



**THE  
EXETER  
MBA**

**ESG**

**Risks  
Investing  
Scorecards  
& Technology**

**Research Report**



# Executive Summary

The document was created as a part of my MBA consulting research Project at the University of Exeter. It discusses topics that range from ESG Risks, ESG Investing, ESG as a driver of sustainability to the latest innovation in technology especially large language models and BERT Transformers that facilitate the integration of ESG factors with mainstream financial decision making.

## Table of Contents

<b>1. Environment, Social, and Governance Risks.....</b>	<b>3</b>
1.1. Environmental Risk .....	3
1.2. Social Risk.....	4
1.3. Governance Risk .....	4
<b>2. ESG Investment strategies.....</b>	<b>5</b>
2.1. Exclusion Based Strategy .....	6
2.2. Impact Investments .....	6
2.3. ESG Investing Strategy.....	6
2.4. Engagement & Stewardship.....	6
<b>3. ESG Investing - A Catalyst for Sustainability .....</b>	<b>6</b>
3.1. The Drivers .....	6
3.2. The cycle of Sustainability .....	7
<b>4. Making ESG information consumable.....</b>	<b>7</b>
4.1. Materiality and Risk mapping process .....	8
4.2. The Role of Technology .....	9
<b>5. Examples from the Industry .....</b>	<b>12</b>
5.1. Ravenpack .....	12
5.2. Network Graphs.....	12
5.3. Deutsche Bank.....	12
5.4. Amenity Analytics .....	12
<b>6. Challenges .....</b>	<b>12</b>
6.1. Lack of ESG disclosures.....	12
6.2. Lack of Standardization in ESG Reporting .....	11
6.3. Divergence in ESG Scores .....	11
6.4. Limited checks on greenwashing.....	11
<b>7. ESG Data providers .....</b>	<b>11</b>
<b>8. References.....</b>	<b>16</b>

# 1. Environment, Social, and Governance Risks

To address pressing concerns of climate change, globalization, and societal megatrends, in the year 2014, World leaders called for integration of Environment, Social and Governance factors into the functioning of Capital markets, the initiative was detailed out as a part of a report titled "Who cares wins" (IFC, 2015) which was put together by the UN Global Compact and the International Finance Corporation. The report emphasized that embedding environmental, social and governance factors into capital markets made sound business sense, led to more sustainable markets, and produced better outcomes for society. The initiative in collaboration with a few other initiatives around the same time led to the coining of the term ESG, an acronym for Environment, Social, and Governance. The emergence of ESG as a metric to understand the sustainability of a company stems from the fact that long-term sustainable returns are dependent on stable, well-functioning and well-governed social, environmental, and economic systems.

Over the years, ESG Investing, a form of financial investment that takes Environment, Social and Governance risks into consideration has gained widescale adoption. Research by PWC (Garvey, 2022) suggests that ESG Assets under management are set to increase from US\$18.4tn in 2021 to US\$33.9tn by 2026, an anticipated growth of 84%.

## 1.1. Environmental Risk

Frequent floods, wildfires, droughts and other natural calamities resulting from a change in climate have exposed businesses to multiple environmental risks, these risks are broadly classified into (a) Physical risks, are risks due to physical effects of climate change, for example, the risk of low-lying coastal areas getting submerged in water due to floods or increase in sea levels, and (b) Transition risks that stem from a lack of preparedness to transition from legacy systems to energy efficient systems, this could render a firm obsolete due to a change in government policies and consumer preferences. In the EU, a carbon footprint beyond the allowance could mean allocation of additional cash to offset excess emissions which negatively impacts a company's bottom line. In the technology sector, for example, blockchain, the lack of a plan to transition from a high carbon footprint consensus mechanism to a lower carbon footprint mechanism could mean a low rate of industry acceptance.

The below abridged diagram (figure a) summarizes the physical and transition risks to economic and financial systems.

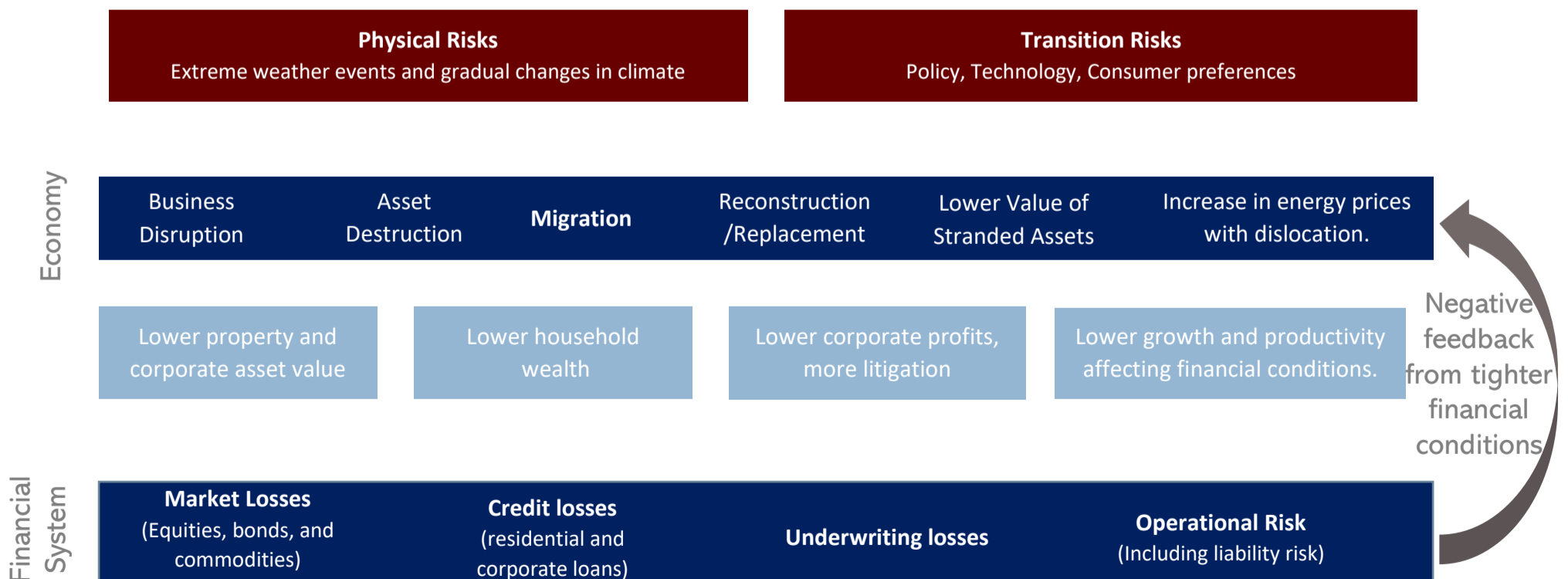


Figure (a)

Source: IMF Climate Change and Financial Risk

## 1.2. Social Risk

Industrialization in the past several decades followed by globalization has shaped the pathway to free trade giving way to cross-border mobility, complex supply chains, wealth inequality, and a multicultural workforce. These changes have exposed societies, common man and businesses to multiple Social Risks. Risk to a common working man includes discrimination at workplace that psychologically harms his wellbeing and adversely impacts his ability to focus, this may have cascading effects on his family members and dependents, risk to business includes opposition from local community preventing a builder from building on a land that they rightfully own, and risk to society includes employment of child labor within a complex supply chain when sourcing products from underdeveloped nations. A business that takes its societal impact into consideration shall, for example, upskill and educate its workforce in the face of rapidly changing technology landscape than making it redundant, a socially ethical firm that sells products or services shall ensure that product liability and consumer protection are built into its operating model. Figure (b) below illustrates a few internal and external social factors that impact a firm.

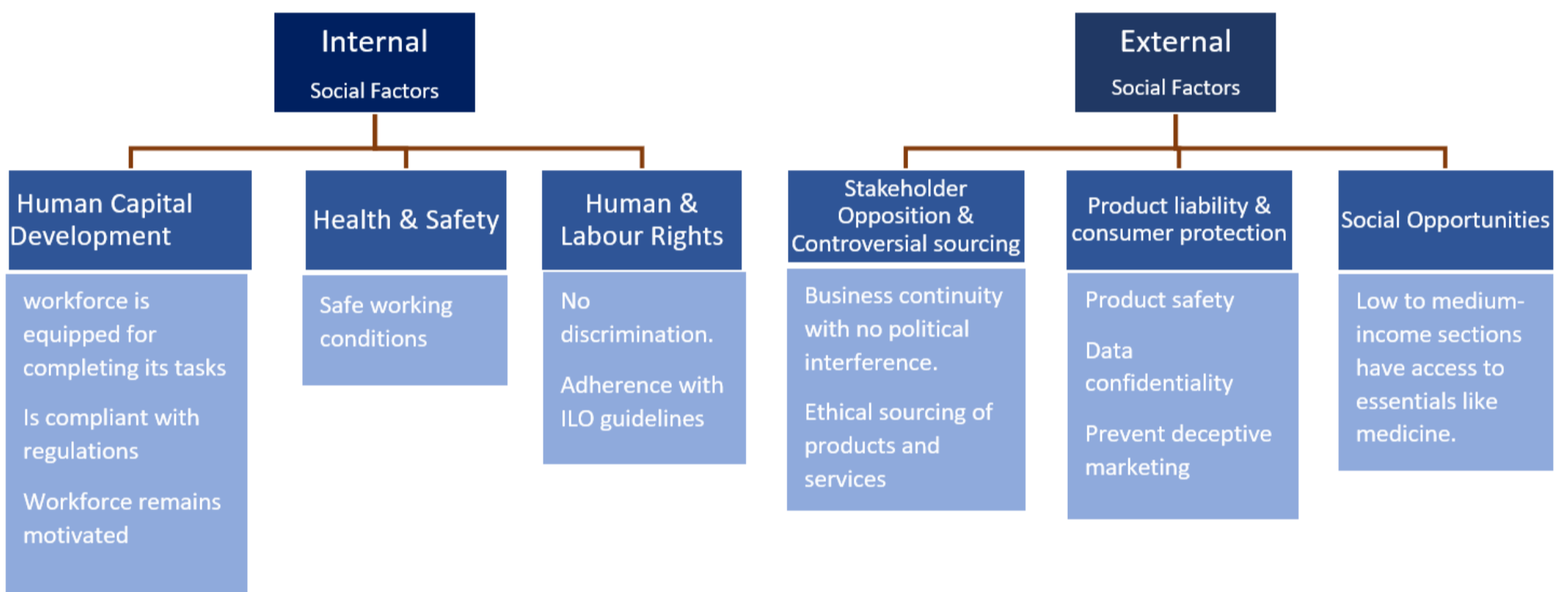
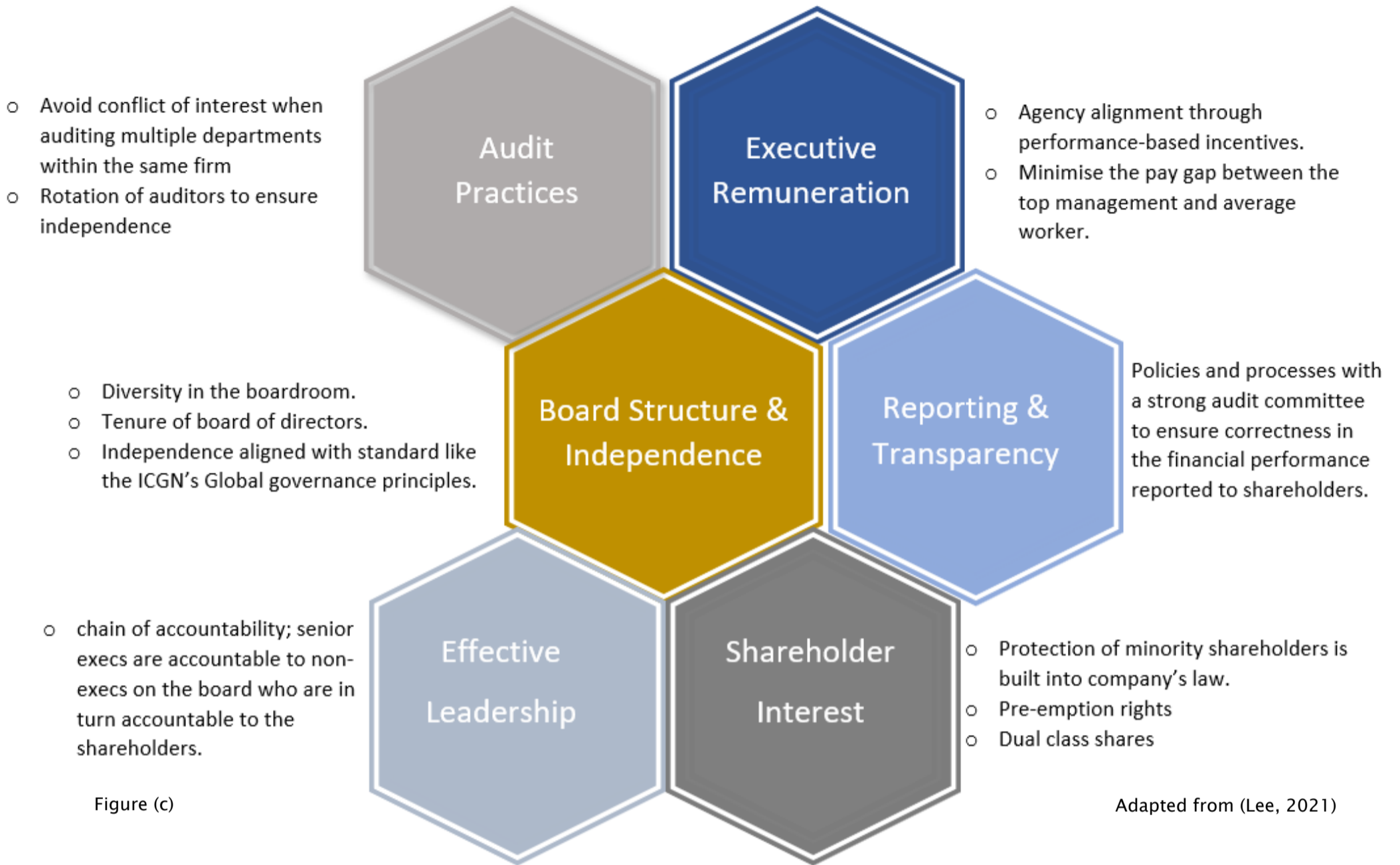


Figure (b)

Adapted from (Bijlevd and Verstappen, 2021)

## 1.3. Governance Risk

Governance Risk results from loopholes in the Governance and Risk management framework of an organization. A good governance model is aligned with the interests of its owners and centered around shareholder and stakeholder protection. The Governance model ensures that workforce feels psychologically safe and are motivated, the board of directors bring in a diversity of thought through balanced gender, race, and background representation in the boardroom, the pay gap between the top management and the average worker is minimized, and there exists a mature Risk management framework to detect and mitigate potential risks to the business early on. A good governance structure also considers the interests of shareholders by ensuring that they have access to correct financial figures and their rights such as pre-emption and minority shareholding are protected. Figure (c) below illustrates a few elements that enable sound governance within a firm.



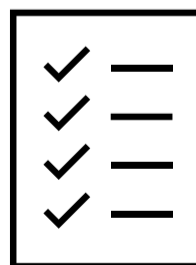
## 2. ESG Investment strategies

ESG investing incorporates Environmental, Social, and Governance factors into investment decisions and active ownership. It considers the influence of ESG on the risk-adjusted return of an asset, and the benefits to the firms, environment, and society at large from investing in and actively engaging with investee firms.



### Exclusions Based Investing

- Exclusionary/negative screening
- Prioritises norms, values, and faiths.
- Non-engagement



### ESG Investing

- Prioritises measurability and scoring.
- Positive screening
- Reinforces engagement activities.
- Reporting capabilities



### Impact Investing

- Prioritises intentionality and additionality.
- Socio-environmental impact focussed.
- Framework-oriented (UN SDGs).
- Measurable objectives and outcomes.

Figure (d)

## 2.1. Exclusion Based Strategy

is applied by faith-based funds, the primary objective of this strategy is to strike out investments that are not coherent with the beliefs of the Asset Owner, for example, Catholic funds may opt out of investment in businesses that facilitate abortion, contraceptives, embryonic stem cell research or sales of weapons, likewise, Sharia funds do not invest in companies that profit from alcohol, pornography, pork, or gambling.

## 2.2. Impact Investments

are aligned with principles of the United Nations' sustainable development goals. These investments may generate less returns than the market average and intend to address the needs of underprivileged in the society, a few examples of Impact investment include investments made towards housing, healthcare, and educational necessities of the underprivileged, supporting minority businesses, and conservation of natural resources.

## 2.3. ESG Investing Strategy

screens funds based on their ESG performance. It leverages ESG scores to make financial investment decisions and invests in firms that overcome a defined ranking hurdle, for example, an investment manager may sort companies by ESG score in each sector and select only the top 25% from each category.

## 2.4. Engagement & Stewardship

is a form of ESG investing in which investors become active and involved owners of their investment through engagement and shareholder voting rights. Engagement is a purposeful dialogue between the investors and investee companies on objectives that relate to improvement of business practices around ESG, the process of engagement is generally guided by the framework provided by Principles of Responsible Investment (PRI).

# 3. ESG Investing - A Catalyst for Sustainability

## 3.1. The Drivers

ESG investing strategy commands a sizeable share of assets under management across geographies; The important actors in this transformation are the Asset Owners, Asset Managers, and the Public.

Asset owners that include Insurance, Pension firms, and endowment funds make up the top of the financial value chain, they own and invest huge sums of public money. Active participation and the decision of Asset Owners to disinvest away from firms that do not take Environment, Social and Governance factors into consideration has put investee companies under tremendous pressure of ESG alignment and voluntary disclosures. Pension firm AXA disinvested from tobacco industry assets in May 2016 by selling off its equity holdings in tobacco companies and tobacco industry corporate bond holdings that were valued at approximately 0.2 billion euros and 1.6 billion euros then (Thomas Bubrel, May 2015).

Asset Managers make up the second layer of the financial value chain, they incorporate sustainability mandates of Asset Owners in addition to their own sustainability preferences. For example, Blackrock, the largest asset manager with \$6.84 trillion in assets under management has in the past made announcements of disinvesting from coal-powered businesses (Joanna Patridge, Jan 2020), these initiatives influence and motivate coal powered companies to transition to clean energy.

In situations where disinvestment is not the best strategy, ESG Investing strategies like Stewardship and active engagement enable investors to become active and involved owners through shareholder voting rights. Engagement between investee companies and investors enables investee companies to understand and align with the expectations of investors, for example, Investors could hold their investee companies accountable for slippages from net zero transition timelines. Investors also collaborate with investee companies over governance, social or environmental risks that may pose a downside risk to the business.

## 3.2. The cycle of Sustainability

As shown in the figure below, industries that consider Environment, Social and Governance factors as a core business strategy are cost-efficient, are popular with consumers, provide better products and services, their businesses are built on ethics and stakeholder protection, and are better equipped to address change. Incorporating ESG factors have shown to have cascading benefits, for example, when employees in a firm are valued productivity increases which in turn results in increased profitability, research on employee wellbeing suggests that investments in a portfolio of 100 best companies to work for in the US earned 3.5% higher returns than the market average between the years 1984 and 2009 (Henry Stewart, Jul 04, 2011). On the other hand, ESG compliant funds are not only an effective risk mitigation strategy but also generate higher returns than traditional funds, as per an article by Statista (Statista Research Department, Aug 2022), over the three years through March 14, 2021, the S&P 500 ESG index outperformed the regular S&P 500 index.

A fast-evolving sustainability landscape and increased intervention from world leaders has brought about enforcements in the form of legislation and government policies, these developments expose businesses to multiple risks like risk of fines and risk of stranded assets. Research by McKinsey suggests that around one-third of company profits could be at risk due to intervention from the government, and further suggests that getting ahead in the curve of ESG adoption makes solid business sense ( Hunt et al., April 26, 2021). Forward-looking companies such Mastercard have set an example by incentivizing their senior executives on progress made towards sustainability factors like transition to net zero, financial exclusion, and gender pay parity (Michael Miebach, March 24, 2021).

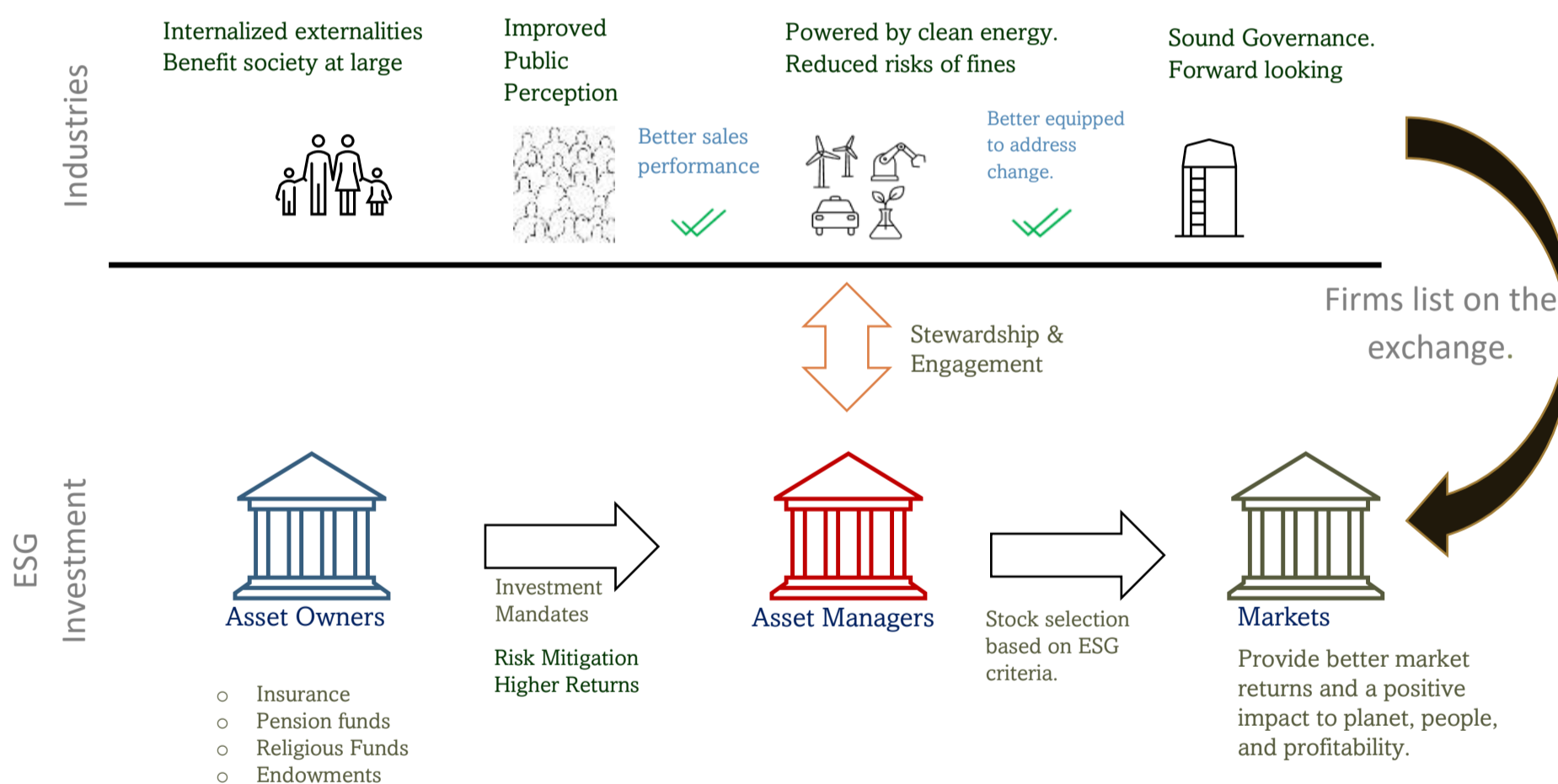


Figure (e)

## 4. Making ESG information consumable

ESG initiatives of a company are disclosed on its website, also company related news articles both good and bad are available on news sites online. For an investment manager to make informed decisions about the ESG performance of companies in their investment universe by reading through the vast amounts of news data is laborious, time-consuming, and practically impossible. Latest developments in the field of Machine Learning and technology enable Asset Managers to form an informed ESG opinion of a firm by referring to a single numerical score, also referred to as ESG Score.

Building a scorecard involves rating the E, S, and G performance of a company on a certain scale, some rating companies provide an individual score for each of the three E, S, and G components along with an



aggregate ESG score. The score is added as an additional parameter to various quant models for making investment decisions and also used to screen funds manually based on a certain threshold criterion, for example, include the top quartile of energy stocks based on their ESG score. To develop an ESG Score, an analyst could choose a scale and a list of material factors 4.1 that impact a sector or firm and based on the performance against the listed material factors rate a firm on its E, S and G performance. For example, on a scale of 5 taking the governance pillar into account.

- Company A has no policy and a history of violations like poor safety conditions for workers and inflated accounts, so they score a 0.
- Company B has a brief policy and no violations, for example, poorly implemented corporate social responsibility so they score a 3.
- Company D has no violations and a detailed policy like a comprehensive Risk framework, and diversity of thought in the boardroom so they score a 5.

An asset manager applying for best-in-class screening for fund selection may discard companies A and B and include company C in the portfolio. Additionally, the asset manager may choose to assign different weights to each of the Environment, Social, and Governance pillars and include a fund only if the weighted average exceeds a certain threshold. The Certificate in ESG investing by the US CFA (edition 2, chapter 7, p. 281) lays down the below sequence of steps to build an ESG scorecard.

- Identify sector or company specific ESG items.
- Breakdown issues into the required number of indicators (referred to as controversy factors)
- Determine a scoring system based on what good/best practice looks like for each indicator/issue.
- Access a company and give it a score.
- Calculate aggregate and individual scores.
- Benchmark the company's performance against industry average or peer groups.

## 4.1. Materiality and Risk mapping process

Factors that financially impact a firm are referred to as material factors. Materiality varies across firms and sectors, for example, water could disrupt the operations of beverage or cloth manufacturing industry, however, a shortage of water does not have a significant impact on the operations of a financial services company. Material risk factors are also referred to as controversial factors and are generally established on a per-sector basis. Materiality and Risk mapping process enable machines to understand which risk factors to group the data into when classifying company related information.

Frameworks such as materiality maps provided by the Sustainability Accounting Standards Board (SASB) provide some guidance, in addition, investment professionals also develop their view on what factors are material for a given industry or company. The below table borrowed from SASB shows material factors for the financial sector.

Issues	Asset Management & Custody Services	Commercial Banks	Consumer Finance	Insurance	Investment Banking & Brokerage	Mortgage Finance	Security & Commodity Exchange
<b>Environment</b>							
GHG Emissions							
Air Quality							
Energy Management							
Water & Wastewater Management							
Waste & Hazardous material management							
Ecological Impacts							
<b>Social Capital</b>							
Human Rights & Community Relations							
Customer Privacy							
Data Security							
Access & Affordability							
Product Quality & Safety							



Customer Welfare							
Selling Practices & Product Labelling							
<b>Human Capital</b>							
Labour Practices							
Employee Health & Safety							
Employee Engagement, diversity & Inclusion							
<b>Business Model &amp; Innovation</b>							
Product Design & Lifecycle Management							
Business Model Resilience							
Supply Chain Management							
Material Sourcing & Efficiency							
Physical Impacts of Climate Change							
<b>Leadership &amp; Governance</b>							
Business Ethics							
Competitive Behaviour							
Management of Legal & Regulatory environment							
Critical Incident Risk Management							
Systemic Risk Management							

(SASB.org, 2022)

## 4.2. The Role of Technology

Below, I discuss the process of building ESG scores by Refinitiv, a leading ESG Score and Data services provider. I also discuss the research done in the field of natural language processing and large language models for text classification. The overarching process at Refinitiv is divided into three broad categories of Data pre-processing, Data classification, and Idiosyncratic rules-based processing.

Data pre-processing involves building data infrastructure by collating company relevant information from various sources. Content research analysts work on populating data in various languages, either manually or in an automated manner. The database is updated continuously and is aligned with corporate reporting patterns. Risk management processes along the data collection, cleaning, and population stages ensure that the collected data is reliable, standardized, and ready for consumption by machine learning algorithms and for other analytical purposes (Refinitiv ESG methodology, 2022).

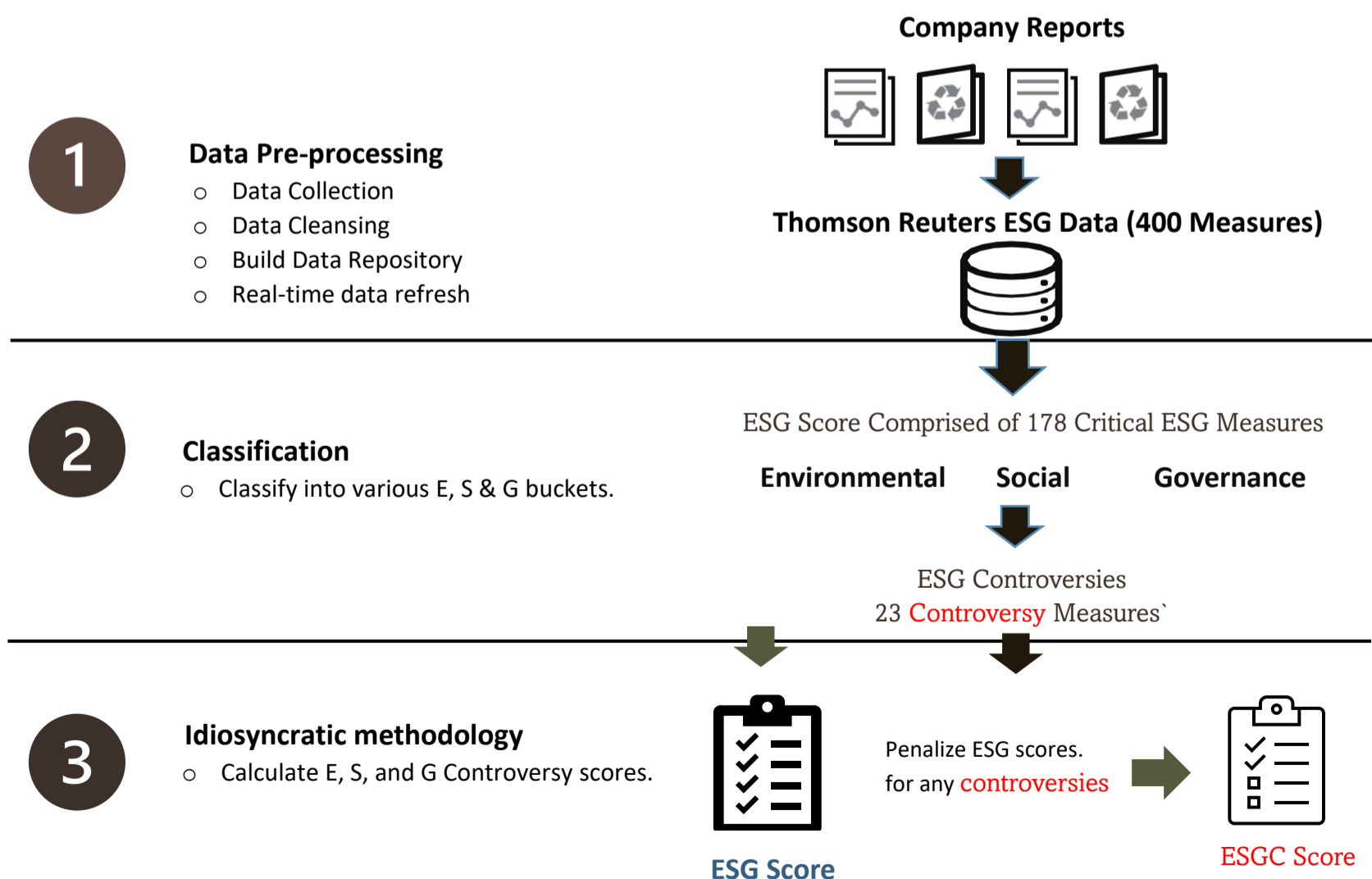


Figure (g)

(Refinitiv ESG methodology, 2022) and (Nugent et al., Oct 2020)

The data repository represents firm-specific information of over 3000 companies that make up the Russell index, post data collation, the next step involves classification into Environment, Social, and Governance controversy buckets labels (Refinitiv ESG methodology, 2022).

For machines to understand the context of a given text like humans do and reduce the risk of misinterpretations, Refinitiv leverages a neural language model known as Bidirectional Encoder Representations from Transformers (BERT) that was initially developed by Google and has since been used by various firms with further enhancements and customizations. The Vanilla BERT model was pre-trained on the Book Corpus that comprised of 800 million words (Zhu et al., 2015) and the English Wikipedia which comprises of 2,500 million words (Devlin et al., 2019).

Upon speaking with Nugent I was informed that to train the model for a domain-specific classification task their team at Refinitiv labs (Nugent et al., 2020) drew inspiration from the performance of domain-specific BERT models namely (a) AllenAI's SciBERT (Beltagy et al., 2019) that was trained on scientific data, (b) Bio BERT (Lee et al., 2019) that was pre-trained on large-scale biomedical corpora, and (c) Fin BERT that was trained on annual and quarterly reports. In their research paper (Nugent et al., Oct 2020, p.2) concluded that the fine-tuned BERTRNA which was pre-trained on a 715M word corpus comprising of financial and business-related information from Reuters News archive showed significant improvement in advanced classification tasks such as multi-class ESG controversy and multi-label UN SDGs detection. Below figure(h) shows the various ESG controversy labels and their mapping to the UN SDG goals.

ESG Controversy	UN SDG GOAL
Accounting	
Anti-competition	
Business Ethics	16
Consumer complaints	
Customer health and Safety	3
Diversity and Opportunity	5,9
Employee Health & Safety	3
Environmental	2,3,6,11,12,13,14,15
General Shareholder Rights	
Human Rights	1,2,8
Insider Dealings	
Intellectual Property	
Management Compensation	
Management Departures	
No Controversy	
Public Health	3,11
Responsible Marketing	1,3,4
Tax Fraud	
Wages or working condition	8

Goal number	Name
1	No Poverty
2	Zero Hunger
3	Good health and wellbeing
4	Quality education
5	Gender equality
6	Clean water and sanitation
7	Affordable and clean energy
8	Good jobs and economic growth
9	Innovation and infrastructure
10	Reduced inequalities
11	Sustainable Cities and Communities
12	Responsible consumption
13	Protect the planet
14	Life below water
15	Life on land
16	Peace and Justice
17	Partnerships for the goals

Figure (h)

BERT models qualify as ideal candidates for performing classification tasks as they employ a human-like attention mechanism that provides context around items in an input sequence. Instead of starting from the very beginning letter of an input sequence, the attention mechanism attempts to identify the context that a word brings to a sentence. Attention mechanism gives BERT transformers a huge advantage over other algorithms as they are capable of deciphering deep contextual information from large volumes of texts and can classify a given sequence of input based on the context.

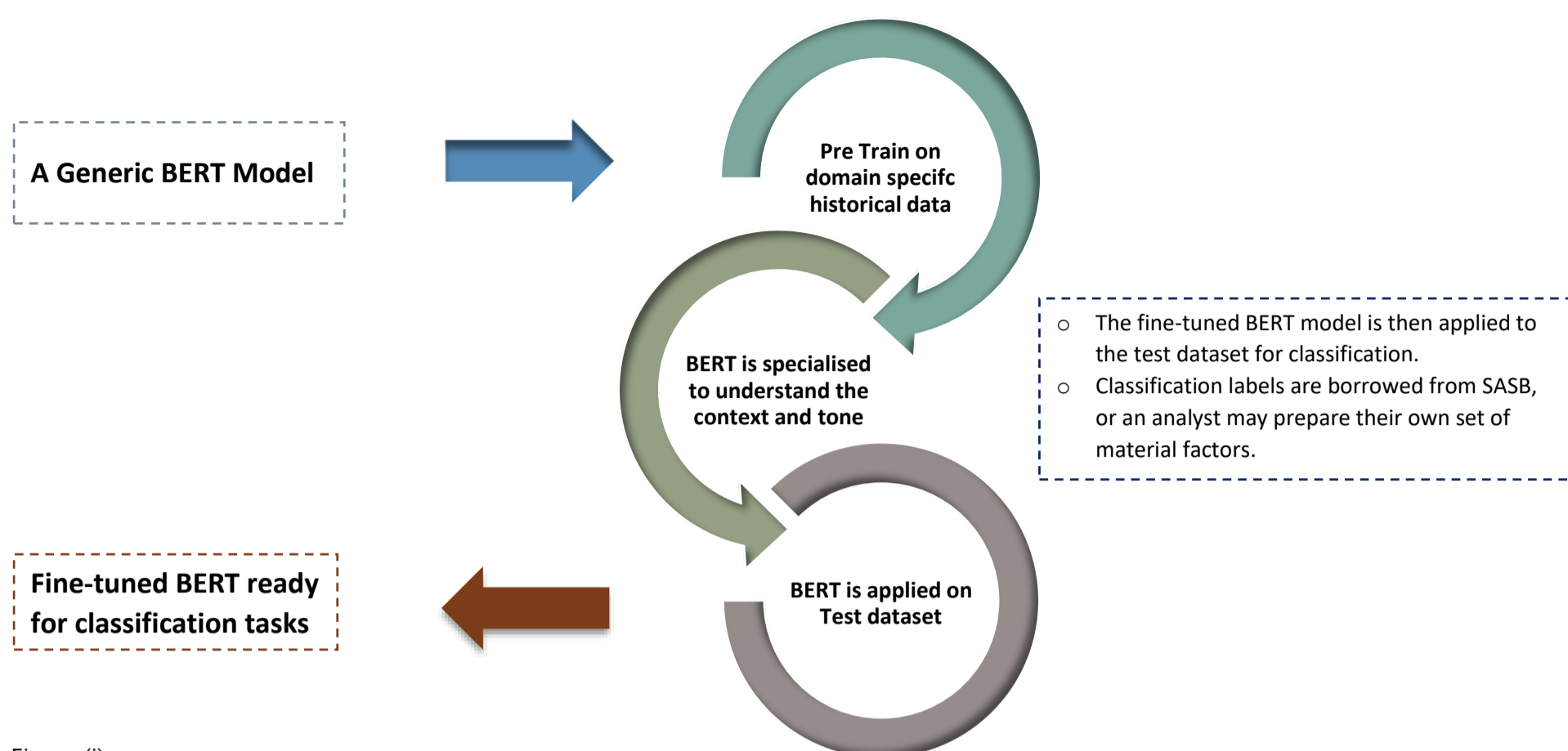


Figure (i)

Refinitiv provides an ESG (Environment, Social, and Governance) score along with an ESGC (ESG controversy) score. The purpose of ESGC score is to discount the ESG score of a company based on negative ESG controversy, and if a firm is not involved in any of the defined ESG controversies then the ESG score equals the ESGC score (figure g).

Instead of absolute scores, Refinitiv provides percentile ranks and for further ease of usage and understanding, every quartile is denoted by letters A, B, C and D. Each quartile is further subdivided into three as shown below.

Score range	Grade	Description
0.0 <= score <= 0.083333	D -	'D' score indicates poor relative ESG performance and an insufficient degree of transparency in reporting material ESG data publicly.
0.083333 < score <= 0.166666	D	
0.166666 < score <= 0.250000	D +	
0.250000 < score <= 0.333333	C -	'C' score indicates satisfactory relative ESG performance and a moderate degree of transparency in reporting material ESG data publicly.
0.333333 < score <= 0.416666	C	
0.416666 < score <= 0.500000	C +	
0.500000 < score <= 0.583333	B -	'B' score indicates good relative ESG performance and above-average degree of transparency in reporting material ESG data publicly.
0.583333 < score <= 0.666666	B	
0.666666 < score <= 0.750000	B +	
0.750000 < score <= 0.833333	A -	'A' score indicates excellent relative ESG performance and a high degree of transparency in reporting material ESG data publicly.
0.833333 < score <= 0.916666	A	
0.916666 < score <= 1	A +	

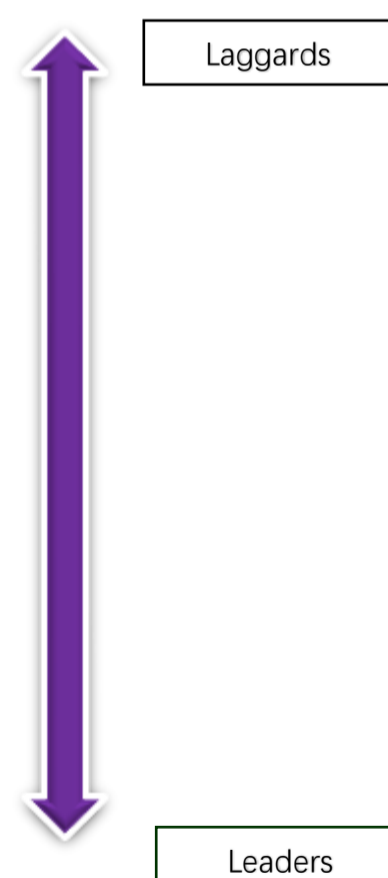


figure (j)

(Refinitiv ESG methodology, 2022)



## 5. Examples from the Industry

### 5.1. Ravenpack

Raven pack (Ravenpack Quantitative Research, April'2022) is an ESG data analytics provider that classifies real time events across 40,000+ news sources in 13 languages into various ESG controversies. Its machine-learning algorithms track millions of listed and unlisted companies and classify events based on controversies.

When sourcing information from various news feeds, there is always a chance of unreliable news making its way into analytics systems, to ensure news from a reliable source is weighed significantly higher than news from an unreliable source, Ravenpack uses a score-based weighting system of 1 through 10, 1 being the most trustworthy score and 10 the least (Ravenpack Quantitative Research marketing material, April'2022).

### 5.2. Network Graphs

A new technology known as Network graphs within the machine learning and artificial intelligence world provides investors with a well-rounded view of the consequences of an ESG controversy fallout of a firm. Network graphs study the interaction of a firm with its suppliers, customers, competitors, and other related entities, and help investors address the cascading effects of an ESG fallout (fintext.io, 2022).

### 5.3. Deutsche Bank

Studies at Deutsche Bank (fintext.io, 2022) concluded that large-cap firms rank higher on sustainability metrics as they have the resources and the budget to deliver lengthy disclosures. To weed out greenwashing and to investigate that firms deliver on their sustainability promises, researchers applied a machine learning algorithm referred to as Topic modeling to find associations and group texts in a company's ESG disclosures into five various topics, namely footprint, mitigation, adaptation, monitoring, and risks. The research concluded that companies using an active and numeric language on average have a 74% chance of reducing their future emissions whereas companies that frequently discuss mitigating or adapting to climate change are 65% more likely to achieve their reduction goals.

### 5.4. Amenity Analytics

Amenity Analytics is a US-based analytics vendor that uses machine learning models like natural language processing (NLP) to discover deception signals such as evasive language, overconfidence or under confidence, euphemisms, detours, and stall tactics used during a company's earning calls to build deception score for investors.

## 6. Challenges

### 6.1. Lack of ESG disclosures

Research by the Centre for Audit Quality (CAQ), a nonpartisan public policy organization that represents US public listed companies on audit-related matters discovered that only a mere 54% of the firms listed on Standard and Poor's 500 index published ESG data in the year 2020 though the number has risen from 37% in 2019 (CAQ Research, June 2021).

## 6.2. Lack of Standardization in ESG Reporting

As per research by Duff & Phelps, ssswhich is a leading provider of governance, risk, and transparency solutions, nearly half of valuation experts believe that a lack of standardization is a major threat to the effective implementation of ESG disclosures. Andrew Probert, the Managing Director at Duff & Phelps expressed that ESG disclosure frameworks today are neither mandated nor standardized across the board and with no consistent approach for reporting between firms, it is challenging for stakeholders to compare opportunities fairly and effectively” (Andrew Probert, July 13, 2021).

## 6.3. Divergence in ESG Scores

Researchers from State Street (Kumar & Weiner, March 2019) studied more than 30 data providers to understand the correlation between ESG scores using the MSCI world index as the coverage universe and concluded that there existed a very high degree of divergence between different rating providers. The two leading score providers MSCI and sustain analytics bore a correlation of only 0.53.

	Sustainalytics	MSCI	RobecoSAM	Bloomberg ESG
Sustainalytics	1	0.53	0.76	0.66
MSCI		1	0.48	0.47
RobecoSAM			1	0.68
Bloomberg ESG				1

figure (k)

(SSGA Research, 2020)

On the contrary, divergence could be useful as it addresses the risk of groupthink and could address situations like the collapse of mortgage-backed loans which led to the financial crisis of 2007-09.

## 6.4. Limited checks on greenwashing

A Research that studied the website of twelve of the biggest fashion retailers in the United Kingdom and Europe that included the likes of H&M, Asos, and Zara concluded that 60% of the environmental claims can be classified as "unsubstantiated" and "misleading". In most of the developed economies, including here in the UK there is no specific legislation that addresses greenwashing. Though the latest machine learning technologies like topic modeling have been implemented by Deutsche Bank (fintext.io, 2022) to detect greenwashing they are far from being 100% effective.

## 7. ESG Data providers

An increase in the integration of ESG Risks with mainstream financial decision making has led to an increase in sustainability related disclosures and paved the way for application of cutting-edge technology like Machine learning in automating the process of decision making. Existing fin-tech and software firms have diversified to include ESG-related offerings and new services and products have emerged out of this demand. A report (Mitchenall, 2023) suggests that the ESG data products market is currently priced at \$1.3 billion and the offering for private markets is expected to grow at a rate of 45% YOY.

The below table summarizes ESG data services offered by a few major market leaders.

Provider	ESG Services	Comments
Bloomberg	ESG disclosure scores Third-party scores New energy finance	Range of proprietary research and accessible third-party databases.

	Company-reported ESG data	
Sustainalytics	Company ESG rating reports. Portfolio ESG analytics. ESG data Carbon analytics. ESG risk ratings	Wide range of ESG services. Acts as a data source for other service providers (e.g., FTSE Russell, Morningstar)
ISS	ESG scores Proxy voting recommendations. Governance ratings	Mainly voting advice and G ratings. More recent expansion into E&S.
RepRisk	Company ESG reports ESG controversy monitoring	Algorithm web-based sources.
TruValue Labs	Company ESG reports Portfolio ESG analytics	Algorithm web-based sources.
Owl Analytics	ESG company rating reports. Fund metrics ESG indices Custom and general accounting risks Carbon analytics	wide range of ESG services. Several small providers acquired over ten years.
FTSE Russell	ESG ratings ESG custom and general Indices	Partnership with Sustainalytics on indices since 2019. Develops FTSE4Good Indices.
HIP	ESG company ratings ESG fund ratings	HIP = human impact + profit Focus on "impact"
Thomson Reuters	ESG company ratings ESG indices	Formerly the Asset4 Database.
Vigeo Eiris*	ESG controversy monitoring Company ESG ratings	Moody's acquired a majority stake in Vigeo Eiris in April 2019
Inrate	Company ESG ratings	
CDP	Carbon scope data E disclosure scores Environmental management assessment	Non-profit. Source E data for most providers
SASB	Materiality maps. Sustainability standards	Non-profit
Morningstar	ESG fund ratings. ESG indices	Uses Sustainalytics data.
Real Impact Tracker	ESG fund ratings	Certified community, publicly available.
Mercer	ESG fund ratings	Most major investment consultants assess ESG to some degree. Ratings are not publicly available.
S&P including Trucost	Credit ratings Water analytics Carbon analytics	ESG is considered. From Trucosts. From Trucost.

(Yeoh Ben, 2021)

ESG ratings provided by different agencies have been subject to controversies as well, for example, the electric car maker Tesla was dropped out of the S&P 500 index and Exxon Mobil which has been involved in multiple climate related controversies was listed in the top 10 for ESG performance (Kolodny, 2022). This apparently boils down to the weight different rating agencies add to individual Environment, Social and Governance pillars that make up the collective ESG score.



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