



Green Bonds Basics

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Introduction

In a world grappling with the urgent need to address climate change, green bonds have emerged as a powerful financial instrument, channelling investments towards sustainable projects and initiatives. As sustainability takes centre stage in the global agenda, green bonds have gained significant traction, revolutionizing the way capital flows by offering investors an avenue to support environmentally friendly projects while generating financial returns.

Green bonds and the Green Bond Principles (GBP) have a close and mutually reinforcing relationship. The Green Bond Principles provide a voluntary framework and guidelines that help issuers and investors navigate the green bond market.

As sustainability gains momentum, there is a growing need to strengthen these principles, ensuring greater transparency, betterment, and impact measurement to enhance investor confidence and drive better environmental progress

Before deep diving into green bonds, the reader must understand the principles behind them, so hereunder the article discusses in brief about green bond principles and their significance in advocating green bonds.

Green Bond Principles

The Green Bond Principles (GBP) are a set of voluntary guidelines that provide a framework for the issuance of Green Bonds, ensuring complete transparency, integrity and disclosure in the market. The Green Bond Principles are designed to be widely utilised by the market. They offer issuers direction on the essential elements of introducing a reliable Green Bond; they support investors by encouraging the availability of data required to assess the environmental impact of their Green Bond investments; and support underwriters by providing essential actions that will enable transactions that maintain the market's integrity.

They were created by the International Capital Market Association (ICMA) to help issuers, investors, and underwriters navigate the green finance domain. These voluntary guidelines provide issuers with a framework for transparency, disclosure, and reporting, ensuring the integrity and credibility of green bond offerings.

The four core components for alignment with the GBP are:

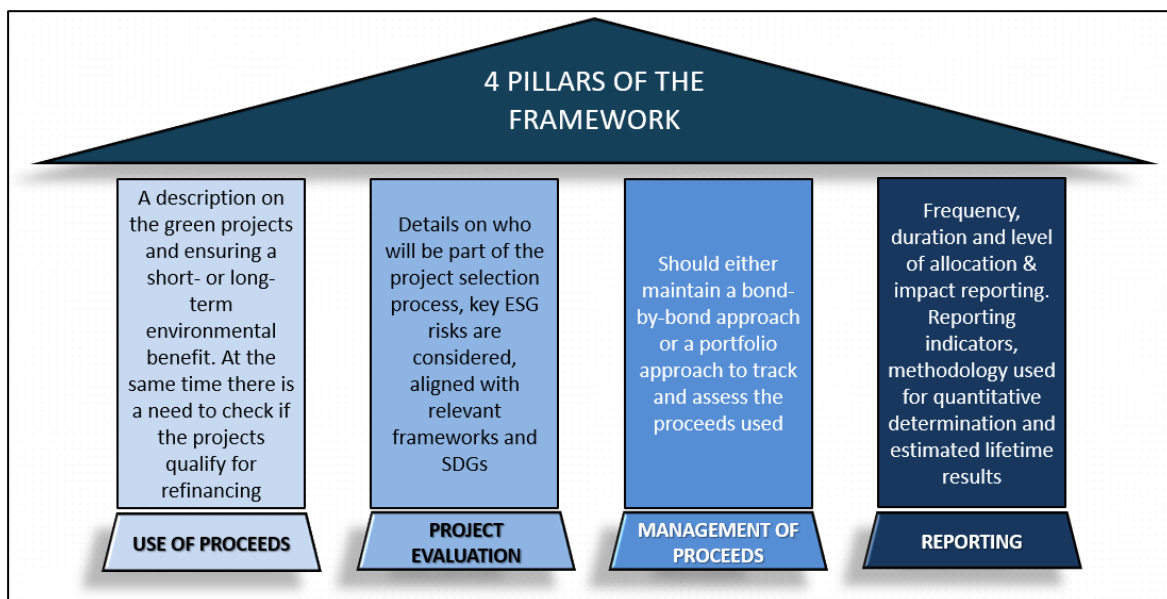


Figure 1 - Pillars of Green Bond Principles

What is Green Bond?

Green Bond is a type of fixed-income financial instrument issued to raise funds exclusively for projects that have positive environmental benefits and impact. These bonds typically help finance initiatives aimed at climate change mitigation, renewable energy, clean transportation, sustainable water management and other environmentally beneficial projects. Green bonds are a type of debt issued by public or private institutions to finance themselves and, unlike other credit instruments; they commit the use of the funds obtained to an environmental project or one related to climate change.

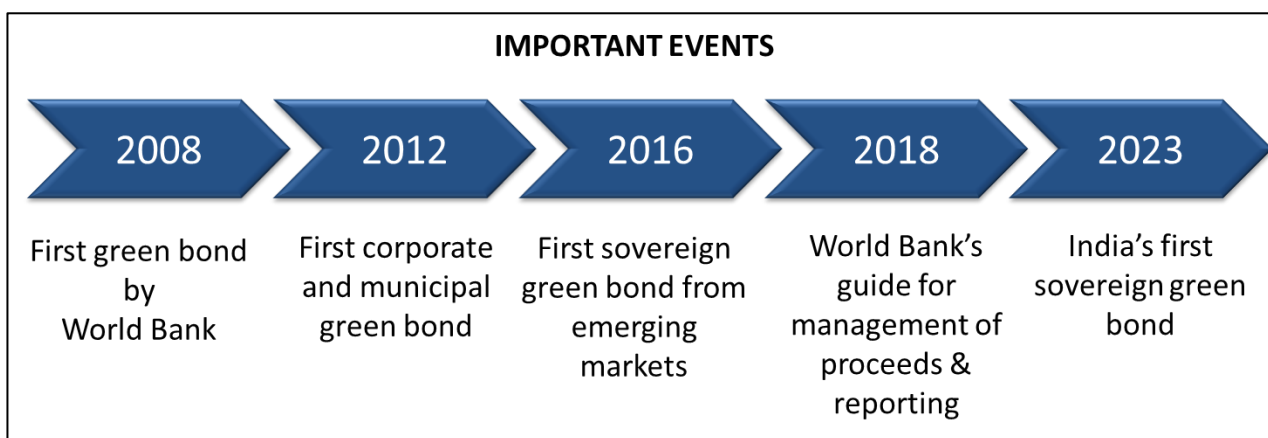


Figure 2 - Important Events of Green Bonds

Why Green Bond?

In the quest for a greener future, green bonds have emerged as a catalyst for change, providing an innovative financing mechanism that mobilizes capital towards projects aimed at tackling climate change and promoting sustainable practices. The rise of green bonds signifies a paradigm shift in the global financial landscape, as investors increasingly recognize the importance of directing capital towards projects that contribute to a more sustainable and resilient future.

- **Climate Action & Sustainable Development:** Green Bonds directly support projects related to renewable energy, clean transportation, and water conservation.
- **Investor Interest in ESG Financing:** Institutional investors and funds are increasingly seeking ESG-compliant investments.
- **Government & Regulatory Push:** Many nations are integrating Green Bond frameworks into their climate goals.
- **Lower Borrowing Costs:** Green Bonds often come with tax incentives or lower interest rates to encourage sustainable investments.

Different types of green bonds

Green bonds come in various forms to cater to different needs and preferences of issuers and investors.

- **Use of Proceeds Bonds:** Use of Proceeds (UOP) bonds are the most common type of green bonds. These bonds are issued with the explicit purpose of financing or refinancing eligible green projects. The issuer specifies the categories or sectors of projects that will receive funding, such as renewable energy, energy efficiency, sustainable transportation, or climate adaptation.
- **Green Project Bonds:** Green Project Bonds are specifically tied to financing a single green project. They provide investors with an opportunity to support a particular initiative with a clear environmental impact. These bonds are often used for large-scale projects, such as renewable energy installations, green infrastructure development, or sustainable building projects.
- **Green Securitized Bonds:** Green Securitized Bonds involve the securitization of a portfolio of green assets, such as loans or leases related to renewable energy projects or energy-efficient buildings. These bonds are backed by the cash flows generated by the underlying green assets. They allow issuers to pool together a diversified portfolio of green projects, providing investors with exposure to a range of green initiatives.
- **Sustainability-Linked Bonds:** Sustainability-linked bonds (SLBs) are a relatively new type of green bond that emerged in recent years. Unlike traditional green bonds, where the proceeds are allocated to specific projects, SLBs are linked to the issuer's broader sustainability performance or goals. The bond's financial terms are tied to predefined sustainability targets, such as greenhouse gas emissions reduction or energy efficiency improvements.
- **Green Retail Bonds:** Green Retail Bonds are targeted at individual retail investors, allowing them to directly participate in financing green projects. These bonds are typically issued in smaller denominations and marketed to individual investors who are keen to support environmentally friendly initiatives. Green Retail Bonds help democratize sustainable investing and raise awareness among retail investors.
- **Sovereign Green Bonds:** Governments issue Sovereign Green Bonds to finance environmentally friendly projects. These bonds help governments raise capital for investments in areas such as renewable energy, sustainable agriculture, or climate resilience. Sovereign Green Bonds can also serve as a signal of a government's commitment to sustainable development and climate action.

- **Multilateral Development Bank (MDB) Green Bonds:** MDB Green Bonds are issued by international financial institutions, including the World Bank and regional development banks. These bonds finance projects in developing countries that promote environmental sustainability, climate resilience, and social development. MDB Green Bonds play a crucial role in mobilizing capital for sustainable projects in regions that may face challenges in accessing traditional financing.

Difference between green bonds and conventional bonds

- Green Bonds are specifically issued to finance environmentally friendly projects, whereas conventional bonds are used for general financing needs.
- Green Bonds often come with regulatory oversight and require detailed reporting on the environmental impact of funded projects, unlike traditional bonds.
- Investors in Green Bonds are usually ESG-focused institutions and funds, while conventional bonds attract a broader investor base.
- Some Green Bonds offer lower interest rates due to government incentives and high demand from sustainability-conscious investors

Global Scenario

The Green Bond market has witnessed exponential growth over the years, with cumulative issuances surpassing \$2.5 trillion globally, and is expected to reach newer horizons within the coming years, shaping the mentality of rigorous investors. This rapid expansion is driven by increasing climate change awareness, regulatory support, and investor demand for sustainable assets, with the growing culture of ESG (Environmental, Social, Governance) awareness, it is expected to take up a new shape of impact in the coming years.

Today's Scenario: Global Leaders in Green Bonds

- United States (US): The US is a significant player in the global green bond market, with financial institutions, corporations, and municipal authorities actively issuing Green Bonds. These funds primarily support renewable energy, clean transportation, and sustainable infrastructure projects, helping the US steadily progress towards ambitious climate targets and net-zero emissions goals.
- United Kingdom (UK): The UK's Green Bond market is rapidly expanding due to robust governmental and regulatory support. Initiatives like the UK Green Financing Framework encourage public and private entities to finance green projects, enhancing investor trust and positioning the UK as a leader in global sustainable finance.
- European Union (EU): The EU has established itself as a global leader in sustainable finance, driven by comprehensive frameworks such as the EU Green Bond Standard (EUGBS). This standard enhances transparency, credibility, and uniformity in Green Bond issuance, encouraging greater participation from international investors and issuers.
- China: As one of the largest global issuers, China leverages Green Bonds to finance its massive transition toward sustainability. Funds raised primarily target renewable energy, pollution reduction, and green infrastructure. The country's dedicated regulatory framework significantly contributes to achieving its ambitious emission reduction and sustainability goals, shaping a technological future built on strong pillars of the green economy.

Indian Green Bond Market

India has emerged as a strong player in the Green Bond market, as the government and corporate sector align with global climate goals and the Paris Agreement, taking an important step towards fostering a safe, better and a green future for the citizens of the country.

India made its debut in the green bond market in 2015 when it released its first green bond, which was intended to be used to finance clean energy and renewable energy projects.

Regulatory Framework & SEBI Guidelines

The Securities and Exchange Board of India (SEBI) has introduced a framework for Green Bond issuance, ensuring:

- Transparency in fund allocation – Issuers must clearly report how funds will be used for environmental projects.
- Eligibility criteria for green projects – Renewable energy, clean transportation, and sustainable infrastructure are among the approved sectors.
- Regular reporting – Issuers must provide updates on the environmental impact of funded projects.

In January 2023, India issued its first-ever Sovereign Green Bond to fund clean energy and climate projects. The Reserve Bank of India (RBI) raised ₹16,000 crore (\$1.9 billion) in two tranches. The funds were earmarked for renewable energy, water management, and pollution control projects.

Key Issuers of Green Bonds in India

Several leading entities in India are actively issuing Green Bonds, including:

- NTPC (National Thermal Power Corporation): India's largest power producer, raising funds for renewable energy expansion.
- State Bank of India (SBI): A major financial institution issuing Green Bonds to support solar and wind projects.
- Renewable Energy Companies: Companies like ReNew Power and Adani Green Energy Issue Green Bonds to finance large-scale solar and wind energy projects.

India's Sustainable Finance Market

- India's sustainable finance market has grown significantly, reaching \$21 billion in green bond issuances as of February 2023, with 84% contributed by the private sector. Notably, REC Limited issued green bonds worth USD 750 million, underlining strong private-sector involvement.
- India currently ranks as the sixth-largest issuer of green, social, sustainable, sustainability-linked, and transition bonds (GSS+) in the Asia-Pacific region, with substantial potential for further growth.
- Sovereign green bonds will be crucial for India's ambitious sustainability targets—aiming for significant emission reductions by 2030 and achieving net-zero by 2070.

Growth Potential and Market Trends

- India has massive potential in solar and wind energy due to its geographical advantage and government push for renewable energy.
- Green Bonds are increasingly being used to fund large-scale infrastructure projects like metro rail systems, water conservation, and sustainable agriculture.
- The growing ESG investment trend is attracting foreign institutional investors into India's sustainable finance market.
- Sovereign green bonds will be crucial for India's ambitious sustainability targets—aiming for significant emission reductions by 2030 and achieving net-zero by 2070. Strengthening sovereign bond issuance can attract global ESG investors and unlock local sustainable investment opportunities, helping India meet its climate commitments effectively.
- India's green bond market reached approximately \$21 billion by early 2023, with the private sector contributing significantly (84%) of issuances.
- Strong Private Sector Involvement: Corporations such as REC Limited (USD 750 million issuance) underline active private-sector participation in sustainable finance.
- Growing Investor Interest: Institutional investors, both domestic and international, are increasingly investing in India's sustainable finance market, highlighting potential for robust growth and market deepening.

Risk and Return Profile of Green Bonds

Green bonds, as financial instruments, function similarly to traditional bonds in terms of risk and return. However, their environmental focus, regulatory scrutiny, and investor demand create some distinguishing characteristics, which can prove to be an investment that can deliver an instant impact or rather be a risky investment.

Risk in Green Bonds

Green bonds do not inherently carry higher or lower credit risk compared to conventional bonds. The level of risk primarily depends on:

1. Issuer's Creditworthiness

- The financial stability and credit rating of the issuing entity (government, corporation, or financial institution) determine default risk.
- Highly rated sovereign and corporate issuers (e.g., governments, large financial institutions) generally offer lower-risk green bonds.
- Lower-rated or emerging market issuers may present higher risk, requiring investors to assess financial sustainability.

2. Project-Specific Risks

- Funds raised through green bonds must be used for environmentally sustainable projects, which can have longer development timelines and regulatory dependencies.
- Projects such as renewable energy infrastructure, climate adaptation, and clean transportation may be subject to technological, regulatory, and political risks that could impact returns.

3. Market and Liquidity Risks

- The secondary market for green bonds is still developing compared to traditional bonds, meaning liquidity can be lower.
- Fluctuations in interest rates and overall market sentiment toward ESG (Environmental, Social, and Governance) investments can impact pricing.

4. Greenwashing Risk

- If an issuer fails to allocate funds transparently or misrepresents environmental benefits, investor confidence can decline, affecting demand and pricing.

Return on Green Bonds

Green bonds generally offer returns similar to conventional bonds of the same credit rating and maturity. The primary factors influencing returns include:

1. Issuer's Credit Rating

- Higher-rated issuers (such as governments and large corporations) provide lower yields due to reduced risk, while lower-rated issuers may offer higher yields to attract investors.

2. Interest Rate Environment

- Market interest rates play a crucial role in determining green bond yields.
- If interest rates rise, bond prices typically fall, affecting returns.

3. Investor Demand and Greenium

- Strong demand from ESG-focused investors can lead to a greenium—where green bonds offer slightly lower yields compared to traditional bonds due to high investor appetite for sustainable investments.

4. Government Incentives and Tax Benefits

- In some regions, governments provide tax incentives or subsidies for investing in green bonds, potentially increasing their attractiveness despite slightly lower yields.

Way Forward

The green bond market has grown significantly, but for it to reach its full potential, stronger regulatory frameworks, financial incentives, and technological advancements are necessary. The following key areas will shape the future of green bonds:

The green bond market is growing exponentially, but for it to reach its full potential, it needs to overcome its shortcomings by improving regulatory frameworks, financial initiatives, and advancements aligned to green technology, which is necessary to truly make a difference. The following areas can shape the future of green bonds in the coming years:

Stronger Governance and Certification Standards: A lack of standardization currently puts varying definitions of what qualifies as a “Green” project, absence of any standard benchmarks for comparison to make it more generalised.

Strengthening regulatory frameworks at national and international levels will ensure greater transparency, credibility, and investor confidence.

Establishing mandatory third-party verifications for all Green Bond issuances will help combat greenwashing risks.

Government Incentives for Green Bond Issuers: Governments can reduce the cost of borrowing for green bond issuers through Tax incentives or interest rate subsidies, Regulatory relaxations for green financing, Sovereign-backed green bonds to enhance credibility and liquidity, etc.

Fact: Ghaziabad Nagar Nigam, a civic body in Uttar Pradesh, is the first Indian local government to have issued a green bond (USD eq 20 million in 2021). Indore Municipal Corporation issued USD 87 million in green bonds in 2023.

Retail Investor Education and Participation

Green Bonds are still primarily issued to institutional investors, with limited participation from retail investors. This is due to high investment thresholds, lack of awareness and limited access to retail-friendly financial products. Expanding retail participation is essential for mobilizing broader capital for green finance projects.

Governments, financial institutions, and market regulators should conduct ESG literacy campaigns to educate investors about green bonds and the future of sustainable investing.

Green Bond-focused mutual funds and exchange traded funds (ETFs) allow retail investors to invest indirectly while benefiting from fund management.

Banks and financial institutions can introduce low-denomination green bonds, making them accessible to retail investors,

Fintech platforms offering fractional green bond investments could enable seamless, transparent, and retail-friendly access to sustainable fixed-income assets.

Addendum 1 - ESGRisk.ai 's approach to ESG ratings

ESGRisk.ai's ESG Rating model and report are designed to quantify ESG performance on a uniform scale across industries, based on industry-specific benchmarks and peer performance analysis. This approach helps investors and other stakeholders quickly understand and quantify an issuer's ESG risk exposure and risk management framework. While all data used for ESG ratings provided by ESGRisk.ai is collected and analyzed from publicly available sources, ESGRisk.ai also provides subscribers an option to review data used for ESG Rating of their company and provide feedback to ESGRisk.ai for any corrections, if needed.

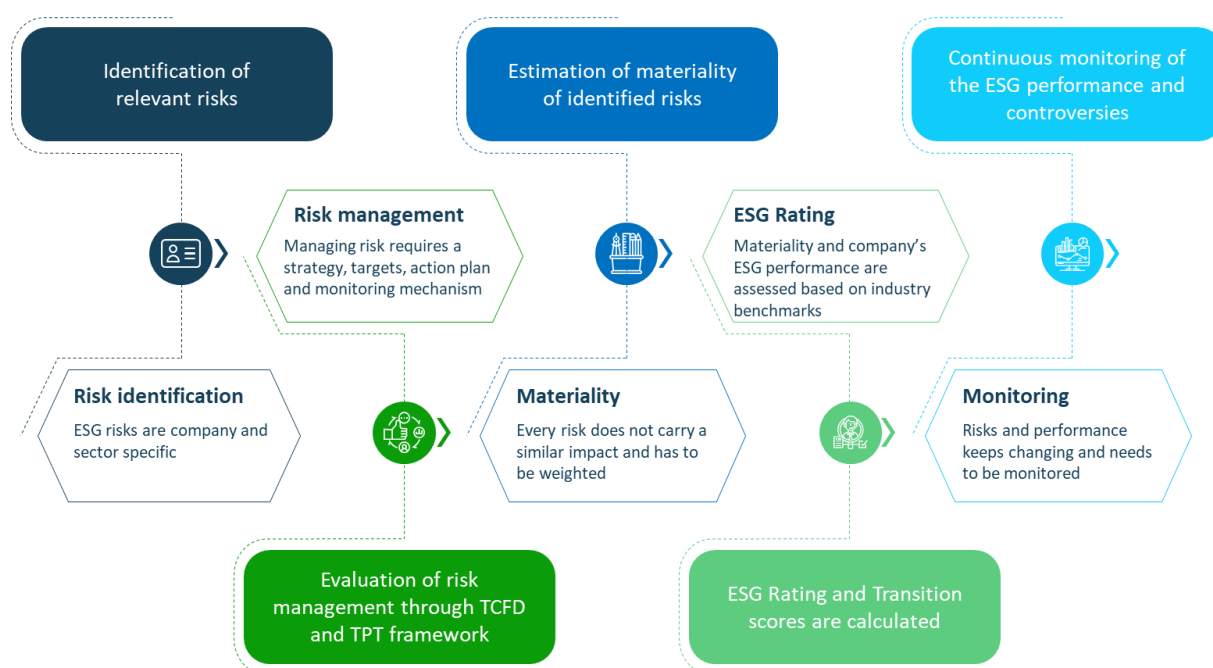
ESGRisk.ai's ESG rating provides a summary of the company's ESG strategy, programs/initiatives, results and controversies across 34 Key Issues, including GHG emissions, water efficiency, environmental management, ESG oversight, human rights, supply chain, Minority shareholders' rights, among others. The ESG ratings are based on a wide range of 1108 indicators that have been selected and assigned weights based on their materiality and relevance to specific industries.

Indicators are weighted and scored based on the company's key issue specific performance. Scores are aggregated using materiality and polarity to derive the ESG rating. This document details the approach to ESGRisk.ai 's ESG ratings.

Addendum 2 - Summary of a comprehensive ESG rating assessment

ESGRisk.ai defines ESG Rating as an objective and comparative opinion on the ability of an entity to mitigate Environment, Social and Governance (ESG) risks on its business operations and financial performance over the long term. Essentially, it is a comprehensive and relative assessment of the risk management practices adopted by a business entity to guard against the adverse impact of environmental, social and governance factors. Therefore, an ESG Rating can be a reliable indicator of long term and sustainable shareholder value. The assessment also includes a benchmarking of the ESG practices of the entity with that of the listed peers in the specific industry.

Figure 3: ESGRisk.ai framework for ESG rating.

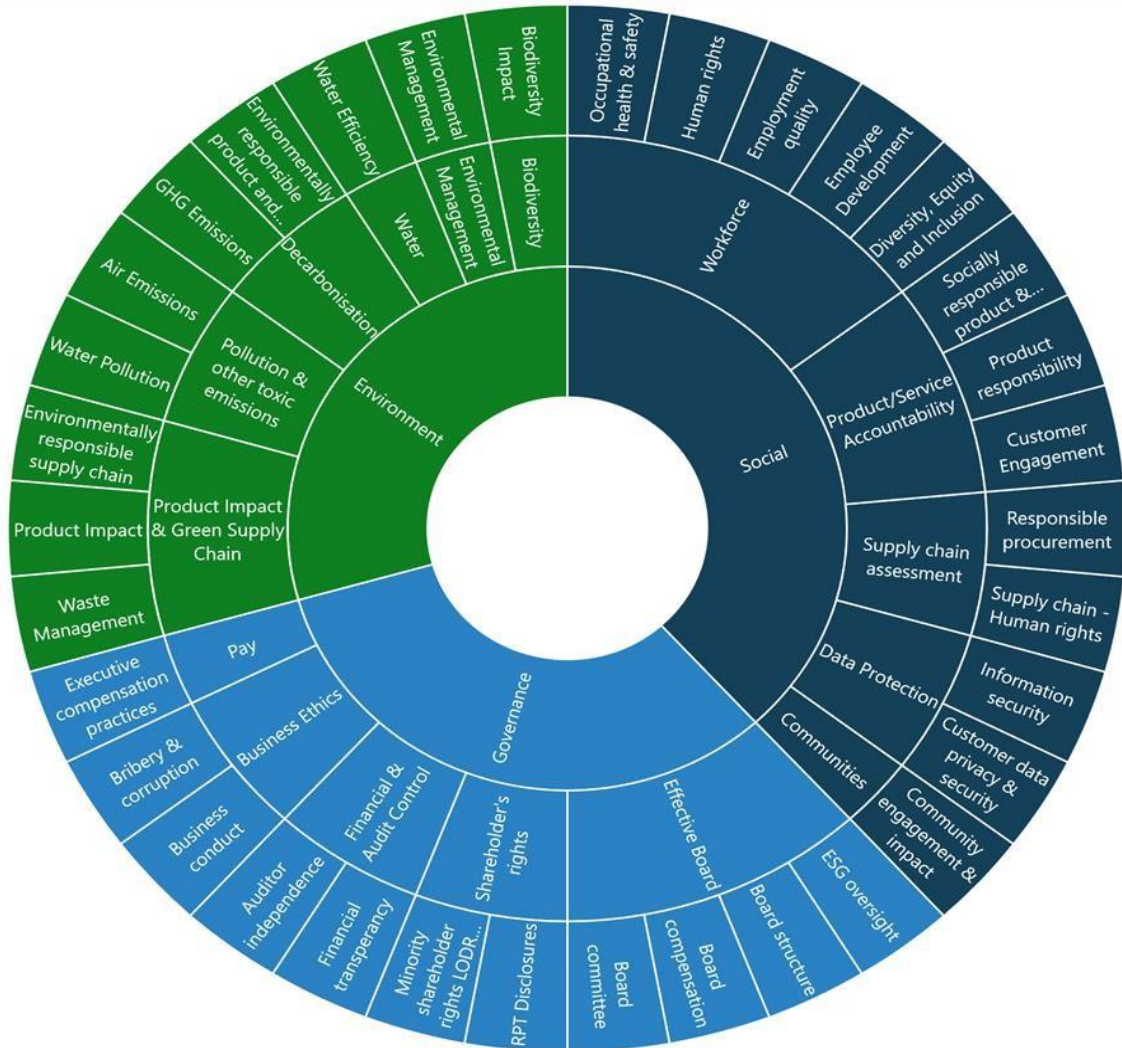


Understanding ESGRisk.ai's ESG data taxonomy

A comprehensive assessment for ESG rating requires identifying all material ESG risks and evaluating the company's risk management practices to proactively address these risks. Since every company has exposure to a wide variety of risks and each risk impacts a company to varying degrees, the evaluation of exposure and scoring of the risk management process must be structured in a hierarchy where individual data points pertaining to the risk exposure and management can be aggregated to evaluate the performance. ESGRisk.ai aggregates data in three levels, viz.: The Key Issue, Theme and

Category level, each of which is the next level of aggregation for hierarchical risk evaluation.

Figure 4: Visual representation of ESGRisk.ai's Data taxonomy.





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