

| Mackenzie Fixed Income Team

Strategic ESG integration: Mackenzie's fixed income risk framework

Executive summary

For over a decade, the Mackenzie Fixed Income Team has recognized that environmental sustainability, social wellness and stable governance are not only significant in understanding an issuer's impact on the world but also how these factors may influence the financial performance of corporate and government bonds.

Emphasizing the latter principle, ESG (environmental, social, governance) integration is a critical tool for fixed income managers and is not limited to an ideological or values-based screening tool. Thoughtful research integration practices aim to proactively identify issuer-specific risks and capture long-term opportunities in trends in consumer behaviour as well as an evolving regulatory environment. At Mackenzie Investments, ESG factors are embedded within both our fundamental credit and sovereign valuation frameworks, enhancing both bottom-up valuation and top-down portfolio construction decisions.

To accelerate these efforts, the Mackenzie Fixed Income Team has developed a series of proprietary risk models tailored for corporate and sovereign issuers. Within these models, we identify material non-financial risks that may impact creditworthiness, liquidity or asset valuation. ESG factors are directly incorporated within security selection through our valuation models while also influencing portfolio allocations through sectoral and regional weighting, position sizing and risk budgeting.

Our goal is to construct resilient portfolios that recognize the potential financial risk of non-financial factors to deliver attractive risk-adjusted returns across all strategies.



Why ESG matters in fixed income

Fixed income investors are primarily focused on downside risk mitigation, given the structure of the investments themselves. The performance of fixed income instruments is largely based on cash flow generation and operational stability, unlike equities, where the critical component of valuation is long-term growth. Despite the seniority of the asset class, investors are still exposed to downside risks from defaults, credit rating downgrades and liquidity squeezes. The ability to proactively evaluate an issuer's risk of fundamental credit deterioration through ESG-linked controversies and their ripple effects has shown to be productive in security selection.

ESG factors often serve as early indicators of these risks:

- **Environmental risks** (greenhouse gas emissions, water management, etc.) can compromise issuer cash flow or asset value as stranded-asset risk increases from economic transition and extreme weather events disrupt fragile supply chains.
- **Social risks** (labour standards, public health issues, etc.) affect operational stability and reputational risk as strikes and controversy risks rise in frequency and severity.
- **Governance risks** (weak controls, opaque operating structures, etc.) directly impact the oversight of the issuer, influencing default probability and downgrade risk.

Neglecting ESG factors within the investment process may limit the ability to recognize structurally deteriorating issuers or significant mispricing of risk premium. As an example, utility providers based in California face elevated risks due to the rising frequency and severity of wildfires, with physical risk as a key environmental consideration. Integrating ESG into the team's investment research process helps to highlight these signals before they are priced into an issuer's credit spread.

Materiality maps and case study

Materiality mapping

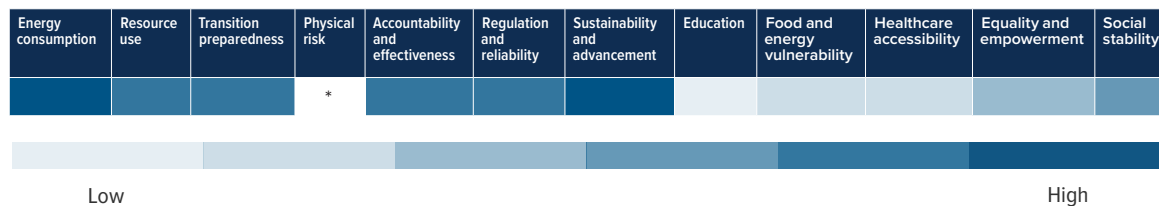
Our team uses proprietary ESG materiality maps tailored to an issuer's sector and geography. Recognizing the variance within conventional Global Industry Classification Standard (GICS) or Bloomberg Industry Classification Standard (BICS) sector classes, this framework leverages the Sustainability Accounting Standards Board's (SASB)¹ Sustainable Industry Classification Standards to determine an appropriate evaluation framework. This approach aims to deliver greater alignment of fixed income issuers with the risks that have the greatest impact on cash flow and creditworthiness.

These frameworks identify which ESG factors are likely to be financially impactful on credit risk premium based on industry characteristics and regional exposures.

¹ Now within the International Sustainability Standards Board (ISSB).

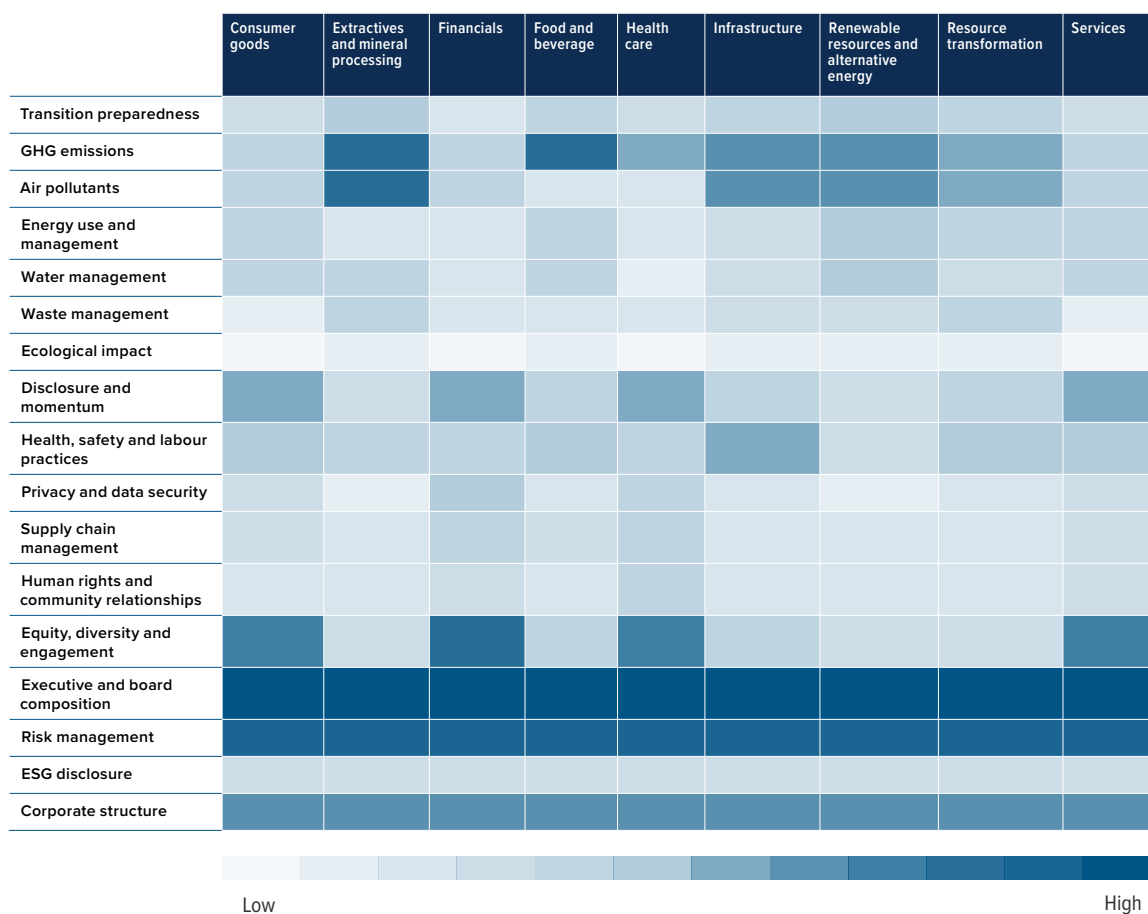


Sovereign materiality map



* Used primarily within the sovereign risk model, while incorporated in climate scenario analysis.

Corporate ESG materiality map



- For **sovereigns**, corruption, civil rights and natural resource dependency shape fiscal and economic resilience amid geopolitical uncertainty.
- In **transportation**, evaluating greenhouse gas emissions, air pollution and safe labour practices limits risks to regulatory headwinds and workplace safety concerns.
- In **financials**, data privacy, risk management and board independence are paramount to protect capital and ensure effective lending practices.

Sovereign ESG model

Analyzing sovereign ESG data as a keystone component of sovereign risk assessment highlights exposure to risks with respect to economic transition and the physical risks associated with various climate change scenarios. Additionally, an active investment management approach allows for high-risk investments to be screened and priced according to their overall risk level.

This approach considers the relative assessment of countries with respect to their classification as developed or emerging markets, recognizing each nation's unique role in the transition to a net-zero economy.

Model overview

The team's sovereign ESG model scores countries across 12 sustainability themes and over 85 indicators. The model is built on academic research, macroeconomic indicators and industry standards. The factors considered within the model are sourced from leading academics, global institutions and open-source industry data.

Mackenzie sovereign ESG framework		
Environmental pillar	Social pillar	Governance pillar
Environmental sustainability themes: • Energy consumption • Resource use • Transition preparedness • Physical risk	Social sustainability themes: • Education • Food and energy vulnerability • Health care • Societal stability • Equality and empowerment	Governance sustainability themes: • Accountability and effectiveness • Regulation and reliability • Sustainability and advancement

The scoring system is designed as a weighted distribution tree which first considers the materiality weightings of core E, S and G pillar scores before weighing designated themes within each of the individual ESG pillars. These weights reflect the relative impact of risks, derived by the state of a country's economic position, industrialization status and geophysical state. These weightings reflect an understanding that nations may have differing priorities due to varying economic, political and physical conditions.

Unlike the corporate ESG model, environmental, social and governance risks have been equally weighted across all countries as best in class policies and practices are broadly accessible to all governments. However, in the case of emerging markets, an increased emphasis is placed on momentum indicators (focusing on the growth rate rather than the level of greenhouse gas emissions, food insecurity, corruption indicators, etc.), relative to developed markets, which prioritize data from a level perspective.

Application

These scores are used in:

- Top-down country allocation: Overweight resilient, reform-oriented countries, as well as those demonstrating clear **momentum** relative to peers.
- Contingent valuation: Adjust sovereign **risk premium** for potential downstream ESG-linked risk or volatility.
- Scenario analysis: Examining the impact of global macroeconomic scenarios such as price or **supply shocks** on a country's operations.

Corporate ESG model

Similarly, integrating corporate ESG data into the research and valuation process reduces the probability of unwanted exposures in sectors and issuers with extensive risks. As extreme weather events, stranded-asset risk and consumer trends continue to evolve, these factors will continue to play a significant role in revenue and profitability growth. This strategy intends to capture the balance of risks and opportunities which exist across sectors, industries and geographies to construct a balanced portfolio while considering non-financial risks.

Model overview

Impact is uniquely measured across industries when considering the role that corporations play in both today's environment as well as to support the evolution towards a just-transition-aligned economy. When analyzing corporate issuers, the Mackenzie Fixed Income Team's corporate ESG framework considers 17 sustainable investment themes, comprised of a back-tested selection of 94 material datapoints, largely sourced from primary disclosure, consulting select third-party metrics to address major data gaps when necessary.

Mackenzie Fixed Income Team's corporate ESG framework		
Environmental pillar	Social pillar	Governance pillar
Environmental sustainability themes: • Transition preparedness • GHG emissions and air pollutants • Energy use and management • Water use and management • Waste and hazardous materials management • Ecological impact	Social sustainability themes: • Social index indicators • Employee health, safety and labour practices • Customer privacy and data security • Supply chain management and selling practices • Human rights and community relationships • Employee equity diversity and engagement	Governance sustainability themes: • Executive leadership and board composition • Risk mitigation • Debt growth and management • ESG disclosure • Complexity of organizational structure

Integration into bottom-up valuation

- ESG scores can influence an issuer's fair value **credit spread**, as the model output and risk percentiles are integrated in the valuation process. When determining fair value, strong ESG performers may justify a lower cost of capital relative to laggards.
- ESG red flags can **reduce** credit exposure to issuers with unpriced factor risks relative to sectoral peers. This can include selecting shorter duration bonds with less risk or reducing the issuer weight relative to benchmarks.



Engagement

The Mackenzie Fixed Income Team is committed to engaging with corporate issuers on critical ESG concerns throughout the duration of our investments. Our credit analysts, alongside our dedicated stewardship team members, engage with issuers when ESG performance diverges from historical expectations or when material risk factors lack transparent disclosure. These programs include the company's Climate 150 program to engage on emissions reduction, as well as the team's "Dear CFO" program to support the issuance of green and other sustainability labelled bonds. The team's proprietary models, combined with the credit analysts' fundamental research, inform the engagement process in identifying key risks and best-in-class benchmarks.

Starting from our initial executive meetings with corporate issuers, our team is focused on addressing ESG risks that threaten the financial and reputational stability of issuers. Following the United Nations' Principles for Responsible Investing's recommendations on the value of strategic engagements, Mackenzie's engagements have contributed increased disclosure and accountability and cover an expansive range of sustainability themes, investment sectors and geographies. These engagements support credit conviction and influence portfolio decision-making.

ESG score integration: from research to portfolio decisions

Stage 1: Initial risk screen

Negative screening excludes high-risk sectors which are non-compliant with firm investment policies (controversial weapons, persistent governance violations, etc.).

Controversy screening identifies high-risk projects or programming with potential legal or financial implications.

Fund-level screening ensures investments are suitable for the risk tolerance of the fund, as well as any integrated sustainability considerations.

Stage 2: ESG-adjusted credit analysis

ESG scores directly adjust internal credit assessments:

- **High ESG risk** → fair value spread widens, adjustments to risk budget, decreased positions.
- **Improving ESG trend** → reduced spread premium, indicates an increased likelihood to hold into spread compression cycle.

Stage 3: ESG valuation tilt

- ESG is incorporated into relative value screens, allowing comparison of similarly rated issuers on a risk-adjusted basis.
- Our "quality overlay" uses ESG as one of several dimensions alongside traditional financial fundamentals in determining a fair-value model for issuers.



Conclusion

Since its inception, the concept of ESG has grabbed headlines, under the misguided assumption that its goal is to restrict the investment universe and mandate alignment to a predefined ideology. While arbitrary restrictions, constraints and over-reliance on third-party black-box methodologies may limit the ability to extract alpha, thoughtful inclusion of ESG integration exemplifies a strong risk management framework. The Mackenzie Fixed Income Team believes that an independent and uncorrelated model sourced from credible primary data sources provides the clarity, transparency and proactivity to enable effective portfolio construction.

As portfolio managers, investors and researchers, we are tasked with identifying and pricing risks. These risks include both conventional macroeconomic and credit factors, but also non-traditional risk factors, such as exposure to extreme weather events and legal liability. These strategies are adapted to the risks of the underlying assets, with distinction between core and core plus strategies, which are focused on identifying spread variance opportunities, high yield funds, focused on default risk mitigation, and global strategies aligned with macroeconomic policy developments. Furthermore, for dedicated investors or institutions with independent ESG policies, these approaches can be adjusted to ensure compliance with risk frameworks and value creation opportunities.

The integration of ESG in a thoughtful and value-focused process provides not only the ability for smart beta exposure to emerging trends, but the potential for sustained alpha generation through evaluating traditionally uncorrelated factors.

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