Rule of law
	Biocapacity and ecosystem quality	Human rights	Financial reporting
	Pollution	Labor standards	Regulatory effectiveness
	Biodiversity	Social exclusion	Adherence to conventions
PRI (2014) (Corporate issuers)	Agriculture	Income inequality	International relations
	Environmental	Demographics	Business integrity
	Climate change	Human rights	Shareholder rights
	Biodiversity	Employee relations	Incentive structure
	Energy resources and management	Health and safety	Audit practices
	Biocapacity and ecosystem quality	Diversity	Board independence & expertise
	Air pollution	Customer relations	Fiduciary duty
IFC (2012)	Water scarcity and pollution	Product responsibility	Transparency /accountability
	Risk Management	Labor	Commitment
	Resource Efficiency	Community Health and Safety	Board structure
	Pollution Prevention	Resettlement	Control environment
	Emergency preparedness and response	Indigenous People	Transparency and disclosure
	Biodiversity	Cultural heritage	Minority shareholders
			Stakeholder engagement

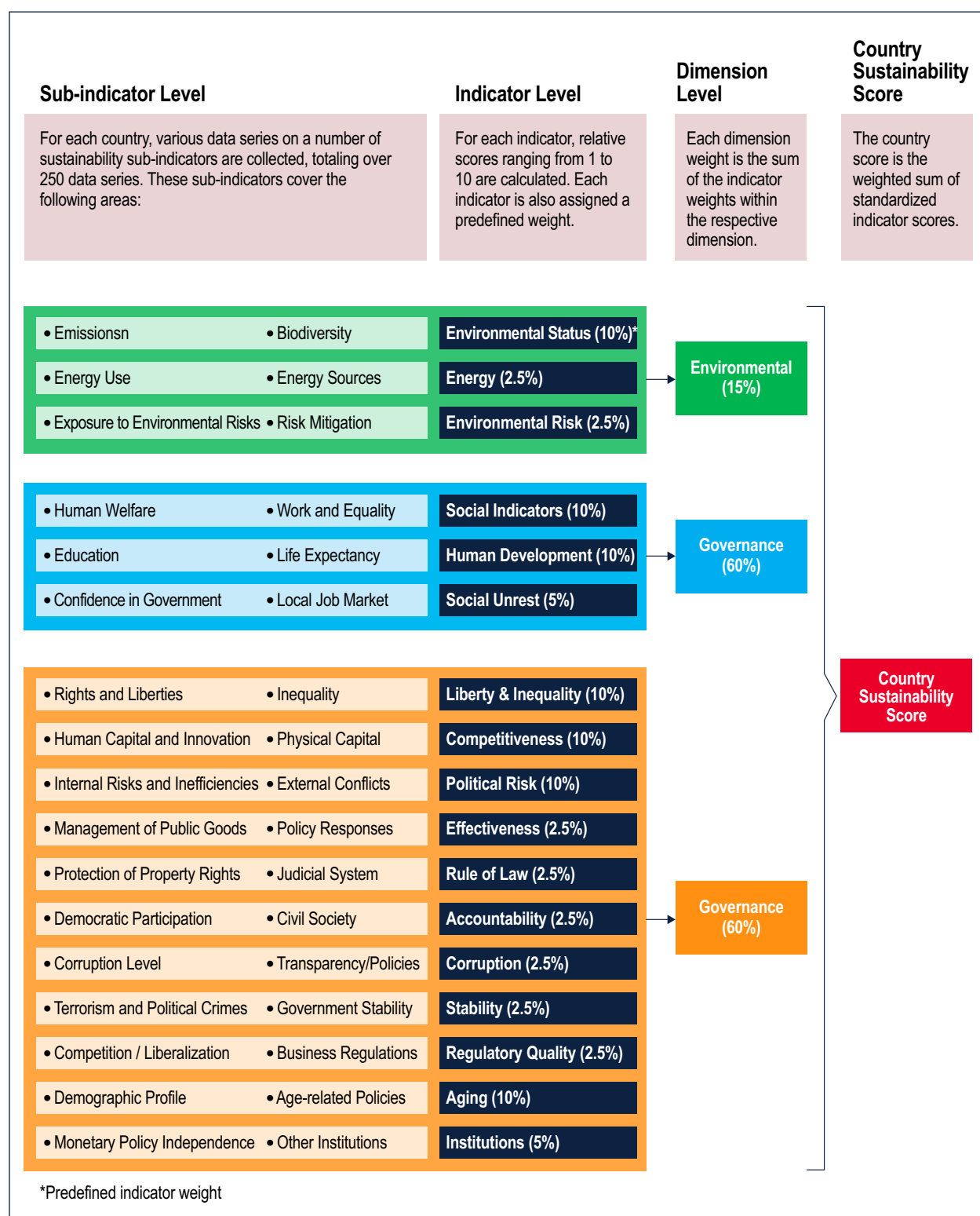
Source:

Appendix 3: Characteristics of Fixed Income and Implications for ESG

Characteristics of Fixed Income	Responsible Investment Actions
Potential downside outweighs potential upside – focus is on risk, low volatility and preservation of capital more than on growth opportunities.	Focus on the contribution of ESG factors to financial downside – in particular, significant event risks and systemic risks that can affect issuer creditworthiness. Most prominent of these should be governance.
Lenders have a contractual relationship with borrowers; they are not owners. Debt holders don't vote at AGMs, and access to management can be relatively infrequent.	<ul style="list-style-type: none"> • To manage risk, use any opportunity to engage issuers on ESG factors of concern (e.g., in run-up to issuance). • Collaborate with other bondholders for more effective engagement. • Vote on governance concerns during debt restructurings.
Multi-layered analysis (e.g., yield spread and yield curve analysis).	Develop robust yet streamlined processes to help analysts identify and manage ESG risks effectively.
Multiple issuer types (e.g., corporate, government, financial sector, and supranational).	ESG analysis varies for different issuers; metrics, criteria weighting and engagement approach vary. There is no one-size-fits-all.
Multiple instruments (e.g., structured products and ABS).	Analyse ESG-related risks to issuer creditworthiness as well as to asset cover pools and originators.
<ul style="list-style-type: none"> • Debt issued as public or private instruments. • Debt issued as investment grade or high yield. 	RI approach varies relative to availability of ESG information, engagement opportunities, investor influence and access to management. Private/high-yield securities may represent higher risk but offer more opportunity for engagement and outperformance.
Different capital structure levels – senior, subordinated, hybrid etc.	Subordinated debt holders face financial downside before senior debt holders do, making them more sensitive to impacts from ESG risk.
Debt instruments have fixed durations covering different periods.	Consider whether different durations will affect the materiality of ESG to creditworthiness (e.g., will carbon regulation impact three- and ten-year bonds the same?).
Private companies can issue listed/public debt.	Coverage of ESG data for private companies is relatively poor – weaker regulations on reporting for private companies.
Weaker issuing requirements but longer issuing periods for private placements.	Greater concentration of risk for private placements requires closer consideration of ESG risks; a longer issuing period allows for this.
Debt can be issued by subsidiaries and special purpose vehicles (SPV).	Consider exposure and management of ESG risks by parent company, subsidiary and originator.
Multiple outstanding debt securities issued by a single issuer.	Consider concentration of ESG risk related to single issuers across multiple securities.
Fixed income analysis can be heavily reliant on quantitative factors.	Address need for consistent and comparable ESG metrics that are easy 'plug-ins' for existing research models.

Source: PRI (2014)

Appendix 4: Structure of RobecoSAM's Country Sustainability Framework



Source: RobecoSAM (2015)

Appendix 5: Bloomberg Barclays MSCI ESG Fixed Income Family

Bloomberg, a global leader in fixed income indexing, and MSCI, the world's largest provider of ESG (environmental, social, and governance) equity indices and research, have collaborated on the development of a family of rules-based benchmark indices that incorporate measures of ESG risk and exposures.

The Bloomberg Barclays MSCI ESG Fixed Income Indexes includes a range of investment-grade aggregate and corporate index benchmarks addressing the evolving needs of institutional investors, who increasingly aim to incorporate ESG considerations into their strategic asset allocation.

Broad Indexes

- Bloomberg Barclays MSCI ESG-Weighted Indexes use MSCI ESG Ratings and MSCI ESG Ratings momentum to overweight/underweight issuers within an existing Bloomberg Barclays parent index. These indices include the full universe of index eligible securities and then apply tilts to the natural market value weights in favor of higher rated/positive momentum issuers and against lower rated/negative momentum issuers.

- Bloomberg Barclays MSCI Sustainability Indexes positively screen issuers from existing Bloomberg Barclays parent indices based on MSCI ESG Ratings, which are a “best in class” assessment of how well an issuer manages ESG risks relative to its industry peer group. ESG Ratings are available for corporate, sovereign, and government-related issuers. The minimum threshold applied to Bloomberg Barclays flagship indices is an ESG rating of BBB or better.
- Bloomberg Barclays MSCI Socially Responsible (SRI) Indexes negatively screen out issuers from existing Bloomberg Barclays parent indices that may be involved in business lines or activities that conflict with investment policies, values or social norms. These indices use MSCI Business Involvement Screening Research (BISR) and MSCI ESG Controversies to identify exposure to screened issues.

Thematic Indexes

- Bloomberg Barclays MSCI Green Bond Indexes offer investors an objective and robust measure of the global market for fixed income securities issued to fund projects with direct environmental benefits. An independent research-driven methodology is used to evaluate index-eligible green bonds to ensure they adhere to established Green Bond Principles and to classify bonds by their environmental use of proceeds.

Source: MSCI (2017b)



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ENDNOTES

1. Approximately three-quarters of these assets are held by institutional and one-quarter by retail investors. In terms of regions, Europe leads with about \$12trillion, followed by North America (\$9.8 trillion), Australia/New Zealand (\$0.5 trillion) and Asia (\$0.5 trillion). GSIA gathers results from regional sustainable investment groups around the world, tracking professionally managed funds that use responsible investing criteria. It includes impact investment and environmental, social, governance funds as well as portfolios that simply exclude weapons manufacturers or gambling companies.
2. Mr. Carney has called climate change “The Tragedy of the Horizon”, because the impacts of climate change will be felt beyond the traditional horizons of most actors (investors, regulators, policymakers) and impose a cost on future generations that the current generation has no direct incentive to fix. He has therefore argued that ensuring that the financial system is resilient to the low carbon transition and enabling the system to efficiently finance the transition should be in the financial policymakers’ clear interest. (Speech 29 September 2015).
3. Global bond markets have a market capitalization of about \$90 trillion, higher than listed equities. Bonds also constitute a substantial proportion of institutional investors’ portfolios. In 2017, pension funds of the seven largest markets has an allocation of 27% in fixed income, i.e. about \$11 trillion out of \$41 trillion total assets. In Japan, the allocation was twice as high (56%) (Willis Towers Watson 2018). Insurance companies tend to have even more conservative asset allocations in many places, not the least for regulatory reasons.
4. For a list of institutions interviewed see Appendix 1. The intention was not to undertake a comprehensive survey of institutional investors and their service providers, but to learn from some of the stakeholders who are known to be leading in this area. A more comprehensive mapping of institutional investor approaches to the different ESG tools could be an interesting follow on to this report. Further analysis on the success of the different approaches in practice is also warranted.
5. The concept of ‘sustainability’ comes from environmental economics and is rooted in the idea that ‘human capital’ can substitute ‘natural capital’ (“Hartwick’s rule”). The

‘strong’ interpretation of the term assumes that “human capital” and “natural capital” are complementary, but not interchangeable. The concepts arose from the work of Robert Solow and John Hartwick in the 1970s. The policy interpretation of this work came out of the Brundtland Commission (1987) and is the basis for the idea of ‘sustainable development’.

6. The universal owner hypothesis is based on the idea that there is “no place to hide” as (negative) externalities of investee companies will affect portfolio returns sooner or later in some form, e.g. taxes, insurance premiums, inflated input prices or the physical cost of disasters. The UNEP use the following definition: “Universal Owners are large institutional investors which have highly-diversified and long-term portfolios that are representative of global capital markets”.
7. Corporate Social Responsibility (CSR) relates to companies’ management approaches. It considers the economic, social and environmental impact for all stakeholders. CSR is again a concept with many definitions and practices. Double/triple bottom line also add a social and environmental dimension to the financial one.
8. ‘Outcome’ and ‘impact’ can are often used as synonyms in this context. They can also be meaningfully conceptualized as ‘outcome’ referring to a finite, shorter term change, and ‘impact’ as broader, longer-term effects that are more difficult to measure objectively (Harding 2018).
9. According to a survey of investment professionals by Amel-Zadeh and Serafeim (2017), relevance to investment performance is the most frequent motivation for use of ESG data followed by client demand and product strategy, bringing change in companies, and then ethical considerations.
10. Fiduciary duty is the requirement that those who manage other people’s money act in their beneficiaries’ interests, rather than serving their own interests.
11. According to the categorization of GSIA (2017), ESG integration (\$7.5 trillion), engagement/ shareholder action (\$5.9 trillion), norms-based screening (\$4.4 trillion) and positive screening (\$0.9 trillion) are the most widespread strategies across all asset classes. Impact/community investing and sustainability themed investing capture only about \$100 billion, i.e. 0.5% of sustainable assets, each.
12. PRI publishes a series of case studies by fixed income investors, and on ESG engagement in fixed income. <https://www.unpri.org/about/pri-teams/investment-practices#FICS>
13. Stranded assets are assets that suffer from premature write-downs or conversion to liabilities. Some experts consider coal and other fossil fuels as potential for physical, economic and regulatory reasons.
14. According to Global Impact Investing Network, the practice of impact investing has four core characteristics: (1) investors intend to have a social and/or an environmental impact, (2) investments are expected to generate a financial return on capital and, at a minimum, a return of capital, (3) investments are to generate returns that range from below market to risk-adjusted market rate, and (4) investors are committed to measuring and reporting the social and environmental impacts.
15. An example is a combined academic and industry effort (Vörösmarty et al. 2018) to develop ‘context-based metrics for investment decisions that try to capture outputs, outcomes and impact in the environment and public health.

16. For further details see Dr. Bob Eccles Forbes article March 11, 2018, 'Measuring Investors' Contributions to The Sustainable Development Goals', which maps SASB's factors to specific SDGs.
17. Arjales and Bansal (2018) find that bond managers are trying to quantify and "financialize" ESG data in their models while equity managers can live more easily with a 'creative friction' between financial numbers and any sort of ESG information.
18. For an investor-related literature overview on ESG in equities, and more general, see, e.g. Dimson et al. (2013).
19. The result for portfolio studies is commented by the authors: "It is important to be aware that the results of these (to date about 150 studies) are overlaid by various systematic and idiosyncratic risks in portfolios and, in the case of mutual funds, by implementation costs."
20. These findings relate to the work of Khan et al. (2015), which finds that firms with good ratings on material sustainability issues significantly outperform firms with poor ratings on these issues. In contrast, firms with good ratings on immaterial sustainability issues do not significantly outperform firms with poor ratings on the same issues. The authors note that the results "have implications for asset managers who have committed to the integration of sustainability factors in their capital allocation decisions." (p. 1)
21. Summit (2017), Douglas et al. (2017), e.g., give an overview for equities. Mooji (2017a) found 218 ESG initiatives, of which 57 for ESG ratings, 38 for ESG rankings, 57 for ESG indexes. Most of them concentrate on equities.
22. Some providers use the term "ESG ratings" but the term "ESG score" is preferred to avoid confusion with traditional credit ratings. ESG rankings are typically based on an ESG scoring system.
23. UN PRI have an on-going project looking at this topic in-depth. Further analysis and results are due out during 2018, which the authors would encourage readers who are looking for further detail on this area to follow.
24. The assessment (GB1-GB5) is distilled from 5 broad factors with a number of sub-factors: use of proceeds, ongoing reporting, organization, management of proceeds, disclosure on use of proceeds. Proceeds are to be used for clean water, sustainable land use, waste and water management, clean transportation, biodiversity conservation, renewable energy, climate change adaptation, or energy efficiency.
25. MSCI took over KLD Research and Analytics in 2010 and Governance Holdings (GMI Ratings) in 2014.
26. Such findings have been supported by other parties though their own in-house research.
27. The country sustainability score does not take the annual change into account, it is based on the current level. The change vs the previous score is only taken into account for the calculation of the country grades used in the ESG sovereign bond index.
28. Labelled green bonds are labelled as 'green' by the issuer and are financing green assets and projects. Unlabelled but still 'climate-aligned' bonds are issued by entities enabling a low carbon economy but are not labelled 'green'.
29. The Green Bond Principles (GBP) are voluntary process guidelines that recommend transparency and disclosure and promote integrity in the development of the Green Bond market by clarifying the approach for issuance of a green bond. The GBP have four core components: 1. Use of Proceeds, 2. Process for Project Evaluation and Selection, 3. Management of Proceeds, 4. Reporting.

30. The bonds directly link returns to the stock market performance of companies in the Solactive Sustainable Development Goals (SDGs) World Index. The index includes 50 companies that are recognized industry leaders on environmentally and socially sustainable issues, or that dedicate at least 20% of their activities to sustainable products.
31. The proceeds of each HSBC SDG Bond will be used to finance in whole or in part, businesses and projects that promote any of the selected seven SDGs.
32. Since 2007, the World Bank Treasury has delivered \$3.9 billion in catastrophe risk transactions—including more than \$2 billion since July 2017. IBRD cat bonds have been recognized as sustainable investments for investors active in the insurance-linked securities (ILS) market.
33. BlackRock CEO Larry Fink's 2017 Annual Letter to CEOs outlining a new approach to corporate engagement has been much quoted. <https://www.blackrock.com/corporate/en-no/investor-relations/larry-fink-ceo-letter>
34. As the Economist (2017) article lays out: "Money managers' deepening love affair with sustainable investment stems not from warm, fuzzy ideas about doing good. For most it is a commercial choice. That worries some SRI purists, who fear that "mainstreaming" will lead some fund managers to put an ethical gloss on conventional investments."
35. See, e.g., Khan (2017). In terms of consistency, in describing their ESG investment approach, QIC (2017), for example note that: "In practice, MSCI and Sustainalytics ratings often disagree with each other. When measuring the relationship between ESG ratings of the two providers, we found positive but low correlations across all three dimensions as well as for the composite rating. This is not surprising, given the differences in methodology. To sum up: Like corporate bond ratings, ESG ratings should not be considered as a simple commodity. Ratings from different providers carry different information and can potentially suggest different portfolio management decisions. At the end of the day, investors and asset owners need to do their own work to reach their own conclusions rather than reflexively following the analysis of providers." (p. 5)
36. A lack of robustness and consistency behind much of the data lies behind these concerns. For example, some of the data used to assess climate risk use assumptions based on what are random events. This means that the portfolios created based on that data are not less affected by climate risk.
37. See, e.g., BlackRock (2016) that mentions "survey fatigue". Mooji (2018) reports widespread "reporting fatigue", poor quality of information and lack of transparency in the ESG industry that is counterproductive.
38. Arabesque, a "quant" asset manager that uses ESG data, examines the sustainability of over 7,000 of the world's largest listed companies. Its technology combines over 200 ESG measures with other data points (such as news stories from 50,000 sources) to rank companies.
39. See Financial Times January 2016, 'Quants are the new ethical investors'.
40. In 2018, APG took over the data analytics team for sustainable investing from Deloitte Nederland.



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