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ESG Rating Agencies:

A Comparison Between Different Methodologies



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*"There's some good in this world,
and it's worth fighting for"*

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Abstract

This thesis examines the methodologies, practices, and regulatory environment of ESG (Environmental, Social, and Governance) rating agencies, with a particular focus on the European sustainable finance ecosystem. The rapid expansion of ESG-related assets has transformed sustainability from a primarily ethical concern into a core component of financial analysis and risk management. In this context, ESG rating agencies play a crucial role by providing structured assessments of firms' sustainability-related risks and opportunities, thereby influencing both capital allocation and corporate behaviour.

The research reconstructs the historical evolution of ESG criteria and analyses the European regulatory framework, including the Sustainable Finance Disclosure Regulation (SFDR), the EU Taxonomy, the Corporate Sustainability Reporting Directive (CSRD), and the European Sustainability Reporting Standards (ESRS). The thesis highlights Europe's position as one of the most advanced institutional environments for sustainability reporting, largely grounded in the principle of double materiality.

The core contribution of this work is a comparative analysis of six major ESG rating agencies methodologies. The analysis identifies several areas of methodological convergence, such as the central role of materiality, the importance of corporate disclosure, and the integration of controversy monitoring. At the same time, it reveals significant divergences in scoring logic, weighting systems, governance evaluation, and penalties related to non-disclosure.

These methodological differences help explain the relatively low correlation observed among ESG ratings and the resulting fragmentation of the ESG ratings market. The thesis argues that ESG ratings can be interpreted as multi-criteria decision-support systems operating within complex socio-technical environments. Their credibility and effectiveness could be strengthened through greater methodological transparency and enhanced regulatory harmonisation, particularly in light of the forthcoming supervisory role of the European Securities and Markets Authority (ESMA).

Finally, the empirical comparison of selected firms illustrates both convergence and divergence in rating outcomes, suggesting that a certain degree of methodological standardisation may be both feasible and desirable in order to improve comparability and strengthen stakeholder trust.

Research Objectives and Structure of the Thesis

The European Commission has recently considered the possibility of establishing an independent European ESG rating agency with its own methodological framework. The objective of such an initiative would be to create a platform capable of providing more transparent and reliable sustainability assessments, while supporting the development of genuinely sustainable economic activities. This work has the main scope to review already existent methodologies, such a “competitors’ analysis”, trying to understand which features could be appropriate for the new one, and which are potentially damaging.

Against this background, the aim of this thesis is to analyse the current state of the art of ESG rating methodologies and to highlight the main differences among the scoring systems adopted by the most relevant rating agencies. These methodological differences often generate confusion among stakeholders and investors, who may struggle to identify which companies are truly sustainable or capable of generating long-term value while minimizing negative environmental and social impacts.

In order to conduct this research, a large body of academic literature was reviewed and several ESG rating agencies were contacted directly in order to obtain access to their methodological documents. These proprietary documents provide detailed descriptions of the scoring models used by each agency and allow for a more rigorous and comprehensive comparative analysis. In addition, institutional websites and regulatory sources were consulted to ensure the reliability and accuracy of the information collected.

The main research question addressed in this thesis is the following:

How do ESG rating methodologies differ across the most important rating agencies?

The thesis is structured as follows. First, the general topic of ESG investing is introduced, together with the historical milestones that led to the progressive integration of sustainability considerations into financial markets and public policy. The regulatory framework—particularly within the European Union—is then examined in order to contextualize the environment in which ESG rating agencies currently operate.

Subsequently, the main challenges and criticisms associated with ESG ratings are discussed, highlighting how the coexistence of multiple methodologies can generate confusion among market participants. Particular attention is devoted to the European regulatory framework, which aims to improve transparency, comparability, and reliability in sustainability reporting.

The core part of the thesis consists of a detailed analysis of the methodologies adopted by several major ESG rating agencies. The selection of these agencies is based primarily on their relevance in terms of market influence and assets covered. In addition to the major international providers, the Italian agency Cerved is also included in the analysis in order to provide a national perspective.

The methodological comparison seeks to explain why ESG scores for the same company may differ significantly across agencies. Access to proprietary methodological documentation was made possible thanks to the cooperation of the agencies themselves, which granted permission to analyse their internal frameworks. However, the comparison of final ESG scores was possible only for a limited number of agencies, as some providers make their ratings available only through paid subscriptions.

Finally, the thesis focuses on specific industry sectors. The selection of these sectors is based on existing literature, which identifies energy and finance as particularly critical industries from a sustainability perspective. The Software-as-a-Service (SaaS) sector is also included to illustrate how emerging industries are increasingly attempting to align their business models with sustainability objectives and to contribute to positive environmental and social impacts.

1. Introduction

There has been a surge in interest in ESG investment over the past couple of years; traditional credit and some more sustainable investments. A number of market data points confirm this sector's growing importance:

- Assets under management (AUM) increased to \$3.4 trillion in 2024 from \$1.4 trillion in 2018, out of which around 80% were European.
- There's been rapid growth in the European ESG linked bonds market rising from \$100 billion in 2018 to more than \$600 billion in 2023.
- Investor demand for ESG Themes investment has exploded^[1].

As a consequence of these facts, though classical credit agencies remained focused solely on business KPI, ESG agencies began to consider how firms could safeguard their economic business, however at a level that would matter less in the realm of world ecosystem^[2]. They have their own way to score a company, hence cause many challenges in different scale, and it's impossible to compare, it's impossible to analyse them, because they don't publish their aggregation methods, their indices or their parameters and most importantly, they often give very different results for the same company. The very core ESG rating agencies are not European, so it is important therefore that European Union

have a mechanism for giving these outputs that is equivalent to, at least, all European businesses. The European Commission, the body which commissioned ADALTIM (Algorithms and impact Data Lake for Transformative Impact Management), an ESF+ (European Social Fund Plus) project, has decided that it will fill the vacuum of a lack of market space, by setting up a new European ESG Rating agency with an independent rating model.

Although ESG ratings are a key tool for the sustainability movement, they experience a deep identity crisis, struggling to articulate their role in the world-to-be. On the one hand, this deliberate vagueness is in furtherance of the marketing interest of rating providers and asset managers and the political interest of regulators. But it also contravenes the independence of investors who are unaware of the true trade-off between monetary returns and social impacts. In this way there is also no well-defined single focus for which ESG ratings should be aiming and services are given that are less visible in the field. Moving toward sustainable economic models has become the supreme desire for markets, institutions, and regulatory agencies. ESG - the acronym stands for Environmental, Social, and Governance - is the core standard for assessing a company's environmental, social, and governance aspects, and its ability to generate lasting long-run profitability.

2. ESG

The concept of sustainability finds its classic formulation in the Report of the World Commission on Environment and Development (Brundtland Report, 1987), where it is defined as “the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs”^[3].

2.1 Environmental Pillar

In fact, the environmental pillar evaluates a company’s efforts to preserve the environment in terms of climate change mitigation and emissions reduction, and more specific green actions. Such has consequences on different financial KPIs according to studies conducted for years: for example, a positive impact on Tobin’s Q, an economic and financial index that asserts if the firm is under or overvalued, suggesting which actions are preferred by the managers; a negative impact on ROE, possibly because it results in increased costs for the business^[2]. Moreover, given the stringent European regulatory environment on environmental results, strict penalties are possible which may tarnish reputation and credibility. This pillar is the most developed by far since it is the first pillar leading to fulfilment of all ESG criteria. On the one hand, it has more metrics than the other pillars; on the other hand, it is the most agreed field during the rating process.



Figure 1 - E-pillar [Canva stock images]

2.2 Social Pillar

The social pillar encapsulates how a company views people and connections. Customer satisfaction, upholding data privacy and security, considering gender and diversity. According to some studies, it has a detrimental effect on ROE and ROA, hypothesizing the negative relationship related to increased costs associated with practicing socially responsible behaviour. On the other hand, an empirical discover affirms that exists a positive relationship between financial success and social responsibility. It seems that organizations which practice social responsibility reap financial rewards from more efficient operations^[2].



Figure 2 - S-pillar [Canva stock images]

2.3 Governance Pillar

The governance pillar discusses guidelines for managing a business in a responsible way. It addresses board composition, audit committee structure, bribery and corruption prevention, lobbying. Some studies show that it is favourably associated to Tobin's Q, maybe it is caused because effective

governance mechanisms reduce information asymmetry in financial reports, which is advantageous to investors and other stakeholders^[2].



Figure 3 - G-pillar [Canva stock images]

2.4 History

Environmental, social and governance (ESG) criteria are a system of standards for evaluating the business performance, in addition to traditional financial analysis. While ESG aspects originate from normative orientations, they are also assumed to have a greater role in analytical work in risk management and creation of long-lived financial value (Friede et al., 2015)^[4]. A strong understanding of ESG history is crucial for appreciating how these ideas are now used in business plan and finance as well as regulation. The origins of ESG issues go back to the rise of ethical investment which appeared in the mid-twentieth century, predominantly in the USA. Age-old investing, guided by religious and moral reasons screened out "sin stocks" in case of alcohol, tobacco, gambling and weapons investments (Renneboog et al., 2008)^[5]. Social and political events in the 1970s, like anti-Vietnam War and anti-apartheid in South Africa, opened the door for more widespread negative screening of investment practices. Shareholders, in particular, were systematically pushing out companies involved in questionable business practices.

By this point, responsible investments were predominantly driven by principles (Sparkes, 2008)^[6] and were still not substantially connected to financial analysis. As the latter part of the 1980s and 1990s saw a rising consciousness of environmental damage, industrial pollution, worker rights violations and corporate malfeasance, socially responsible investment expanded. A significant turning point came with the 1987 publication of the Brundtland Report, "Our Common Future"^[3], by the World Commission on Environment and Development (WCED). In the meantime, companies began introducing voluntary environmental management systems and Corporate Social Responsibility

(CSR) practices. The first socially responsible investment (SRI) funds were created, but the environmental, social, and governance variables were explored on a very different nature with no common metric (Carroll, 1999)^[7].

The turn began to take a radical change in the early 2000s, when global institutions began to bring sustainability to the fore of financial performance. In 2004, the United Nations conducted a joint dialogue with the institutional investors concerning how to bring environmental, social and governance issues into the financial markets. The final effort was to publish a document titled “Who Cares Wins”^[8], that year, with the United Nations and the company signalled the public announcement of the introduction of ESG with an emphasis on ESG issues being financially significant and fitting into financial valuations and evaluating risk. In 2006, the United Nations Principles for Responsible Investment institutionalized ESG integration even more deeply and required investors to incorporate ESG into investment decisions (UN PRI, 2006). The adoption of ESG standards picked up speed across financial markets from 2006 to 2015. ESG rating agencies and vendors developed more indicators and companies exhibited higher sustainability and non-financial disclosure in their reports (Eccles et al., 2012)^[9].

Investment techniques evolved from more exclusionary mechanisms to more sophisticated ones like:

- ESG Risk Integration
- Degree of personalization
- Active Ownership & Shareholder Engagement

This time is unique with respect to management engineering where ESG factors integrated in multi-criteria models of decisions/portfolio optimization and performance evaluation design. 2015 could be seen as one turning point in ESG methodology, due to two main international agreements relating to it:

- The Paris Agreement on Climate Change
- The United Nations 2030 Agenda for Sustainable Development, which also encompasses the Sustainable Development Goals (SDGs)

This increase in support for the ESG integration process, especially in response to system wide risks such as climate and social risks, made sustainable finance a matter of strategic priority in creating a sustainable and long-term economy. The development of ESG criteria represents a move from a moral-based-investment approach to a systematic and financially meaningful approach for sustaining value. ESG is now a crucial intersection of finance, corporate strategy and engineering management

in a multidimensional approach to assess efficiency, robustness and performance under complex social-technical systems.

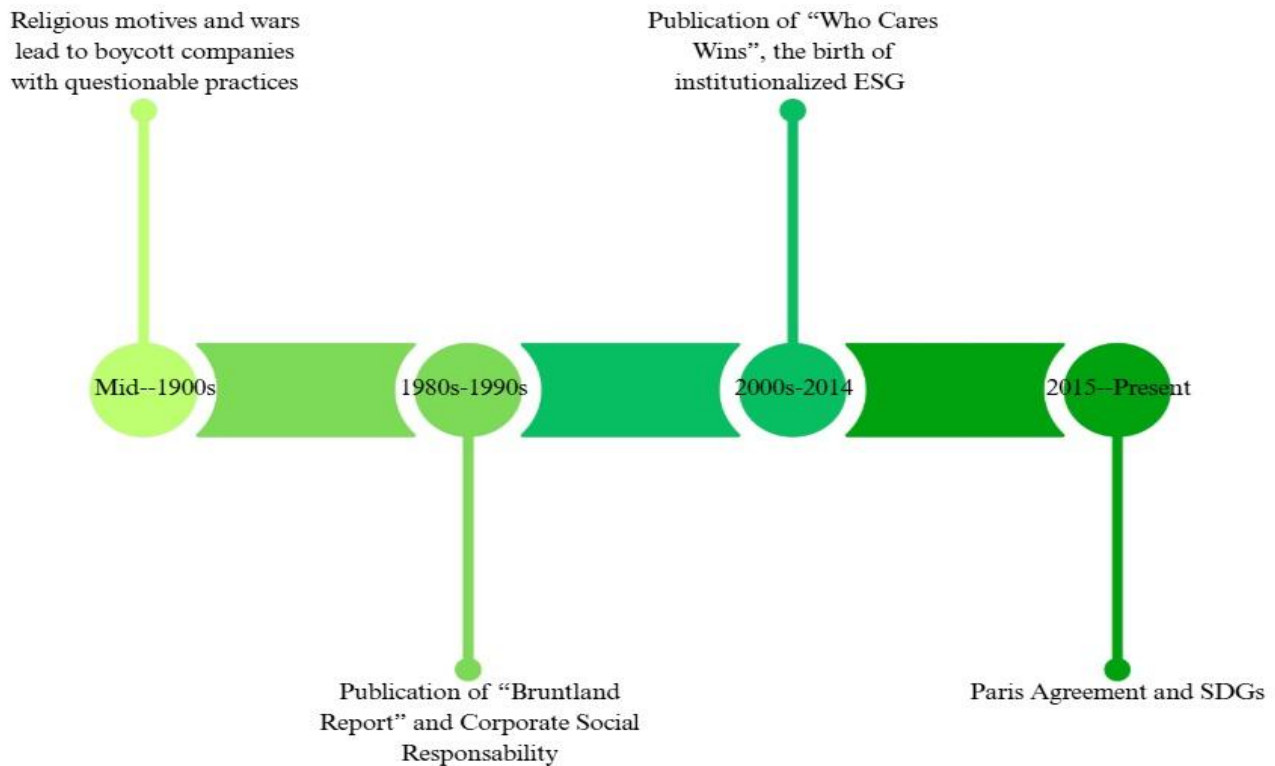


Figure 4 - Timeline of Sustainability's Companies [self-made]

2.5 European ESG Development

Europe also shows the geographic framework whereby the performance criteria of Environmental, Social and Governance are achieved as most advanced level of institutionalization in financial markets. Moreover, when compared to the market-driven paradigm adopted in the United States, it seems that European ESG standards are strongly oriented towards leadership in the public sector, progressive regulatory integration, and specific links among sustainability, financial stability and industrial policies. The basis of ESG in Europe is deeply embedded within a European socio-economic model, traditionally built on welfare state principles, such as:

- worker protection
- social dialogue
- government active participation in economic activity

Several European countries already in the 1970s and 1980s, notably the Netherlands, Nordic countries, and Germany, have led the way in approaches to ethical and socially responsible investment

that were often initiated by public and institutional pension funds (Sparkes, 2003)^[6]. Prior to the development of ESG as an analytical framework, Europe was at the spearheads of development and CSR. One of the major stages of this evolution was the Green Paper on CSR as authored by the European Commission in 2001, which specified what the role of ESG in this space should really be: *"the voluntary integration of social and environmental considerations into business operations and into relationships with stakeholders"*^[10]. At this time, sustainability was, essentially, voluntary efforts and reporting was qualitative and sustainability-related, but there was little evidence to indicate a link between sustainability and financial performance. Following “Who Cares Wins”, Europe rapidly assumed the central role for promoting ESG integration in financial markets. This was due in part to a strong European commitment to the UN Principles for Responsible Investment (PRI) strategy; a relentless push by large investment groups like pension investors in Northern Europe; and a new breed of ESG rating agencies with a European imprint. During this time, ESG factors have been systematically employed in risk assessment with a long-term orientation, governance analysis, and capital allocation.

3. European and International Regulation

In recent years, ESG factors have been increasingly seen as not optional choices, but as something that organizations must enforce in regulation in such a form that, in the recently coming years in the European Union, it has become mandatory. Some such regulations include the Sustainable Finance Disclosure Regulation (SFDR), EU Taxonomy Regulation and the Corporate Sustainability Reporting Directive (CSRD), which strive to harmonize ESG reporting by creating higher comparability of ESG information (European Commission, 2018). Despite widespread adoption, however, ESG frameworks have also experienced persistent concerns regarding variable rating, methodology discrepancies, and questions of greenwashing (Berg et al., 2022)^[11]. The evolution of ESG in Europe has marked a unique path in the European experience, marked through progressive convergence between sustainability, finance and regulation. From a voluntary business practice, ESG has been turned into an institutional part of the economic architecture in Europe, something that takes particular importance in management engineering, in which management of resources increasingly has to be shaped around environmental, social and governance issues.

3.1 ESMA Regulation

In November 2024, ESMA (European Securities and Markets Authority) published a report specifying the rules for ESG rating providers operating in the EU using a common guideline. The Authority will be the direct supervisor of ESG rating agencies providing their services on the continent, subject to the Regulation (EU) 2024/3005^[12]. Starting from 2nd of July 2026, this policy

sets out a framework for standards-oriented reporting that requires transparency, independence, and oversight from the public authority of ESMA to build their credibility as well as investor confidence. ESG rating providers must register their activities in a list, and ESMA will subsequently take the decision to concede or refuse to grant the permit. Yet it is not yet fully prepared and ESMA will offer additional details at a later time^[13].

3.2 Sustainable Finance Disclosure Regulation (SFDR)

The Sustainable Finance Disclosure Regulation (SFDR) is an EU regulation concerned with safeguarding or improving transparency of the information relating to the sustainability of financial products, to allow any type of investor, professional or private, to have reliable information and data and to decide in a conscious way. The regulation, combined with other European legislation, is intended to make it more conducive to moving capital into green and sustainable investments. Next, the most strategic and ambitious goal is to provide a financial landscape that promotes an eco-friendly economy through continuous pressure to embed ESG considerations in investments and performance reviews. The SFDR has the most impact on financial companies. As part of the Sustainable Finance Disclosure Regulation, these entities are required to provide a series of disclosures on any financial products and activities; therefore, any investor type is to be able to appreciate the degree of alignment with the sustainability goals in such products. In particular, the SFDR has its scope in three important informational domains:

1. the information related to sustainable investment objectives: in the form of ESG targets
2. the forms of sustainable investment policy/strategies, including a detailed and accurate explanation about how fund managers incorporate sustainability factors into their investment decisions
3. the assessment of sustainability risks: this category refers to the information that exists on all risk factors that could affect the return. One of the largest and the most publicized risk in the world relates to climate change, loss of biodiversity, deforestation, or abuse of human rights

Under the SFDR, the financial corporations must disclose publicly, concerning the inclusion of ESG in their investment policies. These disclosures should be explicit, transparent, and full, and reflect the extent of the financial products' ESG risk exposure as well as the concrete effects that investment decisions are subjecting those products to on sustainability^[14].

3.3 EU Taxonomy Regulation

The EU taxonomy is the fundamental tool of the EU's sustainable finance framework, and it serves as an important mean of transparency on the markets. The taxonomy helps direct investments to the

most economically necessary activities during this transition, thereby bringing with it European Green Deal objectives. The taxonomy is a classification of economic activities that are consistent with a net zero trajectory by 2050 and broader environmental objectives aside from climate. So that in order to meet the EU's climate and energy goals for 2030 and to fulfil the goals of the European green deal we also need to focus our investments on sustainable projects and operations. It requires both a common language and an understanding of what is sustainable. It is the reason it is necessary to develop a common classification and definition of sustainable development - a "EU taxonomy" (e.g. for sustainable economic activities) and the necessary system for financing sustainable growth, which is the target of the action plan on sustainable finance. In this respect, EU taxonomy provides a common framework between financial and non-financial companies to define the economic activities that can be considered environmentally sustainable. Its purpose is to provide clear definitions and principles based on the scientific information regarding the sustainable activities. Like this, it contributes significantly toward facilitating EU scaling up of sustainable investment, establishing investor security, safeguarding private investors from greenwashing, facilitating the transformation of companies towards climate, and preventing market fragmentation.

The Taxonomy Regulation came into force on 12 July 2020. It forms the basis of the EU taxonomy, as it determines the 4 overarching preconditions for an economic activity to be classified as environmentally sustainable. In the provisions, adopted under the Taxonomy Regulation, the Commission had to develop the actual list of environmentally sustainable activities under delegated and implementing acts determining their technical screening criteria for each environmental objective^[15]. It is built on six different objectives to figure out whether this activity:

- Providing a substantial contribution (SC) to one of the other six objectives
- Not adversely affect one of the remaining five objectives.
- Observing minimum social guarantees

Well-known ESG rating institutions like MSCI and Refinitiv, in particular, are benefiting from this taxonomy boosting their correlation rate in the E-pillar. Even so, despite that, S&P still lags far from having this target achieved therefore proves that taxonomy is very useful and, it is another very good tool yet not being used in the market^{[15][16]}.

3.4 Corporate Sustainability Reporting Directive (CSRD)

CSRD is the acronym for the Corporate Sustainability Reporting Directive, a European Union directive designed to enhance and standardize the communication of sustainability information by companies. It sets out an obligation for Public Interest Entities, large unlisted companies, listed Small

and Medium-size Enterprises (SMEs), and subsidiary and branch enterprises whose parent company is based outside the EU to report non-financial information. What it means is that it must be a major component of the Management Report and should include detailed information about how the business affects society and the environment and how sustainability factors impact corporate growth and performance. More specifically, the CSRD requires the corporate sustainability report consists of all pertinent information about:

- the business model — identifying the company’s plans that are going to help facilitate the transition to sustainability, the risks, the resilience to those risks, and the business opportunities on sustainability initiatives
- goals connected to sustainability matters and related achievements
- the role of administrative, management, and supervisory bodies in ESG matters
- intangible assets such as intellectual, human, social, and relational capital^{[17][18]}

3.5 European Sustainability Reporting Standards (ESRS)

European Sustainability Reporting Standards (ESRS) are the new cornerstone of regulation for corporate sustainability reporting in Europe. The ESRS aim to standardise the approach by which companies report on their environmental, social and governance (ESG) performance and provide a common language for companies, investors, authorities and citizens. They are a systemic tool for tracking and improving sustainable activities and importantly, for making ESG data comparable, dependable and transparent.

At the heart of this framework is the notion of double materiality, requiring an entity to account for both the environmental and social impacts created through their operations (impact materiality) and the financial impact that such consequences can create for the organization (financial materiality). This strategy provides an integrated process for a strategic evaluation of sustainability-related problems. Under the law, sustainability measures must be included as a part of the “sustainability statement” piece of the sustainability report. This means that this document is at the point of intersection between ESG communication and financial disclosure. The aim is to provide stakeholders with clear and coherent, demonstrable summaries of the company’s commitment to a sustainable transition. To adhere to the ESRS you will need to spend in collection and management of your data, internal training of staff, and to enhance reporting systems. Regardless, it also has strategic opportunities: increased market credibility and access to sustainable financial resources, the proactive management of ESG risks, and the strengthening of stakeholder trust^[19].

As it possible to appreciate later on, some ESG rating agencies are just introducing directives or regulations inside their methodologies. For instance, LSEG and MSCI are more applicated into transparency and standardized schemes.

Table 1 - The EU ESG Regulatory Framework

<i>Authority/Regulations/Directive</i>	<i>Acronym</i>	<i>Primary Focus</i>	<i>Management and Technical Objective</i>
European Securities and Marketing Authority	ESMA	Rating Agencies	The ESMA is still control financial agencies; ESG rating agencies will be included in its jurisdiction.
Sustainable Finance Disclosure Regulation	SFDR	Financial Institutions	The SDFR aims to enhance transparency on ESG products, and how ESG risks are integrated in them.
EU Taxonomy Regulation	-	Activities Codification	The main aim is to provide science-based rules to define and measure E-pillar with “just” six indices.
Corporate Sustainability Reporting Directive	CSRD	Company Reporting	The main objective is to include ESG, or general sustainability, reports in management reports, treating this information as crucial as the financial one.
European Sustainability Reporting Standards	ESRS	Standard Reporting	It is the technical part of the CSRD, defining how the reports will be drafted, introducing the concept of “Double Materiality”.

4. ESG Dilemmas

Despite the rapid diffusion of the sustainable investments, ESG criteria are characterized by a series of structural dilemmas that challenge their conceptual coherence, practical implementation and economic effectiveness. They are not just technical issues, but they become also political, reflecting deeper tensions between ethics and finance, regulation and liberal market, standardization and pluralism. As it is already mentioned, ESG development in different places followed a slightly

different process, leading to lack of objectiveness, absence of comparison and transparency. Today, ESG sector has to face various challenges, trying to become as similar as the traditional credit rating. According to the review of the literature, it is possible to list some of these problems.

4.1 Different Missions

ESG ratings have suffered profound identity disturbances, for they don't tell us what they are supposed to do. For one thing, this deliberate vagueness serves not only the marketing priorities of rating providers and asset managers; but also provides support to politicians. It violates the autonomy of investors, who find themselves unaware in practice who it really makes the return from investing, in other words the true trade-off between return money and benefits to society. Right now, ESG rating agencies appear to be serving two different ends:

- **Financial mission**, which can inform only from a purely financial viewpoint of risks and rewards derived from ESG elements. They treat ESG factors as simply a more sophisticated version of value analysis that helps to maximise risk-adjusted returns without experiencing abnormal returns. But there's no evidence that portfolios based on public ESG ratings actually outperform the market on a risk-adjusted basis. This confirms efficient market theory: if an increase in ESG improves expected cash flows or decreases risk, then in evaluation process, market immediately includes this information into price. Even without these financial results, ratings may still include key information about a company's underlying value. Focusing on strong ESG performance can lessen future regulatory risk (like Carbon Tax) or enhance brand image. In the end in pursuit of the best ESG score then they may, in retrospect, revise some performance without the right activity to predict it.
- **Prosocial mission**, whose focus is mainly to guide impact investors who choose to provide part of their returns to contribute to impact on social and environmental good. Investors provide subsidies with the greenium, which is the best social performance, companies. By taking part in a social action the company's value is higher in its market and cost-effective, these savings can then also be redeployed into positive ESG performance enhancing and virtuous circle to support the sustainable growth of the company. But whatever the meaning of the second mission, which is seen as the most sustainable one in any case, it must overcome numerous pitfalls that diminish its value:
 - a) Market dilution: financial investors tend to reject the premium expected to develop by prosocial financiers.

- b) Arbitrage limits: the “greenium” creates an arbitrage opportunity favouring the sale of green securities and the purchase of brown securities that reduces the price spread and results in lower but worse performance in ESG.
- c) Agency costs: the high market evaluation benefits do not inherently lead to improved corporate behaviour due to contrasting views between shareholders and management.

The first problem is the political issue of aggregation, the often divergent ethical and social interests of their users. The goal the company is striving for must be common not just internally, but between companies looking to capture the most value as far as possible. Second, we need an incentive system which maximizes the actual benefit from investors' limited resources, without generating perverse behaviours such as the arbitrage of brown assets^[20].

Table 2 - The Antithesis of The Missions

	Financial Mission	Prosocial Mission
Main Target	Maximize risk-adjusted returns and enterprise value.	Generate positive impact in all the three pillars.
Main Scope	Another tool to gain a more sophisticated financial value analysis.	Investors provide economical contribution to gain better performances.
Benefits	Risks mitigation.	Savings from social actions are reinvested in sustainability.
Constraints	ESG is already considered as the total fair value, not providing better returns.	Green assets lead to encourage brown assets, which means just greenwashing.
Risks	Inaccurate prevision of performance.	Different point of views between management and stakeholders.

4.2 Aggregate Confusion

International sector ESG ratings are performed by a number of agencies around the globe. The main ones are LSEG Data & Analytics (formerly Refinitiv, until 2019 when it was sold to London Stock Exchange Group, LSEG); Sustainalytics; S&P Global and MSCI (see Morgan Stanley Capital International); Moody's ESG. The number of sustainable investments is reported to have been over 100 trillion \$ in assets under management.

The correlations between the providers are unfortunately surprisingly low, on average around 0.54 and a range of 0.38-0.71 despite the huge number of dollars in sustainable investments. These differences make the value, and hence, investors' confidence and market indices' credibility low, making it less interesting to select to invest in this type of investment. Different authors tell us that it's not a purely technical problem but the collection and reinterpretation of information. One might categorize some of these differences along three overarching vectors of divergence in scope, measurement, and weights^[11].

4.2.1 Scope

Each rater decides to decompose the ESG performance construct into different indices and group them into their own framework. After the first decomposition, each agency uses different sets of dimensions (it is not just E-S-G dimensions). In terms of depth of analysis, firms apply a variety of parameters that complicate the analysis, for example, the variation of the parameters could be anywhere from roughly thirty to over two hundreds. Some categories are fully or partially shared by different agencies; sometimes, there is only one agency who has that kind of sector, which means that other agencies do not consider it as a potential ESG field to be analysed. As a result of this, it becomes clear that agencies can never be comparable because they collect data fulfilling their own taxonomies^[11].

4.2.2 Measurement and Weight

Investigating measurements ultimately gives us the mentioned correlation rate: It measures the degree of interrelationship between various ESG rating agencies across several indicators. This suggests that divergences compensate for each other to some extent with aggregation. It might have multiple correlations: different scores act like noise of some latent quality. ESG rating agencies give different degrees of weight to parameters and indices if they are concurring, resulting in divergent outcomes. Besides, as an addendum to the missing categories, as mentioned before, it must be noted that this assumption produces findings that need some modification. These divergences complicate both for investors, who find difficulties to reliably assess ESG performance, which is increasingly relevant in the international context, and for companies, which receive conflicting feedback depending on which agency has been consulted, thus preventing adequate rewards for the achievement of ESG objectives^[11]. The image below represents a clear circumstance in which ESG rating agencies at the end share very different final scores: they could share indicators, but they weigh differently; some indicator is missing or it is measured aggregating different elements. This is one of the problems that lead to different final ESG scores or, worse, similar ESG final scores which mean completely different results for ESG rating agencies.

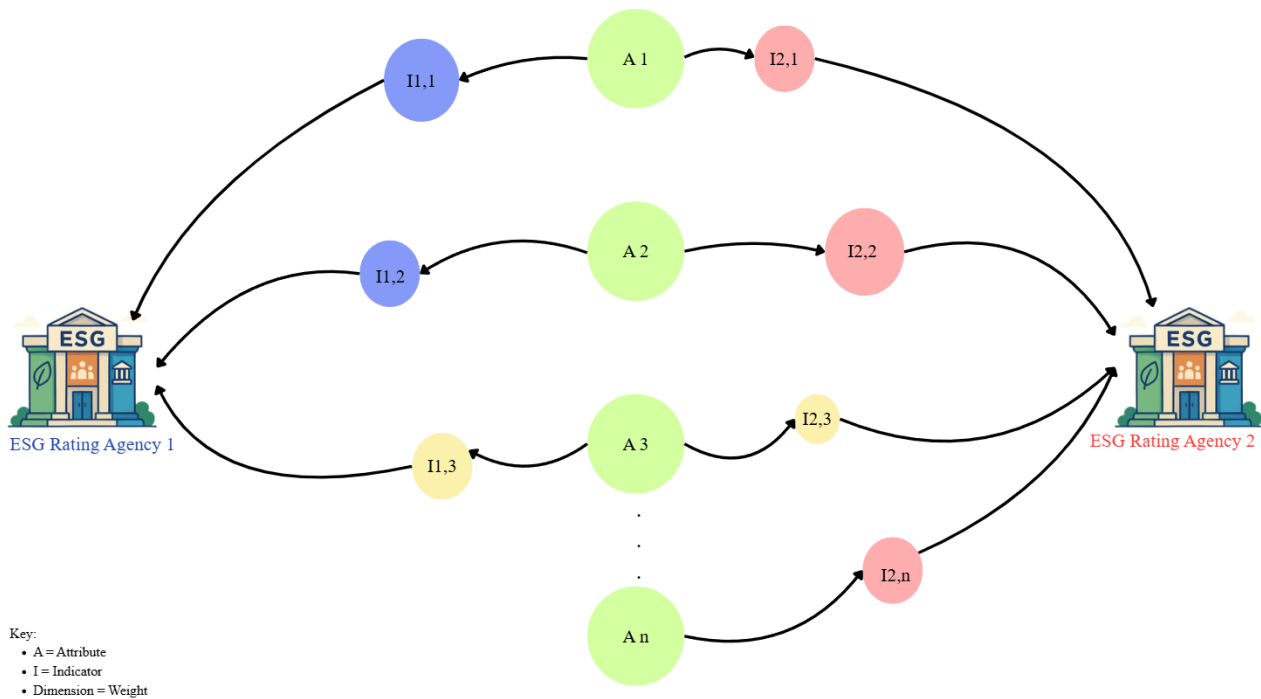


Figure 5 - Aggregate confusion of ratings [Canva self-made, inspired by^[11]]

4.3 Lack of Standardisation and Transparency

These agencies depend on heterogeneous methodologies which use various indicators, weighting schemes and data sources, which leads to a weak interrater correlation and substantial discrepancies between the scores assigned to the same firm. That is to say, only 24% of cases have an exact assessment from one agency to another^[11]. Mainly, this heterogeneity is based on the fact that there are not widely accepted ESG definitions and standards because ESG dimensions are more complex than financial categories, leading to a high degree of subjectivity in the assessment method.

Due to the dilution of the investor impact that can be seen from many statistical studies, it has proved very difficult to standardise in the construction of ESG indices that vary in composition from one type of company to another. This results in the index fragmentation that allows each agency to decide which is the best framework in order to fill the firms. Both these two cause a huge issue: the dilution of investor impact that disrupts the stability of asset prices. Agencies often depend on a combination of sources, including company reports, sometimes interspersed with direct interactions with companies. However, the absence of the aforementioned process of standardisation and transparency erodes the credibility and effectiveness of ESG ratings as instruments of investment decision-making and risk management with increased opportunities to act unethically with the result in greenwashing decisions and behaviour^[21].

5. ESG Rating Agencies

Focusing on the major actors who are involved in this process, in other words to evaluate ESG criteria and give a mark to a firm, it is important to introduce some of the most famous and important agencies in this field, which are almost the same which are involved in the financial evaluation. It is important to highlight that most of the following agencies depicted were not made for positive impact and, actually, they did various merges and acquisitions to beat the competitors, including know-how and databases and models.

5.1 Origin and Evolution of ESG Rating Agencies

ESG rating agencies have developed alongside the broader change in socially responsible investment (SRI) and, more recently, sustainable finance. The first non-financial evaluation mechanisms arose in the 1970s, and the ethical screens were mostly negative. But these early efforts did not rely on uniform methods, nor on systematic collection of data (Sparkes, 2008)^[6]. This growth occurred at the base of the modern ESG rating industry, developing during the late 1990s and early 2000s, as attention to corporate social responsibility (CSR) rose, globalization of the capital markets happened and institutional investor demand for formalized non-financial information grew. Such progress was further facilitated by the introduction of the Dow Jones Sustainability Index in 1999, which represented one of the initial efforts to embed sustainability measures into mainstream financial indices (Eccles, 2019)^[22].

The ESG scores first appeared as niche ethical ratings, however, they have since evolved into sophisticated analytic instruments designed to measure companies' exposure to environmental, social and governance issues. This evolution accelerated even further after the 2008 global economic crisis, when the significance of governance failure and systemic risk management emerged as more apparent. In recent years regulatory developments (notably in the EU) have also highlighted the strategic importance of ESG information, resulting in a rapidly growing and professionalized ESG rating providers.

5.2 Major ESG Rating Agencies at the International Level

The ESG rating market is concentrated in the hands of few players (mostly international ones) with a growing amount of specialised or regional competitors. Prominent international agencies include MSCI, Sustainalytics, S&P Global and LSEG, but many more exist because the importance of the field grew up fast.

5.2.1 MSCI (Morgan Stanley Capital International)

The Morgan Stanley agency became part of the ESG landscape in the late 2000s and early 2010s once sustainability considerations were starting to migrate from the edge of ethical investing to the mainstream of financial analysis. For this reason, MSCI acquired KLD Research and Analytics, the pioneer of social and environmental ratings, acquiring ESG skills, data sets and analytical framework that had previously been external to mainstream finance. MSCI did not treat ESG as an ethical overlay, but as financially material risks and opportunities evaluated against industry peers. This framing was consistent with increasing institutional demand and regulatory pressure to integrate ESG in a systematic manner. By integrating ESG ratings into its current analytics and index products, MSCI operationalized sustainability data for their big investments. MSCI ESG Ratings seek to reflect a company's ability to withstand long-term, industry material environmental, social and governance risks. The focus is on financial materiality, and this methodology is currently used by institutional investors or asset managers^{[22][23]}.



Figure 6 - MSCI Logo^[25]

5.2.2 Sustainalytics Morningstar

Sustainalytics, which was founded by the amalgamation of multiple ESG research and rating companies such as Jantzi Research, a Canadian entity, with the objective to provide ESG insights, corporate sustainability research, and advisory services to institutional investors, was established in 2009. Because of the expansion into Europe, it began collaborating with the Dutch Sustainability Ranking (DSR), in 2003 forming SiRi (Sustainable Investment Research International) Group. In 2005, they bought the Spanish research company AIS (Analistas Internacionales en Sostenibilidad), capturing Latin American markets. Sustainalytics also embarked on a geographic expansion, launching in Singapore to participate in Asia. Morningstar, an investment research firm publicly traded as of 2016 that provides data, ratings and analytical services in the public and private capital markets, gained a 40% stake in Sustainalytics in 2016. They built the score and ratings tool based on

integrated ESG data into their product's structure. Sustainalytics studies ESG risk evaluation via assessment of unmanaged ESG risk. Its structure also ties together ESG features directly alongside potential financial impacts, which may be of particular value concerning risk-based capital investment strategies^[24].



4

Figure 7 - Sustainalytics Logo^[26]

5.2.3 S&P (Standard & Poor) Global

Among the latest ESG rating agencies in the market. Founded in 2012, S&P Global's first major step happened in 2019 when it purchased RobecoSAM's business in ESG ratings. S&P Global ESG Ratings are based on the Corporate Sustainability Assessment (CSA) and are heavily influenced by data from company reports collected and responses to questionnaires. They also marked a shift from ESG indices to company-level ESG scores and enabled ESG analysis to scale across thousands of global companies, allowing ESG ratings to become a core analytics product. It focuses on the assessment tool of risk and opportunity, a tool that can be associated with capital allocation, trying to be more compatible with ISSB (International Sustainability Standards Board), a framework established by IFRS (International Financial Reporting Standards) Foundation for a standard framework for the firm evaluation^[27].



Figure 8 - S&P Global Logo^[27]

5.2.4 LSEG (London Stock Exchange Group) Refinitiv

LSEG began with index-based responsible investing as the basis for ESG activity. A key early cornerstone was FTSE Russell, which started developing ESG and governance indices back in the early 2000s drawing on corporate governance standards, inclusion or exclusion screening and transparency principles. By this point it was already known the LSEG had focused predominantly on norm-based screening, such as human rights or labour standards, with standards closely aligned with institutional asset owner needs. Reuters spun off its division in the 2010s and became consolidated under Refinitiv, a combined entity that collected ESG disclosure data. It created one of the world's largest ESG databases, covering thousands of public companies and using publicly disclosed information and a transparent, data-driven approach based largely on public disclosures. They wrote heavily on data availability and comparability, including separation of E S and G pillars, attempting to utilize abundant number of reported metrics. In 2021, LSEG bought Refinitiv, broadening companies in its sector to include fixed income, sovereigns and private assets. Now integrated in LSEG, Refinitiv ESG coverage is the most comprehensive and transparent option offered, delivering raw ESG metrics, so users can construct their own personal assessments. These bigger providers are joined by a handful of new agencies and niche firms too helping to diversify ESG analysis, particularly in niche areas or markets^[28].



Figure 9 - LSEG Refinitiv Logo^[28]

5.2.5 ISS (Institutional Shareholder Services) ESG

Founded in 1985, the Institutional Shareholder Services group of companies (ISS) provides data, analysis and insight that enables investors and firms to build for sustained growth. ISS, a majority owned enterprise by Deutsche Börse Group and the ISS senior management, provides companies with global services like market intelligence services, market intelligence services, events and editorial content, all to the benefit of institutional investors and corporations. ESG solutions allow

investors to create and incorporate responsible investing policies and practices; participate in responsible investment decisions; and track portfolio company practices through screening solutions. It also offers climate data, analytics, and advisory services for financial market participants to help them better understand, measure and act on climate-related risk within all asset classes. Moreover, ESG solutions provide corporate and country ESG research and ratings that allow its clients to identify significant social and environmental risks and opportunities. Through successive acquisitions, they became one of the most significant ESG rating services providers among institutions^[29].



Figure 10 - ISS ESG Logo^[29]

5.2.6 Cerved Group S.p.A.

It was founded in 2009 by two private equity funds: Bain Capital and Clessidra. Through the years, it acquired different strategical firms, collaborating with banks and other funds. The ESG Rating service provides an assessment of sustainability performance through the analysis of sustainability reports or non-financial statements prepared in accordance with the Global Reporting Initiative (GRI) non-financial reporting standards. It integrates algorithmic evaluation of ESG performance contained in sustainability reports with qualitative analysis conducted by analysts, while also providing benchmarking within the relevant sector. It is the first in Europe for number of Rating Corporate released, the sixth in Europe for share market and the first in Italy. It counts more than 2.500 ESG Rating assessments or scores. It collects more than 600.000 ESG GRI datapoints^[30].



Figure 11 - Cerved Logo^[30]

5.3 Business Models of ESG Rating Agencies

ESG rating agencies operate in a different manner compared to more traditional credit rating agencies. They operate on a business model in which people who invest money, such as asset managers and financial intermediaries, pay to receive ESG data and ratings. These methods of working are considered better because they avoid problems with parties that have interests that are not the same. It is much better than how the people who issue the things being rated pay for the ratings, since that can cause issues^[11]. These services may be complemented with additional items such as advice or feedback from companies to help them align more closely with their needs. The companies being rated eventually can purchase reports from these organizations, to put the information out to the public. Moreover, they can also purchase other companies' rate from the agency when they try to judge competitors.

Now, these services do not necessarily impact the ratings the agencies issue by the time they're given. People are concerned there could be indirect troubles: they feel the agencies might not be completely independent when they are distributing ratings because they are paid. Despite that, all firms that are rated by the same ESG rating agency buy that data, like the others do. It's not an inner problem, but definitely an outer problem, because prices are always the same, but also the rating methodology is quite different, so it can be difficult to put more weight on a better firm than another. The ESG rating industry is also characterized by high entry barriers such as the costs of data acquisition, methodological complexity, and reputational credibility. Thus, we continue to feel a serious sense of market concentration and there are questions of competition, transparency and accountability throughout the industry.

5.4 Data Sources and Information Collection Processes

Investors require readily accessible, comparable and meaningful ESG metrics to create the integration of sustainability criteria in decision making as we move forward. These attributes are influenced by

several elements, and the absence of any of them may present different challenge in a number of ways:

- Regular availability of ESG standards is crucial for achieving full sustainability performance measurement of indicators. However, availability of metrics has a great impact on topics depending on the variable of the material, for example availability and confidentiality and it is also affected by the extent of the standardisation of the issue. Availability is also affected by the size of a company and the geographical location where it operates
- Companies' sustainability performance should be measured by such a comparative set of criteria that could serve as credible benchmarks that can be applied to various parts of the globe, and their operating context is considered. Another point of contention for organizations and institutions in this area is the need to make certain that all stakeholders, including data providers, understand different topics -- and what these topics mean for the performance against such topics -- in order to help drive data comparability. Conversely contradiction exists, as the actual definitions or perspectives of performance are different, leading to inconsistencies in measurement
- Last, ESG metrics must be meaningful; in other words, they must help to better comprehend the performance on issue. ESG metrics are common proxies and can be used to better characterize business performance. The correlation between a selected proxy and the underlying performance it represents determines the reliability and validity of the ESG metrics and associated datasets^[31].

As far as data collection goes, each ESG Rating provider uses a different approach and one method that is often an amalgamation of the objective and subjective, e.g. ESG reporting or firms' surveys; in general, it can be affirmed that data driven reporting by the firm is the most widely accepted way to deliver the rate. When this information is not enough in a report, ESG rating providers can make some metrics on the back of indirect tools (notably newspaper reports, websites or some authorities) based on indirect sources and measure ESG rating sources alone. ESG rating companies use two different routes for collating ESG information that contribute to their rating products. The method of data collection does not preclude such methods of data collection. These can be broken down into "internal" and "external" methods:

- Internal Data Collection (or Active Data Collection) is reliant on companies actively completing a questionnaire or survey about the varying ESG topics that the rating product measures. In general use, such questionnaires have company providing supporting materials to support their claim (such as human rights policy, climate transition plans and water

consumption records). Some ratings permit the company to include confidential material, not openly available to the public

- External Data Collection (or Passive Data Collection) is done without a bilateral engagement and participation of the company being rated. It may occur from automatic scraping of media, statutory and legal filings, companies' sites through computerized systems or media-related information sources. It also routinely contains extensive data from qualitative ESG analyst assessments. This approach is based on publicly accessible statistics

In their interviews with ESG rating providers, all of them, at some level, use external methods of collecting data from public sources at least. It is worth noting that two rating products exclusively depend on external data collection methods (i.e., sourcing metrics purely from publicly available sources), whereas the other products rely on both internal and external collection methods. These providers even reported reaching out to firms for inputs ahead of sending out ratings, with additional questionnaires or surveys^[31].

Table 3 - Differences between active and inactive data collection

	Active Data Collection	Passive Data Collection
Engagement Type	Companies are involved in and participate to the final rate	Performed independently without help's company
Method	Questionnaires and surveys	Web scraping, media monitoring and analysis of legal documents
Mains Sources	Transition plans, internal records of companies, HR policies	Public sites, news and media information
Data access	Both public and confidential materials	Every data publicly accessible such as statistics and information
Analysts	Verifying documents provided by companies	Very detailed assessments
Advantage	High detailed access to non-public data	Greater transparency and objectivity

5.5 Definition of materiality

Adding the value of different conceptions of sustainability, the definition of materiality is also highly associated with social roots in each of our cases. Here also we see the traits of values- and value-based firms, for the former looks at a wide range of significant audiences and stakeholders and therefore defines materiality as externality, while the latter takes account of shareholders and defines materiality in terms of long-term financial returns and firm performance^[24]. The materiality approach of ESG rating providers in evaluating companies' ESG performance are diverse. The ESMA, for example, emphasizes two kinds of materiality:

- ESG risk ratings derived from the concept of financial materiality. They gauge the companies' financial exposure to ESG risks and opportunities, and the extent to which these risks are managed
- ESG impact ratings derive from impact materiality, measures the effect of companies' actions on ESG issues, or people, planet, and society

In interviews with ESG rating providers, five agreed their rating products were taking a “financial materiality” approach to assessing companies' exposure to and impact of financially material ESG risks. Two ESG rating providers mentioned that they adhere to a “double materiality” approach, in which the company's capacity to manage financial ESG risks and opportunities is balanced with their capacity to manage their material effects on people and planet. One product in scope had noted adopting only an “impact materiality” approach, that is, assessing business impacts on people and planet. In practice, the distinction between “risk” and “impact” ratings may be narrower, for they use the same set of ESG measures, focusing on risks of and impacts on ESG issues, as well as risks to and impacts upon ESG elements. Some risks, impacts and opportunities for ESG, also, are composite of the above-rated types. For instance, controversy-based metrics tend to have ties to both reputational risk for a company as well as impacts on people and planet. The same goes for several input-based metrics that measure a firm's capability to manage financially material ESG risks, which can be used to determine whether the firm can also identify or preclude impacts on people and planet (e.g. upgrading plants to reduce exposure to climate hazards might also alleviate physical impacts on staff).

Eventually, alternative materiality paths may produce similar investment strategies and similar outcomes such as exclusion or divestment from high-risk companies (Larcker et al., 2022). Materiality considerations likewise should be considered at the scoring phase, which is outside the scope of the present report. For instance, materiality weighting is a measure we can use depending on the financial materiality of risk, and that is thought to matter to any industry, product or geography. Just like the time horizons estimation related to materiality (how long any risk is perceived to be

material), are determined from the time periods in which financial consequences are perceived. Similar considerations are frequently used at the scoring level^[31].

These differences are one of the major problems in the industry sector because the materiality establishes the initial aim to do a proper rating. Considering the standards pointing to different targets there is an issue at the roots of the problem, leading to a fragmentation of the resources invested.

6. Empirical analysis of ESG rating agencies

This chapter presents an empirical investigation of ESG rating agencies with the aim of assessing their role, consistency, and informational value within financial markets. The empirical analysis focuses on the comparison of ESG methodologies provided by different rating agencies, examining which strategies are implemented in order to be more competitive and observing international laws. To affirm that it is used an owner document for each agency described. This analysis will lead to compare different categories of rating, in order to find some leak to insert a new framework compatible with all the European standards, for which some results are very contrasting. The principal aim is to show if there is a chance to get some parameters or indices aligned between various agencies. Although ESG ratings become more important year per year, still the certification does not have a legal meaning, unless some institutions need it to impose a penalty, it is just a sophisticated tool to have a better value in terms of price value.

The choice is based on the importance and the huge value assets these companies have. Each of them presents unique characteristics which are, sometimes, quite divisive because they create divergences.

6.1 MSCI

The first agency analysed is Morgan Stanley Capital Index (MSCI), which is concerned both with the risks and opportunities of ESG pillars. Ratings are rated on a global seven-band scale that ranges from AAA: the highest, to CCC: the lowest, to come up with a total of 7 categories of ratings. Each firm is assessed on two to seven environmental and societal key issues (33 in all and different aspects) considered therein for each group. These are rated from 0 to 10, being ability to face risk or opportunities.

Letter Rating	Leader/Laggard	Final Industry-Adjusted Company Score
AAA	Leader	8.571* - 10.0
AA	Leader	7.143 – 8.571
A	Average	5.714 – 7.143
BBB	Average	4.286 – 5.714
BB	Average	2.857 – 4.286
B	Laggard	1.429 – 2.857
CCC	Laggard	0.0 – 1.429

Figure 12 - The final Industry-Adjusted Company Score mapped to a letter rating^[32]

3 Pillars	10 Themes	33 ESG Key Issues
Environment	Climate Change	Carbon Emissions
		Climate Change Vulnerability
		Financing Environmental Impact
		Product Carbon Footprint
	Natural Capital	Biodiversity & Land Use
		Raw Material Sourcing
		Water Stress
	Pollution & Waste	Electronic Waste
		Packaging Material & Waste
		Toxic Emissions & Waste
	Environmental Opportunities	Opportunities in Clean Tech
		Opportunities in Green Building
		Opportunities in Renewable Energy
Social	Human Capital	Health & Safety
		Human Capital Development
		Labor Management
		Supply Chain Labor Standards
	Product Liability	Chemical Safety
		Consumer Financial Protection
		Privacy & Data Security
		Product Safety & Quality
		Responsible Investment
	Stakeholder Opposition	Community Relations
		Controversial Sourcing
	Social Opportunities	Access to Finance
		Access to Health Care
		Opportunities in Nutrition & Health
Governance	Corporate Governance	Board
		Pay
		Ownership & Control
		Accounting
	Corporate Behavior	Business Ethics
		Tax Transparency

Figure 13 - MSCI ESG Ratings Key Issue hierarchy^[32]

The extent of understanding the score is determined by the extent to which it refers to risks or opportunities: in terms of risks, the higher the score, the more the company can handle risks, the better decisions it has taken to face those risks; regarding opportunities, a higher mark means a more favourable presence in the marketplace and the capacity to meet the demand. By contrast, Governance

pillar is identical with each pillar, given the difference between what is best practice generally and within that company. Sometimes, the companies will be well-positioned into their market to accurately predict how to supply the goods and services which contribute positively on the first two pillars. It works first with a hierarchical structure in which are modelled all ESG pillars and their subcategories.

- Environmental pillar is divided into 4 themes (from climate change to environmental opportunities) divided into smaller 13 key issues, attempting to cover as much as possible the different visions of the various Themes.
- Social pillar is broken down into 4 themes (ranging from human capital to social opportunities), which are distilled into 14 different key issues.
- Governance pillar is split into only 2 themes (corporate governance and corporate behaviour), being further divided up into 6 major issues.

The final assessment is made using a score calculated by normalizing the Weighted Average Key Issue Score (WAKIS) with respect to the ESG rating, this term being “Industry-Adjusted Company Score”. In addition, WAKIS entails the Governance pillar score, an absolute measurement (ranging from zero to 10) and attempting to deduct information from the corporation itself.

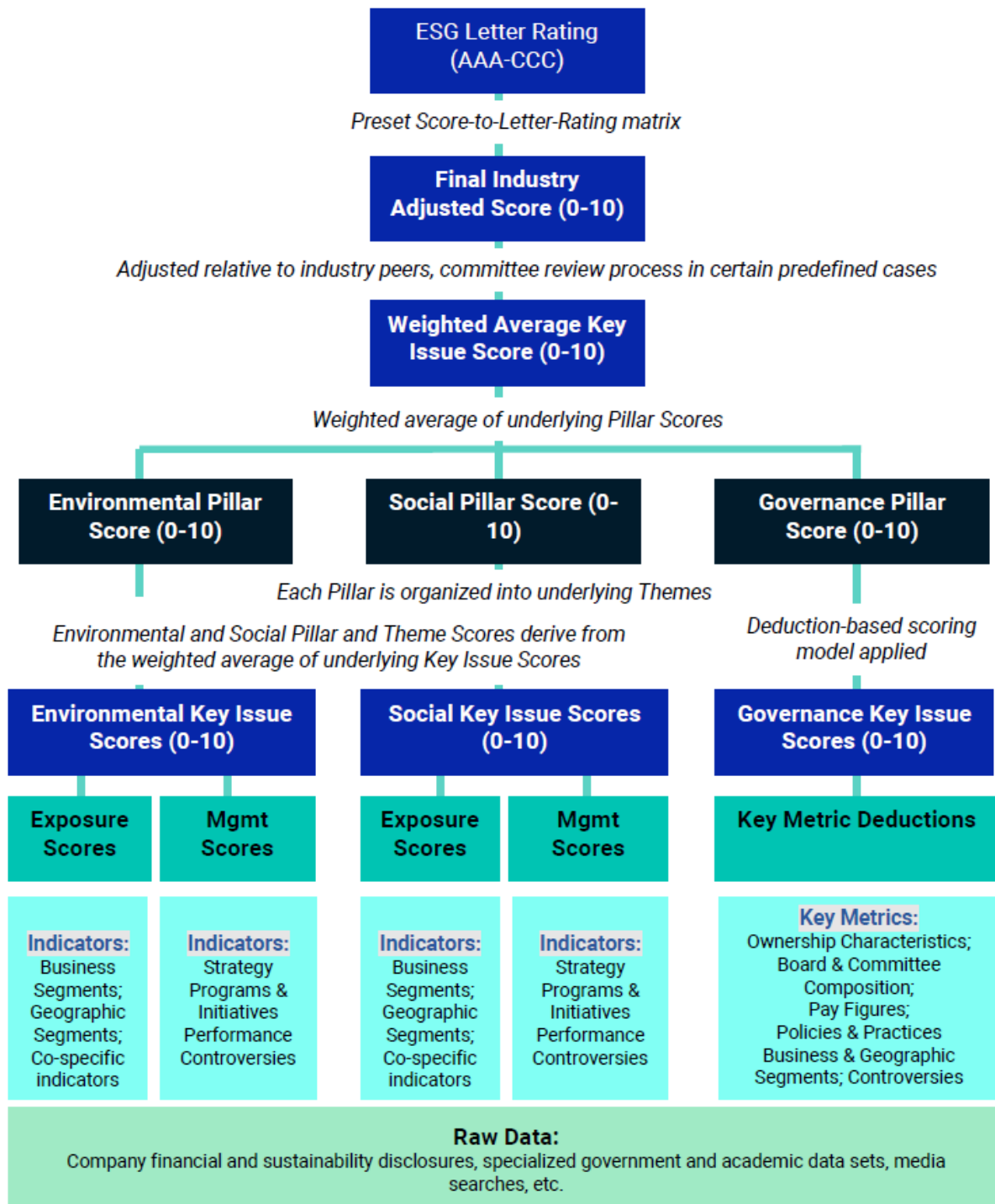


Figure 14 - Hierarchy of ESG Scores^[32]

In certain cases, supplementary scores, those may exist that do not influence an ESG assessment but are simply WAKIS values for each theme (pillar) or WAKIS for each pillar, can even be collected to aid scores at the other level. Each theme has its own additional scoring for the Governance ones. Firstly, it is essential to identify ESG's main concern, identifying the relevant and appropriate ESG risk and opportunity, thus finding relevant ESG issue. They were chosen based on Global Industry

Classification Standard (GICS) standards, which were given to S&P Global, the Global Sector Analysis Initiative for Business Analysis (GICS). MSCI ESG Research uses an organized process to track corporate ESG exposure. The business segments of the companies were categorised through the SIC method (Standard Industrial Classification) and industry-specific adjustments were applied, and then the segments associated with standardized business activities were assigned. Each item is scored by a 0 – 10 level Business Segment Exposure Score, reflecting the overall level of externality formed for different ESG Key Issues. The scoring approach uses quantitative industry data from recognised sources such as International Labour Organization (ILO) and Occupational Safety and Health Administration (OSHA) for quantitative scoring. These intensity metrics are normalized into their relative rank to produce exposure score. A company's Business Exposure score as a whole is the average of all its individual Segment Exposure Scores, based on their sales, assets or operations. MSCI ESG Research next ranks all 163 GICS sub-industries on every Key Issue using the Mean Business Segment Risk Exposure scores of all listed companies. For preserving coherence, they are reviewed once a year to confirm that important issues are still relevant and relevant. Following the mapping phase, the setting phase begins, deciding how the weighting of the key issue and their contribution is applied to this and determine the weight as the key issue within the main issue. For the overall E- and S- rating, it could be from 5% to 30% weight based on the sub-industry.

For Governance pillar, however, we set weight at the highest category based on the long/high contribution over the years. For all the three pillars, one needs to consider the contribution on the externalities as a function of available data from MSCI ESG Research analysis. This setting is key to the rating because that is where the ESG Methodology Committee has to sign in. The third phase is more practical, beginning with the risk analysis, explaining the risk exposure and the relative administration. For an even higher risk exposure it must equate to a much higher and more vigorous mitigation. On the other hand, if the exposure is low, it may also seem unclear what the strategy is. The MSCI's model takes three different exposures into consideration:

- *Business risk*: revenue, assets or operations. This part is evidently related to the dimension of the company and its sector; finally, the value will be weighted
- *Geographic risk*: assessing the preceding factors but grouped within a specific market segment. It becomes relevant only for elements of interest, given also that different regulations exist, particularly regional ones, and the role of the state in the matter
- *Company-Level risk*: how big is this company and why. This means exposure scores from 0 to 10, with 0 being the least exposure and 10 meaning the highest to key issue. The weighted

average Business Exposure Scores for each business line by percentage of each item, combined if relevant with company-specific factors and multiplied by geographic value

After all that, the risk management must be assessed for mitigating the risk exposures. It is fixed in the three categories; strategy & governance; initiatives & programs; performance. The first concern relates to the organizational capability and willingness to deal with the main risks and opportunities. The other is related to the capacity and extent of the practical steps required as an unavoidable reaction to an exposures event. The final one assesses the potential to gather, flag and evaluate the indicators that can trace the appropriate path to evade risks or confront them in a sensible manner.

Both risks and opportunities are calculated with the following formulas, constrained from 0 – 10 and rounded to one decimal:

$$\text{Key Issue Score [Risk Key Issues]}^{[32]} = 7 - (\text{MAX}(\text{exposure}, 2) - \text{management})$$

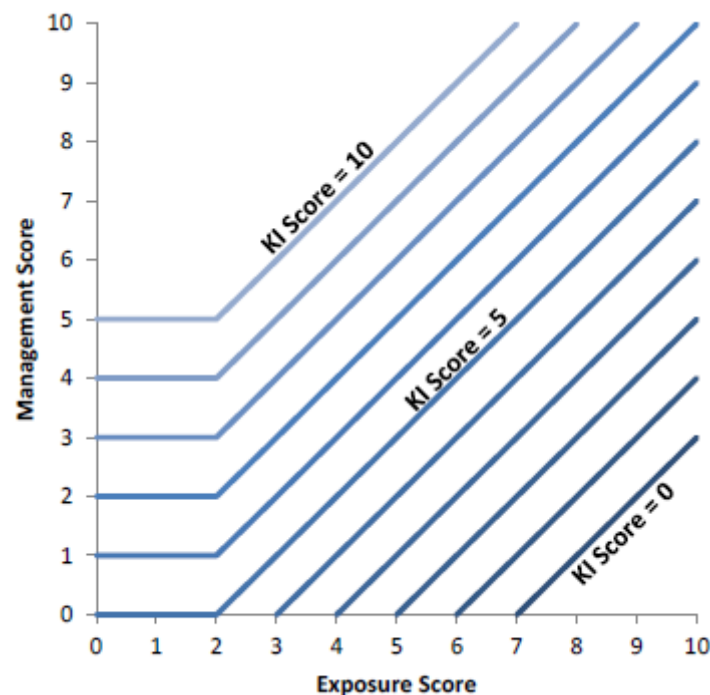


Figure 15 - Combining Exposure and Management - Risk Key Issues^[32]

$$\text{Key Issue Score [Opportunities Key Issues]}^{[32]} = \left(0,5 + \frac{\text{exposure}}{20}\right) \times \text{management} + \left(0,5 - \frac{\text{exposure}}{20}\right) \times 5$$

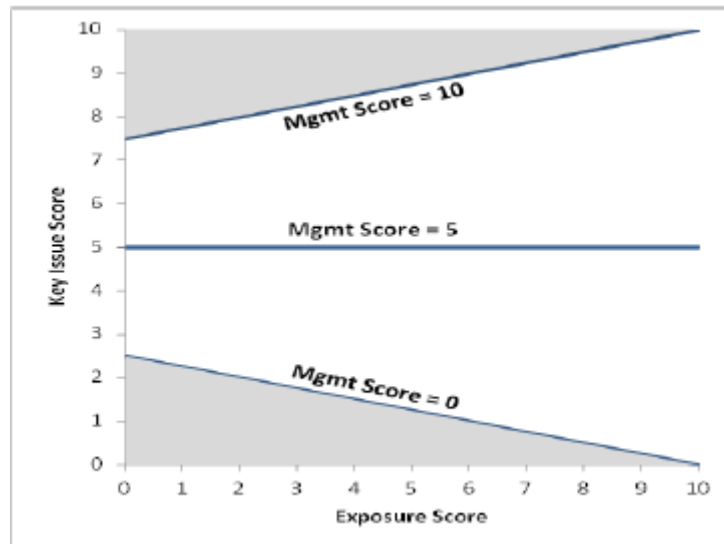


Figure 16 - Combining Exposure and Management – Opportunities Key Issues^[32]

Another kind of risk is related to controversies cases, which are cases or continuing cases that can influence negative externalities, such as breach of existing laws or regulations or global conventions. A team of MSCI ESG Research attempts to measure both the nature and magnitude of damage and integrate these into a matrix that includes a combination of different scenarios. A key part of this assessment is standardization, benchmarking and individuating competitors (the stage by which the indicators must individuate if they are aligned to the market value).

	Very Serious Nature of Harm	Serious Nature of Harm	Medium Nature of Harm	Minimal Nature of Harm
Extremely Widespread Scale of Impact	Very Severe	Severe	Severe	Moderate
Extensive Scale of Impact	Very Severe	Severe	Moderate	Moderate
Limited Scale of Impact	Severe	Moderate	Minor	Minor
Low Scale of Impact	Moderate	Moderate	Minor	Minor

Figure 17 - Assessment of controversies^[32]

MSCI ESG Research's ratings strategy allows companies to vary their disclosure level while protecting small firms (and less-transparent companies in emerging ESG markets) from overly penalised disclosure, in the case of MSCI ESG Research's ratings framework, where they should have higher levels. This reduces the level of adaptations necessary for reducing ESG transparency. The model assigns half the Environmental and Social ratings contribution to Risk Exposure assessment based on baseline financial disclosure. Risk Management assessment employs empirically validated baseline metrics that optimize high disclosure frequency with a relatively high degree of peer differentiation capacity. For the non-disclosure cases, the methodology also does not rely on worst-case assumptions: performance indicators are given below-industry-average ratings; Initiatives indicators are applied contextually (e.g., relative to operational geography and regional risk management norms) without having mitigation efforts assumed from jurisdictions with weak environmental enforcement. In circumstances that reveal gaps in disclosure causing assessment uncertainty, reports express limitations. When company data cannot be retrieved, MSCI relies on industry averages, regional benchmarks and extrapolated estimates based on available disclosures.

MSCI gives the management a score (0-10 scale) for Environmental & Social Pillars for each Key Issue that reflects the strategy, programmes and performance history of the company's performance through an analytical method. The score for each of its underlying indicators changes to a 0-10 (10 = best practice; 0 = no management). Each of the indicators is equally weighted across the management categories (e.g., three strategy indicators value equally in the Strategy Score). Category-level scores are equally weighted to calculate the overall management score pre-controversies. The Management Score is a simple average of practices (Strategy, Policies, Programs, Initiatives, Targets) against performance (Historical trends and Peer comparisons) in most Key Issues. A controversy deduction

(0 to -5.0 points) is taken according to the degree and the type of controversy related to that Key Issue the company is concerned with.

	Structural	Non-Structural
Very Severe	-5.0	-3.0
Severe	-2.5	-1.7
Moderate	-1.3	-0.8
Minor	-0.4	-0.0

Figure 18 - Controversy deduction from Management Scores^[32]

The Governance Pillar utilizes a different approach than Environmental and Social Pillars. Although environmental and social risks are industry related and assessed in relation to exposure levels the concepts of Corporate Governance (or Behaviour) are universal to all organizations, but risks can differ by ownership structure and stakeholder dynamics, cultural issues, and sector-specific investor protection. Governance assessment is a deduction-based scoring model: firms start with a perfect score of 10, deductions are made based on Key Metrics evaluation.

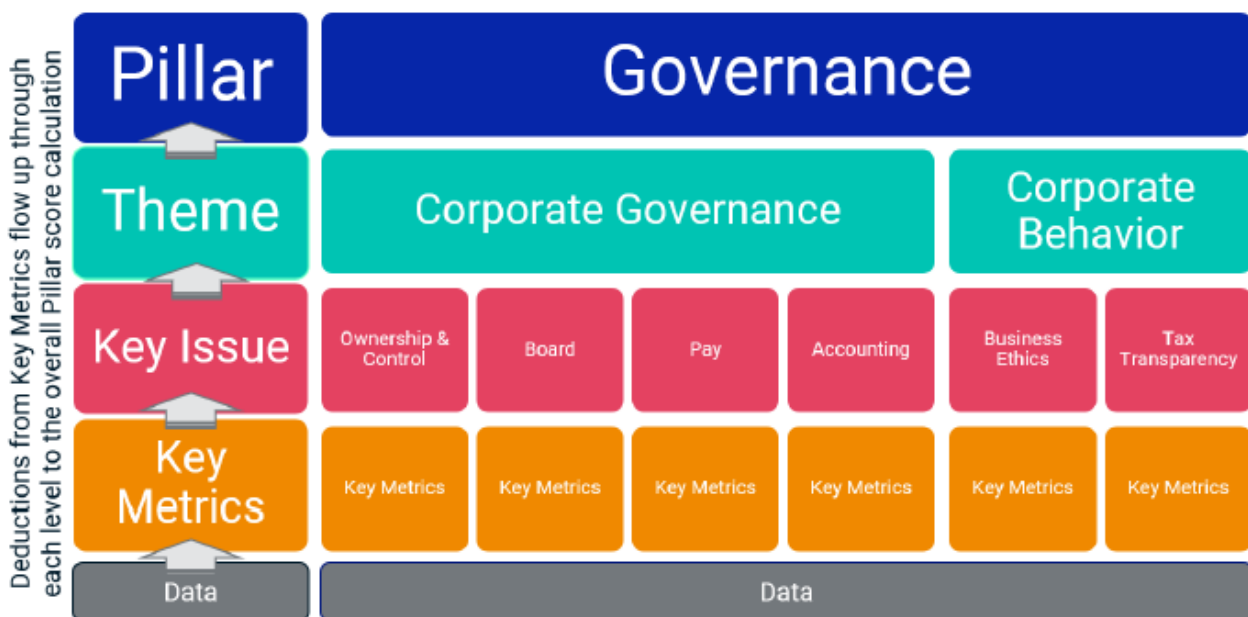


Figure 19 - Governance Model Structure^[32]

The foundational scoring unit is made up of Key Metrics each assessing certain aspects of governance risk, whether that is a presence, a structure of ownership in governance or absence of such risk mitigating policies and practices. Key Metric flags are binary (0/1) pass/fail evaluation symbols that indicate which metrics are significant in determining Theme or Key Issue Scores. Flag frequency differs greatly across metrics, which in turn allows leaders and laggards to be identified alongside the larger 0-10 range. Points in Each Key Metric translate in a published Score Contribution.

Controversies are defined as where organization activities/products are said to create adverse impacts on the environment, social, or governance. Non-controversial events (e.g., breaches of debt covenants, listing obligations defaults, goodwill write-downs) may also provide input into governance risk evaluation. Controversy- and event-based Key Metrics consider variable score deductions commensurate with controversy severity or occasion-based thresholds.

MSCI ESG Research uses a structured method for standardization of data for assessment of corporate governance risks. The methodology is based on peer-based Key Metrics, which build rules-based comparison groups, including those that account for jurisdictional differences across methods of disclosure in various incorporation regimes, regulatory environments on the market, and types of securities listed in securities markets. Non-disclosure treatment is adjusted according to informational materiality. The non-disclosure of board members precludes Corporate Governance Theme Score publication, which is a key feature of board assessment. Undisclosed policies or practices are assumed not to exist, and quantitative data absence results in midpoint deductions in the measured range for the given metrics. Jurisdictional defaults are based on the mandatory regulatory requirements from relevant incorporation and listing jurisdictions. It provides binary pass/fail metrics of different governance risk dimensions under one of the analytical units, Key Metrics. Metrics get flagged for failed evaluations.

Other metrics have a condition or are contingent upon ownership structure, management configuration, or how the organization is structured. Points of each Key Metric are translated into a score for Key Issue and Theme Score calculations, and with a higher score indicating elevated governance risk, this is used to score published Score Contributions. Key Metrics aggregate into Key Issues, which correspond to different governance risk domains, marked with an absolute 0-10 grade scale with lower marking indicating greater level of risk severity. Theme Scores are used to compute Key Issue points as well based on the same scale. The Governance Pillar Score contains an aggregate absolute score (0-10 scale) based on all Key Metric points in all Themes.

For supranational entities and development banks, the Governance Pillar comprises Corporate Behaviour Theme Score (70% weight) and Government Support Score (30% weight), the latter

derived from weighted member countries' Political Governance Risk Factor Scores from MSCI ESG Government Ratings. MSCI ESG Research has its unique ways of integrating Risk Exposure with Risk Management Scores. Because it is based on risk-based Key Issues, high exposure requires the necessary management capability to achieve equivalent scores. The model requires minimum management threshold above a score of 5, and maximum scores under 10 at very high levels of exposure; residual risk remains valid. For opportunity-based Key Issues, given their exposure, they would show relevance to opportunity; therefore, high exposure enables more diverse outcome ranges of success while low exposure limits scores towards 5.

Theme scores for eight out of ten Themes draw directly from weighted average of the Key Issue Scores. The remaining Themes can earn scores only when underlying Key Issues are weighted. Pillar scores make use of weighted-mean for constituent Key Issue Scores. Governance Pillar Architecture: governance pillar, Theme and Key Issue Scores are all predicated off an independent and deduction-based method with the value of 10 subtracted for triggered Key Metrics. Formal Corporate Governance covers four Key Issues; Corporate Behaviour covers Business Ethics and Tax Transparency. The data is continuously collected and recalculated on the basis of changing data, allowing for automatic recalibration as per Key Metrics changes. Scoring Calculation Process:

- 1) Key Metrics: Points values are generated via quantitative evaluation or binary assignment.
- 2) Key Issue points equal summed Key Metric points (after category caps).
- 3) Key Issue points are combined in Theme points.
- 4) Governance Pillar points sum Theme points.
- 5) 0-10 Governance Pillar Score derives from calculating a conversion formula for Pillar points (Negative scoring being outlawed since max values 0.0 are allowed).
- 6) 0-10 Theme Scores calculated similarly using Theme points and conversion formulas.
- 7) 0-10 Key Issue Scores are calculated independently using Key Issue points and conversion formulas.
- 8) Points from Theme and Key Issue generate percentile rankings against both global and Home Market peers.
- 9) Score Contributions against Theme Scores are computed for each Key Metric, with more negative contributions indicating higher levels of governance risk.

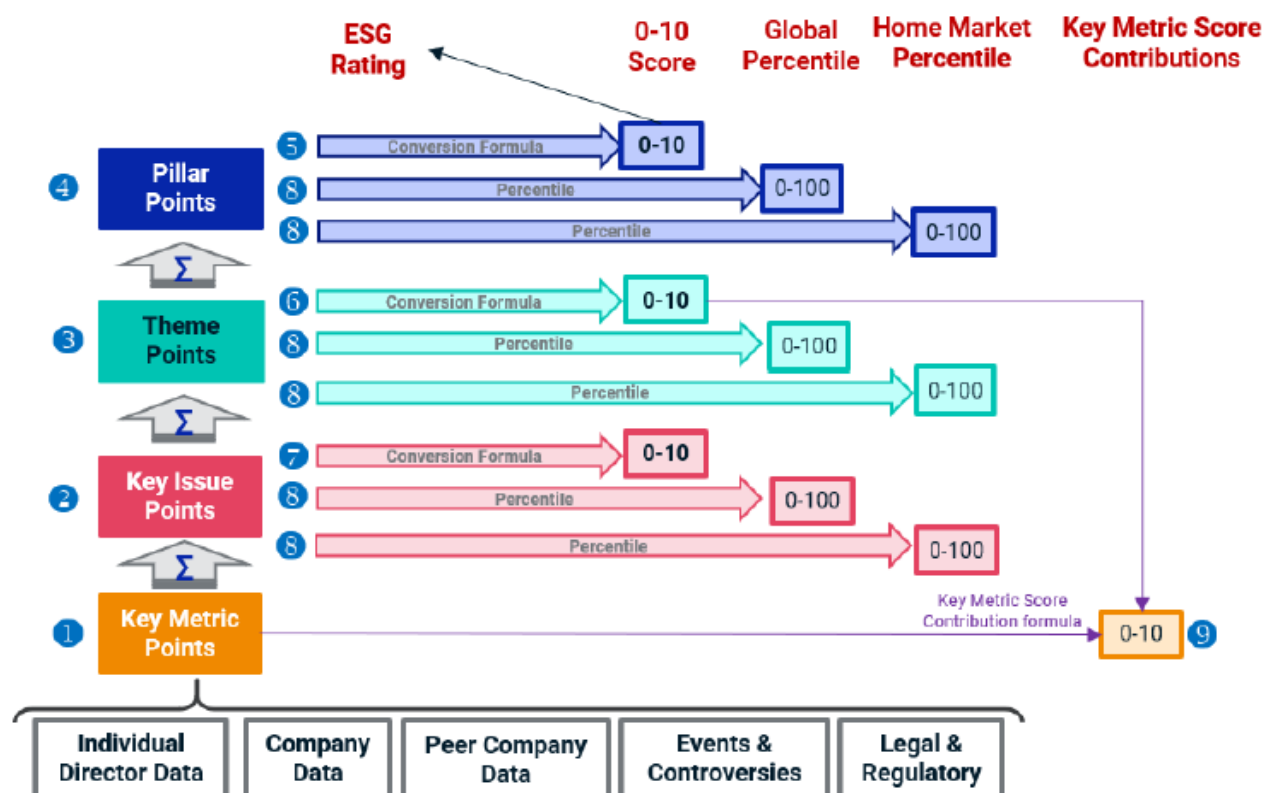


Figure 20 - Governance Pillar scoring calculations^[32]

The Maximum Value in the Score Conversion, which is well explained in the image below, formula also functions to regularize score distributions and prevents poorly performing companies from dominating the 0-10 scale. Maximum Values are set at the 99.5th percentile of points values used in the coverage universe and are normalized every year. MSCI ESG Research calculates the score deduction of every Key Metric's individual deduction from a perfect 10 to show how each one determines Theme Scores.

0-10 Score	0-10 Score Conversion Formula
Pillar	$10 - (10 * (\text{Pillar Points} / \text{Pillar Maximum Value}))$
Theme	$10 - (10 * (\text{Theme Points} / \text{Theme Maximum Value}))$
Key Issue	$10 - (10 * (\text{Key Issue Points} / \text{Key Issue Maximum Value}))$

Figure 21- Conversion formula for 0 - 10 Score^[32]

The scores given are written as negative decimal values, which are computed from Key Metric points calculated from governance practices evaluation, Theme points calculated from a sum of all Key Metrics, and the Theme Score itself. Formulas vary by Theme:

- Corporate Governance^[32]:

$$\frac{\text{Key Metric Points}}{\text{Theme Points}} \times (10 - \text{Theme Score}) \times -1$$

- Corporate Behaviour^[32]:

$$-10 \times \frac{\text{Key Metric Points}}{\text{Theme Maximum Value}}$$

The Governance Pillar Score is computed by converting all the Governance Pillar Points (Corporate Governance points plus Corporate Behaviour points) to a 0-10 score and is computed instead of averaging the two Theme Scores. This way, a strong performance in one area is not likely to conceal its weaknesses elsewhere. Therefore, a company's Governance Pillar Score will be below one or both of its Theme Scores. Also, the same principle applies to the Theme level, where Corporate Governance can easily fall below all four of its constituent Key Issue Scores. Firms with the lowest points gain a rank of 100, while those with most points are given a rank of 0. If the same points values are present, that leads to identical percentile ranks, all shown as integers.



Figure 22 - Maximum Value^[32]

MSCI ESG Research derives final ESG Ratings via a multi-step process that converts quantitative scores into relative letter ratings. The initial score is derived from the weighted average of the Governance Pillar Score and individual Environmental and Social Key Issue Scores. The Weighted Average Key Issue Score is normalized against ESG Rating Industry peers, after applying normalization to normalize the Score against ESG Rating Industry peers. MSCI employs a common "benchmark" peer set of all rated companies in a given ESG Industry to report industry-relative ratings. This method guarantees rating stability across companies entering or leaving the peer set, preventing any effects of changing coverage from occurring. ESG Ratings are then evaluated for accuracy before publication (if applicable) in specific situations.

The ESG Ratings Methodology Committee handles company-related evaluations and the ESG Assessment Committee manages escalated and critical methodology claims, including issues related to high-impact market events. These committees still have the power to amend a company's Industry-Adjusted Score in accordance with their review determination. The Industry-Adjusted Score for each company is plotted into seven letter-size ratings, ranging from AAA (highest) to CCC (lowest). Crucially, these ratings are explicitly relative rather than absolute, set in direct comparison to the industry peers and a comparison between these same companies. The letter ratings are therefore comparative to other ESG Industry peers, recognizing their sectoral differences in benchmark performance^[32].

6.2 Sustainalytics Morningstar

The aim of ESG Risk Ratings is to support investors to make better decisions by offering material data and relevant information on sustainability risks and opportunities aligned with the larger mission of the organization.

It gauges the level of economic vulnerability that the company faces due to ESG risks. It has two dimensions, Exposure and Management, and it measures how exposed a company is to the unmanaged ESG risk. An ESG Risk rating is a quantitative score plus a risk category. The first one represents the risk not managed, measured as an open-ended scale beginning from 0 and ending with a maximum of 50. While ESG Risk Ratings mainly utilize public information, it is also drawn from public documents provided by the company itself. Analysts, though, verify that all this information satisfies internal criteria, for correctness, completeness and timeliness, for credibility and authenticity. The Comprehensive Framework is one of the two research frameworks used in calculating ESG Risk Ratings for companies. The Core Framework, however, is designed to provide further coverage of the ESG Risk Ratings. Its scoring design, the core model derived from the full ESG Risk Ratings

model, takes advantage of a lower indicator set and structure to approximate outcomes from the Comprehensive Framework. The high predictive power ensures that the final result of rating of the two frameworks is comparable. The second, though, does not divide its approach to risk into sections regarding materiality. Core frameworks are different from the two frameworks as they both consider a top-down application of a waterfall approach to governance at the overall level with Risk Decomposition. The ESG Risk Ratings methodology consists of many specific elements:

- "Financial materiality" (meaning the most material risks to business value)
- The two-dimensional lens -- especially the exposure lens -- indicates to investors what ESG risks a company is facing that are material, while the management lens measures how well the company is facing these risks
- Multiple exposure factors, which reflects factors such as a company's business model, financial position, and history
- Comparability, so as to provide investors with information on a good level inside their own industry or sub-industry sector
- Fully integrated, and that is to say that Corporate Governance is part of the ESG Risk Ratings
- Responsive to events which helps the analyst in correctly handling the occurrence of any controversies impacting the ESG Risk Rating Score
- Foresighted, in its nature, this algorithm predicts trends at the time of its occurrence and subsequent events.

Given how dynamic the ESG risks are, data must be refreshed at least annually or more often, especially when something happens in industries or laws. Integrating data with the information given to clients to make it fit their needs is the key to remain aware of changes.

The first level is used to determine the ratio of the company's subindustry exposure in the sub sector when multiplied by its issue beta. On the second level, Issue Manageable Risk is distinguished from Issue Unmanageable Risk by the manageable risk factor. Then, multiplied with exposure, this gives the company's issue risk that can be managed. The Issue Managed is the third, it is derived from the Issue Manageable Risk, where the Issue Managed is multiplied with the Issue Management and yields Managements Score which depends on a set of a management and event indicators outcomes. The portion of the manageable risk which remains unmanaged is known as Issue Management Gap and is computed when managed risk is subtracted from manageable risk. Ultimately, the final ESG Risk Ratings score is calculated as the aggregate of the unmanaged risk scores of material ESG Issues. To get the overall scoring, there are three building blocks from the ESG Risk Ratings.

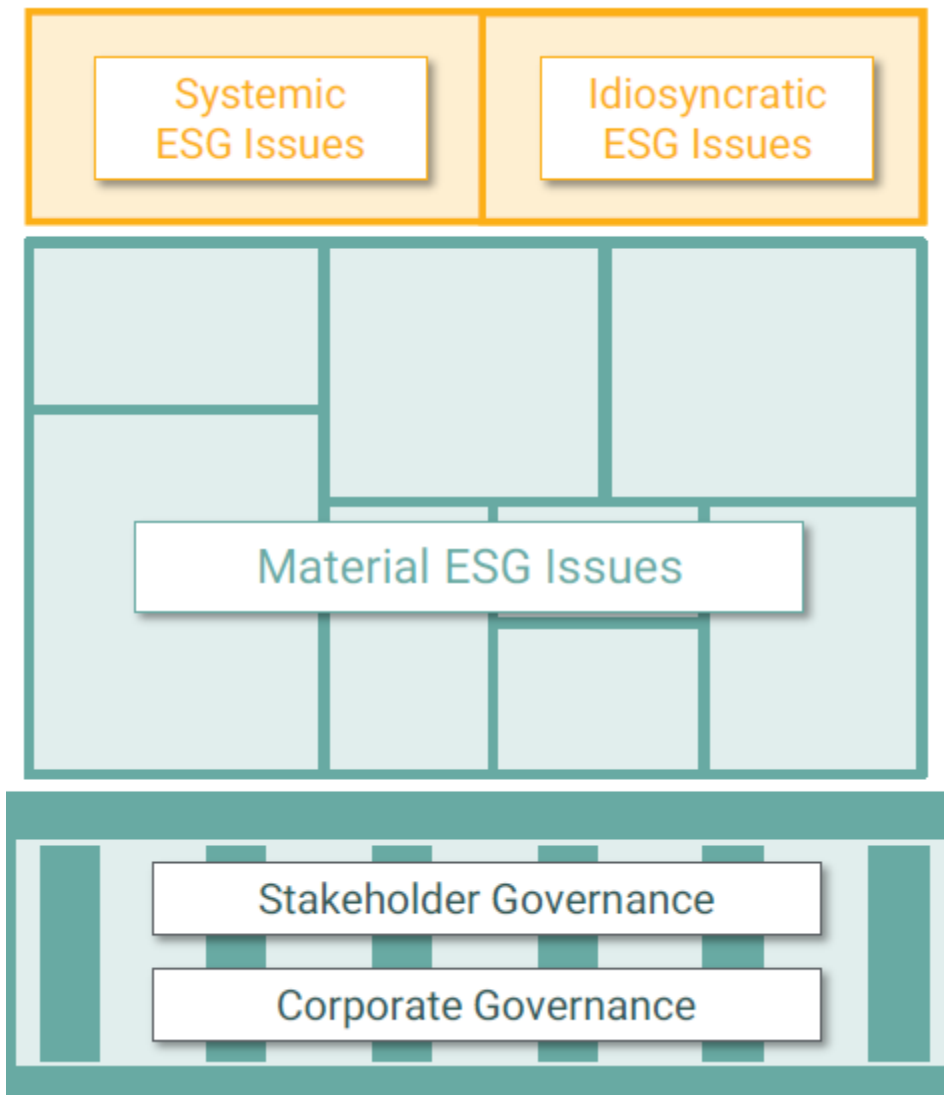


Figure 23 - The Building Blocks of the ESG Risk Rating^[33]

The first one is Material ESG Issues (MEIs), which is thought to be the fundamental component of the whole modelling setup. MEIs are focused on similar topics which need a common set of management actions. This block is evaluated at the subindustry level and is updated annually with a detailed structured process. This block assumes that ESG issues can predictably impact and shape economic and reputational value.

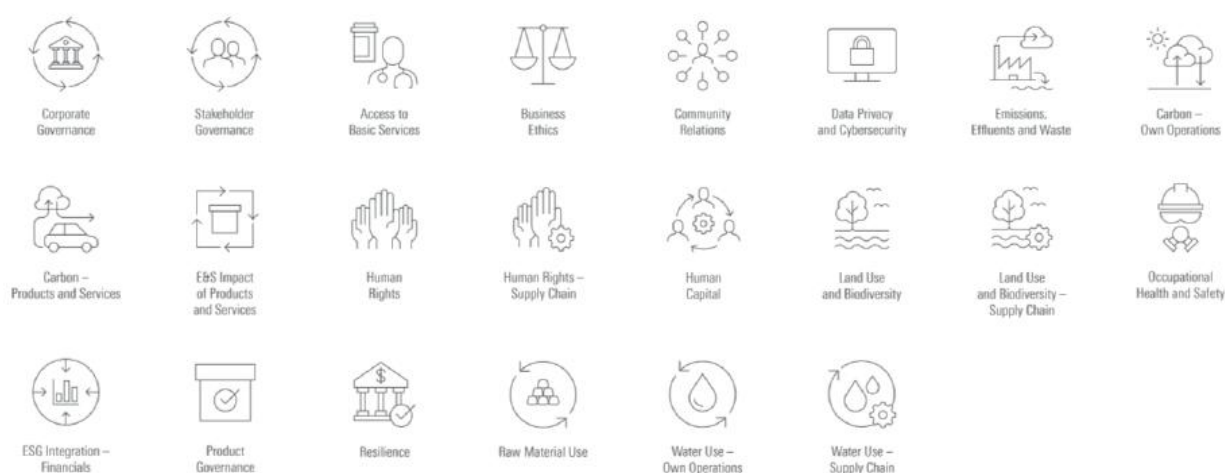


Figure 24 - List of Material ESG Issues^[33]

The foundational block is Corporate Governance (CG) that reflects the value of an effective framework to develop strategy to deal with the opportunities and manage the risks in organisations. It is the general baseline across all the companies, but it is varied by the nature of the industry sector within which it exists and the prevalence and degree of risk and their management. It is reported that as raw material, it is responsible for 20% of all unmanaged risks on an average and also negatively impacts the ESG score. Its first block is more closely related to materiality, as well as ESG issues is more influenced by the materiality of the same, but it is not of any use for each of the companies since it is different for each sub-industry to each other. In this block, beyond Corporate Governance, there is also the Stakeholder Governance (SG), which is central to the operation of the company. It deviates slightly from public or private companies, seeing public ones as riskier than the others.

This final one is computed via a three-stage approach. The model's main core consists of a series of subindustry and MEI-specific so-called beta indicators. The consequences are referred to as Beta Signals, which are added to the subindustry beta value, equal to 1, after applying the qualitative overlay and correction factor. Betas are designed for five particular thematic areas but, the technical correction factor, which is called Subindustry Correction Factor, is used to ensure that the mean beta of a subindustry is equal to one.

Eventually, analysts have a Qualitative Overlay when updating a company profile so that it reflects the specific factors associated with companies which are not reflected in the standard model. In some respects, the risk is not possible to entirely manage, at individual subindustry level in the form of Issue Manageable Risk Factor (MRF) in the range of 30 to 100%, and the share of exposure of the ESG with regards to an important ESG issue.

The third block is divided into two subsets: Systemic ESG Issues (SEI) and Idiosyncratic Issues. With regard to the former's concern, it embodies material risks related to the uncertainty and variability of the nature and the changing circumstances. It touches a multitude of categories and companies, touching upon a whole range of ESG issues. It is concerned with the ability to handle these kinds of events when companies have no ability to control them. The second, however, is triggered by company specific events; they are thought to be uncommon to that business model and so considered not ESG materialities. Regarding the two alternative dimensions mentioned above, ESG Exposure can be seen as the ESG factors which threaten potentially economic risks for companies, or the sensitivity or vulnerability to ESG risks. At this dimension, material ESG issues are reviewed at the subindustry level, identifying the most relevant risk drivers with respect to materials being assessed under MEI, as well as associated data points which help to estimate the correct materiality. Individual risk driver assessments are aggregated to a MEI-level quantitative materiality assessment, which serves for the subindustry score. Then, industry experts scrutinize and calibrate the outcomes at the subindustry level. The final exposure score in the subindustry is between 2 and 10.

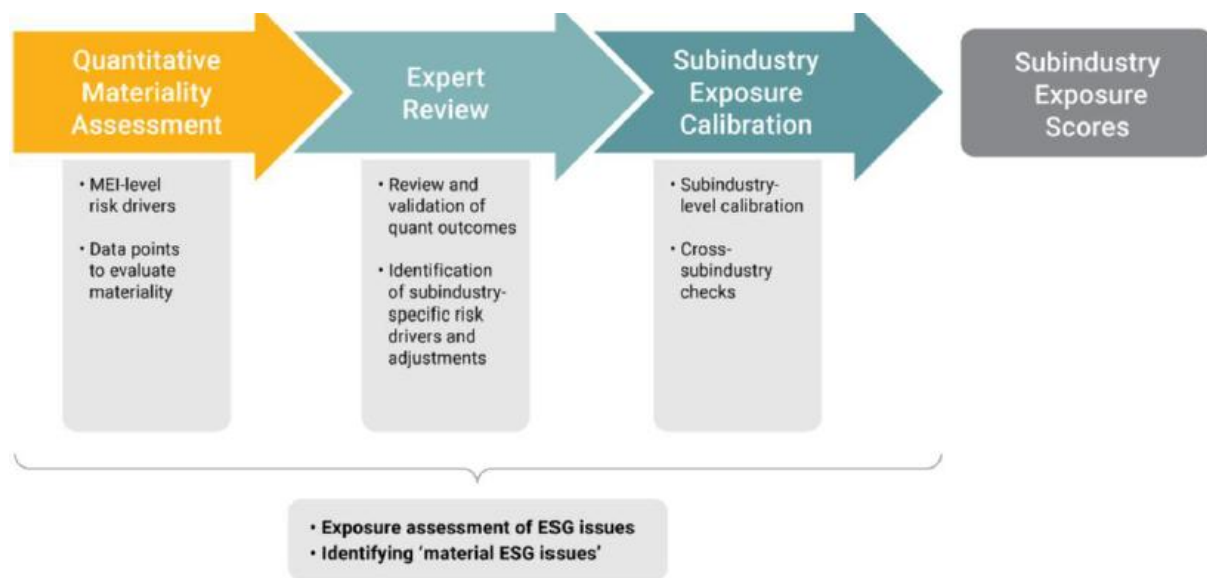


Figure 25 - Subindustry Exposure Score Assessment Process^[33]

Through the introduction of Betas, and in the first image below it is possible to see how Betas are calculated, their exposure score on all subindustries is rated 7 for CG and 2 for SG. This is led to 5 for private companies through the application of Betas. Betas play a significant role in making that ESG Risk Ratings company very specific. Their respective values represent the extent to which a company's exposure to a material ESG issue deviates from the average exposure to that issue within

the subindustry. The subindustry exposure score is multiplied by the company's Issue Beta to arrive at the ESG issue.

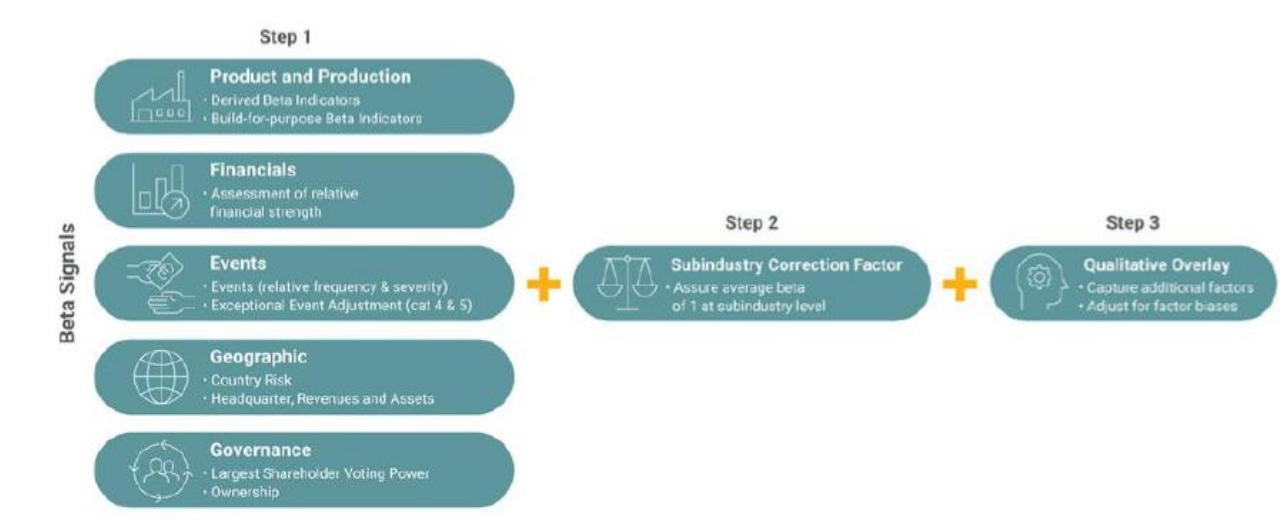


Figure 26 - Model for Calculating Issue Betas^[33]

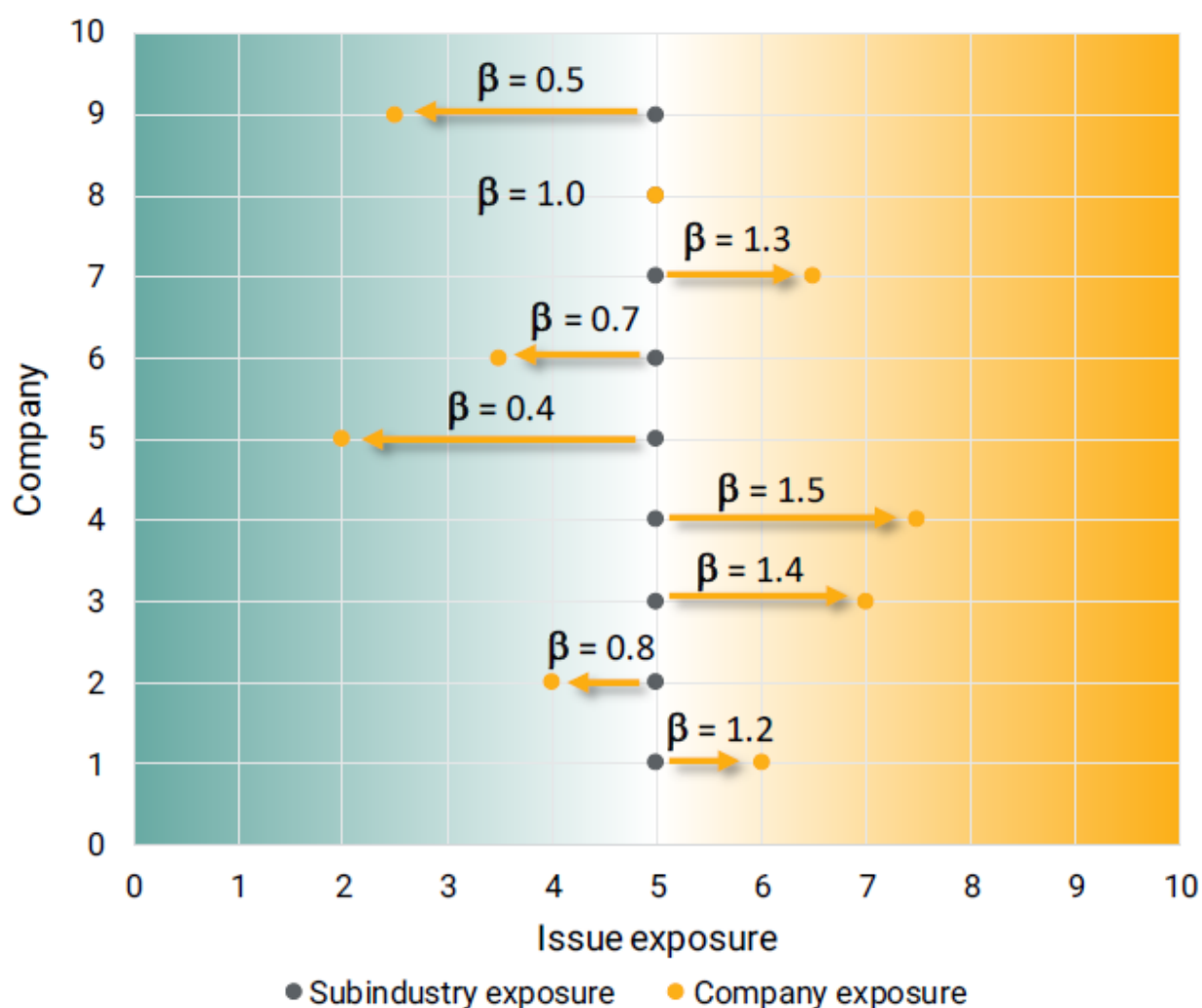


Figure 27 - Using Betas to Arrive at Company Specific Exposure Assessments^[33]

The other dimension, Management, may be looked at as a collection of company commitments, actions, and outcomes indicating how effectively a firm is managing risk. Management score for a company is a set of management measures and performance indicators of its management, which measure management performance directly, either of quantitative kind, or also through being caught up in controversies. For each of its key ESG issue indicators are selected and weighted for each subindustry sector and applied in those which are relevant. Management indicators refer to the smallest assessment material that a company's management on ESG issues has. They allow for a systematic and consistent evaluation of clear and standardized criteria. They are scored according to a pre-defined, indicator specific scheme, described as a set of outcome categories and associated score on a scale of 0 to 100. It is necessary to determine the extent of engagement in controversial incidents that might affect environment, stakeholders or even the company. Event Indicators are rated between 0 (no evidence of relevant incidents) and 5 (impact and serious risks).

Score	Outcome Category
100	The company has a very strong policy.
75	The company has a strong policy.
50	The company has an adequate policy.
25	The company has a weak policy.
0	Based on available evidence, the company does not have a policy.

Figure 28 - Management Indicator^[33]

The last ESG Risk Ratings Scores are an indicator of unmanaged risk, which is defined as the part of material ESG risk that is not being managed by a company. All the steps in ESG Risk Ratings scoring system for a company are designed like a four-level waterfall because there is linkage from each level to the last level but also needs to calculate for the next one. MEIs are indeed the core building block. Every individual MEI is concerned with an ESG topic, or a group of related topics, that is expected to adversely impact on the enterprise value due to its business model. All three building blocks were examined through a 2D lens, which gives a deep view of a company's ESG risk.

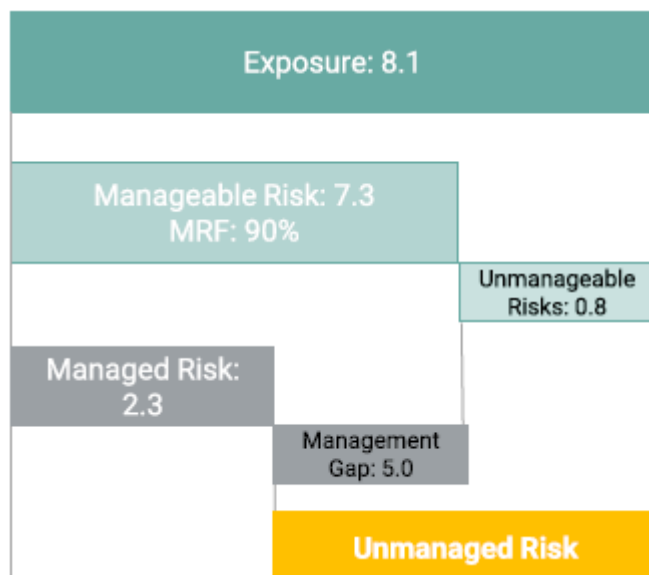


Figure 29 - Risk Decomposition^[33]

The result is ESG Risk Ratings that determine the extent to which a company's enterprise value is at risk as a result of ESG factors. This is based on the dynamic nature of the transitions of ESG factors

and is a subindustry review of the ESG Risk Rating at scale that encompasses: selection, scoring material of MEIs, selection and appropriate weighting of indicators and extent to which risk identified can potentially be controlled in companies. Moreover, the methodology is strengthened in order to be both relevant and substantive. Ratings inputs are periodically updated based on revised reporting. It also entails the review of all source materials such as corporate reporting to provide management indicators, beta indicators, determine the applicability and materiality of ESG issues, manageable risk factors, exposure scores and event indicators^[33].

6.3 S&P Global ESG

As MSCI, S&P Global ESG assesses a company's performance, measured in light of risks, opportunities and impacts, using a mixture of company disclosures, media and stakeholder analysis, based on modelling approaches through the S&P Global Corporate Sustainability Assessment (CSA). The S&P Global ESG score is a relative score of each firm that is used to compare the performance and behaviour of companies with others, constructed through the CSA through the industry sector-specific questionnaire to keep companies engaged.

For companies that do not provide responses to S&P, a team of experts completes the questionnaire using publicly available information. Companies are always closely monitored, screening for controversies which might affect their organization or drag down their scores. S&P Global will ask all businesses that are eligible for a public ESG Score to participate in the examination, so they consist of entities that will be chosen at the Dow Jones Best-in-Class Indices and those as a part of S&P Dow Jones Indices benchmark indices, which are measured on a scale from 0 to 100, where 100 is the maximum score. You will find up to 1000 datapoints per company, divided into relevant ESG themes; up to 30 sub-categories maximum.

Points are scored at the question level from a series of underlying datapoints, which is evaluated for availability, quality, relevance, and performance on ESG topics; the data points are also determined to be available on a given issue. At the end, the final score is comparative between the company and peers in the same field. The double materiality is the main objective of the procedure: it matters if something has strong implications on the pillars or on the stakeholders.

The CSA assesses corporate sustainability risks, opportunities and stakeholders' impact across the short-, medium- and long-term. S&P Global describes a sustainability issue as a material one when it contributes to a significant impact on society, environment or stakeholders. The materiality analysis is the initial weight assigned to criteria for CSA. The obtained data is reviewed and iteratively validated through multiple stages of quality control including cross verifying and substantiating the

response with internal documents or regulatory filings. The CSA is also used to normalize some of the quantitative data which is provided within each industry by the questions and the criteria used. This allows for the comparison of companies with a similar risk and opportunity. In CSA, too, it modifies data, adjusting companies that don't publish too much and using a score algorithm that punishes such companies, forcing them to publish as much as they can: about 70% of underlying questions in the CSA need publicly available data for a point to score.

For qualitative subjects, in contrast, points are assigned based on the substance and content of policies and programs, and not their existence; policies without clear metrics for how such commitments are enforced penalize the final score. For the other 30%, CSA does not necessitate public data, but companies that choose to disclose that type of information are awarded. This evaluation captures almost 40 or 50% of the total score. The other remaining percentage is compared against specific sub-industry or cross-industry specific components. Each of those questions is weighted in a criterion, and when one criterion (a specific question or one sub-topic) is not applicable, it is distributed in with the other questions within the same dimension.

Recognition of relevancy and effect, quantification of risk exposure, tactics deployed to handle sustainability risks or unlock opportunities, measurement of performance against stated KPI and metrics, validating or auditing from outside of the firm are the various actions through which S&P Global can provide accurate valuation. The questionnaires should be objective: every question is scored with a score of between 0 and 100 and will be turned into scores based on some scoring algorithm, given the complexity of data. Scores take three different perspectives into account:

- 1) *Preparedness scoring*, for which quality and nuance of company's policies are used to confront risks and impact management
- 2) *Transparency scoring*, points for qualitative or quantitative information outputted without normative values assessment
- 3) *Performance scoring*, for quantitative metrics assessed on the quality and substance of values compared to a potential maximum scoring response

It is assumed by default to give a 0 score for all questions with no answer. To fill any disclosure gaps, modelling approaches are used and aggregated in the S&P Global ESG Score. Some of the rules are defined as the following to offer a schematic framework:

- No modelling is performed for questions that require data to be revealed in the public domain as stipulated in the CSA.

- A question level score is modelled for the company's performance and disclosure level for other questions within the CSA.
- A question level score is modelled according to the performance of peer companies in same industry regarding the Research Universe across the peer size.
- Scoring deductions based on MSA cases (controversies) are not considered.

The points assigned to each question are then progressively weighted when summing to reach the final score, computed using a numerical formula which is presented below:

$$SP_{ESG} = \sum \left((SP_{QP} \times SP_{QW}) \times SP_{CW} \right) \times SP_{DW}^{[34]}$$

Where:

- SP_{ESG} = S&P Global ESG Score
- SP_{QP} = Question Points
- SP_{QW} = Question Weight
- SP_{CW} = Criteria Weight
- SP_{DW} = Dimension Weight

It is also enriched with context and perspective as it shows the role of company information in the final score through the Disclosure Analysis. The disclosure component is usually classified as two categories namely "Required Public Disclosure" and "Additional Disclosure", and there are six other components out there.

- Data availability refers to how much information the business discloses.
- Required Public Disclosure is the minimum content that companies need to publish.
- Additional Disclosure is what the companies want to do beyond what they originally wrote down so they can be much more transparent.
- Actual Score Contribution is the actual score in the disclosed category.
- Potential Score Contribution represents the maximum available score a firm could obtain in its category.

Both indicate the total information available for public availability, and if this level is high, a higher level of information can give the company a higher rate since the most available is transparency. Corporate scandals, from social media and stakeholders' stories being measured by a third party-

provider. Upon incident identification, an MSA case is opened to investigate, which the true impact on the company, who the stakeholders are, and which negative event is occurring, evaluating the correctness of the policies that company had to face. In the opening, each company is contacted and given the chance to respond with relevant information. A controversy could impact on the final ESG Score and leading to a loss of points in CSA criteria, according to MSA investigators' ruling. It could have been a question about financial (materiality) or reputational (non-materiality). For example, with changes through the market or industry ESG Scores have very different rules.

That means, in the first case, the buyer of a given company keeps the score until after the subsequent assessment, or in the case of the spin-off, the new company inherits the parents' ESG Score. In both cases, the CSA methodology is consistent with the annual updates and helps maintain relevance in ESG Scores, which emphasise materiality and sustainability^[34].

6.4 LSEG Refinitiv

LSEG Refinitiv is one of the largest ESG databases, owning more than 90% of the market cap and utilizing more than 870 metrics. LSEG ESG scores are driven by data and aim to measure a performance, commitment and effectiveness transparently and objectively according to company-reported data. It is about 14,500 public companies and 1,300 private companies. This report covers 10 primary themes and addresses all three pillars. Based on the data from 2002, the LSEG data set covers nearly 16,000 public and private companies, those being classified in a double-tier manner with percentages and letter grades, benchmarked to its own grouping, The LSEG Business Classifications by pillar, adding controversies.

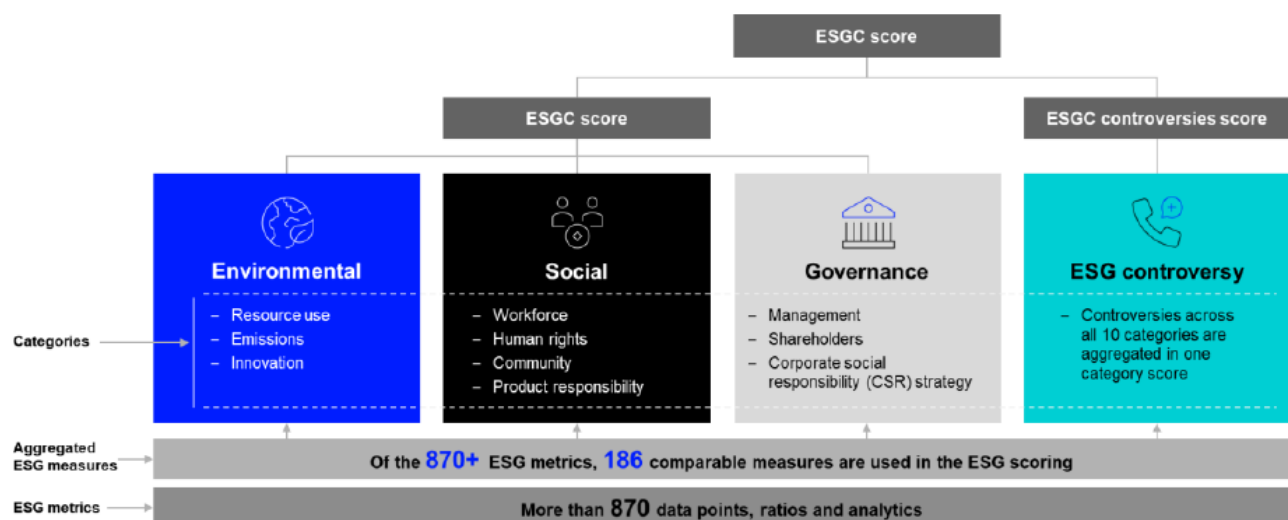


Figure 30 - Hierarchy of ESG final Scores^[35]

Apart from the traditional ESG score, LSEG also provides a combined score (ESGC) which calculates controversies that affect the corporation, reducing the current ESG score. LSEG added some local metrics which fit better some categories, the scores, indeed, reflect ESG factors in terms of the company's sector (E and S pillar) and country (G pillar). Given that, they are data-driven scores in the sense that they also benchmarked their own market, and that information is used to help LSEG to define its model and criteria.

The methodology relies on some principles to perform the calculation adequately as the ESG score:

- 1) *Unique magnitude (materiality) weightings*: considering the differences between various work fields LSEG maps each metric's materiality for each industry from 1 to 10.
- 2) *Transparency*: model is a key part; company disclosure serves to keep it real and at the heart of the methodology. While not relevant if not published, we argue that if the company does not publish high materiality information, it hurts it negatively.
- 3) *Controversies*: LSEG value ambiguous or bad news highly. It is essential to link all actions against these bad events and an appropriate measurement of how big the controversy is in the market. Then it is related to the size of the company that is the larger the company the more negative impact a controversy has on the score.
- 4) Industry and country benchmarks for scoring comparisons.
- 5) Percentile rank scoring approach allowing LSEG to generate a score within 0 to 100, which is a little easier to understand than letter grades.

LSEG has made available one of the largest ESG content collections. The local experts help the company get the company's publicly available data and information and the accurate attributions of the more of 800 indicators or ESG measures for every company gets on track. Although company papers are published once a year, as it is done for financial documents, the database is modified weekly and, consequently, the ESG scores are updated, that because controversies can always happen, but even then, when some major changes into regulatory or directives can occur.

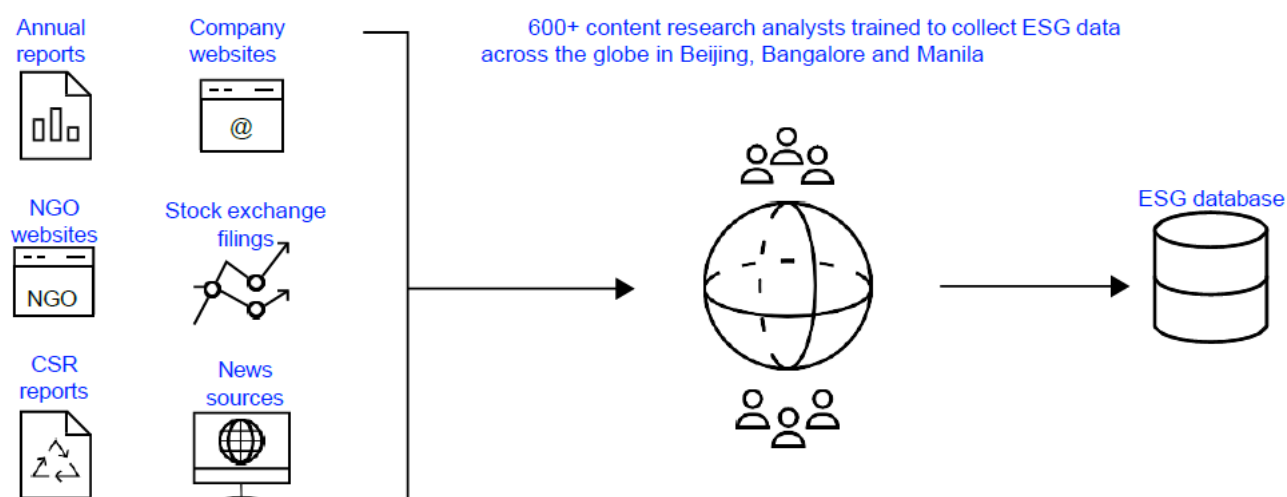


Figure 31 - Data process collection^[35]

Data quality is crucial to the process, so it's a mixture of a human and an algorithmic process to always have the best information on the same table every time, all through several different ways: data entry and handling, independent audits, and management audit. After the first part of the process takes place, scores will continue to be marked, for all historical years, post-5 fiscal years, and those scores will not be altered with alterations to underlying data, such as restatements/correction.

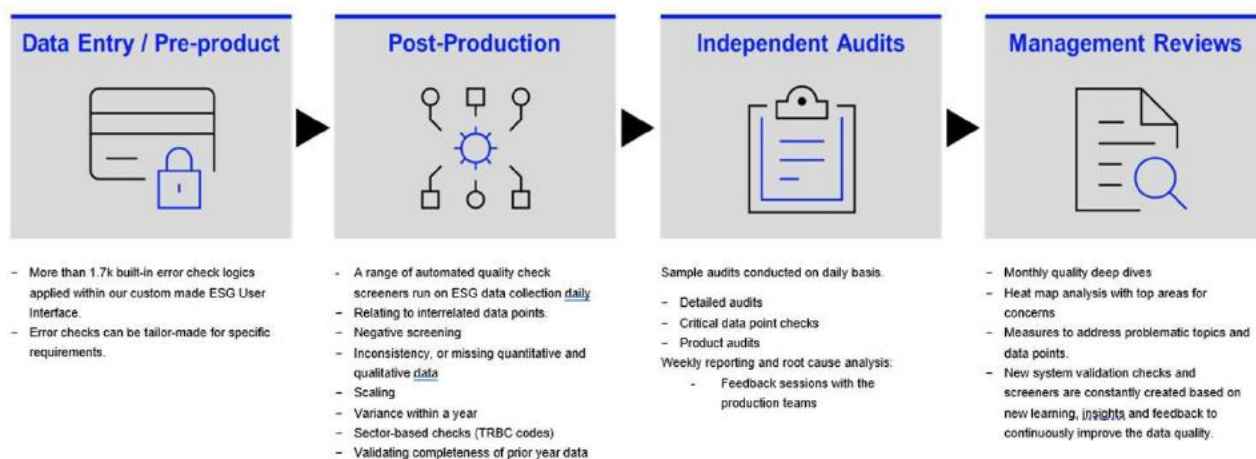


Figure 32 - Different Phases of Checking Data Quality^[35]

LSEG ESG scores furnish a transparent, analytics-driven evaluation of companies' comparative ESG performance and capacity, while controlling for sector materiality and company size assumptions. The process consists of two major assessments:

- *ESG Score*: Evaluates the performance of a company regarding ESG using publicly available, verifiable data
- *ESGC Score*: Ties the ESG score to ESG controversies and makes sustainability performance and conduct over time a more complete picture

This two-score format allows users to choose scoring that aligns with specific mandates or investment criteria. The fully automated, objective model captures more than 870 company-level ESG measures using a subset of 186 measures that are the most comparable and material per industry to guide the assessment process. These measures aggregate in 10 categories, which include three pillar scores (Environmental, Social, Corporate Governance) and the final ESG score (corporate ESG performance, commitment, and effectiveness) based on publicly reported information. Category scales accumulate into pillar scores, where environmental levels and social levels vary by industry, but governance levels for sectors do not (the exact weight per sector varies) and their weights are normalized to 0-100%.

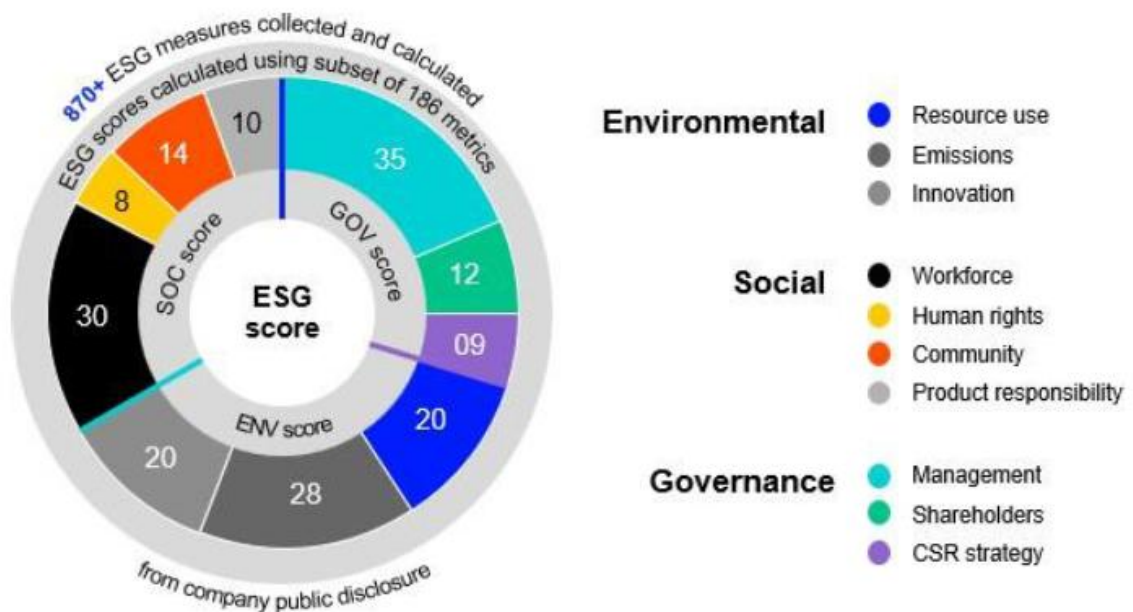


Figure 33 - Normalised Percentage for ESG Ranking^[33]

ESGC scores combine ESG performance to controversies captured in global media sources, and discounted performance against negative media coverage. The score covers 23 topics of ESG controversies and companies implicated in controversies receive weighted average ESG and controversies scores (ESGC score calculations for each fiscal period), which are considered in the

last accountable period. For a well-regarded organization, ESGC is ESG score, which means any controversy happen. If developments do persist, lawsuits, legislative disputes, fines, the impacts of controversies may persist across fiscal periods and the media materials of them go over as controversies progress. This method mitigates market capitalization bias where firms of the large-cap type receive disproportionate coverage in the media to small-cap companies.

Letter grades support rapid performance relative to peers and point out ESG factors that may hinder performance. ESG data is fundamentally important when it comes to informed investment decisions; one of the essential components of trust and confidence in given data is transparency.

Score range	Grade	Description
0.0 <= score <= 0.083333	D -	'D' score indicates poor relative ESG performance and 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 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 high degree of transparency in reporting material ESG data publicly.
0.833333 < score <= 0.916666	A	
0.916666 < score <= 1	A +	

ESG laggards

ESG leaders

Figure 34 - Conversion from Percentile Score to Letter Grade^[35]

The score methodology is broken down into five steps (technically not a methodology step but a quality checking process) and an additional step.

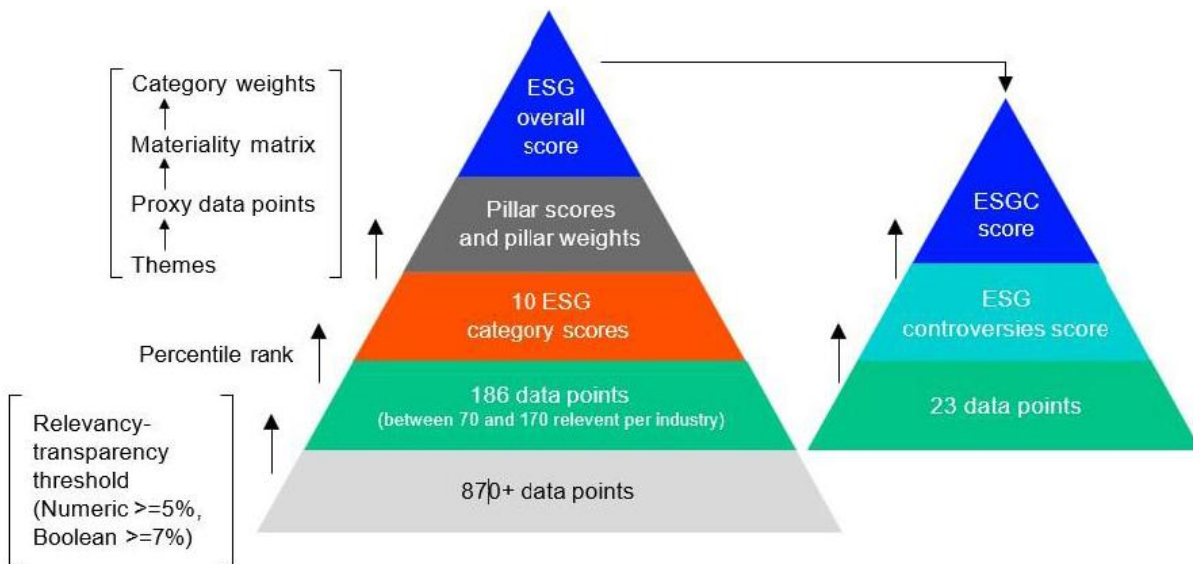


Figure 35 - Schematic Score Calculation Methodology^[35]

1) ESG Category Score

The scoring system uses numbers to make sure everything is clear and fair. If a company doesn't share some information the system gives them a score of zero. This is like a penalty to encourage companies to be open about their performance. On the hand when companies do share information it gets turned into numbers. These numbers help calculate where the company stands compared to others. It's essential to understand that rankings are only based on numbers that companies make public. This makes sure the results can be checked and verified. Whether an information is categorized as Boolean, the system will convert it into a numeric one, in order to allow quantitative assessment. The model also looks at whether a high number's good or bad. For example, a lot of greenhouse gas emissions is bad. The system uses indicators for each industry. These indicators are weighted based on how important they're in that industry. The industries are grouped using the system. The Environmental and Social scores are compared to companies in the same industry. The Governance score is compared to practices in the country. The final scores, for each category and controversies are calculated by comparing the company to others in its group. This is done by counting how many companies do better equally or worse than the one being analysed, as the formula below shows^[35].

$$Score = \frac{no.of\ companies\ with\ a\ worse\ value + \frac{no.of\ companies\ with\ the\ same\ value\ included\ in\ the\ current\ one}{2}}{no.of\ companies\ with\ a\ value}$$

2) Materiality Matrix

LSEG ESG uses a proprietary magnitude matrix to provide an objective and impartial assessment of ESG theme importance in different industries, applied at category level. This method is a systematic approach designed to dynamically and automatically set magnitude values as the corporate ESG disclosure practices evolve and mature over time. Materiality is operationalized through category weights determined using a data-driven approach that determines the relative weighting of individual themes to industries.

Pillars	Categories	Themes	Data points	Weight method
Environmental	Emission	Emissions	TR.AnalyticCO2	Quant industry median
		Waste	TR.AnalyticTotalWaste	Quant industry median
		Biodiversity*		
		Environmental management systems*		
	Innovation	Product innovation	TR.EnvProducts	Transparency weights
		Green revenues, research and development (R&D) and capital expenditures (CapEx)	TR.AnalyticEnvRD	Quant industry median
	Resource use	Water	TR.AnalyticWaterUse	Quant industry median
		Energy	TR.AnalyticEnergyUse	Quant industry median
		Sustainable packaging*		
		Environmental supply chain*		
Social	Community	Equally important to all industry groups, hence a median weight of five is assigned to all		Equally important to all industry groups
	Human rights	Human rights	TR.PolicyHumanRights	Transparency weights
	Product responsibility	Responsible marketing	TR.PolicyResponsibleMarketing	Transparency weights
		Product quality	TR.ProductQualityMonitoring	Transparency weights
		Data privacy	TR.PolicyDataPrivacy	Transparency weights
	Workforce	Diversity and inclusion	TR.WomenEmployees	Quant industry median
		Career development and training	TR.AvgTrainingHours	Transparency weights
		Working conditions	TR.TradeUnionRep	Quant industry median
		Health and safety	TR.AnalyticLostDays	Transparency weights
Governance	CSR strategy	CSR strategy	Data points in governance category and governance pillar	Count of data points in each governance category/all data points in governance pillar
		ESG reporting and transparency		
	Management	Structure (independence, diversity, committees)	Data points in governance category and governance pillar	Count of data points in each governance category/all data points in governance pillar
		Compensation		
	Shareholders	Shareholder rights	Data points in governance category and governance pillar	Count of data points in each governance category/all data points in governance pillar
		Takeover defenses		

Figure 36 - Materiality Matrix^[35]

Data points with adequate exposure serve as a proxy for how many themes are in data points for each category, ensuring the one-to-one linkage between topics and dots. Such approach helps to ensure the true disclosure pattern and industry relevant priorities are factored into materiality assessments. However, the lack of adequate disclosures results in methodological constraints for the themes. Where

no data points are appropriate proxies for relative significance, these are necessarily excluded from the materiality matrix calculation. Nonetheless, these themes are still found in corporate ESG reporting and the LSEG ESG database, maintaining the richness of ESG data. This inclusive thematic stock allows LSEG to identify key data points with strong reporting quality across the themes to build materiality proxies with strong resilience, maintaining the magnitude matrix on the current disclosure capability and the changing ESG reporting requirements.

a) Category Weights Highlights

LSEG ESG computes category weights according to a systematic methodically normalizing to scores between 0-100%, with the default set of weights five positions (median) throughout a 1-10-distribution, weighted according to industry group data point medians. Environmental and social categories trade off industry medians and transparency levels into final weights; the community category gets equal weight across industries because of its global universal importance. Corporate governance however uses a different approach: as they are three categories amounting to 15 points, each category's weight should be calculated as its data points divided by total governance data points and multiplied by 15. For categories that don't have enough data transparency (below 5-7% thresholds), such as innovation and product responsibility, one default weight is given. This differential weighting gives rise to a materiality analysis that is sensitive to industry-specific disclosure trends, while still taking global ESG norms considerations into account.

b) Two Methods for Calculating the Magnitude Matrix

LSEG ESG makes use of two methods (Industry Median, which is good for numerical numbers, and Transparency Weights, which is used for Boolean data points) to calculate the magnitude matrix for environmental and social pillars using numeric and Boolean data points as materiality proxies.

For numeric data of environmental and social impacts, the industry median method is applied. Materiality weighting is derived from the proportion of a sector's materiality that contributes to the total gross value throughout the ESG universe. Compared median values are examined within industry groups for comparison and the weight to weight of each data point in determining sector specific materiality is deduced based on decile ranks (1-10).

c) Category Weight Calculation

The transparency weights protocol is used for Boolean data points (binary 'Yes'/'No' dimensions). The magnitudes are determined by the level of disclosure inside each industry group. The disclosure percentage can be used to assign decile ranks (1 through 10) that establish the relative weight of each

data point, in establishing weights across industry groups. Category weights are calculated by a divided proportion of each category's magnitude weight over the sum of all category's magnitude weights for the industry group^[35]:

$$\text{Category weight} = \frac{\text{Magnitude weight of category}}{\text{Sum of all magnitude}}$$

For environmental and social pillars, data points serving as proxies for industry impact are used to calculate materiality. Industry medians per data point are calculated for each group, then converted to relative medians (industry median / sum of all industry medians). Decile weights (0-10) are assigned based on these relative values. For multi-datapoint categories, the average decile weight determines magnitude weight.

Corporate governance, on the other hand, follows a distinct approach^[35]:

$$\text{Magnitude weights} = \frac{\text{Data Points in Category}}{\text{Total Governance Data Points}} \times 15 \times (\text{Default Weight})$$

Relevancy, category weights, and pillar weights are calculated annually versus the latest (FY0) data of all LSEG ESG coverage companies, the resulting data being benchmarked to thresholds in determining if needs some adjustments. These revisions would only be adjusted for any active fiscal year. To reduce relevancy percentage and weight distortions from limited reporting on small-cap companies, only large- and mid-cap companies are used in our calculation.

3) Overall ESG Score Calculation and Pillar Score

ESG scores are aggregated over the top 10 category weights computed using the LSEG magnitude matrix. Then ESG pillar scores are the relative weight of the category weights.

	Environmental			Social				Governance			
Industry group	Emission	Innovation	Resource use	Human rights	Product responsibility	Workforce	Community	Management	Shareholders	CSR strategy	ESG scores
Water and related utilities	0.15	0.13	0.15	0.05	0.04	0.13	0.09	0.17	0.05	0.03	
ABC	0.66	0.00	0.44	0.05	0.58	0.89	0.34	0.99	0.84	0.56	0.571146184
CBD	0.71	0.96	0.38	0.00	0.69	0.66	0.70	0.37	0.01	0.56	0.547913483
DEF	0.03	0.00	0.00	0.00	0.00	0.57	0.11	0.21	0.14	0.54	0.150536652
EFG	0.00	0.31	0.03	0.00	0.00	0.25	0.59	0.89	0.94	0.00	0.327824384
EMJ	0.87	0.31	0.68	0.20	0.86	0.84	0.98	0.33	0.87	0.68	0.639400132
EMQ	0.00	0.00	0.00	0.00	0.00	0.30	0.02	0.88	0.08	0.01	0.194782046
ENR	0.92	0.81	0.85	0.75	0.97	0.93	0.66	0.40	0.49	0.86	0.756319427
GPQ	0.24	0.31	0.00	0.00	0.17	0.02	0.16	0.56	0.56	0.00	0.223443757
HIJ	0.61	0.31	0.50	0.65	0.42	0.80	0.80	0.48	0.27	0.37	0.54145808
IBD	0.00	0.00	0.00	0.00	0.00	0.07	0.30	0.51	0.49	0.00	0.145398367
JKL	0.50	0.73	0.74	0.00	0.78	0.43	0.93	0.62	0.89	0.26	0.611504799
LMN	0.76	0.31	0.56	0.00	0.47	0.48	0.48	0.17	0.24	0.26	0.415151441
MNO	0.82	0.31	0.91	0.40	0.58	0.61	0.07	0.33	0.52	0.63	0.539888776
MSE	0.55	0.00	0.62	0.85	0.17	0.75	0.84	0.77	0.35	0.91	0.581805891
OPQ	0.29	0.00	0.32	0.00	0.17	0.16	0.48	0.15	0.42	0.08	0.212906948
PQR	0.45	0.65	0.79	0.55	0.78	0.52	0.75	0.76	0.76	0.16	0.640379494
PSF	0.97	0.88	0.97	0.95	0.92	0.98	0.89	0.15	0.73	0.34	0.776142465
RST	0.08	0.31	0.00	0.00	0.17	0.20	0.59	0.42	0.42	0.00	0.228111754
UVW	0.34	0.00	0.26	0.20	0.58	0.70	0.39	0.26	0.16	0.31	0.316400123
VPF	0.16	0.31	0.15	0.00	0.17	0.11	0.25	0.88	0.90	0.00	0.325828115
XYZ	0.39	0.00	0.21	0.40	0.17	0.39	0.48	0.95	0.73	0.51	0.429105164
YQM	0.16	0.00	0.09	0.00	0.36	0.34	0.20	0.69	0.34	0.00	0.25005416

Figure 37 - Overall ESG Score for Industry Group^[35]

Pillar	Category	Category scores*	Category weights	Sum of category weights	Formula: sum of category weights	New category weights*	Formula: new category weights	Pillar scores	Formula: pillar scores
Environmental	Emissions	0.98	0.15	0.44		0.35	(0.15/0.44)	0.94	(0.98*0.35)+
Environmental	Resource use	0.97	0.15		(0.15+0.15+0.13)	0.35	(0.15/0.44)		(0.97*0.35)+
Environmental	Innovation	0.85	0.13			0.29	(0.13/0.44)		(0.85*0.29)
Social	Community	0.89	0.09	0.31		0.28	(0.09/0.31)	0.94	(0.89*0.28)+
Social	Human rights	0.95	0.05		(0.09+0.05+0.04+0.13)	0.17	(0.05/0.31)		(0.95*0.17)+
Social	Product responsibility	0.92	0.04			0.13	(0.04/0.31)		(0.92*0.13)+
Social	Workforce	0.98	0.13			0.43	(0.13/0.31)		(0.98*0.43)
Corporate governance	Shareholders	0.73	0.05	0.26		0.20	(0.05/0.26)	0.32	(0.73*0.20)+
Corporate governance	CSR strategy	0.34	0.03		(0.05+0.03+0.17)	0.13	(0.03/0.26)		(0.34*0.13)+
Corporate governance	Management	0.19	0.17			0.67	(0.17/0.26)		(0.19*0.67)

Figure 38 - Pillar Scores^[35]

4) Controversies Score Calculation

This score is derived from 23 topics on the controversy topics covered by ESG controversies, a controversy should be considered a fit. And first of all, the default value 0 indicates a value. Each controversy counts only in the fiscal year, and it is not reoccurring in other years. Depending on the market cap bias and the degree of attention the media will receive, this will matter. If there is always a controversy going on, a higher rate will be applied decreasing the starting point. It is calculated on a given industry benchmark which is 100 on a no controversy basis, which is to say firms with only 100 does not have any controversies.

Global benchmark	Cap class	Severity rate*
>=10 billion	Large	0.33
>=2 billion	Mid	0.67
<2 billion	Small	1

Figure 39 - Severity Rate for Dimension^[35]

5) ESGC Score

That's the average between the ESG score and ESG controversies, for the fiscal year. If the controversies score is larger than ESG score, then ESG score equals ESGC score. Moreover, when the ESCG score is a decimal, it is rounded to the adjacent smaller integer, as the scheme below shows.

	Environmental			Social				Governance					
Industry group	Emission	Innovation	Resource use	Human rights	Product responsibility	Workforce	Community	Management	Shareholders	CSR strategy	ESG scores	Controversy scores	Combined scores
Water and related utilities	0.15	0.13	0.15	0.05	0.04	0.13	0.09	0.17	0.05	0.03			
ABC	0.66	0.00	0.44	0.05	0.58	0.89	0.34	0.99	0.84	0.56	0.571146184	1	0.571146184
CBD	0.71	0.96	0.38	0.00	0.69	0.66	0.70	0.37	0.01	0.56	0.547913483	1	0.547913483
DEF	0.03	0.00	0.00	0.00	0.00	0.57	0.11	0.21	0.14	0.54	0.150536652	1	0.150536652
EFG	0.00	0.31	0.03	0.00	0.00	0.25	0.59	0.89	0.94	0.00	0.327824384	1	0.327824384
EMJ	0.87	0.31	0.68	0.20	0.86	0.84	0.98	0.33	0.87	0.68	0.639400132	0.25	0.444700066
EMQ	0.00	0.00	0.00	0.00	0.00	0.30	0.02	0.88	0.08	0.01	0.194782046	1	0.194782046
ENR	0.92	0.81	0.85	0.75	0.97	0.93	0.66	0.40	0.49	0.86	0.756319427	1	0.756319427
GPQ	0.24	0.31	0.00	0.00	0.17	0.02	0.16	0.56	0.56	0.00	0.223443757	1	0.223443757
HJ	0.61	0.31	0.50	0.65	0.42	0.80	0.80	0.48	0.27	0.37	0.54145808	1	0.54145808
IBD	0.00	0.00	0.00	0.00	0.00	0.07	0.30	0.51	0.49	0.00	0.145398367	1	0.145398367
JKL	0.50	0.73	0.74	0.00	0.78	0.43	0.93	0.62	0.89	0.26	0.611504799	1	0.611504799
LMN	0.76	0.31	0.56	0.00	0.47	0.48	0.48	0.17	0.24	0.26	0.415151441	0.75	0.415151441
MNO	0.82	0.31	0.91	0.40	0.58	0.61	0.07	0.33	0.52	0.63	0.539888776	1	0.539888776
MSE	0.55	0.00	0.62	0.85	0.17	0.75	0.84	0.77	0.35	0.91	0.581805891	1	0.581805891
OPQ	0.29	0.00	0.32	0.00	0.17	0.16	0.48	0.15	0.42	0.08	0.212906948	1	0.212906948
PQR	0.45	0.65	0.79	0.55	0.78	0.52	0.75	0.76	0.76	0.16	0.640379494	1	0.640379494
PSF	0.97	0.88	0.97	0.95	0.92	0.98	0.89	0.15	0.73	0.34	0.776142465	1	0.776142465
RST	0.08	0.31	0.00	0.00	0.17	0.20	0.59	0.42	0.42	0.00	0.228111754	1	0.228111754
UVW	0.34	0.00	0.26	0.20	0.58	0.70	0.39	0.26	0.16	0.31	0.316400123	1	0.316400123
VPF	0.16	0.31	0.15	0.00	0.17	0.11	0.25	0.88	0.90	0.00	0.325828115	1	0.325828115
XYZ	0.39	0.00	0.21	0.40	0.17	0.39	0.48	0.95	0.73	0.51	0.429105164	1	0.429105164
YQM	0.16	0.00	0.09	0.00	0.36	0.34	0.20	0.69	0.34	0.00	0.25005416	1	0.25005416

Figure 40 - Controversy Scores Applied to the Final Score^[33]

Scenario	ESG controversies score	ESG score	ESGC score
If controversies score is $\geq$ ESG score, then ESG score = ESGC score	100	89	89
If controversies scores is $<$ ESG score, then ESGC score = average of ESG and controversies score	48	49	48.5

Figure 41 - Approximation of the ESGC Score^[35]

6) Feedback and Changes

This is not a real piece of the process, because it works independently and simultaneously. The method of LSEG ESG scoring methodology is continuously reviewed to stay up to date with the client and the evolving industry needs and it is applied with caution and infrequent adjustments in methodology to keep it stable and enable trend analysis and maintain customers' confidence. When iterations are necessary LSEG is structured and is analysed systemically and does impact analysis to expose potential limitations, biases, or unintended consequences. To keep up with new regulations and reporting standards emerging as the methodology, the methodology is reviewed periodically. All updates and improvements are all documented in detail, with client notifications provided 30-90 days prior, depending on complexity, to allow clients to review changes and adjust^[35].

6.5 ISS ESG

The ESG Corporate Rating is intended to help institutional investors drive their investment strategies sustainably. It uses the company ESG performance to adequately manage ESG risks, to mitigate them or to improve positive opportunities.

It tracks performance on a twelve-point absolute letter and base numerical scale between A+/4.00 and D-/1.00. Some of the final scores may be moved a bit by the driven choices of analysts, which weight subjectively some facts. The method uses a holistic and prospective materiality-oriented notion, related to sustainable value generation through a two-factor materiality theory. At worst cases, financially and impact materiality are closely linked; and so, the rating considers a broad set of industry-specific sustainability issues meant to ensure that it includes salient and emergent ESG risks and opportunities.

The ISS Methodology is constructed based on global normative frameworks such as IFRS Sustainability Disclosure Standards published by the ISSB, European Sustainability Reporting Standards (ESRS), CSRD and GRI. The entire value chain is analysed for this score to properly evaluate it; possible controversies, occurred between each component of this chain, need also an analysis. The methodology is periodically inspected by ISS ESG's Methodology Review Board that comprises senior methodology experts in research organizations worldwide. The Board conducts public surveys to solicit opinions from key stakeholders on methodological basis and possible improvement. If modifies would be desirable, clients are notified quarterly. Given that, a business model has its specific risks, opportunities and impacts, an industry and sub-industry specific approach is considered, based on a proprietary industry classifier. This approach starts with Global Industry Classification Standard (GICS), and the final assignment is constructed to achieve good homogenization in the same field. ISS ESG has a two-dimensional Industry Classification Matrix that consists of dimensions, Social and Governance Relevance and Environmental Relevance. The matrix maps each industry into its designated section or category, based on the total size of the sector's risk exposure, stakeholder implications, and location throughout the entire value chain.

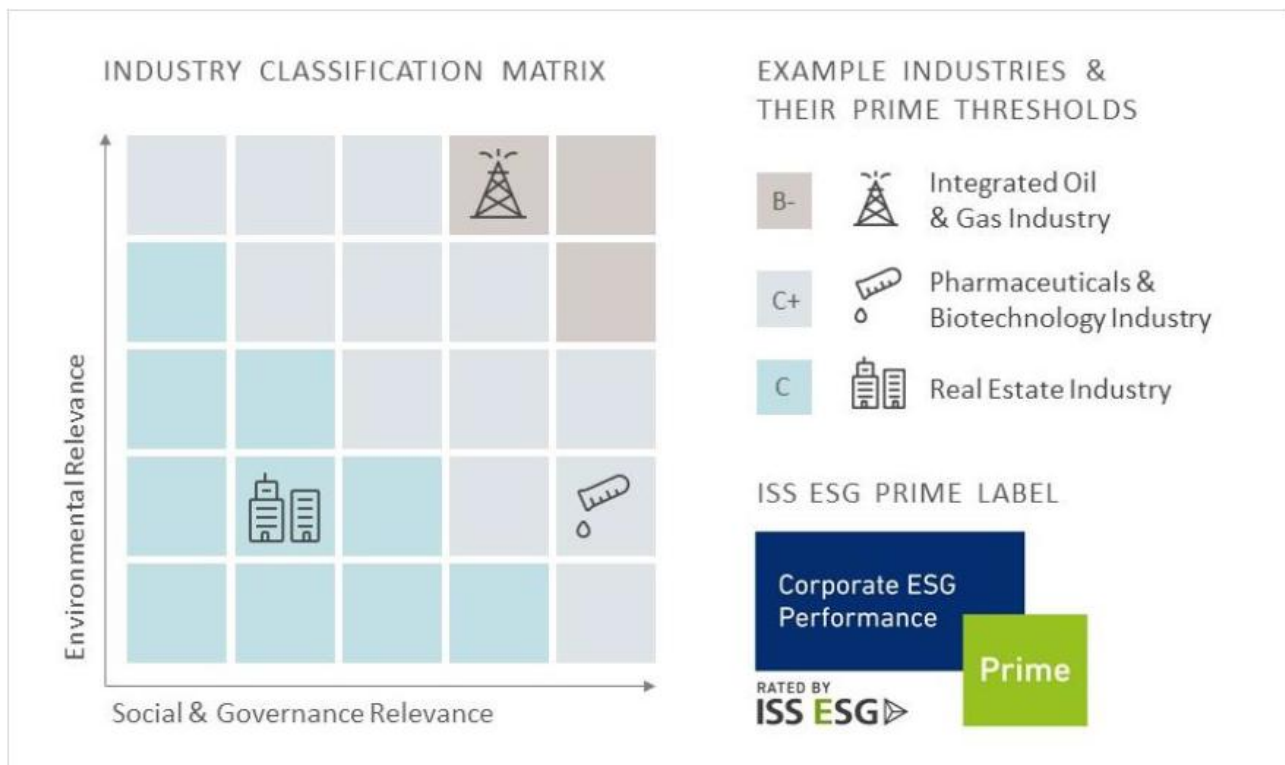


Figure 42 - Industry Classification Matrix^[36]

The weight of each dimension per industry, which includes what is called a Prime threshold, depends on the place it is at in the matrix. Such companies are designated Prime status when their ESG performance matches or exceeds their Prime threshold, an industry level letter grade. If there are various very different circumstances of risk that exist in the same industry, which can lead to confusion onto investors, additional thresholds will be imposed.

The Rating Structure has several levels that are detailed in a top-down basis. Evaluations only take place at the indicator level before scores are aggregated. Companies that are grouped under the heading of ESG Corporate Rating have usually the same set of indicators and as a result, can compare the ratings among peers. First differentiation follows on to the bottom of the “Topic Level” on the consistent “top-level” structure below. There are standard indicators and specific indicators in each industry-specific rating structure from 100 evaluated indicators for each overall rating. As the hierarchy below explains, for each level there are various indicators and topics, which can go deeper in specifying the proper weight for each sub-industry sector.

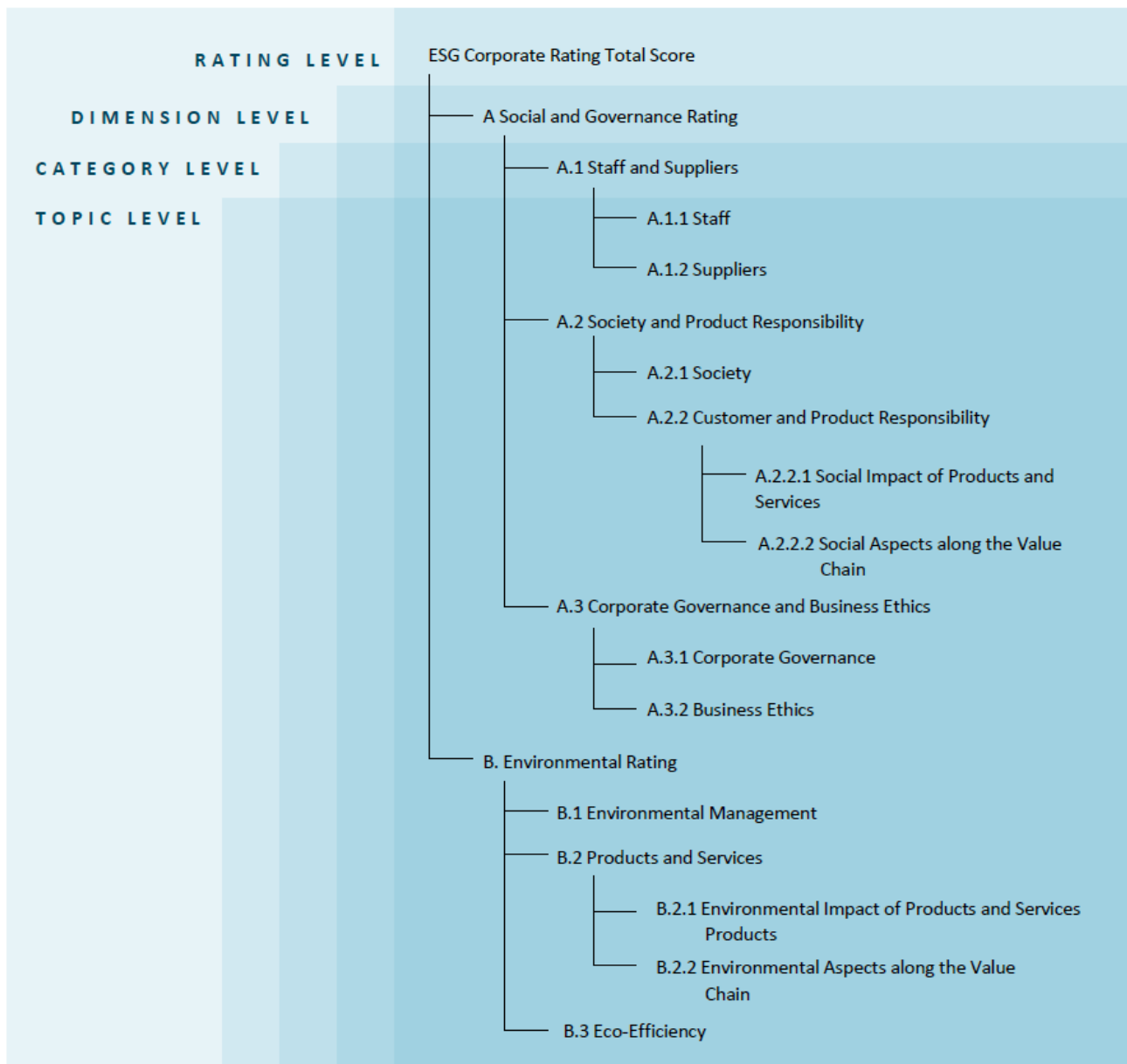


Figure 43 - Consistent Top-Level Hierarchy of the ESG Corporate Rating^[36]

On average there are 40% of standard indicators measuring the performance of the ESG topics of all companies in a field and the other industry specific. In order to adequately describe the proportional degree of materiality to topics, it creates weighting scenarios specific to industry ratings. There are several factors that determine how much weight each topic and indicator gets at the end of the scale:

- *Features of the business form*
- *Corporate issuers' acknowledgment of the issues' materiality*
- *Regulations in place and those to come*
- *Academic research and advances in science and technology*
- *The impact on the SDGs*

- *History of controversies*

The first thing it is necessary to do regarding the correct weight attribution is find key ESG issues, which also vary in terms of complexity as one topic is a multiple or these issues combined are done in different ways. Both common as well as specific to industry indicators should be added to the key ESG issues which can range from 50% to 80% of final weight. For sectors where major Social and Governance factors form the framework for ESG risk and opportunity the latter receives more weight than the former. However, impact assessment for products or services is given between 10-50%.

It changes based on the importance of each item versus other items but generally gives a weight of 10-50% for a given kind of impact. Measures, processes and strategic positions are often given more weight in the indicator range than are linked with corporate policies, this is a principle that companies have pledged to implement. There are 2 extreme cases that are nothing close to the standards:

- Differentiated Weighting Scenarios for different business models, where the specific exposure and materiality of the ESG topics are considered (Pharmaceuticals & Biotechnology industry in particular).
- Non-standard Business Models (Companies doing business in ways beyond what the business normally requires) but exposing themselves to additional ESG-related risks (or that can even incur additional ESG-related risks by investing in another industry to reduce their own ESG exposure).

Absolute performance expectations are presented at the top of the rating scale for each indicator aiming to support objective, reproducible, and comparable judgments for all the norms, standards, and voluntary actions described above. To obtain meaningful assessments at the topic level, a combination of indicators is suitable to measure ESG performance in the respective topics. It is possible to make a basic distinction between qualitative (75%) and quantitative (25%) indicators.



Figure 44 - Types of Quantitative and Qualitative Indicators^[36]

The first ones try to focus on policies and standards, considering the implementation of relevant structures and measures but also controversial business faced. The remaining section aims at quantitative analysis with trend evaluations combined with assessment of the company’s overall performance in the other aspects. Most indicators are assessed and scored through a review of content and the coverage of that content. Coverage is commonly measured by the percentage of relevant employees or operations for which the content applies. Recently, a subsample of indicators uses “factorized” data from the own dataset. Factorized data consists of individual questions and standard answers within a set of data that enable an evaluation of content with embedded coverage. Factorized data cover data from more than 60 indicators that apply to companies in all or most industries.



Figure 45 - Sustainability Objectives Aligned with the UN SDGs^[36]

This facilitates granular and comparative assessments of issuers related to a large variety of key sustainability issues. Standardized questions and answers range embed coverage in the content assessment. For metrics which do not use factorized data, it uses a combined approach applying a bifurcated assessment of content and coverage: an equal 50-50 weight is assigned to content and coverage grades.

This approach, however, has its limitations, since it combines various content and coverage grades rather than making a grossly too favourable measure of high-scoring content combining with very low coverage. In attempts to select more comparative measures, data will only be examined in a disclosure

with a full or near-complete reporting boundary for quantitative indicators. The ESG Corporate Rating is performance assessment and therefore needs pertinent information to be developed into a more objective and reproducible measurement. Relevant information must be aligned with the data requirements or sufficient evidence-based on which a positive assessment or reasonable estimates can be made. Without them, the performance of an indicator cannot be positively evaluated. ESG Corporate Rating evaluations are not carried on from modelling and there are no controversies leading to positive scores. If information obtained from alternative sources can inform it, for example if a company employs the majority of employees in one of the high ESG compliance countries it may be a strong outlook. The estimated data is employed only as long as solid evidence according to the following two rules:

- 1) For percentage assessment based quantitative indicators estimations can be made if no (precise) reported data is provided.
- 2) If coverage is not explicitly mentioned by the company, estimations are informed by the contextual data, assuming reasonable assumptions, in a medium to high degree of certainty.

Disclosure and performance requirements of some indicators are adjusted according to the appropriate size of the companies to avoid systematic disadvantages by financial or capacity limitations. Certain indicators can also be deactivated in some situations. Social and environmental effects of products and services are core to ESG performance assessment. The specific indicators evaluated reflect a company's offerings within the framework of seven social and eight sustainability goals according to the SDGs, according to some financial considerations like net sales.

ISS ESG conducts what is known as Norm-Based Research (NBR) to identify some controversies. NBR evaluates corporations for the existence of alleged or verified breaches of established norms or standards of human rights, labour standards, environmental protection and business practices. ESG Corporate Ratings uses severity rating of NBR that reflects reported risk to or impact on society of all potential forms. The absolute rating is indicated by letter on a scale from D- to A+, and to each letter is a numerical score 1.00 to 4.00 with 0.25 range.

NBR Severity Level	Downgrading Impact at Topic Level*	Impact on Topic with A+ Performance
Potential	No downgrading applied	A+ / 4.00
Moderate	20%	A- / 3.40
Severe	50%	B- / 2.50
Very severe	80%	D+ / 1.60

Figure 46 - Controversy-Induced Downgrading Mechanism^[36]

Prime status is reserved for companies with an ESG performance in line with or above a specific letter grade for their sector. The ESG Performance Score makes the Prime status readily available and cross-industry comparisons of the rating across ratings with normalized Prime threshold possible. It is a measure of the overall alphabetic score (from 0 to 100) and with an overall score over 50 the company is identified as a Prime status company. A decile rank is calculated from the underlying numerical score of the rating.

D-	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
1.00 - <1.25	1.25 - <1.50	1.50 - <1.75	1.75 - <2.00	2.00 - <2.25	2.25 - <2.50	2.50 - <2.75	2.75 - <3.00	3.00 - <3.25	3.25 - <3.50	3.50 - <3.75	3.75 - 4.00
Poor			Medium			Good			Excellent		

Figure 47 - Numerical Scale, Alphabetical Rating and Performance Level^[36]

Letter Scale	Numerical Scale	Performance Score Conversion for Different Prime Thresholds		
		C	C+	B-
A+	3.75 - 4.00	≤ 100	≤ 100	≤ 100
A	3.50 - <3.75	< 93.75	< 92.86	< 91.67
A-	3.25 - <3.50	< 87.50	< 85.71	< 83.33
B+	3.00 - <3.25	< 81.25	< 78.57	< 75.00
B	2.75 - <3.00	< 75.00	< 71.43	< 66.67
B-	2.50 - <2.75	< 68.75	< 64.29	< 58.33
C+	2.25 - <2.50	< 62.50	< 57.14	< 50.00
C	2.00 - <2.25	< 56.25	< 50.00	< 41.67
C-	1.75 - <2.00	< 50.00	< 40.00	< 33.33
D+	1.50 - <1.75	< 37.50	< 30.00	< 25.00
D	1.25 - <1.50	< 25.00	< 20.00	< 16.67
D-	1.00 - <1.25	< 12.50	< 10.00	< 8.33

Figure 48 - Transposition of Letter and Numerical Scales to ESG Performance Score per Prime Threshold^[36]

ESG Momentum, rather, serves as an indicator of year-on-year shift in the overall rating of rated entity. It is calculated using the difference between the final rating numerical grade of the present and last regular final rating numerical grade. According to the numeric change in classification, it is in five levels from significantly negative to significantly positive.

Delta	ESG Momentum	Symbol
$\Delta \leq -0.5$	Significantly negative	⚡
$\Delta \leq -0.25$	Negative	⬇
$\Delta > -0.25 - < 0.25$	Stable	■
$\Delta \geq 0.25 - < 0.5$	Positive	⬆
$\Delta \geq 0.5$	Significantly positive	⬆⬆

Figure 49 - Calculation Mechanism of ESG Momentum^[36]

The Transparency Level indicates the level of transparency in the ESG Corporate Rating as measured by how much of the company's performance is tangible information, including information provided by the company itself or obtained through third-party organizations. It considers the availability of information on various indicators, even including information made available as part of the rating feedback mechanism.

0% - <20%	20% - <40%	40% - <60%	60% - <80%	80% - 100%
Very Low	Low	Medium	High	Very High

Figure 50 - Transparency Levels^[36]

The Analyst's opinion is a summary of each ESG Corporate Rating would be as follows:

- **Product Portfolio Impact Commentary**, summing up an assessment of the quality and share of revenue with respect to a company's products and services
- **Key Issues Performance Commentary**, which provides a summary assessment of how proactively and successfully the company addresses material sustainability challenges in its own operations and value chain

- **Governance Commentary** which describes the governance structures and measures adopted by the company and the quality and implementation rate of policies, related to its ethical business conduct

All data collection and analysis for ESG Corporate Rating is solely performed in-house by trained and specialized analysts, working under clearly defined data collection manuals and evaluation guidelines. The source of data mainly comes from publicly available information, such as a company's own disclosure and reporting. During the rating process, companies are approached both when they are rated for the first time and when they undertake a voluntary rating review every two or three years. A non-public document may also be offered by companies to aid in rating and increase transparency.



Figure 51 - ISS ESG's Rating Process^[36]

Although this is a voluntarily carried out review, scores generally are reviewed annually; further updates can occur if significant developments or reporting standards evolve or some controversies come out. Mergers, acquisitions and spin-offs are well examined in the subsequent new year. ISS ESG has implemented a quality management system that includes the following quality controls for the ESG Corporate Rating:

- 1) It relies on a uniform and thorough rating technique that ensures comparable scoring across companies and sectors.
- 2) The methodology and approach for scoring are embedded into proprietary software used by the analysts.
- 3) A global team of specialists in local markets spanning worldwide helps to drive geographical diversity and ESG trends.
- 4) All analysts are fully trained.
- 5) All ratings are meticulously proofread by experienced analysts who are intimately familiar with the rating methodology.

- 6) A global ESG Methodology team responsible for consistently applying the methodology monitors all ratings. They typically create new methodology in partnership with sector leads and ESG topics.
- 7) Small changes in Prime status and substantial grade changes must be approved by a committee with senior staff in ESG Research.
- 8) Material methodology modifications are reviewed and approved by a Methodology Review Board of qualified methodology and research leaders^[36].

6.6 ESG Cerved Rating

Cerved Rating Agency (CRA) created an owner methodology, derived from algorithms, for ESG-applicability rating agencies. In addition to this first expert-based analysis, best in class, based on international frameworks as EFFAS (European Federation of Financial Analysts Societies) or Global Compact's Ten Principles (inspired by the Global Initiative for Sustainability Ratings (GISR)) there is a qualitative judgment made by the analyst, which seek to interpret his final decision based on the primary KPIs.

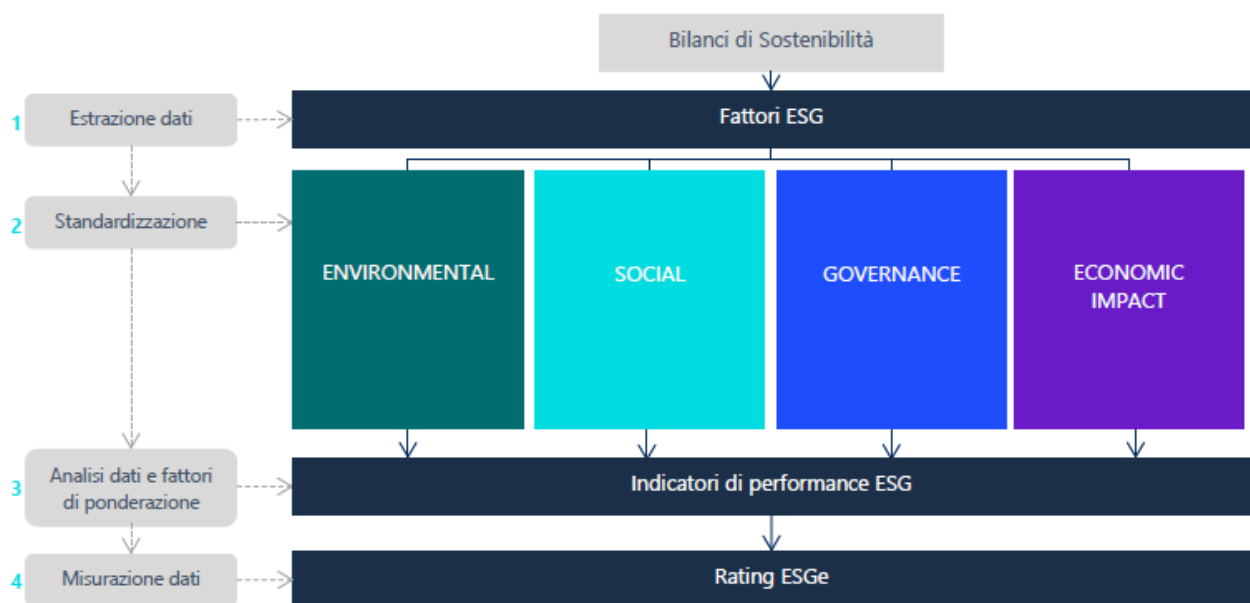


Figure 52 - Process' Phases^[37]

The measurement is relative in nature and considers the heterogeneity of every industry sector. Key factors are transparency, impartiality, thoroughness and comparability (which follow several principles, including strictness and backtesting in a systematic manner). For the extraction, starting with financial data and public data collected for each sub-industry sector, so that companies can be

compared. You can use other sources of non-financial data, and this would include non-financial statement by the GRI Standards, integrated financial report or websites. It is necessary to standardize the data following this step and split it into five sectors (ESGE, Environmental, Social, Governance and Economic), along with a financial sector.

Area	Key indicators	Aree di indagine analizzate
ENVIRONMENTAL	Natural Capital Dependence	La tipologia e l'ammontare di materiali, acqua, energia, carta e rifiuti che l'azienda impiega e produce e che possono essere indicativi della sua dipendenza dalle risorse naturali e del suo impatto sulla loro disponibilità.
	Climate change – Carbon Footprint	L'ammontare di emissioni nell'aria rilasciate dall'azienda, tra cui le emissioni di gas serra (GHG), di ossidi di azoto (NOx) e di ossidi di zolfo (SOx), che sono indicative del suo contributo al cambiamento climatico.
	Products and services	L'ammontare delle emissioni connesse con attività upstream e downstream dell'azienda, nonché la presenza di certificazioni LCA e prodotti e/o servizi sostenibili.
	Supply chain	La consapevolezza dell'azienda circa l'impatto che le sue relazioni lungo la catena di fornitura hanno sull'ambiente. Questa consapevolezza si riflette nella selezione dei fornitori sulla base di uno screening ESG.
	Innovation	L'impegno dell'azienda nell'innovazione, tra cui l'adozione di illuminazione led, l'ammontare di investimenti in ricerca e sviluppo e di prodotti brevettati.
	Tangible value	Risultati tangibili dell'impegno dell'azienda rivolto alle tematiche ambientali, tra cui la presenza di obiettivi, quantitativi o non, di riduzione delle emissioni GHG.
	Compliance	L'impegno dell'azienda con leggi, regolamenti e/o certificazioni ambientali e l'ammontare di eventuali sanzioni dovute.
	Disclosure	La completezza dei dati quali-quantitativi forniti dall'azienda, tenuto conto del benchmark e della materialità dei temi inerenti al settore di appartenenza.

Figure 53 - E-pillar Indicators^[37]

Area	Key indicators	Aree di indagine analizzate
SOCIAL	Workforce – Labour practices	Il modo in cui l'azienda si approccia alla diversità, alle pari opportunità, alla creazione di lavoro e alla salute e alla sicurezza dei propri dipendenti sul posto di lavoro, che genera benefici sia per l'azienda che per i lavoratori.
	Human Rights	L'impegno dell'azienda nel garantire la tutela dei diritti umani, tra cui il suo impegno nell'abolizione del lavoro forzato e del lavoro minorile, nell'evitare le discriminazioni e nel garantire la libera associazione dei propri lavoratori.
	Society	Impegno dell'azienda in ambito anticorruzione e valutazione dei fornitori sulla base di criteri ESG.
	Product Responsibility	Incidenti di non-compliance dei prodotti offerti dall'azienda rispetto alla salute e alla sicurezza dei consumatori o rispetto a pratiche di marketing e valutazione della soddisfazione dei consumatori.
	Stakeholders	Investimenti in infrastrutture ed iniziative a favore della comunità.
	Disclosure	La completezza dei dati quali-quantitativi forniti dall'azienda, tenuto conto del benchmark e della materialità dei temi inerenti al settore di appartenenza.

Figure 54 - S-pillar Indicators^[37]

Area	Key indicators	Aree di indagine analizzate
GOVERNANCE	Composition	Informazioni circa la composizione del consiglio di amministrazione e circa i comitati presenti nell'azienda. Questa disclosure dà un'overview anche del ruolo svolto dal CdA nel definire gli scopi, i valori e la strategia aziendale.
	Conflict of interest	Impegno dell'azienda ad evitare e/o a rendere noti agli stakeholder eventuali conflitti di interesse.
	Corruption	Episodi di corruzione confermati durante l'anno: il mercato, gli stakeholder e le normative internazionali si aspettano che le aziende siano conformi a principi di integrità, governance e a pratiche di business responsabili.
	Anti-bribery & Anti-money laundering practices	Presenza o assenza di processi di whistleblowing e di una funzione anticiclaggio.
	Remuneration & Incentives	Informazioni circa la politica di remunerazione degli amministratori e la possibilità che queste remunerazioni siano vincolate ad obiettivi di sostenibilità.
	Gender Diversity	Presenza di donne nel consiglio di amministrazione ed all'interno del top management dell'azienda: mostra l'impegno dell'azienda nel garantire le pari opportunità di carriera.
	Shareholders	Assetto proprietario dell'azienda, rating creditizio e indici etici nei quali l'azienda è inclusa.
	Anti-competitive behaviour	Rispetto delle norme aventi ad oggetto la concorrenza e le leggi antitrust e di monopolio, durante il periodo di riferimento.
	Tax transparency	Trasparenza dell'azienda nella gestione degli aspetti di natura fiscale.
	Risk management & performance	Valutazione delle performance dei più alti livelli di governance e presenza/assenza di target di sostenibilità misurabili all'interno di un Piano Strategico.
	Remuneration policies	Caratteristiche delle politiche di remunerazione e presenza/assenza di un legame tra le remunerazioni degli amministratori e del top management e gli obiettivi ESG.
	Disclosure	La completezza dei dati quali-quantitativi forniti dall'azienda, tenuto conto del benchmark e della materialità dei temi inerenti al settore di appartenenza.

Figure 55 - G-pillar Indicators^[37]

Area	Key indicators	Aree di indagine analizzate
ECONOMIC IMPACT	Economic Value Distribution	Il valore economico aggiunto, generato e distribuito dall'azienda ai suoi portatori di interesse, quali i dipendenti, gli azionisti, la comunità, la pubblica amministrazione e i fornitori. È indicativo della capacità dell'azienda di generare ricchezza per i suoi stakeholder.

Figure 56 - Economic pillar Indicators^[37]

It is possible to add more data points up for each company, up to 400 data points. Based on some industry and industry, level analysis, these fields are clustered in individual areas per business sector based on ESG risk for each segment, and that is determined by the Preliminary Risk Assessment (PRA) which develops an ESG risk heat map. When all elements are correctly stated, it becomes

necessary to elaborate ESG KPIs with proper measurements and rates. Then it is necessary to measure your data correctly, via Python on a SQL dataset. Ratings range from 0 to 100, divided over 4 different slots each, with 25 points a correct number of points.

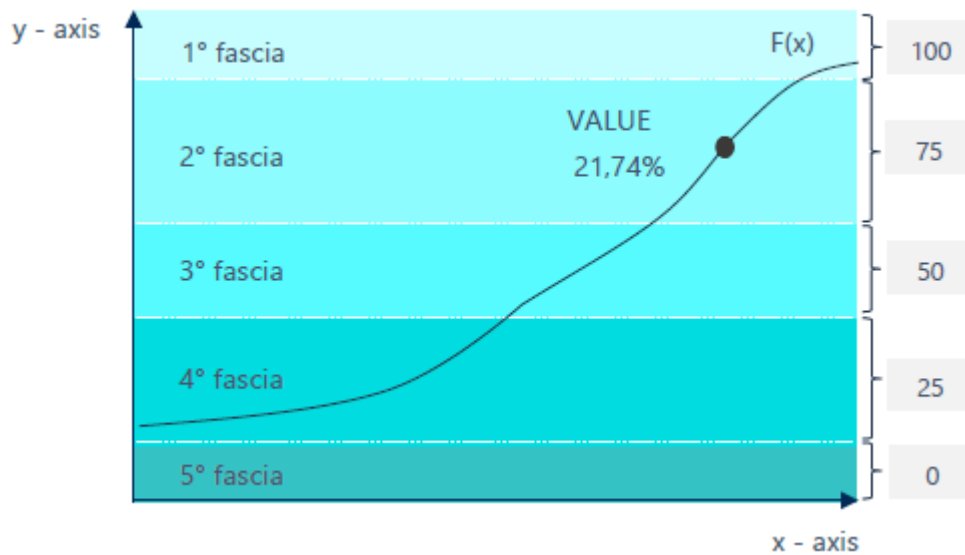


Figure 57 - Qualitative Indicators^[37]

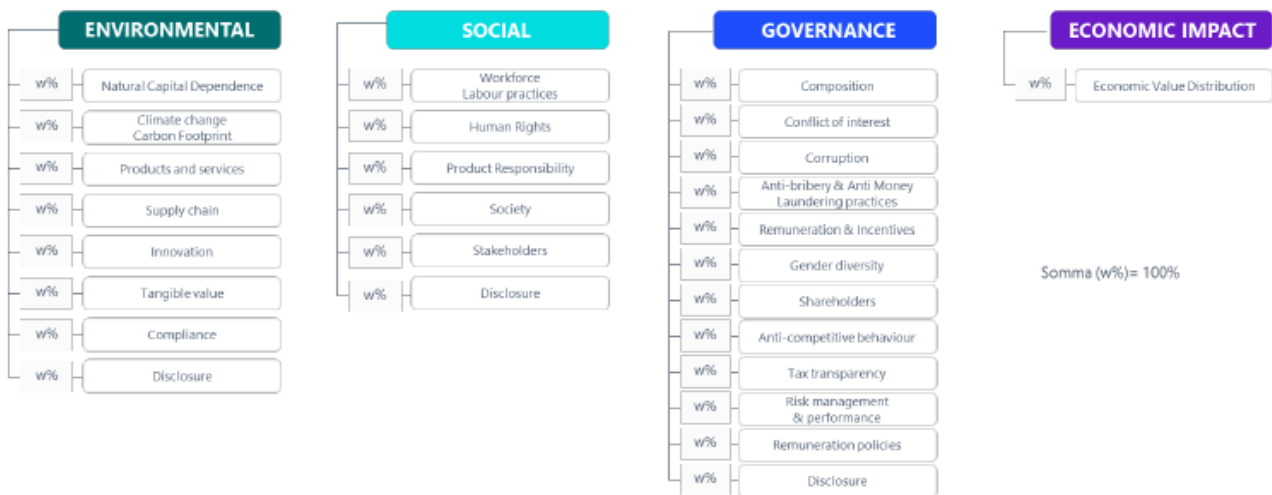


Figure 58 - Weighted Pillars^[37]

$$ESGe = EW \times \sum_{E=1}^8 (w_E \times KI_E) + SW \times \sum_{S=1}^6 (w_S \times KI_S) + GW \times \sum_{G=1}^{12} (w_G \times KI_G) + ecW \times (w_{ec} \times KI_{ec})$$

Figure 59 - ESGe Score Formula^[37]



Figure 60 - Weighted Overall Score^[37]

There are also qualitative points that get ‘0’ if negative response, 100 otherwise. Since the KPI is weighted in percentile, the IT system determines the weighted average for each pillar along with the economic impact as well. Each total is awarded a string of letters from AAA to D, and the analyst can change the rating class, needing to motivate them to change the rating classification^[37].

AAA	AA	A	BBB	BB	B	CCC	CC	C	D
85.00–100	75.00–84.99	70.00–74.99	65.00–69.99	60.00–64.99	55.00–59.99	47.00–54.99	40.00–46.99	30.00–39.99	0.00–29.99

Figure 61 - Numerical and Alphabetical Scores^[37]

7. Comparative Analysis of ESG Rating Methodologies

A combination of six ESG rating agencies, MSCI, Sustainalytics Morningstar, S&P Global ESG, LSEG Refinitiv, ISS ESG, and Cerved Rating Agency, shows both convergent foundational principles and substantial methodological divergences that dictate present-day ESG assessment. The comparison combines the strategies undertaken by these top-tier providers in order to shed light on shared conceptual frameworks while emphasising key differences that yield inconsistent ratings for identical companies, thereby critiquing the concept of ESG rating fungibility. In the table below all the paragraphs, it is possible to appreciate a summarized scheme in which the most common principles are shared by different ESG Rating Agencies. Starting from those points, it could be possible to build a unique framework for the following borning agencies.

7.1 Convergent Methodological Foundations

ESG rating agencies demonstrate consensus on several fundamental principles that constitute the bedrock of contemporary sustainability assessment.

7.1.1 Materiality as the Central Organizing Principle

Every methodology reviewed adheres to materiality as a foundation for the assessment process, recognizing that ESG factors demonstrate varying importance across industries and business models. MSCI's industry-specific Key Issue weighting (ranging from 5% to 30%), Sustainalytics' Material ESG Issues (MEIs) framework assessed at the subindustry level, S&P Global's double materiality approach emphasizing impact on both society and enterprise value, LSEG's proprietary magnitude matrix with industry-specific weights (1-10 scale), ISS ESG's Industry Classification Matrix spanning social-governance and environmental relevance dimensions, and Cerved's Preliminary Risk Assessment (PRA) developing ESG risk heat maps all point to the need for uniform ESG assessment to apply to sector-specific risk profiles. This alignment indicates that the literature in the industry is widely aware that one-size-fits-all strategy cannot fully grasp the complex risk-opportunity landscape across a myriad of business activities.

7.1.2 Transparency and Disclosure as Core Evaluation Dimensions

Transparency and disclosure emerge as universally prioritized dimensions, though with varying degrees of emphasis and penalization. LSEG explicitly constructs 70% of its scoring framework around publicly available data, while S&P Global's Corporate Sustainability Assessment (CSA) similarly emphasizes public disclosure requirements for 70% of underlying questions, with zero points attributed to non-disclosure by default. MSCI's methodology acknowledges disclosure limitations without disproportionate penalization, particularly for smaller firms or those in emerging ESG markets, allocating half of Environmental and Social ratings contribution to Risk Exposure assessment reliant on standard financial disclosure. Sustainalytics distinguishes between Comprehensive and Core frameworks to extend coverage while maintaining comparability, with the Core framework using reduced indicator sets. ISS ESG requires relevant information for objective assessment, explicitly stating that performance cannot be positively assessed in absence of disclosure, though it adjusts requirements considering company magnitude. This shared emphasis reflects recognition that information asymmetry fundamentally constrains ESG assessment quality and that disclosure practices serve as both input data and proxy for management commitment.

7.1.3 Dynamic Adjustment Mechanisms for Evolving Risk Landscapes

The dynamic adjustment mechanisms are included in all agencies to meet changes in ESG risk and disclosure practices. LSEG's automatic magnitude value adjustments as corporate ESG disclosure practices change, MSCI annual Key Issue relevance reviews for coherence, Sustainalytics responsive event monitoring with refresh rates at least every 1 year (more often when regulatory or industry changes happen), S&P Global annual CSA updates to keep the relevance and materiality of ESG

impact in the forefront of attention, ISS ESG annual score review along with periodic updates to include new material or controversy, and Cerved systematic backtesting that demonstrates methodological adaptability to maintain relevance in the contemporary world. Such periodic recalibrations recognize that static frameworks quickly become irrelevant in the face of changes in regulatory requirements, changing stakeholder expectations, and evolving sustainability challenges. The temporal dimension distinguishes sophisticated ESG assessment from snapshot-based evaluations.

7.1.4 Comprehensive Controversy Monitoring and Integration

Controversy monitoring is also a methodological confluence: there is a consensus that backward-looking metrics underperform on assessing the extent of the reputational and operational risks derived from ESG incidents. MSCI takes a controversy deduction from 0 to -5.0 points for the severity and the type of the controversy, where structural Company Problems could be affecting several Key Issues. Sustainalytics includes Event Indicators scored 0-5 (no evidence to severe impact) in its management area and differentiates between Systemic ESG Issues impacting broad categories and Idiosyncratic Issues, which are company specific, abnormal occurrences. S&P Global analyses controversies through third-party providers and presents MSA cases which can lead to CSA criteria point deductions for financial (materiality) and reputational (non-materiality) issues. Specifically, LSEG's ESGC score tracks 23 ESG controversy topics on top of the base ESG score and continues to affect ESG across fiscal periods for ongoing developments and explicit adjustments in market capitalization bias. ISS ESG applies Norm-Based Research (NBR) against alleged or verified failures to respect established norms and severity scoring in Corporate Ratings. The methodology of Cerved also measures controversies through its full toolkit for assessment. This is the universal inclusion to avoid past performance failing to accurately predict future risk manifestation and stakeholders' perceptions of organizational behaviour impacting enterprise value.

7.1.5 Multi-Dimensional Assessment Architectures

Methodological approaches were further integrated through multi-dimensional assessment frameworks adoption. Sustainalytics' explicit Exposure-Management lens is reflected in the scoring structure of MSCI's Risk Exposure and Risk Management, S&P Global's preparedness-transparency-performance evaluation trilogy, LSEG's performance-commitment-effectiveness measurement framework, and ISS ESG's content-coverage bifurcated assessment (with equal 50-50 weighting for non-factorized indicators). This dimensional structure allows to highlight specific risk exposure which can depend on industry and business model attributes and demonstrated mitigation ability is indicative of management quality and overall strategic approach. The exposure-management

dichotomy is a more nuanced evolution from simple good-bad binary assessments recognizing high-risk industries with high degree of management could merit a favourable evaluation while considering their inherent high-risk exposures.

7.1.6 Pillar-Based Hierarchical Structures

All methodologies employ hierarchical models that structure ESG assessment to form Environmental, Social, and Governance pillars that are further subdivided into themes, categories or key issues which are further decomposed into specific indicators or metrics. MSCI's framework consists of 4 Environmental themes (13 key issues), 4 Social themes (14 key issues) and 2 Governance themes (6 key issues). Material ESG Issues are organized in Sustainalytics with Corporate Governance as a cornerstone block accounting for around 20% of the total unmanaged risk, giving Sustainalytics a framework for assessment with its assessment at Material ESG Issues. S&P Global's CSA incorporates up to 1,000 datapoints across a maximum of 30 sub-categories that are split into material ESG themes. As a whole, LSEG aggregates more than 870 measures into 10 categories which share three pillar scores. ISS ESG uses about 100 assessed indicators per rating (40% standard, 60% industry-specific) arranged by topics. Cerved distributes up to 400 data points across five categories (ESGE, Environmental, Social, Governance, Economic) plus Financial. Such design hierarchies ensure systematic evaluation, allow for an easy granular attribution of the individual performance, and aggregate features from detailed indicators to summary ratings while retaining traceability.

Table 4 - Summarized convergences

Dimension	Convergent Principle	Shared Principle	Implications
Materiality	Each agency uses the Materiality Matrix, although in different set up, as the core of ratings.	- MSCI uses industry-specific Key Issue weights. - Sustainalytics adopts sub-industry MEIs. - S&P integrates double materiality. - LSEG attributes a magnitude matrix for each issue. - ISS ESG applies an Industry	All the ESG rating agencies consider extremely various and heterogeneous sectors, so they weigh each sub-industry sector in a different way. It does not work a single-fit model.

		Classification Matrix. - Cerved builds its own risk heat matrix.	
Transparency and Disclosure	In every methodology it is possible to appreciate that company's disclosure is the core of the process. When a company do not share important information, it is penalized in the final score.	- MSCI consider a penalty in rating when there is not any collaboration in disclosure. - Sustainalytics differentiates Comprehensive and Core framework. - Both LSEG and S&P base more than 70% of the final score on public data shared directly by companies. - ISS ESG requires minimum disclosure for a positive rate. - Cerved considers disclosure an integrated part of the risk assessment.	Disclosure is one of the greatest efforts ESG rating agencies require to companies due to be more accurate in judging. It works both as an input and a proxy for quality, trying to reduce asymmetry.
Dynamic Adjustment Mechanism	Periodically, each agency recalibrates weights and scores in	- MSCI annually reviews Key Issue relevance.	ESG assessment is considered as dynamic as the financial sector.

	order to be aligned with regulatory, laws and market changes.	- Sustainalytics updates MEIs and monitors event at least annually. - LSEG adjusts magnitude as soon as something changes. - S&P revises CSA criteria at least yearly. - ISS ESG updates controversy assignments and ratings. - Cerved performs systematically backtesting.	It ensures methodology relevant and consistent which it evolves with and for the sub-industry field.
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Controversy Monitoring	Controversies are universally embedded to capture reputational and operational risks, which, otherwise, remain invisible in the indicators.	- MSCI consider controversies as negative points in the final score, from 0 to -5. - Sustainalytics attributes from 0 to 5 to events, distinguishing systemic and idiosyncratic issues. - LSEG tracks 23 different controversy topics, calculating a different total score, which is ESGC. - S&P integrates third-party controversy cases in the CSA scoring. - ISS ESG uses Norm-Based Research, scanning the web helped by AI. - Cerved incorporates controversies in its assessment.	It is impossible to measure controversies with prearranged indicators. Each agency finds the best way to refresh data according to the established laws and directives.
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Multidimensional Assessment Architectures	Agencies develop ratings combining exposure, management, performance and preparedness.	- MSCI separates risk exposure from risk management. - Sustainalytics uses a combined rating for exposure and management. - LSEG prefers schematizing rating into three different arrays: performance-commitment-effectiveness. - S&P applies preparedness-transparency-performance. - ISS ESG uses content-coverage duality. - Cerved does not seem to use multi-layered framework.	It enables nuances: it is not possible to avoid risks, but it is possible to manage them in the best way possible. It also provides the possibility to rate in various modes avoiding just “bad or good” rates.
Pillar-Based Hierarchical Structure	All methodologies are based on the ESG pillars, split into themes and indicators.	- MSCI applies 10 pillars, divided into 4 E-pillars, 4-S-pillars and 2 G-pillars, for a total of 33 Key Issues. - Sustainalytics uses MEIs and Governance score.	It ensures systematic and traceable aggregation. It is possible to rate from a general to a very granular point of view. It also supports comparability among peers

		- LSEG arranges more than 800 indicators for 10 different categories. - S&P reaches up to 1000 datapoints organized into 30 sub-categories. - ISS ESG counts more than 100 indicators, which cover standard field for about 40% and sub-industry sector for the remaining 60%. - Cerved applies more than 400 datapoints divided into ESGE and financial categories.	
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7.2 Fundamental Methodological Divergences

Notwithstanding these convergences, substantial methodological heterogeneity produces rating discordance across agencies, reflecting fundamentally different philosophical orientations toward ESG assessment objectives and optimal measurement approaches. With a more accurate analysis of the following themes, it is possible to say that some of the positive aspects, which lead to the convergence of the methodologies, are also considered negative, which causes divergencies.

7.2.1 Scoring Philosophy and Scale Architecture

The starkest distinction is in scoring philosophy. MSCI uses relative letter grades (AAA to CCC) that are normalized within industry peer groups in which AAA is industry leader, not a universal mark of

excellence. In contrast, Sustainalytics uses an absolute risk measurement scale (0-50+) that is applied to unmanaged ESG risk exposure, no matter peer performance. So, S&P Global and LSEG each have their own way of using 0-100 percentage scales that take a different approach; S&P Global is biased towards peer comparison, while LSEG instead utilizes percentile ranking benchmarked against proprietary market classifications. ISS ESG uses an absolute twelve-point scale (A+/4.00 to D-/1.00) to assess industry-specific Prime thresholds, whereas Cerved maintains a 0-100 range with letter grade conversion (AAA to D). The MSCI framework supports optimal best-in-class selection within industries, the absolute measurement of Sustainalytics can be employed to quantify portfolio risk, and hybrid approaches (S&P Global, ISS ESG) seek to balance peer comparison with cross-industry assessment. These architectural differences fundamentally alter rating interpretation.

7.2.2 Governance Integration and Treatment

The governance integration reveals different perspectives on governance's nexus to the overall ESG performance. MSCI is a governance independent pillar of deduction-based scoring that is fundamentally distinct from Environmental and Social methodologies; companies start at a 10, with deductions applied based on triggered Key Metrics through binary pass or fail assessments. This autonomous construction prevents one strength from compensating for another weakness. Sustainalytics considers Corporate Governance a Material ESG Issue responsible for approximately 20% of overall unmanaged risk, thereby placing governance within only one risk category rather than foundational infrastructure. In contrast to S&P Global's governance integrated into the CSA questionnaire framework without distinct methodological treatment, LSEG includes governance as a standalone pillar with country-specific benchmarking (acknowledging that best practice of governance differs significantly by jurisdiction, not sector). ISS ESG includes governance combined with industry-variable weighting, corresponding to placement in the Industry Classification Matrix (ICM). These variations mean weaknesses in governance are penalized by MSCI more, in contrast to integrated frameworks that can counterbalance negative governance with good environmental and social performance.

7.2.3 Non-Disclosure Treatment and Penalties

There is evidence of pronounced methodological dissimilarity in the treatment of non-disclosure. MSCI employs materiality-based calibrated treatment: non-disclosure by board members precludes the release of the Corporate Governance Theme Score, unrevealed policies are presumed non-existent, missing quantitative data triggers mid-range deductions, and jurisdictional defaults incorporate mandatory requirements. Where data are not available, MSCI relies on industry averages and regional benchmarks. S&P Global takes the most punitive approach: 70 percent of CSA questions

need publicly available data to determine the score, and zero points are automatically assigned if a respondent does not answer. The remaining 30% rewards voluntary disclosure but does not punish absence. While Sustainalytics does not penalize non-disclosure, they incorporate transparency into management assessment, where absence makes positive scoring impossible. LSEG uses a distinction between low-materiality information (minimal if missing) and high-materiality gaps (substantial negative). ISS ESG requires relevant information for positive assessment but adjusts requirements based on the size of firms to protect against systematic disadvantage for small firms. Cerved provides an emphasis on transparency but enables analyst judgment to contextualize disclosure patterns. This divergence in response leads to varying sensitivity: S&P Global penalizes limited transparency the most, MSCI most effectively accommodates the heterogeneity of disclosures, and others occupy intermediate positions. The implications ripple through to corporate strategy: S&P Global generates stronger motivation for comprehensive disclosure, while MSCI's amenable position lowers disclosure pressure for resource-constrained firms.

7.2.4 Weighting Methodologies and Materiality Determination

There is considerable technical variation in weighting strategies. Weightings of categories (5–30% for Environmental and Social Key Issues) for MSCI are established by the ESG Methodology Committee through externality analysis based on quantitative industry data. Sustainalytics uses subindustry exposure scores (2-10 scale) times company-specific betas determined through a three-stage process involving beta indicators, subindustry correction factors, and qualitative overlays. The Issue Manageable Risk Factors fall between the 30-100% mark, indicating the segment of exposure that is potentially manageable. The CSA of S&P Global uses question-level weights that add up through tiered structure, so materiality assessment is used to give the initial allocation. Up to 1,000 datapoints are evaluated, with 40–50% of total score coming from preparedness-transparency assessment, while the rest comes from performance metrics. Specifically, LSEG's magnitude matrix performs category weights based on systematic methodology: 5-point default weights within the 1-10 distribution, modified either through industry median method or transparency weights method using decile ranking. Corporate governance follows a special calculation where magnitude weights are equal (category data points / total governance data points) $\times$ 15. ISS ESG's weighting scenarios reflect the characteristics of the business model, recognition of topic materiality, regulations, academic research on it, the impact of the SDG, and controversy history. Final weight for key ESG issues ranges from 50-80% with assessment on product and service impact weighted 10-50%. Cerved's percentile-weighted KPIs combine through its IT system producing weighted averages that capture economic impact. These differences such as Committee-determined (MSCI), beta-individualized (Sustainalytics), Materiality-analysis-informed (S&P Global), Algorithm-calculated

(LSEG), Multi-factor-informed (ISS ESG) and Risk-assessment-based (Cerved) create scenarios where issues that receive heavy weight in a given framework receive hardly any consideration in another, and portfolio-level implications come into play when agencies diverge on materiality hierarchies.

7.2.5 Qualitative Analyst Judgment and Algorithmic Consistency

The role of qualitative analyst judgment varies greatly. This has profound implications, embodying deep-seated tensions between consistency and contextual nuance. Cerved explicitly empowers analysts to modify rating classifications with documented justification; human judgment assumes the final arbiter. ISS ESG includes the judgment of the analyst at multiple levels: through systematic proofreading by experienced analysts, committee review for changes in Prime status, and Analyst Opinion to give qualitative overlay to quantitative assessment. S&P Global's approach to non-responding companies consists of expert team questionnaire completion from publicly available information, and a preparedness scoring dimension that assesses "quality and nuance of the company's policies." Sustainalytics applies Qualitative Overlays to calculations of beta for company-specific factors, though these constitute adjustments rather than wholesale modifications. MSCI and LSEG focus on algorithmic consistency with committee review for prescribed exceptional cases. LSEG's fully automated, data-driven model updates itself weekly, even as the company reports its own data annually. This range from expert-driven (Cerved, ISS ESG) to algorithm-dominant (LSEG, MSCI) strategies reveals key trade-offs: expert-driven ones could potentially identify context-specific risks not identified by algorithmic models but introduce subjectivity concerns and scalability constraints.

7.2.6 Data Source Breadth and Update Frequency

There is a significant variation in dataset source breadth. LSEG has one of the largest databases, with more than 870 company-level measures (186 is utilized for scoring) across approximately 16,000 companies dating to fiscal year 2002, with weekly updates. S&P Global's CSA asks companies for a maximum of 1,000 datapoints from up to 30 sub-categories through sector-specific questionnaires and annual cycle updates for each firm. MSCI collects information consistent with 33 Key Issues from both company disclosures and credible external sources, with constant collection and auto recalculations. Sustainalytics separates the Comprehensive and Core frameworks to maximize coverage-depth trade-offs. ISS ESG evaluates about 100 indicators (40% standard, 60% industry-specific) and has data only gathered internally by trained analysts, putting quality over quantity. Cerved accommodates up to 400 data points, the primary sources being financial and public reports, which are standardized in Python. Indeed, these disparities reflect strategic decisions: LSEG values

breadth and frequency, S&P Global focuses on depth with intensive questionnaire designs, MSCI balances both company and external sources, Sustainalytics uses tiered models, ISS ESG has a quality focus, and Cerved is all about sector-level comparability.

Table 5 - Summarized divergences

Dimension	Divergent Principle	Cross-Agency Evidence	Implications
Philosophy	Each agency uses a different scoring logic, which could be relative, absolute or hybrid.	- MSCI uses an industry-normalized letter grade (from AAA, best, to CCC, worst). - Sustainalytics applies an absolute unmanaged risk rate, split into 5 slots (from 0 to 40+). - LSEG categorises firms using percentile rankings. - S&P organises biased comparison among peers, evaluating them with a 0-100 scale. - ISS ESG uses 12-point absolute scale, composed by letters (from A+ to D-).	It is not possible to compare directly same firms from different ESG rating agencies. Similar “grades” lead to totally different meaning, causing uncertainty into building the proper portfolio.

		- Cerved applies a hybrid scale using 0-100 scale, but it is convertible into letters.	
Governance Treatment	G-pillar is considered as a standalone component, a risk factor or an integrated issue.	- MSCI applies a standalone G-pillar. - Sustainalytics treats G-pillar as one of MEIs, weighting it about 20% of the total. - LSEG considers G-pillar as a country benchmark. - S&P includes G-pillar into CSA criteria. - ISS ESG applies G-pillar into its Industry Classification Matrix. - Cerved integrates G-pillar within sector-specified risk models.	Each agency believes G-pillar crucial, but not in a unique way. E- and S-pillar are often more similar between different ESG Rating Agencies between the G one.
Penalties and Non-Disclosure Treatment	Each agency clearly prefers total disclosure, but they penalise firms in very different ways.	- MSCI applies deductions. - Sustainalytics prevents positive	Different logics behind penalties spread differences, leading to a non-comparable ESG final

		scoring without disclosure. - LSEG differentiates gaps in the disclosure documents, applying different penalties. - S&P assign 0 points for unanswered CSA questions. - ISS ESG adjusts expectations relying on firm size. - Cerved allows adjustments from analysts.	scores. Fortunately, disclosure will reduce its impact, at least in Europe, thanks to new directives.
Weighting and Materiality	It differs in logics, granularity and computational.	- MSCI uses Key Issue weight, rounding from 5 to 30% of the total. - Sustainalytics applies betas and multiplies them to exposure scores. - LSEG uses a magnitude Materiality Matrix with algorithmic adjustments. - S&P weighs tiered question-level,	ESG rates depends on the providers. These problems lead to a methodological opacity which complicates reconciliation between ESG Rating agencies to create a unique framework.

		relying on up to 1000 datapoints. - ISS ESG uses a multi-factor weighting for Key Issues, from 50 to 80%. - Cerved applies percentile-weighted KPIs.	
Analysts Interventions and Algorithmic Consistency	Few ESG Rating Agencies are helped by analysts in terms of correcting final scores. The others trust in their algorithms.	- MSCI and LSEG prioritize algorithmic consistency and limit analysts work. - Sustainalytics uses qualitative overlays just for betas. - S&P hires expert teams for non-respondents' firms. - ISS ESG and Cerved allow analysts to intervene a lot rather than other agencies.	This kind of work leads to major subjectivity in final scores.
Data Source and Update Frequency	Agencies differ from the quantity and quality data they have.	- MSCI refreshes data continuously across its 33 Key Issues.	Main differences are among breadth and depth in data collection and metrics. If more indicators can

		- Sustainalytics has just two different categories of data collector: Comprehensive and Core frameworks. - LSEG refreshes its more than 870 metrics weekly. - S&P updates its 1000 datapoints annually. - ISS ESG contains just 100 indicators. - Cerved automatises its datapoints collection.	lead to a more accurate analysis, it also can cause scattering among peers and agencies. Also the refresh frequency could be standardised for each agency.
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7.3 Implications for Stakeholders

The heterogeneity of ESG rating approaches, which include absolute versus relative scoring logics, differential treatment of governance (including deduction-based or integrated approaches), differential policies for non-disclosure, heterogeneous issue weightings, and varying degrees of qualitative analyst discretion, generates systematic rating discordance with important analytical and operational implications for investors, rated companies, and regulators. For investors, rating concordance implies sound and broadly recognized ESG performance, while divergence requires careful scrutiny of the methodological premises driving such a comparison and the explicit matching of rating selections to the objective of investing (i.e., best-in-class allocation within industries, risk quantification at the portfolio level, cross-sector comparability, thematic exposure, engagement prioritization). For rated companies, a detailed grasp on how these different approaches is designed can directly help with strategic positioning, particularly with respect to disclosure strategy, governance remediation, controversy management, and the prioritization of ESG initiatives whose materiality and weight vary across frameworks. Such diversity for regulators not only constitutes a

case of problematic inconsistency but also highlights the coexistence of different evaluative purposes and theoretical foundations, and consequently regulatory intervention should not focus on imposing rigid standardization that would potentially suppress justified analytical pluralism but needs instead to address factors in the background of these divergences in assessment objectives, the need for methodological transparency and comparability disclosures along with accountability mechanisms: clarifying the scoring logic behind these assessments and weightings, non-disclosure treatment, qualitative override processes, and empirical validation practices.

8. Empirical Comparison of ESG Rated Firms

Trying to get these analogies and differences easier to understand, it is necessary to show which firms share similar scores and which are totally divergent. In the previous chapters, it is possible to notice that methodologies are similar for some reasons, and very different from other ones. It depends on multifactorial elements, for instance considering the capability to face risks or create opportunities, the philosophical approach for considering some indices, but also the industry and sub-industry, because they could be more unflexible due to the standardisation or laws.

For the first paragraph a positive comparison is conducted. For “Positive” it is considered a strict industry sector, the production and distribution of electricity, in which regulatory institutions build rigid approaches to rule the entire process. This set up gets all the competitors similar in which indices they must achieve and, although methodologies are different, the final scores are quite similar. For stronger evidence, it is shown a second sector, a technological one, which, for different fields, is considered as comparable as the first one. While the first one is a bit chaotic in measuring emissions and E-pillar indices, the second one finds easier to collect data and publish them, as a matter of fact the divergences are more related to S- and G-pillar.

In the third paragraph, on the other hand, it is shown a negative comparison. For “Negative” comparison it is aimed that many variables could be understood in different ways because there is not a unique interpretation. In this sector, different methodologies widen the existing, but obvious, characteristics, leading to very opposite final scores, for which each pillar gives a different interpretation, and the final score could be misunderstood by stakeholders and investors.

Together, these cases provide the evidence of the fact that if the environment around is well-treated, it is possible to share distinct ESG ratings because the results would be comparable to the others, although it is quite difficult to “translate” different grades.

The analysis of ESG Rating Agencies’ Methodology often supports their algorithmic process depicting examples as the ones provided below, therefore this is the defence of that choice.

For the empirical comparison of the ESG Scores, therefore, are used S&P Global, ISS ESG and LSEG Refinitiv, which are available directly from their websites. MSCI is added in an indirect way, using ESG factsheets of the companies which are considered. Sustainalytics is missing due to the lack of free available data.

8.1 Positive – First Example

The first category of cases examined assigns scores that are broadly aligned, thereby suggesting an inter-rater convergence observed across the ESG universe. The four companies selected for this analysis, which are Enel S.p.A., the most known Italian energy provider, E.ON SE, a German renewable electrical company in the business of electricity provider and mobility, National Grid PLC, the most similar British energy company to the others, and Iberdrola S.A., the most important Spanish electricity provider, constitute a representative sample of large-cap European integrated utilities and electricity operators, a sub-sector that is particularly exposed to ESG issues, but, more importantly, to an intense regulatory exposure across multiple European jurisdictions, operating under strong disclosure incentives and have above-average reporting comprehensiveness, which reduce divergences and final scores. It is urgent to specify that these companies are not totally superimposable, because it was difficult to find them with the same characteristics; for example, E.ON SE was split from its core business which treated fossil energy, facing different merges and acquisitions, but also E.ON is particularly focused on electrical mobility, and National Grid PLC is more a multiservice company, while Enel S.p.A. and Iberdrola are just energy providers. In addition to that, hence, it is possible to justify difference in ESG scores which are lower than the others.

ESG Rating Agencies \ Companies	Enel S.p.A. 	E.ON SE 	National Grid PLC 	Iberdrola S.A. 
S&P Global	79	42	51	86
LSEG Refinitiv	75	69	69	79
ISS ESG	B	C+	C+	B-
MSCI	AA	AA	AAA	AAA

Figure 62 - ESG Final Score Energetic Industry Comparison^{[38][39][40][41][42][43][44]}

Considering the first two ESG rating agencies which are numerical, it is possible to affirm that all of these scores are comparable. The Italian firm and the Spanish one are more similar because they share the exact same business. Iberdrola is slightly better than Enel in both numerical results: percentage differences are 8,48% for S&P Global and 5,19% for LSEG Refinitiv; on the other hand, considering the letter grades, Enel is a bit better than the Spanish one. For S&P Global, in addition, both Enel S.p.A. and Iberdrola S.A. are CSA survey respondent, which means that ESG Score is based on their responses to CSA and their information is available in the public domain and modelling approaches. Also, for ISS ESG both Enel and Iberdrola gained the Prime status because their overall ESG Corporate Rating letter grades meet or exceed the industry-specific Prime threshold defined by Sustainability Solution's Industry Classification Matrix, which reflects the overall magnitude of an industry's risk exposure and footprint. While the other two, the British and the German, cover more businesses, so they have to face more risks. Among these two, it is also possible to compare the ESG final scores: 19,35% for S&P Global and 0% for LSEG Refinitiv. In these cases, the main problems are related to lack of transparency for both of these two companies, which do not share some crucial information for a proper rating. All of these companies are very well considered by MSCI, which give to them almost maximum or maximum grades possible, confirming it is a ESG regulated industry sector.

8.2 Positive – Second Example

The second category is a high-tech sector, specifically software houses, for which there is no supply chain or production stuffs. The main differences between the first table and the second one below are more homogeneous rates between peers and MSCI grades missing, because of some of them do not publicly show this in their ESG factsheets, which are commonly the ESG reports.

ESG Rating Agencies \ Companies	Salesforce 	HubSpot 	Adobe 	Teradata Corp. 
S&P Global	57	56	53	51
LSEG Refinitiv	69	67	66	70
ISS ESG	B-	C+	B-	C+

Figure 63 - ESG Final Score SaaS Industry Comparison^{[38][39][40]}

As it possible to see, the table shows a cluster of SaaS (Software as a Service) companies. The empirical evidence highlights a significant degree of convergence in ratings between peers, in a flatter way avoiding peaks such as the utility companies. Although there is a slight difference between ESG rating agencies, they are quite similar, and all of them converge to a “not-so-good” rate. Analysing them, it emerges that they provide lots of quantitative data to justify very excellent E-pillar grade, also because they do not produce emissions like other industry-sector, but they weaken into S- and G-pillars which are more critical in this sector.

It is possible to appreciate that the maximum percentage difference between the entire sector in the example is a little further on 11% for S&P Global, and almost 5,9% for LSEG Refinitiv, which are better than the utility sector for which it was necessary to split the comparison. Different arguments it needs to have done for ISS ESG because it is obvious that grades are not high, but all of them benefit Prime status, which means the standard in the entire SaaS sector is levelled to that.

8.3 Avoiding Examples

On the other hand, for instance in the financial field, the heterogeneity tends to increase divergencies, because the methodologies' differences highlight metrics which are not so comparable. Due to the indirect relationship with ESG sector, banks push their investments to the most convenient, neglecting often the entire supply chain, letting the controversies downgrade the final score. Moreover, ESG rating agencies disagree with the proper weight assigned to each Social and Governance issues. The global operational footprint of these institutions, in addition, introduces asymmetric information availability that tends to exacerbate non-disclosure penalties. Although it is possible to think a similar argument could have been done comparing banks and utility companies, there is a difference which changes everything: banks deliberately decide in which sector invest to gain major returns, utility companies have to produce emissions for their main industry target, and still they are trying to reduce as possible them, reducing fossils and increasing innovation and technologies.

ESG Rating Agencies \ Companies	Intesa Sanpaolo 	Deutsche Bank 	BNP Paribas 	Banco Santander 
S&P Global	88	72	58	57
LSEG Refinitiv	92	78	90	81
ISS ESG	C+	C+	C+	C+

Figure 64 - ESG Final Score Commercial Banks Industry Comparison^{[38][39][40]}

From this table it is possible to appreciate that commercial banks differ a lot among themselves, both in terms of grades inside the same ESG rating agencies but also between different ESG rating agencies. In the best comparison possible, it exists a percentage difference higher than the worst cases in the previous analysis, resulting as 20%; the worst case is around 50% for S&P Global. It results quite similar, although there are clear differences with previous cases, for LSEG Refinitiv, being aware that this agency awards the transparency in disclosure, which is almost obliged for commercial banks. Eventually, they gain same results for ISS ESG, considering C+ is the maximum grade

possible for commercial banks, which indicates a not-so-good sector in ESG risk managing for that evaluation.

9. Limits and Future Perspectives

However, this empirical analysis presents different limits.

Firstly, it was not possible to focus better on methodologies because the lack of quantitative data inside the documents: ESG Rating agencies do not share this information for free, and it is limited only to clients. It is not possible to know in which relationships are ESG agencies and their clients, so it is not possible to infer if there could be biased scores. Moreover, some of the agencies could exaggerate final scores in order to be better than others and grab more clients from the competitors.

Secondly, the empirical comparison is not supported by clear explanations because ESG Rating agencies does not share any further information except of final scores, therefore it is a backward work made using ESG factsheets, at least in the energy industry. The differences between final ESG Scores are just inferred applying rating process from methodology documents, but an expert for each agency should be interviewed for being sure it was the right understanding. According to the actual state of art, the sub-industry chosen to conduct the empirical experiment are the proper ones, because the energy sub-industry is heavily regulated in emissions and development of technologies, the SaaS industry is not considered a big issue in terms of E-pillar and the commercial banks remain an unreadable variable because of the huge investments in brown sub-industry fields.

Thirdly, this works tries to highlight convergences and differences between the most famous ESG Rating Agencies, without having all the necessary information to settle this up. Moreover, some of them are still quite reticent in sharing or let using documents which are already publicly available.

In this evolving landscape, technology will play a dual role: on one hand, Artificial Intelligence and Big Data will enhance passive data collection, reducing the gap between corporate claims and market reality; on the other hand, the shift toward Double Materiality will require agencies to refine their "prosocial" measurement tools.

Above all these arguments, aggregate confusion still remains the main issue which still leads to fragmentation and resource loss. Different nuances in the methodology split the entire sustainable world, moving away firms to be rated for their sustainable efforts. In this presentation, one aspect leaps out: each ESG Rating Agency does not follow a unique international or European standard, they indulge some aspects from different regulatory and standard institutions, mixing indicators, metrics and models.

From this year and the following ones, regulatory will be stricter in terms of transparency and clearness, disclosure will be standardised and Europe will launch its independent sustainable agency platform, which can lead to a more similar model in rating and valid for each sub-industry sector. Moreover, agencies are trying to reduce disclosure gaps and enhancing transparency in methodology and ratings. With the European framework it would be possible to have scores more comparable between different agencies.

10. Conclusion

The comparative analysis conducted in this thesis demonstrates that the heterogeneity observed in ESG ratings is primarily rooted in significant methodological divergences across rating agencies. These divergences concern multiple dimensions both technical and logical, because each ESG Rating Agency had started with few regulatory limitations, and now it is necessary to try to rule them all. Despite of that, all the different methodologies have some shared principles, which means agencies could be more aligned than nowadays. Nevertheless, these common principles are implemented through substantially different operational approaches, resulting in limited comparability and relatively low correlation among ESG ratings.

This methodological diversity represents both a challenge and a potential strength of the ESG rating ecosystem. On the one hand, the lack of comparability may create confusion for investors and other stakeholders. On the other hand, the coexistence of multiple analytical perspectives can enrich the informational environment and reflect the different purposes that ESG ratings may serve in financial markets.

Future regulatory developments, particularly within the European Union, are expected to play a crucial role in addressing some of these challenges. The forthcoming supervisory framework under the European Securities and Markets Authority (ESMA), together with enhanced corporate disclosure requirements introduced by the CSRD and the ESRS, may contribute to reducing informational asymmetries and improving methodological transparency. Rather than pursuing strict standardization that could suppress methodological diversity, a more effective approach may consist in promoting greater transparency, clearer disclosure of scoring methodologies, and improved comparability across rating systems. Strengthening methodological transparency, expanding disclosure of rating rationales, and developing cross-agency reconciliation tools may enhance the interpretability and usefulness of ESG ratings for investors and other stakeholders. Actually, while financial ratings, despite different, converge in terms of meaning, for ESG agencies it is quite confusing because they reach very different final results. The comparative study of six major agencies reveals that ESG ratings are not

interchangeable measures of corporate sustainability performance. Instead, they represent distinct analytical frameworks shaped by different philosophical orientations: relative versus absolute scoring, risk-based versus performance-based evaluation, algorithmic consistency versus qualitative judgment. These structural differences have significant implications for investors, companies, and regulators. Investors must understand the underlying logic of each rating system rather than relying on scores at face value; companies must navigate heterogeneous disclosure expectations; and regulators must balance the need for transparency with the preservation of methodological diversity.

Ultimately, the future of ESG ratings may lie in a model of informed methodological pluralism: a system in which diverse evaluation frameworks coexist, while maintaining sufficient transparency and accountability to allow informed decision-making within increasingly complex sustainable financial markets.

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