

ESG Metrics and Greenwashing

RELEVANCE, MISUSES AND INNOVATIONS

PREPARED BY

JAY EVERETT, ZOE GALL, TUSHAR NARULA, MAYOWA
OGUNREMI, LAUREN MAUPETIT, RAFA ALONSO



G13 ASSOCIATES

Table of contents

EXECUTIVE SUMMARY: PAGE 2

PART 1: INTRODUCTION TO ESG METRICS AND GREENWASHING
IN THE FINANCE INDUSTRY
PAGE 3

PART 2: THE CHALLENGES OF COMMON ESG METRICS FOR
INVESTORS
PAGE 5

PART 3: ESG METRICS AND RISK MANAGEMENT
PAGE 7

PART 4: INNOVATIVE ESG TOOLS FOR INVESTORS
PAGE 9

CONCLUSION: PAGE 13

REFERENCES: PAGE 14



Executive Summary

ESG metrics are a tool providing investors with standardised data on a firm's environmental, social and governance performance (MSCI, 2017). They provide a supplementary measure for investors to assess the quality of an investment. They can facilitate investor risk management by: identifying non-financial risk exposure; indicating a firm's proactivity and progressiveness in governance; and improving long-term capital allocation. Investors can also use ESG metrics to rank companies against ESG criteria to compare performance.

However, inconsistent metrics, lack of standardised reporting, variable rating systems and complex communication may cause firms to intentionally or unintentionally engage in "greenwashing". Greenwashing is the misreporting of ESG performance to improve perceived attainment. This presents a challenge for investors attempting to interpret ESG metrics from different firms, geographies and time periods.

A quantitative analysis is undertaken to explore whether Global Reporting Initiative (GRI) reports can detect greenwashing in FTSE100 firms; discerning the differences in firm cost of capital between companies that assure their reports with a third party, and those that don't. The regression model output suggests that if a company's GRI report is assured by a third party, the cost of capital decreases. This is in line with the hypothesis that unassured GRI reporting can serve as a proxy for greenwashing, and that greenwashing increases the risk associated with a firm; investors expect a lower rate of return from firms with assured GRI, due to the reduced risk perception. A second model investigating whether GRI reporting has any predictive power in the MSCI ESG metric does not generate such clear-cut results; results suggest that MSCI's ESG risk ratings do not differ based on third-party assurance. This lack of disparity could indicate the potential for greenwashing in MSCI ESG scores, and could misrepresent risk to investors if used.

To combat these risks, investors can use innovative AI-based ESG analytics tools such as Natural Language Processing (NLP) to measure climate risk disclosures by firms regarding location or size. Leveraging AI analytics tools allows investors to detect potential greenwashing by assessing a firm's climate risk exposure and compliance with international reporting standards such as the Task Force for Climate-related Financial Disclosures (TCFD). It also allows investors to explore the relationship between climate risk disclosure and other firm characteristics, such as financial performance. AI-based tools address the issues of inconsistent metrics of variable rating systems – embedding transparency as a functioning driver to reduce uncertainty and increase standardisation efforts. From a risk-return perspective, the filtration of greenwashed firms out of the portfolio also eliminates background risk that is associated with reputation risk, physical hazards or declining public opinion. Finally, NLP helps investors better articulate their view on climate risk/return tradeoffs. Specifically, they can identify and manage competing constraints in their portfolio optimisation engines to reach the desired risk/return tradeoff. (Sardana, 2019).

Investors that start measuring such risks early and consistently across their portfolio may develop a strategic investment advantage, and NLP can be an interesting solution to understand and start applying in climate-related risk analysis. However, while innovative tools AI-based can provide value to investors, they also have limitations and shortfalls. NLP is not a silver bullet and must be implemented in tandem with other interventions required to bring the ESG reporting ecosystem to maturity. Such interventions include mandatory disclosure, globally consolidated standards, clear and accessible investor communication of ESG for multiple users and stakeholders.

Introduction to ESG metrics and greenwashing in the finance industry

DEFINING ESG METRICS

MSCI defines ESG metrics as “a tool designed to give institutional investors a broad set of standardized ESG data and simple flagged metrics that are comparable across a broad universe of companies” (MSCI, 2017). As such, ESG metrics are a supplementary measure designed to help investors assess the quality of an investment whilst considering the firm or project's impact on society at large.

HOW ARE THEY RELEVANT TO INVESTORS?

ESG metrics can help investors measure portfolio performance and/or identify risks and opportunities. In 2018, research by Morgan Stanley indicated that 78% of investors identified risk management as “an important application for ESG data”, and 77% of investors identified return potential as “an important factor in ESG-driven investing” (Morgan Stanley, 2018). ESG metrics are also used in investor reporting – to improve transparency, corporate responsibility, and risk management evaluation. Investors are subject to increasing regulation and growing pressure to disclose ESG ratings alongside corporate risk assessments; in Europe, climate-related risk reporting is increasingly expected, particularly since the development of the Task Force of Financial Disclosure (TCFD) in 2015 and the EU taxonomy in 2019.

KEY TOOLS USED FOR ESG METRICS

CSR rating agencies are an increasingly important financial intermediary for ESG metrics. MSCI is the leading provider, with over 1,200 institutional investors subscribed (including 46 of the top 50 global asset managers). It is the largest rating agency in the space and its ESG Rating model is now a critical part of its business (Yang, 2020). MSCI uses data analytics to develop exposure and management metrics that provide ESG ratings from “CCC” (laggard) to “AAA” (leader). The details of the cover ESG-related risk metrics and the rating process can be found in the appendix (fig. 1 and 2).

WHAT ARE THE MOST COMMONLY USED ESG METRICS AND WHICH MATTER MOST?

Investors tend to prioritise issues that are considered to have “materiality”: that is, a “concrete impact on issuers” (CFA, 2020). According to IHS's surveys of private market participants, the top 10 ESG metrics commonly sought by PE fund investors are (IHS Markit, 2019):

1. **ESG Policy:** “A formal, overarching ESG policy which provides an overview of a company's social responsibility and environmental position”
2. **Assignment of ESG Responsibility** within the management team
3. **Corporate Code of Ethics:** “A corporate code of ethics to guide management and employees as they carry out organisational objectives”
4. **Presence of Litigation:** “Any litigation, specifically that related to environmental, social and ethical affairs, typically requires disclosure to investors to allow an assessment of the wider risk profile”
5. **People Diversity:** “Diversity among employees, board members and management, promoting a wider range of perspectives in decision-making and organizational management”
6. **Net Employee Composition:** “Examining workforce management, including the ratios of part-time and contract workers, gives investors visibility into the way the management team allocates a key component of the organization's budget”
7. **Environmental Policy:** A formal environmental policy showing the management team's ability to monitor and address the environmental costs of the organisation's operations.
8. **Estimation of CO2 Footprint:** The ability to estimate carbon emissions, both direct and indirect, including those produced by the wider value chain
9. **Data and Cybersecurity Incidents:** Demonstration of a “track record of transparency in reporting all incidents and their potential legal impacts”
10. **Health and Safety Events:** The ability to provide “safe working environments”, measured using accident and incident rates

How does CO2 footprinting improve risk management?

- Assessing the carbon footprint of a portfolio “provide[s] a useful indicator for related exposure to carbon costs” (ShareAction, 2015)
- Helps identify the key areas of risk exposure within investee firms
- Ultimately facilitates the mitigation of physical and transition risks, e.g. regulation, supply chains disruption

Earlier this year, 61 international companies (including Fidelity International, UBS, Allianz, BBVA, Bank of America, Credit Suisse, HSBC Holdings and Santander) announced their commitment to the Stakeholder Capitalism Metrics, a set of 21 metrics on environmental, social and governance criteria established by the World Economic Forum and its International Business Council in September 2020 (WEF, 2021). The metrics centre around four pillars: **People** (e.g. diversity, wage gaps), **Planet** (e.g. GHG emissions), **Prosperity** (e.g. employment, taxes paid), and **Principles of Governance** (e.g. purpose, strategy).

HOW ESG THEORETICALLY ASSISTS WITH RISK MANAGEMENT

Reduced exposure to climate risk:

Consistent and comparable ESG metrics help investors understand their assets’ risk exposure and improve decision making accordingly. Assessing these factors during due diligence flags potential risks to monitor throughout the investment period. The most common types of risk considered are **physical** (relating to losses from natural hazards and major climate trends) and **transition** risks (relating to the loss of value of certain assets and economic disruptions caused by climate policies, technologies and market sentiment during the period of adjustment towards a low-carbon economy).

How does measuring data and cybersecurity improve risk management?

- Data insecurity and vulnerability can lead to significant internal and external costs, such as “the need to invest in detection and recovery systems, business disruptions, information or intellectual property theft, revenue losses and erosion of customer confidence” (Schroders, 2014)
- Regulatory changes are likely to “force companies to incur additional compliance costs, as well as fines and/or litigation awards” (Schroders, 2014)

Rankings and ratings: Standardised ESG metrics allow investors to rank companies against ESG criteria in order to value and compare their performance. ESG ratings and rankings can encompass all available metrics and scopes, or be broken down to assess exposure to specific risks.

Corporate governance: The use of ESG metrics can be an indicator of better corporate governance, as it signals greater corporate transparency and indicates that the company is monitoring and disclosing a broad spectrum of risks, including its governance ratings, to stakeholders.

May be a predictor of better financial performance: Embedding ESG metrics into risk assessments and investment decision processes indicates that the fund adopts a proactive approach to investment practices. It demonstrates a commitment to reducing risk exposure and driving better financial performance, while responding to a growing client demand for responsible investment. When combined with traditional volatility and return measures, ESG metrics may help improve capital allocation for the long-term (e.g. by avoiding investments that “may not pay-off because of longer-term environmental issues”, McKinsey 2020).

The challenges and limitations of ESG metrics for investors

Even though ESG metrics can improve risk management, decision-making and transparency in the finance industry, they can be exploited by corporates engaging in intentional or unintentional "**greenwashing**".

The CFA Institute defines greenwashing as "conveying a false impression or providing misleading information or a misleading narrative about how a company and its products are environmentally sound or positive in an ESG context" (CFA, 2020). This presents a challenge for investors attempting to reliably rank and compare investment opportunities with incomplete or intentionally incorrect information.

The primary goal of ESG metrics is to capture a firm's performance on a given ESG issue as accurately as possible (Kotsantonis et al 2019).

Following the work of Ogletree (2021), we divide and explore ESG challenges and limitations that relate to greenwashing in four major categories:

1. Inconsistent metrics and definitions
2. Lack of standardized reporting
3. Variable rating systems
4. Complex communications

ESG indicators are fundamentally less structured, less complete and generally have more **inconsistent metrics and definitions** than financial data (HBR 2020). For example, Kotsantosis et al (2019) studied 50 large, publicly listed companies and found that the measurement of "Employee Health and Safety" varied greatly between firms, with six different metrics: half expressed as a number and half as a percentage.

The burden arising from inconsistent ESG metrics is amplified by the **lack of standardised reporting**. Corporates widely self-report on ESG metrics. While this presents an advantage in terms of increasing the speed of ESG adoption, it also represents an operational barrier to investors attempting to measure risk and calculate risk exposure, valuations and returns.

Lack of standardised reporting is a particularly important problem for **environmental ESG metrics** relating to extreme weather events and other material events that can increase the chance of tail-risk. In addition, ESG metrics are still not commonly included in mandatory financial reporting, even after a massive adherence of investors to the Principles for Responsible Investment (PRI), which translates into additional grey areas where corporates can engage in greenwashing and misreport information.

Another challenge is the **variability in ESG rating systems**, which provide a relative assessment of how corporates perform compared to one another. There are many ESG data providers and rating agencies, and each one has a different way of managing and disclosing ESG reports. It is well-known that ESG ratings vary greatly from one ESG provider to another (OECD, 2020), and while we look at MSCI as the largest rating agency in the space, in reality there is not a single, accepted methodology across agencies for calculating ESG ratings (KPMG, 2020).

Relevant rating agencies include KLD (MSCI Stats), Sustainalytics, Vigeo Eiris (Moody's), RobecoSAM (S&P Global), Asset4 (Refinitiv), and MSCI (Berg et. al, 2020).

Diving deeper into the variability in ESG ratings by agencies, we see that divergence arises due to the **indicators, attributes, and weights** defined by the rating agency (Berg et al, 2020). The correlation between the six major ESG ratings was found to be 0.54, with a range from 0.38 to 0.71 (Berg et. al, 2020) – meaning that the information from rating systems is relatively noisy for decision-makers.

Moreover, most rating agencies do not disclose how their peer groups are defined, and this **lack of transparency** further undermines the ratings' reliability (Kotsantosis et al 2019), increasing the window of opportunity for intended or unintended greenwashing.

Finally, **communicating ESG is particularly challenging** and can lead to opaque results. Growing pressures and demand for responsible investment and ESG disclosures could have incentivised funds and corporates to rebrand their offerings as "green", without discernible strategic changes, to protect their reputation and avoid growing regulations (Bloomberg, 2021). While Khan (2005) and subsequent authors show evidence for a strong correlation between financial and ESG performance, communicating the value of ESG remains a challenge. Two separate and disconnected reporting systems, one for financial returns, and one for social and environmental impact produce two separate narratives: one indicating how profitable the company is, and the other highlighting its impact on people and planet (Institutional Investor, 2020).

Investors are interested in the **risk-return relationship** of a given company, but there is no clear and universal way to assess (and therefore clearly communicate) the extent to which ESG exposure might increase or reduce risk in a particular asset. Companies that misuse ESG metrics tend to communicate only that which favours them most, obscuring access to damning information that would be critical for investors to know. Lack of coordinated standards for ESG data makes this much easier to do for ESG metrics than for financial data, and therefore it becomes an area where corporates can distort the reality of their risk exposure.

As we move forward in our analysis, and knowing the limitations of inconsistent metrics and definitions in the broader ESG space, we explore potential solutions to solve some of these issues through innovative ESG analytics tools.

Other stakeholders may also suffer from unintended consequences of these challenges and limitations, including:

- Policy-making with a limited, or wrong scope
- Challenges for academic empirical research
- Confusion in deciding allocation of resources to specific business units
- Talent leaving or joining specific companies due to misconceptions of environmental, social and governance performance
- Overall mistrust in the financial system and in the ESG rating system
- Sensationalistic media coverage creating further confusion and mistrust (Berg et al, 2020)

Quantitative Analysis of ESG metrics

In this section, we aim to explore the relationship between ESG ratings and firm cost of capital: by testing whether GRI reports can detect greenwashing by discerning the differences between firms that have had their reports assured by a third party, and those that haven't. The rationale behind this exercise is that unassured GRI reporting could be indicative of greenwashing, which will subsequently be priced into a firm's cost of capital – indicating that investors demand a higher return for their investment due to increased ESG risk. The test will be undertaken in two stages: firstly, a regression modelling to see whether GRI reporting is reflected in a firm's cost of capital, controlling for both assured and unassured reports; and secondly, testing whether GRI reporting has any predictive power in the MSCI ESG metric that is widely used by investors as a gauge of ESG risk.

METHODOLOGY

TEST 1

The first test models the relationship between assured and unassured GRI reporting and a firm's cost of capital, including indicators of firm size, profitability, and liquidity as additional explanatory variables. This methodology was guided by Weber (2018) and Dang et al (2018) who provide a modelling framework for testing the role of external assurance and controlling for firm-specific financials, respectively. The resulting models take the following form:

$$\text{Cost of Capital} = \text{Return on Assets} + \text{Market Capitalisation} + \text{Current Ratio} + \text{GRI Report}$$

$$\text{Cost of Capital} = \text{Return on Assets} + \text{Market Capitalisation} + \text{Current Ratio} + \text{GRI Assured}$$

The models include the variables 'Return on Assets' to proxy for firm profitability, 'Market Capitalisation' to proxy for firm size, 'Current ratio' to proxy for firm liquidity, and two different binary variables that indicate whether the firm filed an unassured or assured report under GRI standards.

TEST 2

The second test assesses whether the same dummy variables are captured in MSCI's ESG ratings, which would indicate whether greenwashing is occurring in these scores – a vital consideration due to their common use. Guided by Lioui (2018), the models take the following form:

$$\text{MSCI ESG Rating} = \text{Industry} + \text{GRI Report}$$

$$\text{MSCI ESG Rating} = \text{Industry} + \text{GRI Assured}$$

Where the dependent variable is each firm's MSCI ESG rating, and the explanatory variables include a categorical variable indicating whether the firm is in one of twelve included sectors, and the same binary variables for assured and unassured GRI reporting. In order to capture fluctuations in the qualitative MSCI ESG ratings, each score (ranging from AAA to CCC) was scaled numerically, so that a score of CCC was assigned a value of 1, and a AAA score was assigned a value of 7.

DATA USED

The tests focused on all firms currently listed on the FTSE100 in order to maximise data availability and ensure that all firms were mature companies that were likely to be more liquid (and therefore have ESG risk priced if it were present). All firm-specific financials were collected through Bloomberg and CapitalIQ, and GRI data was found through the GRI search database.

RESULTS

TEST 1

	Coefficients	t Stat	P-value
Intercept	9.84	12.56	0.00
Roa	-0.01	-0.26	0.80
Mkt cap	0.00	-1.01	0.32
Current ratio	0.90	3.07	0.00
GRI Report	-0.49	-0.60	0.55

	Coefficients	Standard Error	P-value
Intercept	9.95	0.74	0.00
Roa	-0.01	0.05	0.78
Mkt cap	0.00	0.00	0.57
Current ratio	0.89	0.29	0.00
Gri assured	-1.44	0.88	0.10

TEST 2

	Coefficients	Standard Error	t Stat	P-value
Intercept	4.13	0.78	5.33	0.00
Financial Services	1.39	0.82	1.70	0.09
Mineral Extraction	0.10	0.87	0.11	0.91
Industrials	1.32	0.81	1.63	0.11
Food Staples	2.04	0.99	2.08	0.04
Pharma and Healthcare	1.12	0.94	1.18	0.24
TMT	0.93	0.94	1.00	0.32
Consumer Discretionary	1.75	0.82	2.13	0.04
Aerospace	0.87	0.99	0.87	0.39
Energy & utilities	0.88	0.88	1.00	0.32
Tobacco	0.00	0.00	0.63	0.22
Gambling	1.87	1.09	1.72	0.13
Commercial services	0.96	0.84	1.13	0.26
GRI Report	0.73	0.29	2.53	0.01

	Coefficients	Standard Error	t Stat	P-value
Intercept	4.15	0.79	5.26	0.00
Financial Services	1.47	0.84	1.76	0.08
Mineral Extraction	0.11	0.88	0.12	0.90
Industrials	1.37	0.82	1.66	0.10
Food Staples	2.28	1.00	2.28	0.03
Pharma and Healthcare	1.10	0.96	1.14	0.26
TMT	0.92	0.95	0.97	0.33
Consumer Discretionary	1.85	0.85	2.18	0.03
Aerospace	0.85	1.01	0.84	0.41
Energy & utilities	1.00	0.89	1.12	0.27
Tobacco	0.00	0.00	73.00	0.44
Gambling	1.85	1.11	1.67	0.11
Commercial services	0.95	0.86	1.11	0.27
GRI assured	0.69	0.33	2.08	0.04

DISCUSSION OF RESULTS

Our model yielded interesting results regarding the role of GRI reporting and its ability to convey ESG risks to investors. Our first model shows that unassured GRI reports have no bearing on the cost of capital (P-value = 0.55) and that the relationship with firm liquidity is the only significant explanatory variable. However, when using assured GRI reporting, the variable becomes significant at the 10% level (P-value = 0.1). Since the coefficient is negative (-1.44), the model shows that if a company's GRI report is assured by a third party, the cost of capital decreases indicating a reduction in required return by investors. A possible explanation is that companies that assure their reports have nothing to hide in terms of their ESG risks, and investors pick up on this signal to expect a lower rate of return due to the reduction of risk. The second model does not generate such clear-cut results; it can be seen that unassured GRI reports have lower P-values than assured reports (0.01 vs. 0.04, respectively), indicating greater explanatory power. This suggests that MSCI's ESG risk ratings do not differ based on third-party assurance, but instead capture different elements, including industry factors in select cases (such as firms in the consumer discretionary sectors, who tend to have better ESG scores). This lack of disparity could indicate the potential for greenwashing in MSCI ESG scores, and could misrepresent risk to investors if used.

Innovative analytics tools: the role of Natural Language Processing to reduce greenwashing

Innovative analytics tools based on technological solutions can provide asset managers with methods for improving investment decision making. Though not a silver bullet, Natural Language Processing and Artificial Intelligence tools can be used to better measure and discern elements that might lead to greenwashing from the useful aspects of ESG data. In particular, investors can use **Natural Language Processing (NLP)** to measure climate risk disclosures by firms regarding location or size. Aided by these solutions, investors can gauge the coverage of climate-related and financial impact metrics from internationally recognised standards and bodies such as the Task Force for Climate-related Financial Disclosures (TCFD).

Authors such as Biffis (2020) identify three objectives of the utilisation of NLP. First, the leverage of AI tools to better assess a firm's climate risk exposure and its compliance with TCFD reporting guidelines, as mentioned above. Second is the usage of AI-based indicators to detect potential evidence of greenwashing. Third, the exploration of the relationship between climate risk disclosure and firm characteristics, including financial performance. This final objective is particularly important in a time where more companies are starting to report their climate-related risks. As more data becomes available and supported by better standards in reporting, the investment community will be able to better determine the effect of climate-related risks on financial performance. Investors that start measuring such risks early and consistently across their portfolio may develop a strategic investment advantage, NLP can be an interesting solution to understand and start applying to help in climate-related risk analysis.

AI-DRIVEN TRANSPARENCY INDICATORS

Artificial Intelligence-driven transparency indicators are a valuable complement to ESG analytics tools and ratings currently available in the market. (Schumacher, 2020). In one study, (Schumacher, 2020), the author identifies two greenwashing issues where these solutions can provide better management of data and therefore assist decision making:

- 1) Underreporting by high emission firms on capital and systematic impact
- 2) Disclosure of Scope 3 Emissions

Measuring emissions, particularly scope 3 emissions, is an area where lack of standardisation affects the reliability of analysis. In some industries more than in others (for example, those with real assets and complex value chains highly dependent on nature), Scope 3 emissions can directly affect medium or even short-term risk, having a direct impact on potential financial returns for the firm and ultimately the investor.

The role of AI is embedded in transparent reporting and standardization of metrics. It addresses the issues of inconsistent metrics of variable rating systems – having transparency as a functioning driver reduces unnecessary uncertainty. It is also related to tackling the challenge of complex communications both internally and with external stakeholders.

NATURAL LANGUAGE PROCESSING AND GREENWASHING

The results from the Ping (2020) case study on the operation of Natural Language Processing, demonstrated that the emissions and energy metrics are in general widely covered by companies and also showcased through the efforts of ESG as well as SDG alignment. On the other hand, **water and land use** disclosures are limited and sparse to observe. This lack of engagement with natural resources is speculated to be low because of the general lack of direct business model engagement and indirect contributions (Ping, 2020).

The results of the case study suggest that the NLP-developed indicators perform better than existing ESG ratings in the market in differentiating between "green" and "brown" firms. They also offer insights into the relationship between firm characteristics and climate disclosures. Finally, evidence from AI-driven indicators suggests that greater disclosure is associated with lower cost of capital, thus boosting firm value. (Ping, 2020). From a risk-return perspective, the filtration of greenwashed firms out of the portfolio also eliminates background risk that is associated with reputation risk, physical hazards or declining public opinion.

NLP tools can help asset managers structure meaningful decarbonisation strategies. It can also help investors as an awareness and knowledge-boosting tool to support portfolio tilts. These solutions can contribute towards knowledge assets around climate risk premiums beyond emissions, helping investors to capitalise on the increase of climate awareness by including considerations and alignment towards investment and climate policies. Finally, NLP helps investors better articulate their view on climate risk/return tradeoffs. Specifically, they can identify and manage competing constraints in their portfolio optimisation engines to reach the desired risk/return tradeoff. (Sardana, 2019)

A systemic change approach to avoid greenwashing

While innovative tools based on NLP and Artificial Intelligence can provide value to investors, they also have limitations and shortfalls. NLP is not a silver bullet and therefore it needs to be implemented in tandem with other interventions to create systems change. Below, we identify some additional solutions beyond NLP and AI that will be necessary to better weed out greenwashing companies from green companies, better measure ESG indicators and better manage climate-related financial risks.

ADDITIONAL SOLUTIONS

In order for ESG to arrive at the same level of maturity as the financial reporting ecosystem, frameworks and standards must achieve: (IMP, WEF, Deloitte 2020)

1. Global legitimacy through regulatory mandates or other recognition by policy makers
2. Incorporation in the public domain
3. Preparation of comparable and reliable information that can be consumed by a wide variety of data aggregators, analytics providers, ratings and indices

Alongside technological innovations such as NLP, the following interventions are required to bring the ESG ecosystem to maturity:

1. MANDATORY DISCLOSURE

Policymakers are increasingly requiring ESG disclosure around the world. For example, the European Union (EU) will tighten its "Non-Financial Reporting Directive" in 2021, which requires ESG disclosure from companies with more than 500 employees doing business in the EU. It's likely that the incoming U.S. administration will introduce new ESG mandates as well (GreenBiz, 2020)

2. GLOBAL STANDARDS

Global agreement on a set of sustainability topics and related disclosure requirements is required to address inconsistent metrics and definitions at the systems level. This is because of the need for consistent, comparable reporting data across companies, geographies and time periods (IMP, WEF, Deloitte, 2020). Creating a set of universal metrics will provide greater consistency of reporting and increase the quality of reporting (GreenBiz, 2020), therefore of analysis that investors can conduct to make decisions.

Similarly, creating standards that ensure high-quality reporting will be required to fully discern greenwashing from actual climate action. Significant qualitative evidence suggests that strong standards and top-tier ESG performance result in better operational results (Cort, Esty, 2020). Disclosure standards help create a foundational layer of high-quality, company-reported information which the rest of the ecosystem can rely on to support more efficient markets and more effective decision-making (IMP, WEF, Deloitte, 2020). Along with the standards, we need to create an equivalent mindset when it comes to sustainability disclosure (IMP, WEF, Deloitte, 2020).

In the absence of established ESG metrics that clearly drive financial performance, investors must seek a wide range of information and develop bespoke methodologies to analyze the data that are available—and then transform their analyses into implementable investment decisions. The different investment priorities of individual asset owners—from maximizing financial returns to primary emphasis on social and environmental impacts—add to the sense of confusion. (Cort, Esty, 2020).

3. CONSOLIDATED ESG STANDARDS

Recently, four leading ESG standards organizations — GRI, the Sustainability Accounting Standards Board (SASB); CDP (formerly the Carbon Disclosure Project); the Carbon Disclosure Standards Board (CDSB); and the International Integrated Reporting Council (IIRC) — declared their intent to collaborate. While this is a welcome signal, all of this work could be rendered moot by the International Financial Reporting Standards (IFRS) Foundation's proposal to develop ESG standards. This collaboration can provide a greenfield for innovative data-driven solutions to obtain high-quality inputs and help improve results. (GreenBiz, 2021). Well-constructed ESG data standards could create greater reliability in the metrics that underpin the variety of emerging reporting and disclosure approaches and promote greater confidence among investors and other stakeholders that they will be able to separate sustainability signals from noise. (Cort, Esty, 2020)

4. TECH-ENABLED COMMUNICATIONS

For asset managers, the reasons for communicating messages about ESG have changed. ESG has moved from simply projecting social responsibility to demonstrating a clear and systematic approach to the risks and opportunities confronted in a changing world. Clear and accessible investor communication of ESG can enhance their proposition and truly set them apart in a landscape characterised by acronyms, jargon, and false promises (AlphaFMC, 2021).

Sustainability information must be easily available and accessible to all kinds of users and stakeholders. Structured information enables greater connectivity between producers and users. It allows for information to be easily searched, filtered, aggregated, and integrated into end-user technologies. (IMP, WEF, Deloitte, 2020).

The use of technology to implement a publicly available, sustainability-related data platform structured for accessible sharing and comparison will be critical in reducing greenwashing and improving access to reliable ESG metrics. Technology will not only reduce the burden of reporting, it will also improve the quality of data, improving reliability and driving actionability of sustainability benefits for stakeholders (GreenBiz, 2021). NLP can be integrated into such mechanisms to increase transparency and accuracy.

Conclusion

ESG metrics can facilitate investor risk management by identifying risks and opportunities, measuring performance, improving transparency, and indicating a firm's proactivity and progressiveness in governance. However, challenges and limitations such as inconsistent metrics and definitions, lack of standardised reporting, variable rating systems and complex communications speak of an ESG ecosystem that still requires further work to mature and serve the investment community to make informed decisions. Companies can exploit these challenges to intentionally misreport and distort perceived risk exposure, creating unreliable noise in critical data on topics such as climate-related financial risks. This presents a tangible risk for investors attempting to use ESG ratings to inform investment decisions.

Natural Language Processing and Artificial Intelligence-driven tools can help overcome some of these challenges. In particular, these innovative tools can improve risk measurement, management and transparency (for example, in companies with value chains heavily dependent on nature), allowing for the effective discernment of green vs. brown companies. However, to truly solve the complex issues that the ESG ecosystem currently faces, deep systemic change is needed, with solutions including global standards and mandatory disclosure supported by different stakeholders including governments, the global investor community and corporates.

It is likely impossible and possibly counterproductive to halt the growth of ESG-investing in an attempt to force homogeneity across investment approaches. Therefore, investors today may choose to focus their efforts on implementing innovative tools available for collecting, determining and validating data to support investment decision-making.

REFERENCES

- Barker, R. (2020). The Future of ESG Is ... Accounting? [online] Harvard Business Review. Available at: <https://hbr.org/2020/12/the-future-of-esg-is-accounting>.
- Berg, F., Kölbel, J.F. and Rigobon, R. (2020). Aggregate Confusion: The Divergence of ESG Ratings. [online] papers.ssrn.com. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3438533.
- Biffis, Rocciolo, et. al. (2020), "Climate Disclosures and Financial Performance – AI Driven Indicators, Greenwashing detection and Firm Characteristics", ESG Report Series, Issue 4, Ping Digital Economic Research Center, Imperial College London
- Boffo, R. and Patalano, R. (2020). ESG Investing: Practices, Progress and Challenges. [online] OECD. Available at: <https://www.oecd.org/finance/ESG-Investing-Practices-Progress-Challenges.pdf>.
- Broderick, S. (2019). The Top 10 ESG Metrics Private Equity Funds Should Collect. [online] . Available at: <https://cdn.ihsmarkit.com/www/pdf/O720/ESGTop10-Digital-Final-HiRes.pdf> [Accessed 10 May 2021].
- Cort, T. and Esty, D. (2020). ESG Standards: Looming Challenges and Pathways Forward. *Organization & Environment*, 33(4), pp.491–510.
- Dang, C., Li, Z.F. and Yang, C., 2018. Measuring firm size in empirical corporate finance. *Journal of Banking & Finance*, 86, pp.159–176.
- Du, X., 2015. How the market values greenwashing? Evidence from China. *Journal of Business Ethics*, 128(3), pp.547–574.
- EY Reporting (2018). What investors want to know about ESG metrics. [online] www.ey.com. Available at: https://www.ey.com/en_uk/assurance/what-investors-want-to-know-about-esg-metrics [Accessed 10 May 2021].
- Fender, R., Stammers, R., Urwin, R. and Preece, R.G. (2020). The Operating Model to Enable Sustainable Investing. [online] CFA Institute. Available at: <https://www.cfainstitute.org/en/research/industry-research/esg-operating-model> [Accessed 10 May 2021].
- Gilbert, M. (2021). Former BlackRock Executive Blows the Whistle on Greenwashing. *Bloomberg.com*. [online] 23 Mar. Available at: <https://www.bloomberg.com/opinion/articles/2021-03-23/former-blackrock-executive-tariq-fancy-blows-the-greenwashing-whistle> [Accessed 10 May 2021].
- GUIDANCE AND CASE STUDIES FOR ESG INTEGRATION: EQUITIES AND FIXED INCOME. (2018). [online] CFA Institute. CFA Institute. Available at: <https://www.cfainstitute.org/-/media/documents/survey/guidance-case-studies-esg-integration.ashx>.
- Henisz, W., Koller, T. and Nuttall, R. (2020). ESG framework | McKinsey. [online] www.mckinsey.com. Available at: <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/five-ways-that-esg-creates-value>.
- Ho, (2020)," How Ping An is leveraging AI for ESG Investing", *Asian Investor*
- Khan, M. (2019). Corporate Governance, ESG, and Stock Returns around the World. [online] Available at: https://www.researchgate.net/publication/336199770_Corporate_Governance_ESG_and_Stock_Returns_around_the_World.
- Khan, M., Serafeim, G. and Yoon, A. (2016). Corporate Sustainability: First Evidence on Materiality. [online] papers.ssrn.com. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2575912 [Accessed 28 Feb. 2020].
- Kotsantonis, S. and Serafeim, G. (2019). Four Things No One Will Tell You About ESG Data. *Journal of Applied Corporate Finance*, 31(2), pp.50–58.
- KPMG (2021). Sustainability reporting – KPMG Global. [online] KPMG. Available at: <https://home.kpmg/xx/en/home/insights/2020/10/sustainability-reporting.html> [Accessed 10 May 2021].

REFERENCES

- Kramer, M., Jais, N., Sullivan, E., Wendel, C., Rodriguez, K., Papa, C. and Napolli, C. (2020). Where ESG Ratings Fail: The Case for New Metrics. [online] Institutional Investor. Available at: <https://www.institutionalinvestor.com/article/b1n7O6z8lqfscs/Where-ESG-Ratings-Fail-The-Case-for-New-Metrics>.
- Liechti, C. and Bingle, V. (n.d.). Alpha FMC – ESG: 8 Tips for Effective Communication. [online] Alpha FMC. Available at: <https://alphafmc.com/esg-8-tips-for-effective-communication/> [Accessed 10 May 2021].
- Lioui, A., 2018. Is ESG Risk Priced?. Available at SSRN 3285091.
- Measuring Stakeholder Capitalism Towards Common Metrics and Consistent Reporting of Sustainable Value Creation S E P T E M B E R 2 0 2 0. (2020). [online] The World Economic Forum. Geneva, Switzerland: The World Economic Forum. Available at: http://www3.weforum.org/docs/WEF_IBC_Measuring_Stakeholder_Capitalism_Report_2020.pdf.
- Mohin, T. (2021). Can we finally standardize ESG standards? | Greenbiz. [online] www.greenbiz.com. Available at: <https://www.greenbiz.com/article/can-we-finally-standardize-esg-standards> [Accessed 10 May 2021].
- MSCI ESG RESEARCH LLC (2017). MSCI ESG METRICS A BIG DATA APPROACH TO ESG: DELIVERING AN EXTENSIVE SET OF STANDARDIZED ESG DATA AND SIMPLE FLAGGED METRICS THAT ARE COMPARABLE ACROSS A BROAD UNIVERSE. [online] . Available at: https://www.msci.com/documents/1296102/1636401/MSCI_ESG_Metrics_factsheet.pdf/eee531f4-bf23-4628-b6cc-4c7b96b31276.
- Ogletree, C. (2021). Understanding what makes high quality ESG data. [online] Goby. Available at: <https://www.gobyinc.com/what-makes-quality-esg-data/> [Accessed 10 May 2021].
- Ping Insurance Group China, (2020), "Ping- An Uses Artificial Intelligence to drive New ESG Investments Strategies – Access to data to from alternative sources uncover hidden risks and opportunities", PR Newswire Cision
- PwC (n.d.). ESG Reporting Services. [online] PwC. Available at: https://www.pwc.com/us/en/services/audit-assurance/esg-reporting.html?WT.mc_id%27CT3-PL300-DM1-TR1-LS3-ND30-PRG7-CN_ESG-Google&gclid=ds [Accessed 10 May 2021].
- Rahm, S. (2014). Why investors should care about data security risk. [online] Schrodgers. Available at: <https://www.schrodgers.com/en/sysglobalassets/staticfiles/schrodgers/sites/global/pdf/why-investors-should-care-about-data-security-risk.pdf>.
- Sardana, (2019), "How to spot Greenwashing", Guide to Responsible Investing, Financial Times Advisor
- Schumacher, Chenet, et al. (2020), " Sustainable Finance in Japan", Volume 10, Issue 2, Journal of Sustainable Finance and Investment, Taylor and Francis Online
- Statement of Intent to Work Together Towards Comprehensive Corporate Reporting Summary of alignment discussions among leading sustainability and integrated reporting organisations CDP, CDSB, GRI, IIRC and SASB. (2020). [online] IMP, WEF, Deloitte. Available at: <https://29kjwb3armds2g3gi4lq2sx1-wpengine.netdna-ssl.com/wp-content/uploads/Statement-of-Intent-to-Work-Together-Towards-Comprehensive-Corporate-Reporting.pdf>.
- Sustainable Signals Asset Owners Embrace Sustainability Key Insights: Momentum and Shifting Perspectives. (2018). [online] Morgan Stanley. Available at: <https://www.morganstanley.com/assets/pdfs/sustainable-signals-asset-owners-2018-survey.pdf>.
- Weber, J.L., 2018. Corporate social responsibility disclosure level, external assurance and cost of equity capital. Journal of Financial Reporting and Accounting.
- World Economic Forum. (n.d.). Global Business Leaders Support ESG Convergence by Committing to Stakeholder Capitalism Metrics. [online] Available at: <https://www.weforum.org/press/2021/01/global-business-leaders-support-esg-convergence-by-committing-to-stakeholder-capitalism-metrics-73b5e9f13d/>.
- www.gsam.com. (n.d.). Measuring the Immeasurable: Scoring ESG Factors. [online] Available at: <https://www.gsam.com/content/gsam/global/en/market-insights/gsam-insights/gsam-perspectives/2015/esg/qis-article.html> [Accessed 10 May 2021].

APPENDIX

Figure 1: ESG Rating Framework and Process Overview

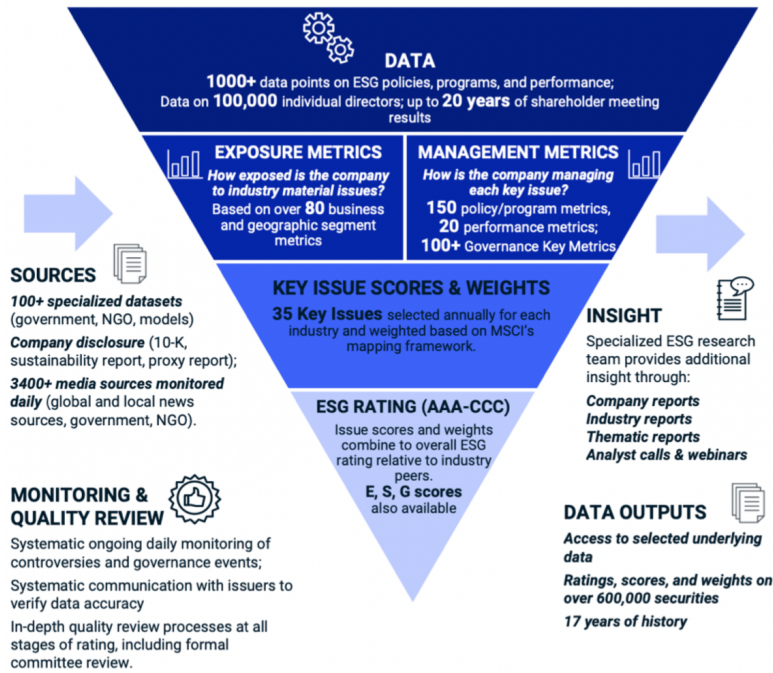


Figure 1: "ESG Rating Framework and Process Overview"
Source: MSCI ESG Research, MSCI ESG Ratings Methodology, 2020

Climate Change	Natural Capital	Pollution & Waste	Environmental Opportunities	Human Capital	Product Liability	Stakeholder Opposition	Corporate Behavior
<p>Risk Exposure</p> <ul style="list-style-type: none"> Geographic Exposure to Carbon Regulation (-1,0) Business Exposure to Carbon-Intensive Operations (-1,0) Geographic Exposure to Climate Vulnerable Regions (-1,0) Reliance on Carbon-Intensive Supply Chain (-1,0) <p>Controversies</p> <ul style="list-style-type: none"> Climate Change Controversies (-1,0) <p>Performance</p> <ul style="list-style-type: none"> Three-year trend of average carbon emissions intensity (-1,0,1) Three-year average carbon emissions intensity (tCO₂e / USD million sales) relative to GICS Industry peer median (-1,0,1) 	<p>Risk Exposure</p> <ul style="list-style-type: none"> Business Exposure to Operations with Land or Ecosystem Disturbance (-1,0) Geographic Exposure to Fragile Ecosystems (-1,0) Geographic Exposure to Water Stressed Regions (-1,0) Business Exposure to Water-Intensive Operations (-1,0) <p>Controversies</p> <ul style="list-style-type: none"> Environmental Impacts on Communities Controversies (-1,0) Operationally Controversial Investments Controversies (-1,0) Raw Material Impact Controversies (-1,0) Water Stress Controversies (-1,0) 	<p>Risk Exposure</p> <ul style="list-style-type: none"> Business Exposure to Operations Producing High Levels of Packaging Waste (-1,0) Business Exposure to Operations Producing High Levels of Toxic Emissions and Waste (-1,0) <p>Controversies</p> <ul style="list-style-type: none"> Toxic Emissions & Waste Controversies (-1,0) 	<p>Practices</p> <ul style="list-style-type: none"> Alternative Energy Products and Services (1,0) Energy Efficiency Products and Services (1,0) Green Building Products and Services (1,0) Pollution Prevention and Control Products and Services (1,0) Sustainable Water Products and Services (1,0) 	<p>Risk Exposure</p> <ul style="list-style-type: none"> Business Exposure to Injury-Prone Operations (-1,0) Geographic Exposure to Poor Workplace Safety Standards (-1,0) Reliance on Highly-Skilled Workforce (-1,0) Business Exposure to Labor-Intensive Operations (-1,0) Geographic Exposure to Frequent Work Stoppages (-1,0) <p>Controversies</p> <ul style="list-style-type: none"> Controversial Workplace Accidents Controversies (-1,0) Discrimination and Diversity Controversies (-1,0) Controversial Working Conditions Controversies (-1,0) Collective Bargaining and Union Labor Controversies (-1,0) Supply Chain Labor Controversies (-1,0) 	<p>Risk Exposure</p> <ul style="list-style-type: none"> Geographic Exposure to Chemical Safety Regulations (-1,0) Involvement in Business Commonly Reliant on High Concern Chemicals (-1,0) Exposure to Business Prone to Data breaches or Handles High Volumes of Customer Data (-1,0) Geographic Exposure to Privacy Regulations (-1,0) Exposure to Business with Product Safety Risks (-1,0) <p>Controversies</p> <ul style="list-style-type: none"> Chemical Safety Controversies (-1,0) Data Security Breaches Controversies (-1,0) Customer Fraud Controversies (-1,0) Discriminatory Access to Basic Services Controversies (-1,0) Marketing Controversies (-1,0) Product Safety & Quality Controversies (-1,0) 	<p>Controversies</p> <ul style="list-style-type: none"> Social Impacts on Communities Controversies (-1,0) Social Impacts of Raw Materials Controversies (-1,0) Human Rights Concerns Controversies (-1,0) 	<p>Risk Exposure</p> <ul style="list-style-type: none"> Geographic Exposure to Corruption & Instability (-1,0) Business Exposure to Operations Commonly Associated with Corrupt Practices (-1,0) <p>Performance</p> <ul style="list-style-type: none"> Tax Gap Greater Than 20% (-1,0) Foreign Market Revenue Greater Than 20% (-1,0) <p>Controversies</p> <ul style="list-style-type: none"> Anti-Competitive Behavior Controversies (-1,0) Bribery and Corruption Controversies (-1,0) Business Ethics Controversies (-1,0) Taxes and Subsidies Controversies (-1,0)

Figure 2: MSCI's ESG-related risk exposure metrics

Source: MSCI ESG Research, 2017