Bloomberg ESG Scores

Methodology, October 2026

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For a complete version history, please refer to Annex 2 of this document.

1. Introduction

This document outlines the methodology (the "Methodology") including the rules, criteria, risk factors and other information used to compile the Bloomberg ESG Scores (the "Scores"). Capitalized terms used in this Methodology, unless otherwise defined, have the meanings provided in the Annex (Glossary of Terms).

In recent years, environmental, social and governance (ESG) issues have increasingly influenced and impacted business decisions, and ESG data has become essential for financial decision making. Businesses need to manage the effects of climate change and shifting societal norms, among other key issues, making transparency, disclosure, and measurability of ESG issues paramount. Advances in corporate reporting on ESG issues should help investors and other stakeholders better understand how businesses can and will respond to this dynamic landscape – but only if the information can be evaluated easily and transparently.

The increased availability of accurate and timely information helps to drive growth in all markets. Sustainable finance and investing will likewise benefit from standardized, transparent company data. Bloomberg, as a steward of this information, plays a key role in supporting corporate ESG reporting. Bloomberg also serves as a central point of contact in maintaining a platform to support analytics, including developing measures for ensuring the integrity and comparability of ESG data.

Data-driven ESG scores are a powerful vehicle for making ESG data accessible and intelligible to investors and other interested parties. By introducing transparent, data driven Scores and facilitating their integration into financial decision-making, Bloomberg is highlighting the value of useful, comparable and consistent sustainability information and promoting improved disclosure from a wide range of businesses around the world. The Scores integrate seamlessly with Bloomberg's data, analytics and research solutions, Bloomberg news and media platforms, and the company's support for market infrastructure to improve both the supply and demand side of sustainable finance.

In developing ESG scores, Bloomberg's work has been informed by analysts, researchers and investors who have flagged the critical challenge of deploying company reported ESG data in the investment decision-making process.
As a result, the Scores help to contextualize corporate sustainability data and simplify the integration of ESG analysis into business and investment analysis. Within the same industry-specific materiality framework, ESG Scores assess financially material ESG performance, while ESG Disclosure Scores assess the extent of disclosure.

1.1. Key Features of the Bloomberg ESG Scores

1. Focus on Financial Materiality

The Scores measure a company's exposure to and management of financially material industry-specific Environmental & Social (ES) risks and opportunities, as well as Governance (G) policies and practices with adjustments for country-specific rules and regulations. ESG Disclosure Scores assess the level of disclosure for each company using an industry-specific materiality framework.

2. Quantitative and Timely

The Scores are based on publicly available, company-disclosed information, and do not rely on an analyst's opinion in the assignment or adjustment of a company's score. As a result, the Scores can be updated monthly throughout the year as companies release new data. The Scores also consider the disclosure of quantitative data as a dimension of performance.

3. Transparent

The methodology and underlying data are transparent. Users can view and analyse all data driving each Score as well as additional features such as weights and percentiles.

1.2. Bloomberg's Process for Scores Product Development

Bloomberg's Scores bring together various data sources collected and curated by Bloomberg, principally company-reported sustainability information and financial fundamentals data, with proprietary research assets and analytics, such as Bloomberg ESG research, Bloomberg Industry Classification System (BICS) and Bloomberg ESG Classification System (BECS).

Bloomberg's Scores are supported by evidence, research, consultation, and analytical rigor. Bloomberg conducts top-down materiality assessments by industry; these are further detailed in this document. A broader, bottom-up review of existing and new data determines their suitability for describing and quantifying material sustainability issues. Quantitative techniques are then applied to ensure that meaningful signals are reflected in the Scores.

Feature/Resource	Use Case/Outcome
External Frameworks	External frameworks used to prioritize sustainability performance drivers and to group issues
Key Issue Research	Research on key sustainability issues through both proprietary analysis and external consultation to specify the data fields best aligned with priority themes
ESG Data Analysis	Analysis of existing ESG data, especially company disclosure and suitability, to describe key sustainability issues and activity metrics for normalization
New ESG Indicators	Development and collection of new ESG data fields to address new ESG topics and industry-specific indicators
Field Taxonomy/Grouping	Grouping of sustainability themes and corresponding data fields
Peer Group Construction	Grouping of companies into peer groups, comprised of companies sharing similar ESG risk and opportunity profiles
Issue and Theme Priorities	Research, evaluation, and assignment of priorities by industry and other features
Indicator Attributes	Where relevant, assignment of indicator qualifiers for importance of disclosure, polarity (e.g., positive = better or worse), fit, consistency, and quality of indicators
Quantitative Data Survey	Quantitative evaluation of quality and coverage of ESG data
Indicator Scoring	Deployment of field-level, industry- and market-specific scoring methodologies to translate input data into a score.
Aggregation and Weighting	Incorporation of weighting schema to aggregate from Bloomberg Indicator Scores up to Sub-Issues, Issues, Themes, Pillars and Overall Scores
Review and Feedback	Internal score review and feedback to calibrate and refine industry scoring models

TABLE 1 - ESG SCORES KEY FEATURES

1.2.1 Approach to Environmental and Social Scores

Bloomberg's rationale for developing Environmental and Social (ES) Scores is driven by the growing demand for ESG information, the emergence of global sustainability frameworks, and the specific nature of reported ESG data and performance scores. Sustainability frameworks, such as those of the Sustainability Accounting Standards Board (SASB)/International Sustainability Standards Board (ISSB) and the Task Force on

Climate-related Financial Disclosures (TCFD), are emblematic of the shift toward viewing business relevance and financial materiality as key considerations for selecting industry-specific ESG themes and data for use in decision-making and reporting.

Bloomberg's goal in developing the ES Scores is to evaluate and present ESG data so that it can be: 1) integrated into analysis more easily, 2) made more comparable within specific industries, 3) used to identify leaders and laggards, and 4) deployed to complement or validate research-driven performance scores. A key challenge that Bloomberg's users face in this effort is the overwhelming number of company and third-party reported ESG fields. Users of sustainability information are also faced with non-comparable disclosures and substantial disclosure gaps within and across firms.

To address these challenges, Bloomberg has brought a range of resources and assets together in developing the ES Scores. The goals and processes include the following:

- Improving ESG data for existing indicators with more precision, coverage, and history and through new industry-specific datasets
- Providing an organizing structure and taxonomy to clarify ES issue hierarchies and translate from reporting frameworks
- Offering guidance on materiality to highlight and rank key issues by industry
- Leveraging fundamental research to provide context and practical insights
- Using quantitative analysis to incorporate standing guidelines and principles and to aggregate data for analytical use.

In the development of its E and S scores, Bloomberg refers to the following ESG reporting frameworks as well as numerous industry associations. A full list of frameworks and industry associations by sector are covered in the Industry Guides which are made available to rated items and users of the Bloomberg ESG Scores.

The key voluntary reporting frameworks referenced in the Bloomberg ESG Scores are:

- Sustainability Accounting Standards Board (SASB)
- International Sustainability Standards Board (ISSB)
- Task Force on Climate-related Financial Disclosures (TCFD)
- Global Reporting Initiative (GRI)
- CDP

Name of Reporting Framework
Sustainability Accounting Standards Board (SASB)
International Sustainability Standards Board (ISSB)
Task Force on Climate-related Financial Disclosures (TCFD)
Global Reporting Initiative (GRI)
CDP

TABLE 2 - KEY VOLUNTARY ESG REPORTING FRAMEWORKS REFERENCED

1.2.2 Approach to Governance Scores

Combining Bloomberg data and subject matter expertise, Governance (G) Scores offer quantitative, transparent analyses. Under the Governance pillar, the themes of Board Composition, Executive Compensation, Shareholder Rights, and Audit touch on several core issues that can have a material impact on company performance. These issues can be further divided into a set of distinct sub-issues, leading to a clear taxonomy for data fields. In the analytical process, the Fields, Sub-Issues, and Issues all contribute to individual Theme Scores, including the Board Composition, Executive

Compensation, Shareholder Rights, and Audit Themes, which ultimately make up the Governance Pillar Score.

Bloomberg's quantitative, transparent Governance score model has been designed by subject matter experts across Bloomberg and is powered by Bloomberg's management and board-level data, which are industry leaders in the ESG data space. In general, Governance Scores are built by combining Bloomberg's proprietary research with guidance provided by third-party corporate governance frameworks and practitioners.

Corporate Governance Frameworks	
The Investor Stewardship Group (ISG)	The Organization for Economic Co-operation and Development (OECD)
International Corporate Governance Network (ICGN)	Council of Institutional Investors (CII)
Corporate governance codes	Local listing rules

TABLE 3 - CORPORATE GOVERNANCE FRAMEWORKS REFERENCED

1.3. Bloomberg ESG Classification System (BECS)

BECS is built from the Bloomberg Industry Classification System (BICS), applying a mapping of different BICS nodes and levels to create more granular or cross-cutting peer groups for ESG-specific analysis. BICS nodes are defined as a group of entities which are perceived by the markets to be peers with similar economic drivers, risks or correlations. BICS classifications typically follow company segmented revenue reporting to determine business activities.

2. Objective

2.1. What Do the Scores Measure?

Bloomberg ESG Scores assess a company's performance on financially material ESG risks and opportunities. Bloomberg ESG Disclosure Scores measure the extent to which a company discloses ESG information that is material to its industry.

Both use the same industry-specific materiality framework, indicators and weightings, while serving different purposes. ESG Scores assess performance using applicable quantitative and qualitative indicators, with disclosure incorporated as a dimension of the assessment. ESG Disclosure Scores focus on the disclosure of applicable quantitative information.

Financial materiality is defined as issues that can have negative or positive consequences for a company's financial performance, measured through metrics such as revenue streams, operating costs, cost of capital, asset value and liabilities. Bloomberg identifies material issues based on proprietary research, which is shared transparently and is based on an assessment of probability, magnitude and timing of financial effects. The Scores are firmly grounded in the concept of financial materiality and assess both risks and opportunities through that lens; accordingly, the Scores do not seek to assess impacts within the specific meaning of the double materiality framework.

The ESG Scores consider both current exposure and management performance. They combine industry-specific, forward-looking risk and opportunity signals with an evaluation of how specific companies have historically performed in managing those risks and opportunities. Indicators can reflect past performance, commitments and targets, as well as company policies for managing ESG risks and opportunities. The ESG Scores measure best-in-class performance within peer groups. Derived measures, such as Percentiles, are provided to support comparison and interpretation of the underlying ESG Scores across peer groups, as further described in Section 2.2.2.

The ESG Scores consider disclosure of quantitative data as a dimension of performance. Quantitative and qualitative indicators are scored using quantitative methodologies, considering normalization, polarity, the type of data field being scored, and other data features.

The following sections of this Methodology and additional linked documentation provide further detail on the specific topics and issues considered by the Scores. Where relevant and analytically useful, the Methodology may reference selected disclosure frameworks and international principles and agreements, including but not limited to SASB/ISSB, TCFD and the Paris Agreement, and relevant region and market-specific standards such as the EU Taxonomy and Corporate Sustainability Reporting Directive (CSRD). Given the industry- and market-specific nature of the Scores, any such references are not universally applied, and do not suggest that the Scores act as a measure of disclosure or performance against any frameworks or agreements. The Scores remain an industry-specific, financially material assessment of factors across a global universe, and issue selection, weighting, and aggregation vary accordingly.

The scores produced under this methodology are unsolicited in all cases and are produced using publicly available information (or data derived thereof), without direct engagement with the scored entity (see section 8 for further discussion on how Bloomberg interacts with scored entities). We endeavour to inform all scored companies that they have been scored, and to make them aware of available resources for understanding the methodology and validating input data used. See section 8 for additional information.

2.2. Scores Structure and Aggregation

ESG Scores are calculated across multiple levels of granularity, from individual indicators through to an Overall ESG Score.

The foundation of scoring ESG material issues is the selection of indicators that capture company-reported information that describes and quantifies those issues. Once indicators are selected, qualifiers or attributes are assigned to guide selection of indicator-level scoring techniques and to inform aggregation to higher score levels.

2.2.1 Multiple levels of granular scores

Indicator Scores represent the scored output of individual indicators and are aggregated into a Sub-Issue Score based on the applicable Fit/Quality attribute. Indicators are scored using quantitative methodologies, taking into consideration normalization, polarity, indicator type, and other applicable data features. The term "indicator score" corresponds to the "field-level score" which is the technical term used within Bloomberg. As a result, the terms "indicators" and "fields" may be used interchangeably in associated product documentation.

Sub-Issue Scores are aggregated from Indicator Scores by a weighted average, depending on Fit/Quality of included fields.

Issue Scores are a function of the weighted generalized mean (power/p-mean) of the Sub-Issue scores. Issue Scores have two dimensions, Issue Performance Score and Disclosure Factor:

Issue Performance Score is a power mean of Sub-Issue Scores. All Sub-Issues are weighted 1 except those containing only binary fields, which will be weighted 0.25.

Issue Disclosure Factor (DF) is a weighted percentage which measures disclosure of quantitative fields in the Issue. Each field has a DF point value associated, assigned by Bloomberg, and the Issue DF is based on the ratio of the sum of the points out of total points a company can earn by disclosing all fields. DF determines a disclosure-driven score range and scales and shifts the Performance Score into that range.

Theme Scores (G only) are aggregated from Governance Issue Scores using a power mean.

Pillar Scores are aggregated from Issue Scores using a power mean. The weight associated with each issue is determined according to Bloomberg research. Issue Scores containing only binary fields have their weight reduced by 80%.

Overall Scores are based on an aggregation of E, S and G Pillar Scores. For each industry, Pillar weights are determined by Bloomberg Intelligence fundamental research. The relative importance—from the point of view of financial materiality—of each of the three Pillars is specified by assigning them a "rank" on a 1-5 scale, with 1 reflecting the highest importance. G is ranked 3 for all industries, given that company and region-specific factors can be more significant drivers of governance than industry factors. Rankings are then translated into percentage weights. Aggregation of Pillars into the ESG Score uses a power mean. ESG Scores measure performance within the applicable BECS peer group.

2.2.2 ESG Score Representations and Interpretation

ESG Scores measure performance within the applicable BECS peer group. Bloomberg also provides derived measures to support the comparison and interpretation of ESG Scores across different peer groups and industries. These derived measures do not represent separate assessments of ESG performance; rather, they provide different ways of interpreting and using the underlying ESG Scores.

Percentiles rank a company's ESG Score relative to companies within its applicable BECS peer group. Percentiles are available for Issue, Theme, Pillar and Overall Scores and range from 0 to 100, with 100 being best.

Zero-Centred Scores (ZCS), Standardized Scores and Score Bands are three related representations based on the distance between a company's Overall ESG Score and its peer group median. Unlike Percentiles, which express a company's rank within its peer group, these measures preserve the magnitude of the difference from the peer group median and support comparison across peer groups. **Zero-Centred Scores (ZCS)** represent the difference between a company's ESG Score and its peer group's median Score (floored at 1.5). Possible values range from -10 to 8.5, where the median company in a peer group has a ZCS of 0. Positive and negative values indicate performance above or below the applicable peer group median, respectively.

Standardized Scores linearly rescale the Zero-Centred Scores to produce values that range from 0 to 10, with the peer group median equal to 5. They provide a 0–10 representation of the same relative distance from the peer group median captured by the ZCS.

Score Bands group companies that have similar ZCS/Standardized Scores into categorical ranges of under or over performance. Companies are assigned to one of seven bands which are labelled A-G, with A being best. Score Bands therefore provide a categorical representation of the same relative performance measure.

2.2.3. ESG Disclosure Scores

ESG Disclosure Scores are a component of the ESG Scores that assess the extent of quantitative disclosure within the same industry-specific materiality framework used for ESG Scores. At the Issue level, the level of disclosure is incorporated into the ESG performance assessment and determines the range into which the Issue Performance Score is scaled to produce the final Issue Score.

ESG Disclosure Scores represent the percentage of applicable disclosure, with a higher percentage indicating a greater level of disclosure.

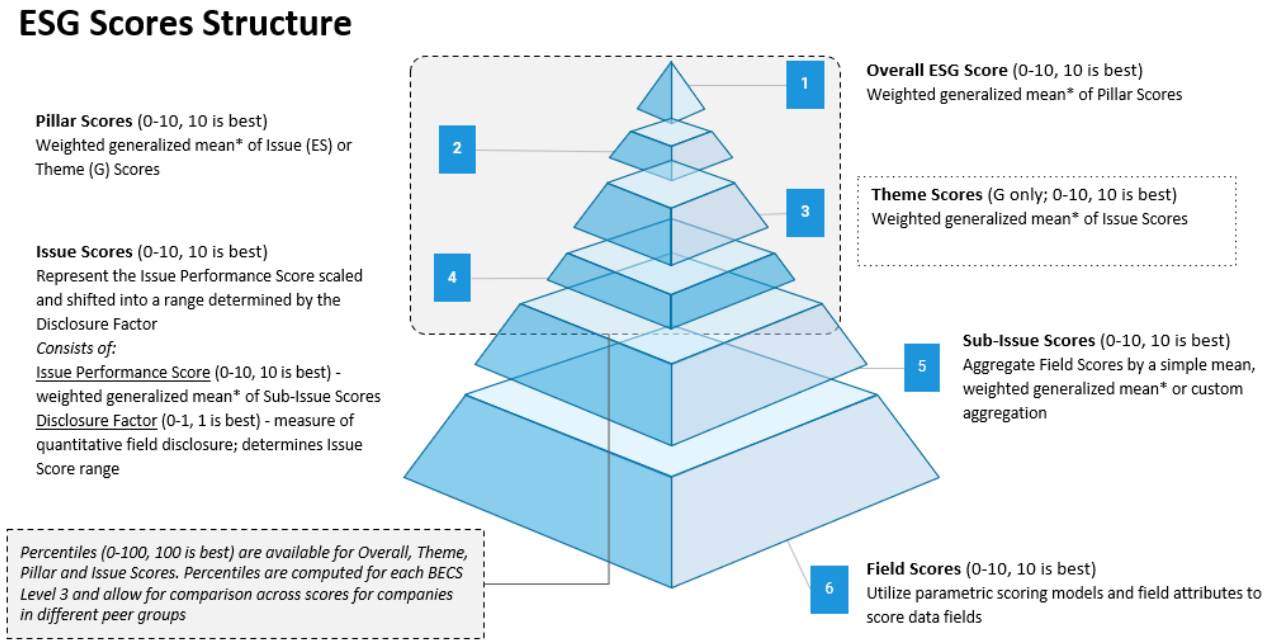

FIGURE 1 - ESG SCORES STRUCTURE

Source: Bloomberg

3. Input Data

3.1. Types and Sources of Input Data

Bloomberg's Scores use publicly available, company-reported ESG data, and do not incorporate analyst opinions in the assignment or adjustment of scores. Data used in the Scores is transparent, including attribution to the source document. Data sources include company filings such as annual reports, 10-Ks, integrated reports, corporate responsibility reports, disclosure against ESG reporting frameworks and standards such as SASB index tables, proxy voting and other corporate governance documents, and other ESG releases. Where companies produce statements as required under disclosure regulations and directives—such as those prepared under the Corporate Sustainability Reporting Directive (CSRD)-amended Accounting Directive (2013/34/EU), using the European Sustainability Reporting Standards (ESRS), or disclose information under Regulation (EU) 2019/2088 on sustainability-related disclosures in the financial services sector (SFDR) —such statements may be used for data acquisition, where relevant and appropriately disclosed.

Bloomberg aims to ensure that all available filings, documents and other disclosures that are relevant for the collection of ESG data and computation of Scores are acquired and reviewed in a timely manner. Technology-assisted, process-enforced and validation-confirmed workflows are in place to support this activity. In any instance in which potentially relevant data is not disclosed publicly, Bloomberg will not collect and Scores will not make use of it. Undisclosed information is not estimated or inferred. The treatment of missing disclosure within the scoring methodology is described in Section 4.5.

Bloomberg does not use questionnaires or surveys to develop its Scores. Scores may make use of data disclosed by companies to CDP through its annual survey.

3.2. Updates to Input Data

While the reporting cycle for ESG data is typically annual, input data are monitored and reviewed on an ongoing basis and incorporated monthly, to account for company-specific variation in reporting timelines and any new information or restatements that are published. Bloomberg reviews input data ahead of every monthly update, to ensure completeness and accuracy. If additional time is required, publishing of a company's Scores may be paused until the review is completed; in most such cases Scores will be published the following month.

More information on our approach to data can be found in our "Approach to Data Management & Quality" disclosure, available here.

4. Calculation Methodology

4.1. Calculation

Bloomberg's approach to scoring ESG performance is characterized by a bottom-up, model-driven method based primarily on self-reported, publicly available information that results in a transparent, parametric and rules-based scoring framework. ESG Disclosure Scores use the same industry-specific materiality framework and relevant indicators to assess the extent of quantitative disclosure. The methodology features:

- Qualitative input from research analysts and industry experts for identifying appropriate indicators, as well as their relevance to specific Issues, industries (for ES Scores) and markets (for G Scores)
- Statistical and data science techniques to assist in, for example, identifying peer groups and selecting and applying scoring models to indicators
- Factor analysis to aid in identifying unique Issues and Sub-Issues within the common ESG performance and disclosure framework
- For ESG performance scoring, parametric methods that closely approximate the empirical distribution of quantitative indicators using historical data, accounting for differences across industries and markets to facilitate meaningful comparison between companies
- Incentives for improved transparency and disclosure, so that the best scores reflect both good sustainability performance and good disclosure

One key goal of Bloomberg's quantitative approach to scoring company ESG performance is to build an extensible "toolkit" to score corporate ESG data based on the type of data. In analysing the data to develop these scores, certain principles and benefits of the approach adopted for Bloomberg's Scores have emerged:

- Guidelines or principles, when available, must be translated into quantitative thresholds;
- Normalizing data is necessary to compare metrics;
- Model choice can help to address size bias;
- Factor analysis aids in identifying individual issues from multiple related indicators;
- Data science techniques can be used to assist in identifying peer groups;
- Scoring from the indicator to the top-level Score requires an aggregation approach that rewards consistent performance and penalizes uneven performance;
- Disclosure must be a dimension of scoring to reflect increasing stakeholder expectations on minimum disclosure levels, as the voluntary and regulatory reporting drive increased transparency and standardization of reporting

The following sections and annexes detail technical protocols for generating Scores. Annex 4 provides additional context around features of the calculation methodology, including the use of parameters, peer groups, assessment of firm age, and transformation and pre-processing of input fields. Attributes assigned to input data fields and the approach to field-level scoring, along with weighting and aggregation decisions, are described below. Additional details are available in the documentation made available to users, including Overview & FAQ, Industry Guides, Industry Guide Companion File, and Theme Guides.

4.1.1. ESG Score Inheritance

For entities without direct ESG Scores, Bloomberg applies a methodology to inherit ESG Scores from its nearest parent company operating in the same sector. This methodology follows two steps:

- The parent has a valid ESG score
- The issuer and parent share the same sector (BICS level 2)

As part of the data outputs, an additional field identifies the applicable parent entity from which the score is assigned, allowing users to trace coverage clearly and consistently:

Bloomberg Field Name	Description
ESG_DATA_CVRG_SCORES_BBID	Data Coverage for ESG Scores - Identifier

This approach helps ensure broader and more consistent ESG coverage across debt instruments, when issuers lack standalone ESG scores. The score calibration and percentile assignments are based on the population with direct ESG scores and are

not skewed by this inheritance methodology. For entities where this methodology is applied, the overall ESG score and all its sub-component scores, including all associated metrics (such as Percentiles, Disclosure metrics etc.) are all inherited from the parent company.

4.2. Evaluation Criteria

Material Environmental and Social risks and opportunities for each peer group are selected based on Bloomberg research, which includes top-down review of global standards such as SASB/the International Sustainability Standards Board (ISSB) and other industry-specific guidelines. The research also includes bottom-up review of corporate ESG disclosure and an assessment of the suitability of data fields for describing and quantifying sustainability issues.

Similar to the Environmental and Social Scores, material Governance Issues are selected based on top-down and bottom-up research. In addition to a review of global frameworks, for G Scores this research includes analysis of country- and market-specific corporate governance codes and listing rules. Company disclosure is also reviewed to identify material issues. Company- and market-specific factors, such as firm age or local market rules, may play a role in determining which Issues are scored.

Bloomberg ESG Scores are designed around an industry-specific materiality framework, informed by major sustainability reporting frameworks used by companies around the world to identify material sustainability issues. Bloomberg identifies disclosed corporate information that aligns with these issues, particularly with regards to corporate strategy, operations, and priorities. By embracing materiality as the central concept, Bloomberg's approach focuses on the drivers of operating and financial performance.

While reviewing and developing inputs, Bloomberg conducted an industry-specific assessment of sustainability issues, prioritizing and ranking the sets of Issues using proprietary and external sources. The analysis of financial materiality for each industry provides context for the categorization of Sub-Issues, as well as indicator selection, normalization, and transformation decisions. Details on Bloomberg's industry-specific analyses and Issue prioritization can be found in the ES Scores Methodology Industry Guides. The Industry Guides and associated Companion Files, available to Bloomberg ESG scores users and rated items, provide additional details on business activities for companies within each industry, explanations, and examples for how each ES Issue scored impacts the industry, company specific examples of ES risks and opportunities, as well as detailed indicators used to score each industry.

4.2.1. Environmental and Social Score Framework and Structure

Bloomberg's ES Scores are structured into the following hierarchy: Pillars, Issues, Sub-Issues and Indicators. Each Issue contains at least one Sub-Issue, which aggregates associated ES data fields. To see a list of the specific Issues that are scored for each sector and industry please refer to the Industry Guides and Companion File.

PILLARS, ISSUES AND SUB-ISSUES

The diagram below shows the relationship between pillars, issues and sub-issues. A full list of issues and sub-issues can be found in Annex 3.

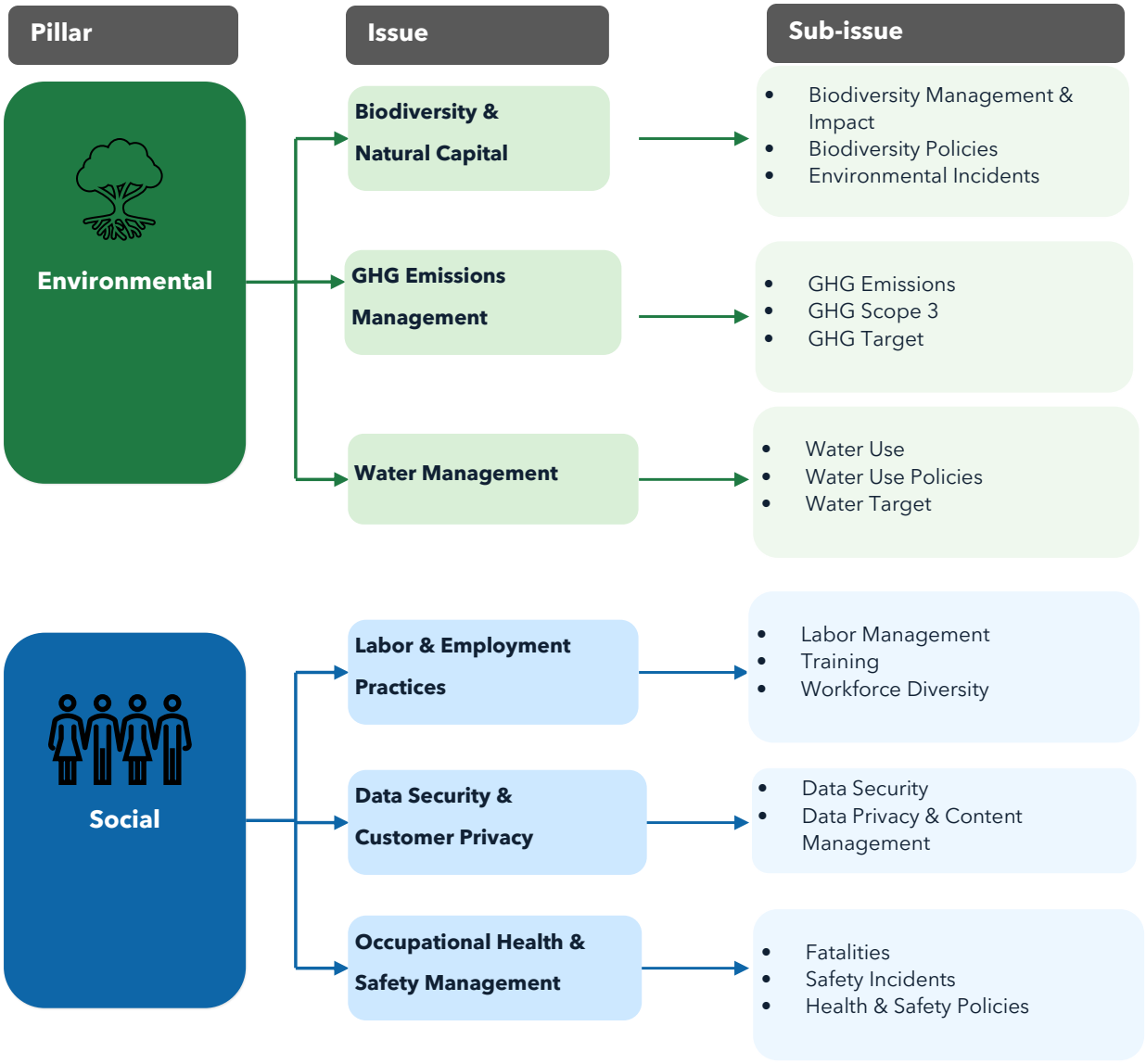

FIGURE 2 - E & S PILLARS, ISSUES AND SUB-ISSUES

4.2.2. G Score Framework and Structure

Bloomberg's G Scores are structured into the following hierarchy: Pillar, Themes, Issues, Sub-Issues and Indicators. Each Issue contains at least one Sub-Issue, which aggregates associated G indicators. A full list of issues and sub-issues can be found in Annex 3.

The diagram below shows the hierarchy of pillar, themes, issues and sub-issues found in the Governance pillar. A full list of issues and sub-issues can be found in Annex 3.

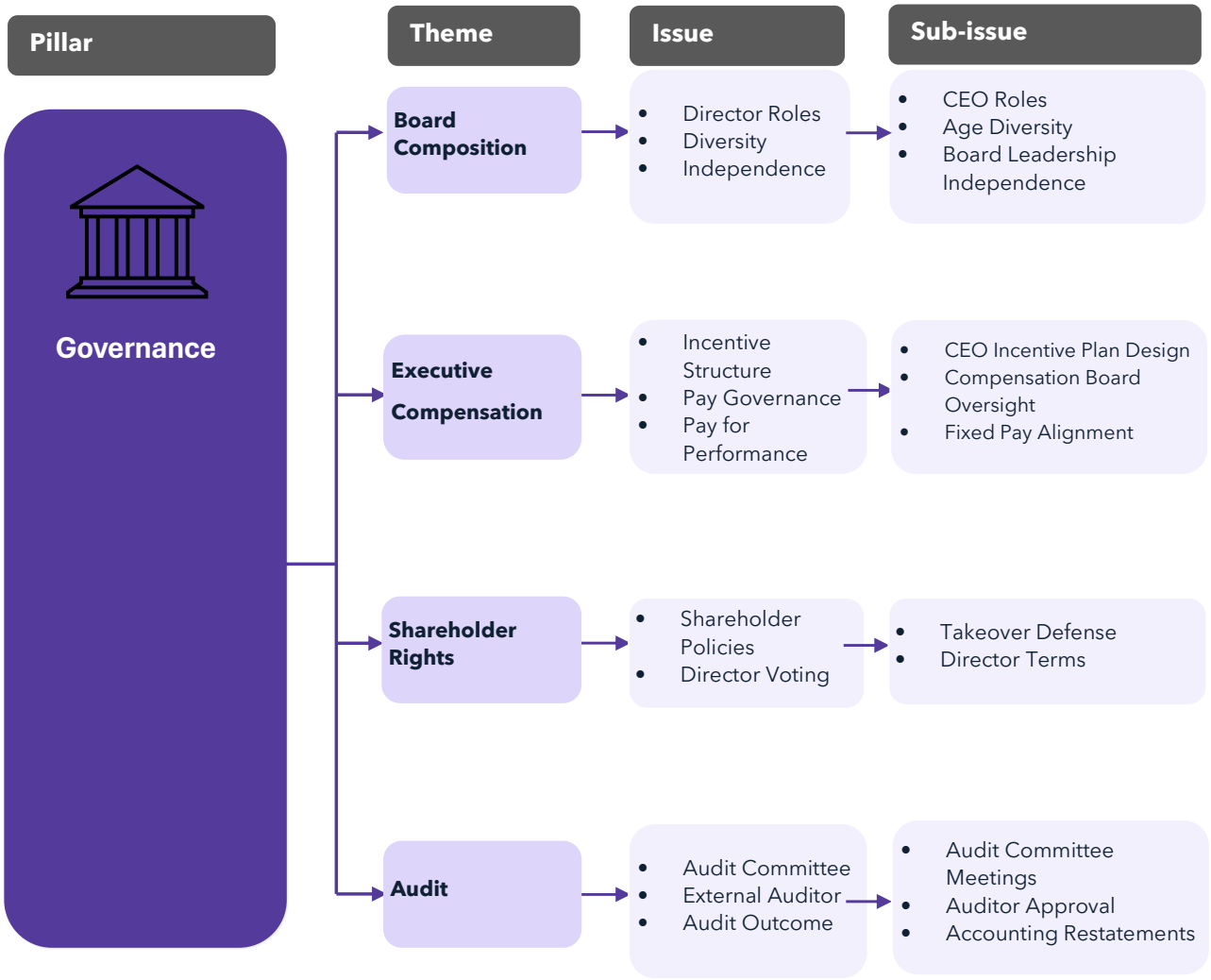

FIGURE 3 - G PILLAR, THEME, ISSUE, AND SUB-ISSUE STRUCTURE

Source: Bloomberg. For illustrative purposes.

4.3. Key Performance Indicators

Materiality frameworks leveraging the above Sub-Issues, Issues and Themes are built with an average of 100 input indicators per peer group. These indicators are scored using different quantitative approaches depending on factors such as the indicator type, polarity and the activity metric used for normalization; availability of data and reference points for good performance, such as thresholds determined by industry bodies or research.

For example, emissions data is mostly scored using normalized intensity. Depending on the industry, greenhouse gas (GHG) emissions can be normalized by revenue, total production or another relevant activity metric to control for the size factor. This indicator is then scored as a GHG intensity metric relative to the peer group.

An indicator quantifying "Amount of Anti-Competition Fines", for example, may be scored using a model based on categorical ranges. In this case, the indicator is scored based on the number of fines (in currency value) as a percentage of the company's revenue, i.e. 0% is awarded a score of 10, >0-1% is awarded a 7 and greater than 5% results in a 0 score. These categorical range thresholds reflect levels of performance.

Once a scoring method is selected, a parametric approach is used to score ES indicators. For all indicator types, parameters are estimated empirically for peer groups, with a few exceptions such as binary indicators and indicators related to workforce fatalities, explained in further detail below. G Scores employ additional scoring methods further described in the "Governance Indicator Scoring" section of this Methodology.

4.3.1. Indicator Attributes

Input Data fields are aggregated into Sub-Issues, Issues, Themes and Pillars. The input of Bloomberg Intelligence (BI) analysts determines the relative importance of various scores in the aggregation process. Furthermore, key attributes are predefined and captured for use as score inputs. Industry specific model inputs are provided in the Industry Guides.

Issue/Theme Priority is determined by Bloomberg Intelligence research analysts to reflect the varying degrees of relevance and importance of various Issues to a particular industry. This value determines the weight assigned to each Issue (ES) or Theme (G) in the aggregation into E, S and G Pillar Scores.

Indicator-Type or Input Data Field Type indicates whether indicator values are quantitative or binary. Quantitative indicator types have values that are numerical. Binary indicator types have either "Yes" or "No" values and represent Bloomberg's policy indicators – indicating whether a company has disclosed information on a particular topic. As such, binary indicators do not assess the quality of such disclosure.

Fit/Quality for E and S scoring approaches are applied at the indicator level to reflect relevance and quality of input data available. The scoring is reviewed annually to reflect changes in the availability and quality of reported data These values can be High, Medium, or Low and are used to weight individual Indicator Scores into aggregated Sub-Issue Scores.

- **High (H):** The indicator is a good measure of what is called for in at least one ESG disclosure framework, and the data is comparable.
- **Medium (M):** The indicator is either a good measure (as above), or the data is comparable, but not both.
- **Low (L):** The indicator is not a good measure, and the data is not comparable, or is a qualitative Policy indicator.

Polarity (positive or negative) is used to reflect activities that decrease or increase financial, operational, or reputational risks. In other words, positive polarity is assigned where a higher indicator value means lower risk, or higher opportunity and, therefore, a higher score.

Disclosure Factor (DF) determinations are made to guide the treatment of missing data within the scoring framework. Each indicator is assigned a DF rating of A, B, or C.[1]

- **DF Rating A:** Indicators used in the scoring model that are included in a multitude of ESG disclosure frameworks or widely called for by investors receive a DF of A.
- **DF Rating B:** Indicators used in the scoring model that are a proxy for indicators included in a multitude of ESG disclosure frameworks or are not widely called for by the market receive a DF of B.
- **DF Rating C:** Indicators that are either immaterial for certain companies, not directly disclosed, or whose disclosure is already captured by others may receive a DF of C.

Activity metrics are used to normalize sustainability performance relative to operating or financial metrics. For instance, GHG emissions scale most closely with the economics of production, whereas spending on worker training scales most closely

[1] Indicators may also receive a DF Rating of A- or B- in the special circumstances described in "Issue Scores and Disclosure Factors - Technical Description"

with number of employees. In cases where precise activity metrics are not available, universal metrics such as revenues are used.

Activity metrics that quantify the amount of activity may differ depending on industry fundamentals and the availability of widely reported data. For many industries, revenues are used as the common activity metric due to the wide range of products and the lack of product-specific financial data.

Indicators that are already normalized – such as per-unit measures, percentages, and standardized calculations like Total Recordable Incident Rate (TRIR), are not assigned corresponding activity metrics.

Indicators that are categorical or binary, including policy indicators, are not assigned corresponding activity metrics.

Similarly, indicators that are scored regardless of company size or activity levels – such as number of sites in environmentally sensitive areas – do not have activity metrics.

Taxonomy Inclusion Start Year (four-digit year) is used to determine the first fiscal year for which an indicator will be included in the scoring framework. If the value is blank the field will be included in the scoring framework from fiscal year 2015. For instance, the Glasgow Financial Alliance for Net Zero (GFANZ) was launched in 2021. Thus, field SA904, which indicates whether a company is a GFANZ signatory, has 2021 as its Taxonomy Inclusion Start Year.

Taxonomy Inclusion End Year (four-digit year) indicates that an indicator is no longer considered material or relevant to the scoring framework and will be excluded from the scoring framework after the specified fiscal year. In other words, the specified fiscal year will be the last year for which such an indicator will affect scoring. If this value is blank, it means that the indicator remains material and will be included in the scoring framework.

4.3.2. Environmental and Social Indicator Scoring

The process for scoring ES input fields uses various field-level scoring methods that depend on indicator Type, Unit, Polarity, and presence of an Activity Metric. The resulting Indicator Scores will range from 0 to 10.

A parametric approach is used to score indicators. For all indicator types, parameters are estimated empirically for peer groups, except for binary indicators, categorical scoring indicators, and fatalities. Fiscal year scores are computed for the current year using parameters that have been determined from data for up to three prior years.

Depending on the type of indicator and the nature and availability of accompanying data, parameters are estimated, and indicators are scored using different statistical techniques. Each method is described with some illustrative examples in Annex 4. The Industry Guide Companion File contains a table that lists the specific techniques used for each ES indicator.

Finally, in a few cases, some indicators are not relevant to all companies in a peer group and, so, may not have values disclosed. An example would be the indicator "Nuclear Waste". In such cases, a set of conditions is used to determine if the indicator is relevant to a company. If relevant, the indicator is scored normally following the process detailed above. However, if the indicator is determined as not relevant –in this example, because a company does not have any nuclear operations–then the indicator may either be awarded a pre-determined score and full disclosure factor points, or will be excluded from scoring.

The table below outlines the various models used to score environmental and social indicators. Further descriptions and examples are available in Annex 4.

Scoring Model	Brief Description
Amount	Used to score zero-inflated intensities: i.e. continuous quantities with a significant proportion of zeros in the dataset that need to be scaled by an activity metric

Scoring Model	Brief Description
Binary	Used to score policy indicators, which return a binary (Y/N, 1/0) outcome. Indicators scored with this model do not affect the Disclosure Factor
Binary+	Used to score policy indicators that have a quantitative element underpinning the policy. Indicators scored with this model do affect the Disclosure Factor
Categorical-Intensity	Used to score intensities that have insufficient data disclosed to derive an Intensity model. Assigns scores based on analyst-determined categories
Categorical-Level	Used to score discrete intensities that have insufficient data disclosed to derive a Count model. Assigns scores based on analyst-determined categories
Count	Used to score discrete intensities: i.e. discrete quantities that need to be scaled by an activity metric to be comparable
Fatality	Used to score fatality rates
Intensity	Used to score intensities: i.e. continuous quantities that need to be scaled by an activity metric to be comparable
Percent	Used to score percentages: i.e. indicators where the minimum is 0% and the maximum is 100%
Percent-Defined	Used to score percentages where analysts determined appropriate scores for different percentages
Rate-Anchored	Used to score rates that represent year-over-year percent changes, introducing a maximum median for the distribution (the "anchor") corresponding to a roughly zero percent year-over-year change
Rate-Defined	Used to score target year indicators
Rate-Intensity	Used to score rates that have negative polarity (i.e. higher rate indicates worse performance) and low frequency of zeroes
Rate-Neg	Used to score rates that have negative polarity (i.e. higher rate indicates worse performance) and high frequency of zeroes
Rate-Pos	Used to score rates that have positive polarity (i.e. higher rate indicates better performance) and low frequency of zeroes

TABLE 4 – ENVIRONMENTAL AND SOCIAL INDICATOR SCORING APPROACHES

4.3.3 Governance Indicator Scoring

In general, G input field scoring is determined based on guidance provided by Bloomberg subject matter experts (SMEs), corporate governance frameworks and industry practitioners. Typically, guidance takes the form of categorization of best or worst governance practices. Categories are mapped to numerical values, so that best practices attain a score of 7 and up and worst practices attain scores of 3 and below, with significant ground in between.

To facilitate timely score generation, certain indicators with quantitative outcomes use defined parameters in building scoring curves and models. Two typical examples of field scoring using the parameter determination approach are the parameterized hierarchical regression model on Pay for Performance, and Director Support indicators using scoring curves with anchor points referencing estimates based on empirical distributions.

The table below summarizes types of scoring models used to score G indicators. Further descriptions of these curves and other scoring methods, as well as examples are available in Annex 5. Tables summarizing how indicators within different Themes are scored and details about indicator-level scoring, including graphs of scoring curves are available in the individual Governance Scores Theme Guides.

Scoring Model	Brief Description
Smooth Curve	Leverages specific types of interpolations between anchoring points that are determined based on corporate governance guidance
Curve With Contingency	Used to score an indicator with a contingency on the value of additional input data

Scoring Model	Brief Description
Step Curve	Used to score quantitative fields with discrete outcomes
Binary	Used to score inputs (one or more) that are binary, utilizing an information lookup based on a defined set of outcomes
Balance	Used to identify how well-balanced values are between multiple input data fields or groups of fields
Size Dependent	Leverages more than one input data field to obtain the scores, which are calibrated by leveraging mathematical tools based on principles determined by Bloomberg analyses
Parametric	Leverages an empirical, parametric approach to evaluate performance using disclosed data for some indicators where there may be no well-established consensus formula or anchor points

TABLE 5 - GOVERNANCE SCORING APPROACHES

4.4. Forward-looking Criteria

As previously stated in the "Objective" section of this Methodology document, each Issue and Sub-Issue used in scoring may contain quantitative and qualitative indicators reflecting:

- A company's current and historical performance
- Policies that demonstrate the company's management approach towards ESG risks and opportunities
- The company's commitments and targets related to forward-looking performance and management

Indicators covered in the commitments and targets category typically capture whether a company has disclosed a quantitative, time-bound target for achieving a performance goal related to the material ESG issue in their own operations, supply chain and/or property or investment portfolios. Examples of such metrics include:

- Science-based emissions targets
- Net zero emissions targets
- Renewable energy/electricity targets
- Energy/water use reduction targets
- Diversity targets
- Target year for achieving deforestation-free supply chain
- Target year(s) for excluding certain businesses from investing, financing or underwriting activities
- Targets for inclusion of sustainable/ESG-related finance in investment, lending, and/or underwriting portfolios

Such indicators typically return either binary (Y/N representing whether such a quantitative target exists) or year (target year for achieving the goal) values and are scored accordingly using one of the scoring models referenced above. Users of this information can refer to the Industry Guide Companion File for additional information on where and how these fields are scored across various peer groups.

As part of ongoing industry research and annual methodology reviews referenced in this document, Bloomberg continually reviews opportunities to introduce additional forward-looking metrics to scoring frameworks.

4.5. Weighting and Aggregation

4.5.1 Environmental and Social Issue Prioritization

Since the frameworks used to develop Bloomberg's ES Scores do not assign weightings to the Issues that they identify as important, Bloomberg has developed a three-part assessment to determine Issue priorities:

- **Probability:** Each Issue is assigned a ranking of high, medium, or low to represent the probability of the Issue (cost/opportunity) materializing
- **Magnitude:** Each Issue is assigned a ranking of high, medium, or low to represent the magnitude or potential severity of the financial cost or opportunity
- **Timing:** Each Issue was assigned a classification of short-term, medium-term, or long-term. Short term suggests that the financial impact can occur within 2 years. Medium-term indicates that the financial impact is more likely to occur in 2-5 years, and long-term in 5+ years. The financial impact of medium- and long-term Issues may be more dependent on physical and regulatory changes

Bloomberg has prioritized and ranked industry-specific risks and opportunities associated with material sustainability themes and embodied in Bloomberg Issues. These rankings are provided by industry, with rationales for each Issue's priority level, which reflects the following inputs:

- Internal discussions with Bloomberg SMEs and sector-specialists
- Analysis of internal Bloomberg research and news sources that highlight financial impacts related to key environmental and social risks in the industry (e.g., litigation, fines, reputational/brand risk, employee turnover)
- Bloomberg proprietary research on data related to industry activities and operations and their impacts
- Academic/scientific studies that point to industry exposure to the highlighted factors
- Regulatory actions in relevant jurisdictions to limit, track, and control negative impacts associated with industry activities and operations

Industry and sub-industry specific priority rankings can be found in the Industry Guides; as an illustrative example, the Oil & Gas priority rankings are provided in the tables below. Summary tables in each Industry Guide describe key Issues and show transparency into Issue Priorities. Details are also provided on the assignment of Issue Priorities for each industry.

FIGURE 4 - EXAMPLE HEAT MAP OF ENVIRONMENTAL ISSUE PRIORITIES FOR OIL & GAS INDUSTRY

	Exploration & Production	Integrated Oils	Midstream	Refining & Marketing	Drilling & Support	Oilfield Services & Equipment
Air Quality	5	6	3	3	5	5
Biodiversity & Natural Capital	4	5	1	2	1	3
Climate Exposure	1	1				
Energy Management		4			4	4
GHG Emissions Management	1	1	1	1	2	2
Waste Management		7		5	6	6

Water Management	3	3		3	3	1



Source: Bloomberg. Dark green represents the highest priorities, and grey represents the lowest priorities.

FIGURE 5 - EXAMPLE HEAT MAP OF SOCIAL ISSUE PRIORITIESS FOR THE OIL & GAS INDUSTRY

	Exploration & Production	Integrated Oils	Midstream	Refining & Marketing	Drilling & Support	Oilfield Services & Equipment
Community Rights & Relations	4	4	1		4	4
Ethics & Compliance	5	5	2	4	5	5
Labor & Employment Practices	2	2		2	2	2
Occupational Health & Safety Management	1	1		1	1	1
Operational Risk Management	2	2	2	2	2	2



Source: Bloomberg. Dark green represents the highest priorities, and grey represents the lowest priorities.

4.5.2 Governance Theme Prioritization

The Governance Pillar consists of four themes: Board Composition, Executive Compensation, Shareholder Rights, and Audit. Theme Priorities Themes included in the Governance Pillar Score are weighted based on Theme Priority. Bloomberg Intelligence assessed corporate governance issues, prioritizing and ranking themes using proprietary and external sources, which reflect the following inputs:

- Internal discussions with Bloomberg SMEs
- Analysis of internal Bloomberg research and news that highlight financial impacts related to key governance risks (e.g., litigation, fines, shareholder actions, employee turnover)
- Bloomberg analyses of numerous corporate governance codes from different countries
- Academic/scientific studies that point to the highlighted factors

FIGURE 6 - HEAT MAP OF GOVERNANCE THEMES AND PRIORITIES

Governance Score	Theme Priority Rank	Weighting Points	Theme Weight
Board Composition	1	3.72	35.00%
Executive Compensation	2	2.65	24.94%
Shareholder Rights	2	2.65	24.94%

Audit	4	1.61	15.12%
Total Points		10.62	100%

$$\sum_{issues\ in\ pillar} \widetilde{W_i} * DF_i$$

4.5.3. Pillar Disclosure

The Pillar Disclosure measures the level of disclosure a company offers for the fields under each of its Pillars. Pillar Disclosure is calculated using the same disclosure treatment applied at the Issue level. Points are earned where the relevant field can be scored, meaning that the field is disclosed and, where relevant, the applicable activity metric is also disclosed.

The Pillar Disclosure value is computed as a simple weighted average of the Disclosure Factors for the Issues within the Pillar, using the applicable Issue Weights used in Pillar Score aggregation, where DF_i is the Disclosure Factor for Issue i and $\widetilde{w_i}$ is the applicable Issue Weight:

$$PD = \sum_{issues\ in\ pillar} \widetilde{W_i} * DF_i$$

The Pillar Disclosure Score represents the percentage of applicable disclosure available and does not impact the calculation of the Pillar Score. It is designed to provide additional context to the reporting levels at the aggregate Pillar level and should be used in conjunction with the corresponding ESG score.

4.5.4 Governance Score Aggregation

Overview

As previously discussed, Bloomberg's approach toward aggregation attempts to reward consistent performance and penalize uneven performance. However, it also works to temper the penalties by making use of other attributes, such as research-driven BI Theme Priorities.

Scores on each level (Field, Sub-Issue, Issue, and Theme) roll into a higher level of aggregation: Fields are scored individually and rolled up into Sub-Issues, which then feed into the major Issues, which, in turn, are folded into the four Theme Scores and then the Governance Pillar Score.

Disclosure as a dimension of performance is considered at the Issue level, where the Disclosure Factor is introduced to summarize the availability of quantitative fields for scoring. Bloomberg's approach to aggregation at the Issue level emphasizes quantitative disclosure. Also, because policy performance can be perfect while quantitative disclosure is poor, the aggregation approach aims to minimize the potential to score well through disclosure of qualitative information alone.

Sub-Issue Scores

There are several different ways to aggregate field-level scores into Sub-Issue Scores: a weighted generalized mean (p-mean); a simple mean (average); and some special cases using custom aggregation as introduced below.

P-mean is used to reward general excellence and to penalize less consistent performance between the various Sub-Issues being aggregated. As with all Sub-Issue Scores, we use weighted shifted p-means, with the power p=0.5 and shift s=1.[2]

$$M(x,w,p,s) = \left(\sum_{j=1}^{n} w_j (x_j + s)^p\right)^{1/p} - s$$

Simple Mean is used when fields within one Sub-Issue are compensable with one another (i.e., good performance in one field can compensate for bad performance in a related field) and there are high correlations between the field-level scores.

Bonus Field is applied to specific Sub-Issues. For example, Gender Diversity is a function of the gender makeup of the board, with a potential uplift for a female Chair.[3]

The field representing whether the board Chair is a woman (CG629) serves as a bonus field, adding 1 point of credit to the overall Gender Diversity score. Sub-Issue Scores are always capped at 10. The aggregation formula is:

Gender Diversity Score = "minimum (10, % of Board Members that are Women-S + 0.1*Chairman or Equivalent a Woman-S)"

Where ' -S ' represents the score of the input field.

"Deflator" is a way to aggregate scores by proportionally scaling the aggregated scores based on a specific field (score) within the Sub-Issue. For example, In the Say on Pay Sub-Issue, two Indicator Scores (Say on Pay Support Level and Frequency of Say on Pay Votes) are multiplied to generate the Sub-Issue score, as shown below:

$$Say\ On\ Pay\ Sub\text{-}Issue\ Scores = Say\ on\ Pay\ Support\ Level\ Score * Frequency\ of\ Say\ on\ Pay\ Votes\ Score/10.0$$

A company can have a score of 10 on Say on Pay Support Level field, but the Say on Pay Sub-Issue Score is 7 if the company sets the frequency of say-on-pay every three years.[4]

Effectively, the Frequency of Say on Pay Votes Field Score serves as a "deflator" that caps the Sub-Issue Score to be lower than 10 if the frequency of the say-on-pay vote is less frequent than every year.[5]

Score aggregations for each Sub-Issue are detailed in the specific Governance Scores Theme Guides, available to users of the Scores.

Issue Scores and Disclosure Level

Sub-Issue Scores are aggregated into Issue Scores. In addition to capturing corporate governance performance, Issue Scores highlight disclosure performance. By incorporating the level of disclosure at the Issue Score level, Sub-Issue and Indicator Scores reflect only disclosed performance (or are blank due to lack of available data).

Only quantitative fields and a set of non-policy qualitative fields are considered in the calculation of the Disclosure Factor. As a result, Bloomberg's approach to aggregation at the Issue level emphasizes quantitative disclosure to avoid a perfect policy

[2] The p-value of 0.5 is chosen as the midpoint of the values that represent an arithmetic mean (p=1) and a geometric mean (p=0). The shift value s=1 is chosen to avoid large penalties for scores near 0.
[3] The presence of a chairperson may not always be relevant, as some companies have no established chairperson on the board.
[4] See the Say on Pay Categorical Scoring table in the Executive Compensation Theme Guide.
[5] It is considered best practice for companies to hold a say on pay vote annually, though in some markets a less frequent vote may be allowed.

performance score, with poor quantitative disclosures to back it up. Essentially, the aggregation approach aims to minimize the potential to score well by disclosing only qualitative information.

To accomplish this, the disclosure levels are built into the separate Disclosure Factor, which is then aggregated into performance scoring at the Issue Score level. Bloomberg's dual goal of measuring performance and incentivizing disclosure dictates that it would be an incomplete measure of a company's performance to aggregate to a higher-level score by averaging lower-level scores only for data that has been disclosed.

In summary, Issue Scores are calculated as follows:

Step 1:

Determine an average performance score of Sub-Issue Scores – the "Performance Score"; which is calculated as the weighted shifted p-mean of Sub-Issue Scores to reward general excellence and penalize less consistent performance between Sub-Issues. Factors such as firm age, board size, board structure, and country of issue are also considered.[6]

Step 2:

Measure disclosure of quantitative and non-policy fields, with the result being a weighted percentage, called the Disclosure Factor. A company's Disclosure Factor for an Issue is computed as a weighted percentage over all fields within the Issue topic. Points are earned if all field(s) needed for computing the Field Score are disclosed, meaning that the points are earned where we are able to generate a Field Score; the point value depends on a field's Disclosure Factor as shown in the table below:

Disclosure Factor	Point Value
A	5.0
B	2.0
C	0.0

TABLE 6 - POINT VALUES BASED ON DISCLOSURE SCORE

A Disclosure Factor of A represents fields for which disclosure is widely requested or required by corporate governance codes or ESG disclosure frameworks, B represents fields for which disclosure is less-widely requested, and C represents fields derived and not directly disclosed by the company, or where the same field is used more than once, so as to avoid double counting. For example, in Board Composition, the fields Average Director Age and Adjusted Board Age Range both require the same data set – the age of all corporate directors – and disclosure or lack thereof need only be counted once.

Mathematically, the Disclosure Factor (DF) is computed as:

$$DF = \frac{\sum_{fields} Point\ Value\ if\ Field\ can\ be\ scored}{\sum_{fields} Point\ Value}$$

[6] The Performance Score is a function of the weighted generalized mean (p-mean) of the Sub-Issue scores, with weights decided within each Issue, described in the individual Governance Scores Theme Guides.

This results in a number between 0 and 1, with 0 representing no quantitative or non-policy field disclosure at all, and 1 representing 100% disclosure of all data.

Step 3:

The Disclosure Factor determines the scale which is then applied on the Performance Score to derive the Issue Score. The scale, called "Upper Target," forms an increasing and curved line as the level of disclosure increases. More specifically, the Upper Target is a convex line that decreases more dramatically at less than 90% to medium levels of disclosure, reflecting the higher marginal penalty on any non-disclosure of corporate governance data.

$$Upper\ Target = 10 \times (0.9 \times DF^2 + 0.1)$$

The Upper Target is 1 if the DF is 0, and it is 10 if the DF is 1. Thus, a company that does not disclose any quantitative information cannot receive an Issue Score greater than 1. Furthermore, disclosing information that only pertains to quantitative fields in which performance is good does not necessarily result in a high Issue Score, as the Disclosure Factor will account for the lack of full disclosure by capping the score at the Upper Target. The graph below illustrates the relationship between the Upper Target and the corresponding "achievable" Issue Score:

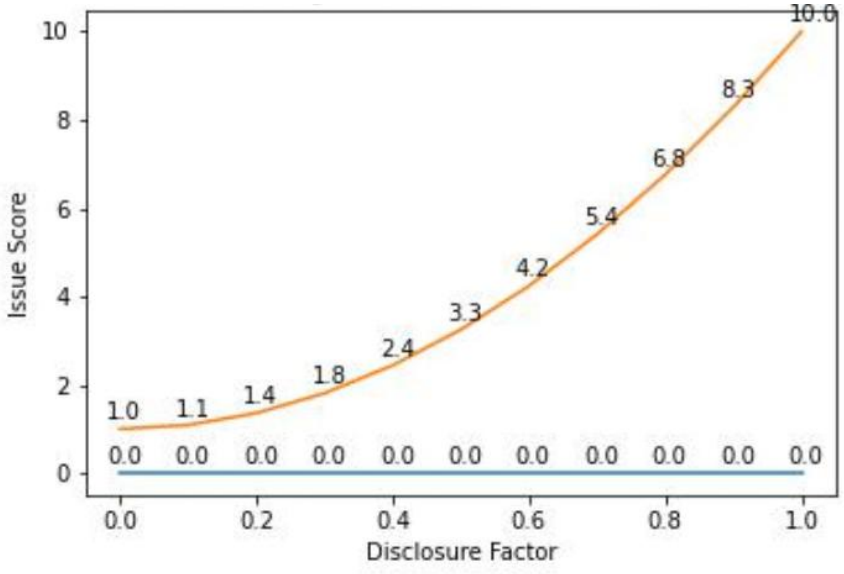

FIGURE 7 - RELATIONSHIP BETWEEN UPPER TARGET AND "ACHIEVABLE" ISSUE SCORE

Step 4:

Scale the Performance Score using the Upper Target (UT) to generate the Issue Score.

$$Issue\ Score = Performance\ Score \times \frac{\mathrm{UT}}{10}$$

When the Upper Target is 10, which represents full disclosure based on definition, the Issue Score is identical to the Performance Score; this means that perfect (100%) disclosure does not require adjustment of the Performance Score.

The final step can be visually demonstrated using the diagram below:

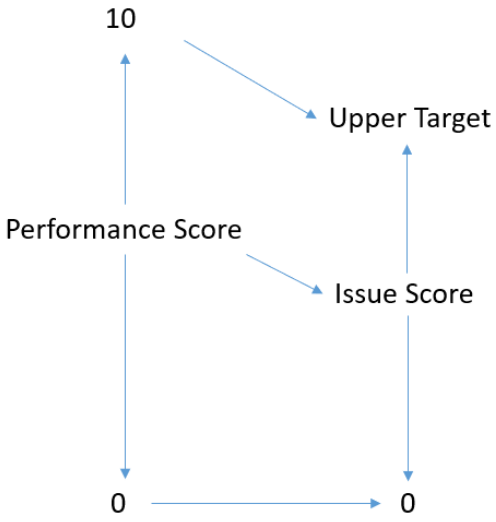

FIGURE 8 - SCALING PERFORMANCE SCORE USING UPPER TARGET TO GENERATE ISSUE SCORE

Theme Scores

Theme Scores are a function of the weighted generalized mean (p-mean) of the Issue Scores. The weighting scheme for each Theme is determined based on fundamental research and company-specific factors, such as firm age or local market rules. Additional details can be found in the individual Governance Scores Theme Guides.

Theme Disclosure

Theme Disclosure measures the level of disclosure across the Issues within each Governance Theme. Theme Disclosure is used in the aggregation of the Governance Pillar Disclosure Score and does not affect the calculation of the Theme Score.

Pillar Score

BI Theme Priority rankings are assigned weights ($\tilde{w}$) that are determined as a function of a ranking (k) of their relative importance.

$$\tilde{w}=1+e^{0.5\times(3-k)}$$

Note that the weights do not decrease in a linear fashion by design.[7] This reflects the relatively high importance of the top rankings and implies that lower priority Issues have a lesser effect on Pillar Scores.

After the calculation of absolute weights for each Theme, the weights are divided by the total weights of all Themes to derive the relative weights, which feed into the weighted p-mean aggregation to calculate the Governance Pillar Score.

Pillar Disclosure Score

[7] 0.5 and 3 are the values of the tuning parameters in this equation, the former controls the ratio of weights between adjacent ranks and the value of 3 controls where it starts to flatten in those ratios. The values are calibrated to meet the scores design principle.

The Pillar Disclosure measures the level of disclosure a company offers for the fields under each of its Pillars. Pillar Disclosure is calculated using the same disclosure treatment applied at the Issue level. Points are earned where the relevant field can be scored, meaning that the field is disclosed and, where relevant, the applicable activity metric is also disclosed.

The Pillar Disclosure value is computed as a simple weighted average of the Disclosure Factors for the Themes within the Pillar, using the applicable Theme Weights used in Pillar Score aggregation, where DF_i is the Disclosure Factor for Theme i and $\widetilde{w_i}$ is the applicable Theme Weight:

$$PD = \sum_{themes\ in\ pillar} \widetilde{W_i} * DF_i$$

The Pillar Disclosure Score represents the percentage of applicable disclosure available and does not impact the calculation of the Pillar Score. It is designed to provide additional context to the reporting levels at the aggregate Pillar level and should be used in conjunction with the corresponding ESG score.

4.5.5 Overall ESG Score Aggregation

Pillar Weighting

The Overall ESG Score and Overall ESG Disclosure Score use the same industry-specific relative weighting of the Environmental, Social and Governance Pillars. For each industry, the E, S and G Pillars are ranked on a scale of 1 to 5, with 1 reflecting the highest importance. G is ranked 3 for all industries, given that market- and region-specific factors can be a more significant driver of governance than industry factors.

The rankings of the E and S Pillars are assessed based on Bloomberg research of the relative exposure to E and S Issues identified in the industry's E and S materiality framework; the rankings are then translated into percentage weights. For instance, for companies in the Tobacco peer group, social factors are viewed as reflecting the dominant financially material issues and ranked 1, while the Environmental Pillar is ranked 5. This results in weights of 11.1% for Environmental, 55.6% for Social and 33.3% for Governance. In contrast, for Oil & Gas Exploration and Production, environmental factors are deemed most material, with the Pillar ranked 1, while the Social Pillar, reflecting issues related to safety, is ranked 3, resulting in weights of 45.5% and 27.3%, respectively.

Overall ESG Score

The Overall ESG Score is a weighted generalized mean (power mean) of a company's E, S and G Pillar Scores, using the Pillar weights described above. The use of a power mean is designed to reward more balanced performance across Pillars and to penalize less consistent performance, reflecting a belief that E, S and G Scores and the performance they assess cannot compensate for one another. The values of the power and shift (p=0.5 and s=1) are the same as those used in the aggregation of each of the Pillar Scores.

4.6. Assessment Categories

As referenced throughout this document and displayed in Figure 1: ESG Scores Structure, the assessment category for all ESG Score fields in the below levels/ categories ranges from 0-10, with 10 being best:

- Indicator Scores
- Sub-Issue Scores
- Issue Scores
- Theme Scores

- Pillar Scores
- Overall Scores

These 0-10 scores measure best-in-class performance within BECS peer groups. Percentiles available for each of Issue, Theme, Pillar and Overall Scores range from 0-100, with 100 being best.

Zero-Centred Scores range between -10 to 8.5, where the median company in a peer group has a ZCS of 0, outperforming companies have ZCSs greater than 0 and underperforming companies have ZCSs less than 0. The ZCS represents the difference between a company's ESG score and its peer group's median score (floored at 1.5). Any two companies from any peer groups that have the same ZCS could be considered to be performing equally better or worse than their specific peer averages by the same margin, and the Scores are comparable across all peer groups through this lens.

Standardized Scores range between 0-10, where higher scores are indicative of better relative performance against the set of a company's peers. The Standardized Scores are calibrated such that the median company in a peer group receives a Standardized Score of 5. Companies lagging the average performance of their peers (specifically, the median peer group score) receive Standardized Scores lower than 5, while companies doing better than average (median) in their peer group receive Standardized Scores greater than 5. Similar to the Zero-Centred Scores, any two companies from any peer groups that have the same Standardized Scores could be considered to be performing equally better or worse than their specific peer averages by the same margin.

In addition to the Zero-Centred and Standardized Scores, companies are also assigned to one of seven categories called ESG Score Bands. The Bands group companies that have similar Standardized Scores. The Score Bands are labelled A-G, with A being best.

As seen in the preceding table, companies with Overall Scores that are near their peer groups' median

ESG Standardized Score Range	ESG Score Band	Description of Performance in Range
8.4375 to 10	A	Significantly better than peer average
7.0625 to <8.4375	B	Much better than peer average
5.6875 to <7.0625	C	Moderately better than peer average
4.3125 to <5.6875	D	Peer average
2.9375 to <4.3125	E	Moderately below peer average
1.5625 to <2.9375	F	Much below peer average
0 to <1.5625	G	Significantly below peer average

TABLE 7 - PEER GROUP SCORING BANDS AND ASSESSMENT CATEGORIES

scores (i.e. ESG Standardized Scores near 5) are assigned to Band D. Companies that are performing moderately better than peer average will be in Band C; companies performing much better than peer average are in Band B; and those that score significantly better than their peers' average will be in Band A. A similarly reflected categorization applies to companies that are lagging their peers' average scores, and these companies fall into Bands E-G.

4.7. Scientific Evidence

The Scores methodology and model may draw on relevant scientific evidence to inform factor selection and prioritization, indicator design and analytical thresholds. Relevant scientific evidence may include peer-reviewed research, technical reports, and publications from recognized public, industry, or expert bodies, particularly those focused on the operational and financial relevance of ESG factors. The analysis of specific indicators related to topics such as climate exposure considers measurement and target-setting approaches suggested by industry bodies such as the Science-Based Targets Initiative (SBTi). Further, metric selection and prioritization is, wherever possible, supported by statistical and evidence-based analysis of industry relevance; for example, selection and prioritization of water management for a given industry will consider the relative water intensity of the industry.

4.8. Assessment Time Horizon

The Scores are designed to provide a framework for understanding and analysing industry-specific, forward-looking risk and opportunity signals, as well as a direct evaluation of how specific companies have historically performed at managing those risks and opportunities. In this context, the assessment time horizon for Scores can be understood from two angles: the forward-looking impact time horizon that is considered in Issue prioritization, and the time period for which input data is collected and incorporated to produce company Scores.

The forward-looking impact time horizon is described above in section 4.5.1. The likely timing of impact for each Issue may be classified as short term (within 2 years), medium term (in 2-5 years), or long term (in 5+ years).

With respect to input data collection, Scores use the most current information available, supplementing the most recent fiscal year's data with any newly disclosed information. The oldest data points used in the calculation of the Scores are sourced from the most recent fiscal year for which a Fiscal Year score has been calculated.

Fiscal Year-Aligned Scores provide an alternative representation using only data associated with a specific fiscal year. For further information on the different time representations and their treatment over time, see Section 7. 1.

4.9. Time Horizon of Validity

Scores are calculated monthly to account for newly available data. As ESG data is typically reported across multiple documents, incorporating new data into Scores monthly allows Bloomberg to account for company-specific variation in reporting timelines. Bloomberg reviews input data ahead of every monthly update, to ensure completeness and accuracy. If additional time is required, publishing of a company's Scores may be paused until the review is completed; in most such cases Scores will be published the following month.

Scores will cease to be computed for a given company once a certain amount of time has passed since that company was observed to be active and to have disclosed relevant ESG and fundamental data. Typically, this occurs approximately 24 months after the end of the last fiscal year for which data was disclosed.

Fiscal Year-Aligned Scores are initially published for a given company only once disclosure of data for the relevant fiscal year is determined to be complete. As a result of this delayed availability and their restriction to data associated with that fiscal year, FY-Aligned Scores may not reflect the most current information available at the time of publication. For further information on the different temporal representations and their publication history, see Section 7.1.

4.10. Industry Classification

Bloomberg ESG Scores are based on BECS, as noted in section 1.3.

4.11. Supporting Models, Key Assumptions and Use of AI

All relevant models and assumptions are described herein and/or in referenced and linked documentation. The Scores model does not employ the use of artificial intelligence ("AI") for computation or other purposes.

With respect to the use of AI in data collection, as previously stated Bloomberg collects ESG data from a variety of publicly available sources, such as annual reports, integrated annual reports, sustainability reports, corporate governance reports, sustainability-related press releases, etc. In some cases, Bloomberg collects ESG data using AI assisted data collection techniques, which, combined with robust data validation processes, support accuracy, completeness and timeliness of data.

5. Input Data and Methodology Limitations

Bloomberg's Scores intend to produce transparent assessments of companies based on company reported data, fundamental industry research and proprietary quantitative transformations and analyses.

Current input data limitations are driven by the uneven and rapidly evolving nature of company ESG reporting, as well as ongoing iteration of formal frameworks used by companies to guide their reporting decisions. Such limitations include:

- **Incomplete disclosure:** Many companies do not report on all relevant ESG topics, particularly in jurisdictions where disclosure is voluntary or loosely regulated. Even among firms that do disclose, coverage across environmental, social, and governance indicators is often uneven.
- **Opaque or aggregated disclosures:** Some companies report ESG data only in aggregated or generalized terms, obscuring critical details. This can constrain the granularity of analysis and may hinder detection of material risks or opportunities.
- **Inconsistent reporting standards:** Companies often use different reporting frameworks or tailor their own metrics, limiting comparability across firms and industries. Variability in definitions, units, timeframes, and assumptions can make side-by-side assessment challenging, even when reporting appears similar.
- **Timeliness and frequency:** Most ESG data is disclosed annually, and with significant time lags—often several months after the end of a fiscal year.
- **Use of artificial intelligence in data collection:** Bloomberg recognizes that the use of AI, including large language models (LLMs), in processing public disclosures requires appropriate governance and controls. Variability in source document formats, terminology, and disclosure practices may introduce complexity in data extraction; however, these risks are mitigated by a combination of model design, confidence based filtering, and robust validation frameworks.

Current model limitations are largely related to such data limitations, as well as assumptions and implications of model selection previously mentioned in this Methodology. These can be broadly categorized as:

- **Reliance on self-reported data:** Scores are based primarily on company-reported disclosures, which per above vary in quality, completeness, and comparability. Where reported information is limited, inconsistent, or not sufficiently granular, scores may be affected and may not fully capture underlying ESG performance or exposure.
- **Circumscribed use of imputation:** As previously discussed, the model generally avoids imputing undisclosed values. This approach supports and encourages transparency but may limit coverage of component/sub-scores and comparability between those firms with very high disclosure vs. those with very low.
- **Materiality, weighting, and model-judgment dependence:** While Score computation is fundamentally quantitative and rules-based, Issue selection and prioritization rely on Bloomberg research, proprietary judgment, and model choices. Different analytical choices could reasonably produce different results.
- **Limited forward-looking capability:** Although targets and commitment-related metrics are included in the assessment, Scores are based primarily on historical and current disclosures and therefore assume past performance and reported management approaches to be reasonably indicative of future risk.

Given these and other challenges, the Scores aim to summarize risks that can feasibly be assessed through a combination of data collection, standardization, research, and analysis. However, the data fields and analysis used in these Scores should not be considered exhaustive, but rather representative of sustainability risks and opportunities. Users are expected to combine these Scores with their own analysis and judgment to determine suitability for the intended goal.

Future methodology enhancements will focus on continuously improving the effectiveness of the Scores in assessing both performance and disclosure. These enhancements may result in changes to the scoring templates and parameters that drive the quantitative model. Assessments and potential changes entail the following activities:

- **Sector review:** Each sector framework will be reviewed once per year to evaluate changes in guidance embodied in frameworks, corporate disclosure, availability of company reported data, and other key drivers. Notably, fields currently scored for Disclosure Factor-only may be re-examined to assess whether improved disclosure facilitates applicability of quantitative scoring methods. Data fields may also be added or removed.
- **Regulatory action or collective consensus:** New additions to the methodology could be introduced in response to regulatory behaviour.
- **For entities benefiting from inheritance** (related to section "ESG Score Inheritance 4.1.1"), only the current relationship is applied historically and accessible by clients. Clients cannot currently access historical (Point in Time) inheritance relationships, potentially limiting the scope of back testing analysis.

  Bloomberg chose BICS level 2 to balance the sector level granularity with the expansion of coverage. A more granular assessment (e.g., using BICS Level 3) may potentially increase accuracy, but limit coverage.

6. Methodology Review

The methodology set out in this document is reviewed at least annually, to ensure it remains up-to-date and in line with industry practices and where applicable, reflects developments in scientific evidence, global frameworks, corporate reporting practices or regulatory requirements. Methodology changes are managed through BSEL's methodology governance process. Material updates to the methodology will be communicated to stakeholders ahead of time.

More information on our methodology development and review process can be found in our "Approach to Methodology, Review and Change" document, available on our website here.

7. Restatements, Output Updates and Cessation

7.1. Restatements and Other Updates

As outlined in Section 3.2, update to input data used in scores –including restatements of previously disclosed data– will be reviewed, processed, validated and incorporated into Scores on a rolling basis as they become available. We do not proactively communicate changes to Scores that are driven by restatements of input data, but communication channels are available via which users and rated entities can review such changes.

Bloomberg ESG Scores are available in two different time representations: Scores and Fiscal Year-Aligned Scores.

Scores are calculated and published monthly using the most recently available information at the time of calculation. Each published Score is valid as of its publication date and remains valid until the next publication. Published Scores are not subsequently revised; each published Score represents an immutable point-in-time assessment.

Fiscal Year-Aligned Scores provide an alternative representation associated with a specific fiscal year. They are recalculated monthly to incorporate potential updates, restatements or newly available information relating to that fiscal year. As a result, previously published FY-Aligned Score values may change over time. Accordingly, the FY-Aligned Score does not represent an immutable point-in-time assessment and should be interpreted as an evolving measure based on the most up-to-date information available fora specified fiscal year.

	Scores	FY-Aligned Scores
Data scope	Most recently available data, associated with an "as of" date	Data associated with a specific reporting fiscal year
Publication	Published monthly using the most recently available information as of each publication date	Initially published once disclosure of data for the relevant fiscal year is determined to be complete, then recalculated monthly as underlying data changes
Timeliness	Most timely representation	Inherently delayed and may not reflect the most current information available at the time of publication
History	Published observations are preserved and not subsequently revised, enabling Point-in-Time (PiT) retrieval	Recalculated – previously published fiscal-year values may change over time
Reproducibility	Supports historical reproducibility	A value retrieved today may differ from the value previously retrieved for the same fiscal year
Typical use	Current ESG analysis, historical analysis and back testing	Fiscal-year-aligned analysis

TABLE 8 - ESG SCORES VS. FISCAL YEAR-ALIGNED SCORES

When an entity is no longer scored—due to changes in the coverage universe, certain types of corporate actions, cessation of data disclosure, or other reasons—computation and publishing of new Scores for that entity will cease after a period of time (the exact timing may vary depending on factors such as the underlying reason for the company having been removed from coverage).

Various circumstances may result in an update to the final output of the Score, for example, without limitation, (i) as a result of a material change to the methodology, models, key rating assumptions or data sources, including estimates, (ii) changes to the ESG Rating due to error correction or (iii) because of major new information in respect of a rated item.

7.2. Cessation of Scores Product

Bloomberg's Scores product may be ceased under certain circumstances, including if Bloomberg determines that it is no longer suitable or wishes to replace it with another product. In such cases, Bloomberg will follow a formal procedure for cessation, which includes a thorough review of the product's ongoing relevance and suitability. If a decision is made to cease the product, Bloomberg will communicate this decision to users ahead of time, providing clear notice of the cessation and any relevant information regarding the discontinuation of the product. This communication will be made through a clear and transparent process, including notifications to clients and rated entities, as well as updates to relevant documentation and marketing materials.

8. Engagement Process and Communication Channels

BSEL is committed to transparent and consistent engagement with its stakeholders. BSEL maintains dedicated channels through which clients, rated items and other stakeholders may contact us or access information relating to our products and methodologies.

8.1 Contact Channels

Client and general enquiries
Clients and other stakeholders may contact BSEL at bsel_info@bloomberg.net.

Data and methodology enquiries
Rated items and other relevant stakeholders may submit questions regarding company data, methodology matters or related enquiries through the Inquiry Form.

Input received from rated items is reviewed for possible data or methodology-application errors. Validated issues are addressed through the applicable correction, restatement or methodology-change process. Rated items cannot negotiate or determine the methodology, rating rules or outcomes.

Further information on BSEL's approach to stakeholder engagement is available on our website.

8.2 Methodologies and Related Disclosures

Current product methodology documents, applicable regulatory mapping tables and information regarding changes to BSEL methodologies and models are available on the BSEL ESG Ratings Products page.

8.3 Complaints

Information on how to submit a formal complaint, including the applicable process and contact arrangements, is set out in the BSEL Complaints Policy

Annex 1: Glossary of Terms

- **Bloomberg ESG Classification System (BECS) -** Bloomberg's proprietary classification system for grouping companies with similar ESG risk and opportunity profiles for purposes of ESG analysis and scoring.
- **Bloomberg Industry Classification (BICS)** – BICS is Bloomberg's proprietary industry classification system, which classifies companies by tracking their primary business activities as measured by their primary source of revenue; it then groups them together according to market-based industries.
- **CDP -** CDP is a non-profit organization that runs the global disclosure system for investors, companies, cities, states and regions to disclose on and manage environmental impacts.
- **Corporate Sustainability Reporting Directive (CSRD) –** European Union directive requiring certain companies to report sustainability-related information in their management report in accordance with the European Sustainability Reporting Standards (ESRS).
- **Council of Institutional Investors (CII) -** The Council of Institutional Investors is a nonprofit, nonpartisan association of U.S. public, corporate and union employee benefit funds, other employee benefit plans, state and local entities charged with investing public assets, and foundations and endowments with combined assets under management of approximately $5 trillion.
- **Global Reporting Initiative (GRI) -** The Global Reporting Initiative is an international, independent, nonprofit entity that provides a widely recognized framework for sustainability reporting, helping organizations report on their economic, environmental, and social impacts.
- **International Corporate Governance Network (ICGN) -** Established in 1995 and led by investors responsible for assets under management of around US$77 trillion, ICGN advances standards of corporate governance and investor stewardship globally, by influencing public policy and professional practice, convening events and providing governance and stewardship professionals with guidance and education.
- **International Sustainability Standards Board (ISSB) -** The ISSB is an independent, private-sector body that develops and approves the International Financial Reporting Standards (IFRS) Sustainability Disclosure Standards (IFRS SDS). The ISSB operates under the oversight of the IFRS Foundation.
- **Investor Stewardship Group (ISG) -** The Investor Stewardship Group is an investor-led effort that includes some of the largest U.S.-based institutional investors and global asset managers, along with several international counterparts. Formed as a sustained initiative to establish a framework of basic investment stewardship and corporate governance standards for U.S. institutional investor and boardroom conduct, ISG has produced a set of stewardship principles for institutional investors and corporate governance principles for U.S. listed companies.
- **Organization for Economic Cooperation and Development (OECD) –** The OECD is an intergovernmental organization founded in 1961 to advise governments on how to deliver better policies for better lives. Working with over 100 countries, the OECD is a forum and knowledge hub providing standards, trusted statistics and analysis, platforms for dialogue and support to policy reform.
- **Sustainability Accounting Standards Board (SASB) -** SASB Standards help companies disclose relevant sustainability information to investors. Available for 77 industries, the SASB Standards identify the sustainability-related risks and opportunities most likely to affect an entity's cash flows, access to finance and cost of capital over the short, medium or long term and the disclosure

topics and metrics that are most likely to be useful to investors. As of August 2022, the ISSB assumed responsibility for the SASB Standards.

- **Task Force on Climate-Related Financial Disclosures (TCFD) –** The TCFD was created by the Financial Stability Board (FSB) in 2017 to develop recommendations on the types of information that companies should disclose to support investors, lenders, and insurance underwriters in appropriately assessing and pricing risks related to climate change. The resulting disclosure recommendations, structured around four thematic areas, are designed to help companies provide better information to support market transparency and more informed capital allocation.

Annex 2: Version History Archive

Document update information

Model Version Number	Document Version Number	Version Release Date	Description of Updates to Document
3.00	7.0	September 2026	Updates to Version History to account for model version increment
2.05	6.5	July 2026	Updates to Version History to account for model version increment
2.04	6.4	May 2026	Updates to ES and G "Pillar Disclosure" descriptions in sections 4.5.3 and 4.5.4 to account for adjustment of Pillar Disclosure calculation. Updates to Version History to account for model version increment
2.03	6.3	April 2026	Updates to Version History to account for model version increment
2.02	6.2	December 2025	Updates to Version History to account for model version increment
2.01	6.1	November 2025	• Clarification in section 4.1.1 that relevant ESG fields scores are part of the inheritance approach • Updates to Version History to account for model version increment
2.00	6.0	October 2025	Updates to Version History to account for model version increment
1.04	5.3	September 2025	Adding section 4.1.1 ESG score Inheritance and adjusting Section 5 Methodology Limitations accordingly
1.04	5.2	July 2025	Updates to Version History to account for model version increment
1.03	5.1	June 2025	Updates to formatting and terminology
1.0	5.0	November 2024	Addition of language describing Zero-Centred and Standardized Scores and Score Bands
1.0	4.0	September 2024	Modification of "ES Score Framework and Issue Priorities" and example heat maps to reflect addition of Biodiversity & Natural Capital Issue and removal of Ecological Impact Issue
1.0	3.2	August 2024	Addition of language describing periodicity ("Assessment Time Horizon")
1.0	3.1	June 2024	Updates to formatting and terminology
1.0	3.0	September 2023	Methodology for Environmental, Social and Governance Scores

Score model update information

Model Version Number	Date of Implementation	Description of Changes to Scores Model
3.00	September 2026	Release of below enhancements; • Enhanced methodologies for Energy Management and Climate Exposure – Physical Risk. • Expanded Key Issue applicability and indicator review: Data Security & Customer Privacy is being extended to Automobiles and Institutional Brokerage, and Water Management to Automobiles. Indicators have also been reviewed and refined across the peer groups where GHG Emissions Management, Water Management, and Data Security & Customer Privacy apply. • Review of inputs for Governance across Board Composition, Executive Compensation, Shareholder Rights, and Audit For additional details on the enhancements, see the Industry Guides and Industry Guide Companion File for ES, and Theme Guides for G.
2.05	July 2026	Incorporation of Overall ESG Disclosure via ESG_DISCLOSURE_SCORE (RX317)
2.04	May 2026	Adjustment to calculation of Pillar Disclosure to use weighted averages. Minor adjustments to G Score pre-processing and scoring functions to remove fiscal year end date filling logic; make G Issue Disclosure calculation agnostic to order of parameters; and adjust the scoring parameter table for Directors Below 90 Percent Support Score to allow scoring to proceed for boards of size 28 or larger.
2.03	April 2026	Adjustment to pre-processing and computation functions to incorporate introduction of new trigger indicating completion of data processing for a given fiscal year
2.02	December 2025	Adjustment to a pre-processing function for Latest scores in the Executive Compensation Theme to align with behavior in other Themes
2.01	November 2025	Adjustments to account for scoring of FY 2024

2.00	October 2025	Release of below enhancements; for additional details, see the Industry Guides and Industry Guide Companion File for ES, and Theme Guides for G:
		• Introduction of a Physical Risk Sub-Issue in the Climate Exposure Issue, in addition to the existing Transition Risk Sub-Issue
		  o Release of two new fields, PHYSICAL_RISK_SUB_ISS_SCR (ST179) and PHYSICAL_RISK_IDENTIFIED_FLD_SCR (ST194)
		• Enhancements to scoring of the following Environmental and Social Issues to improve materiality and consistency:
		  o Climate Exposure
		  o Energy Management
		  o Sustainable Product
		  o Labor and Employment Practices
		  o Occupational Health and Safety
		• Enhancements to Shareholder Rights in the Governance scores, reflecting updated research on country-specific relevance of certain topics, among other updates

1.04	July 2025	• Further enhancement to treatment of non-reported data in Executive Compensation • Update to scoring of Director Terms in the Shareholder Rights Theme to allow for values greater than 7 to be scored
1.03	April 2025	Enhancement to treatment of non-reported data in the Executive Compensation Theme
1.02	March 2025	Minor re-estimation of some historical score parameters to account for changes in scaling of input data fields
1.01	January 2025	• Introduction of conditional scoring for some workforce diversity fields to account for disclosure regulations/restrictions in certain European markets • Enhancement to treatment of non-reported data in the Audit Theme
1.0	November 2024	Release of Zero-Centred and Standardized Scores and Score Bands
1.0	September 2024	Hierarchies and scores in the Environmental Pillar for 57 peer groups updated to reflect the below changes (not all changes are relevant for all peer groups): • Incorporation of enhanced approach to assessing biodiversity-related risks and opportunities for 40 peer groups, via introduction of the "Biodiversity & Natural Capital" Issue (and corresponding retirement of the "Ecological Impact" Issue) • For 27 peer groups (including 10 of the above), review and, in some cases, modification of field scoring under "Environmental Supply Chain Management" and "Sustainable Finance" Issues, reflecting consideration of biodiversity-related issues in supply chains and financing/investing/underwriting activities
1.0	August 2024	• Scores in the Governance Pillar enhanced to introduce the concept of "Latest" Scores • Composition of the Professional & Financial Services and Commercial Support Services peer groups reorganized to group companies providing support services into those whose work is office-based versus those with exposure to non-office based activities • BICS-BECS mapping updated to reflect changes to the Bloomberg Industry Classification System (BICS) implemented as part of the 2024 BICS review

Annex 3: Full List of Issues and Sub-Issues by Pillar

Bloomberg's ES Scores are structured into the following hierarchy: Pillars, Issues, Sub-Issues and Fields. Each Issue contains at least one Sub-Issue, which aggregates associated ES data fields. Users can see a list of the specific Issues that are scored for each sector and industry please refer to the Industry Guides and Companion File.

ENVIRONMENTAL

Air Quality
Air Emissions
Air Emissions Policies

Biodiversity & Natural Capital
Biodiversity Management & Impact
Biodiversity Policies
Environmental Fines
Environmental Incidents

Climate Exposure
Transition Risk
Physical Risk

Energy Management
Energy Consumption
Energy Target
Renewable Energy Use

Environmental Supply Chain Management
Supplier Environmental Compliance
Sustainable Sourcing

GHG Emissions Management
GHG Emissions
GHG Emissions Policies
GHG Regulation
GHG Scope 3
GHG Target

Sustainable Finance
Engagement
ESG Integration
Exclusions
Financed Emissions
Industry Exposure
Market Initiatives
Portfolio Climate Transition Risk
Sustainable Lending & Underwriting

Sustainable Product
Alternative Drivetrain Technology
Green Product
Light Duty Vehicle Fuel Efficiency
Passenger Vehicle Fuel Efficiency

Waste Management
Hazardous Waste Generation
Hazardous Waste Recycling
Waste Generation
Waste Recycling

Water Management
Wastewater
Water Use
Water Use Policies
Water Target

SOCIAL

Access & Affordability
Access & Affordability Policy
Access & Affordability Practices

Community Rights & Relations
Community & Human Rights
Community Relations

Customer Welfare
Customer Education & Well Being
Customer Health & Safety

Data Security & Customer Privacy
Data Privacy & Content Management
Data Security

Ethics & Compliance
Business Ethics
Competitive Behavior
Legal & Regulatory Management

Labor & Employment Practices
Labor Actions
Labor Management
Organized Labor
Training
Workforce Diversity

Marketing & Labeling
Marketing Practices
Product Labeling

Occupational Health & Safety Management
Fatalities
Health & Safety Fines
Health & Safety Policies
Safety Incidents

Operational Risk Management
Operational Incidents
Operational Preparedness

Product Quality Management
Product Quality & Safety

Social Supply Chain Management
Supplier Social Compliance

Bloomberg's G Scores are structured into the following hierarchy: Pillar, Themes, Issues, Sub-Issues and Fields. Each Issue contains at least one Sub-Issue, which aggregates associated G data fields. To see a list of the specific fields for each Sub-Issue, please refer to the Governance Scores Theme Guides.

GOVERNANCE - BOARD COMPOSITION

Director Roles	**Diversity**	**Independence**	**Refreshment**
CEO Roles	Age Diversity	Board Leadership Independence	Board Refreshment
Chair Roles	Gender Diversity	Board Independence	Chair Refreshment
Board Roles			

GOVERNANCE - EXECUTIVE COMPENSATION

Incentive Structure	**Pay Governance**	**Pay for Performance**
CEO Incentive Plan Design	Compensation Board Oversight	Fixed Pay Alignment
Executive Incentive Plan Design	Say on Pay	Variable Pay Performance
Executive Pay Equity	Pay Policies	
Executive Pay Linkages		

SHAREHOLDER RIGHTS

Shareholder Policies	**Director Voting**
Takeover Defense	Director Terms
Voting Rights	Director Support
Director Election Policies	

AUDIT

Audit Committee	**External Auditor**	**Audit Outcome**
Audit Committee Meetings	Auditor Approval	Accounting Restatements
Audit Committee Structure	Auditor Fees	Auditor Opinion
	Auditor Tenure	

The following Annexes provide more insight into how ESG scoring parameters are calibrated, using specific Bloomberg data inputs as examples. As a result, the descriptions contain reference to specific Bloomberg field names, IDs and attributes.

Annex 4: Additional Features of Score Calculation

Parametric Approach to Scoring

Quantitative analysis of corporate ESG performance in the current marketplace for sustainable finance and investing data and analytics relies heavily on quantitative and qualitative analyses by researchers and on a wide range of information sources, including company reporting, non-governmental organization (NGO) monitoring and data, government information, and various news sources. These information sources and the resulting summary analytics (i.e., scores) have varying levels of frequency and transparency. As a result, the drivers of ESG scores can be difficult to discern. Much like other investment research, the results may capture subjective, potentially invisible weightings and heuristics that lead to biases not easily understood by a user.

Bloomberg's approach to these Scores aims to deliver a transparent, parametric, rules-based scoring framework driven by self-reported company information. The use of a parametric approach that closely approximates the empirical distribution is intended to address the challenges that arise in commonly used approaches to ranking sustainability performance by percentiles:

- Parameters can be estimated in a robust manner to limit sensitivity to outliers.
- Parameters can be fixed or slowly adjusted over time, for instance, using data from previous years to estimate parameters for a given year's scoring.
- Companies can be scored as soon as current-year data becomes available, without having to wait for all companies to report because parameters are estimated from historical data.

Parametric Analysis	Percentiles Bucketing
Scores companies as they report	Requires most/all data to be reported for a peer group to rank
Preserves trends with slower-moving parameters	Suffers from small peer groups or low-disclosure industries
Better identifies performance differences in peer groups	Can obscure trends in data over time
Is more robust to outliers	Can be sensitive to outliers

The table above highlights the differences between using parametric approaches to scoring vs. bucketing into percentiles.

While percentiles bucketing is a simple approach to sorting companies (or companies within a defined peer group) by the value of a field and to assigning scores that correspond to some quantile (i.e., percentiles), the drawback is that data is not always available at the same time. As a result, quantiles cannot be computed until all data for a reporting year is available.

Role of Peer Groups

A key consideration in the estimation process is establishing suitable peer groups from which data can be sampled to determine appropriate parameters. The general approach to peer groups is to compare data and evaluate statistical differences. If statistical tests suggest that the differences in the data across industries are not significant, then pooling the data across 2 or more industries is considered as a means of increasing the number of data points available for determining scoring parameters.

In cases where established external benchmarks or widespread consensus of ideal standards exist, Indicator Scores can be computed for all companies against one

universal standard, i.e., an estimate of a single set of parameters for all companies. As a benefit, each company's score would be directly comparable, in an absolute way, to every other company's score, regardless of sectors and industries. A second advantage of universal scoring is that pooling all available data to estimate one universal relationship across all companies lends greater statistical confidence to the parameter estimates.

In Bloomberg's ES Scores methodology, fatalities provide an example of such "absolute scoring." In recognizing the universal value of a human life, we score fatalities for all companies, regardless of industry or size, to a common standard. All binary fields are also absolute, by their nature, because they represent only two states – a company's disclosure of a given policy or the lack of one.

However, the evaluation of several fields is meaningful only within smaller peer groups. Scope 1 Greenhouse Gas/Carbon Dioxide Emissions is one such field. The expected quantity of a company's emissions is a function of the nature and the amount of the activity that produces them. Emissions produced by upstream exploration and production activities are not comparable to those produced by downstream distribution activities because the nature of those activities is different.

As a result, scores evaluated relative to smaller, industry-specific peer groups are "relative," i.e., ranked only within that peer group (industry, in the case above). In other words, a company that scores a 7 on a particular field is better than a peer that scores a 5, but no direct way is available to compare it to a company from a different peer group that also scores a 7 in that field.

Finally, it is worth noting that scoring based on empirical distributions, regardless of parametric- or percentile-driven approach, can lead to high scores that may not correspond to an ESG goal. For example, if all participants in a given industry have high pollution levels, the best relative performer will still receive a high score.

Where quantitative guidance is available, the current version of the Scores attempts to integrate meaningful thresholds, such as a 1% of revenues materiality test. However, given the rarity of such benchmarks, Bloomberg's current approach corresponds most closely to a "best in class" approach.

Firm Age Estimate

In general, Governance Scores require an estimate of firm age to properly assess a company's eligibility for scoring. There are also cases in which firm age has an impact on the Indicator Scores. For example, in Board Composition the estimated company age is used to avoid overly penalizing young companies for failing to adopt best practices that are more commonly found in mature firms: young firms are not expected to "refresh" the board in the same way as a long-established firm. In some other cases, the firm age is considered when determining the weightings in Issue Score aggregations. Detailed use cases of firm age estimates can be found in the individual Governance Scores Methodology Theme Guide documents available to Scores users.

To calculate the firm age as of each fiscal year-end date, multiple company specific underlying fields are leveraged, including:

1. The Field INTERVAL_START_VALUE_DATE (PY023), which denotes when a security began trading;

2. The field DATE_OR_YEAR_OF_INCORPORATION (DZ626), which contains the date that the entity was incorporated, registered, or established, and

3. The derived field (INTERVAL_START_VALUE_DATE with MARKET_DATA_OVERRIDE="IS050", PERIODICITY_OVERRIDE= "Y"), which represents the first fiscal year-end date for which fundamental data is collected.

This methodology is only a proxy for firm age because this calculation can be affected by various corporate actions. As an example, a spin-off may carry over auditors from the previous corporate entity. Likewise, firms may exist as private companies for several years before their securities start trading publicly. Note that in practice, a firm

could be older than this "age" calculation but is unlikely to be younger than the estimate.

Field Transformation and Pre-Processing

Before scoring, it is sometimes useful to apply a field transformation to calculate "clean" indicator ("field") values for a desired metric or to reduce the impact of missing data by using a proxy calculation. The goal of field transformations is to maximize the suitability of the data specified for evaluation in the scoring model to the sustainability Issue being scored.

As an example, the indicator (in Bloomberg "field SA023"): Percentage of Hazardous Waste Recycled is transformed to represent the amount of hazardous waste not recycled as a percent of total waste. Thus, the polarity for scoring changes from positive to negative because of this field transformation. This transformation is designed to ensure that a company with no hazardous waste is not penalized.

The transformation formula is ((100-SA023)/100)*SA016. This can be interpreted as:

- SA023 is the percentage of hazardous waste recycled
- SA016 is the percentage of all waste that is hazardous.
- 100-SA023: is the percentage of hazardous waste not recycled.
- (100-SA023)/100*SA016 is the hazardous waste not recycled as a percentage of total waste.

If, for example, 60% of hazardous waste was not recycled and 50% of all waste was hazardous, then 30% of all waste was unrecycled hazardous waste.

Most field transformations will apply to all sectors; however, there are some formulas that are used to increase the amount of available data that are not needed for industries with adequate reporting.

For Governance Scores, most indicator-level scores are calculated by using corporate governance fields as direct inputs. Certain fields, however, require pre-processing or transformation of the raw data fields to facilitate meaningful comparisons across companies. In these cases, corporate governance fields have been transformed to derive new fields, in a step referred to as Scoring Field Derivation. For example, Age Diversity Scores are computed based on an "adjusted age range" by taking, as a maximum, 75 for the oldest director's age, less the youngest director's age. This formula caps the reward for a wide age range by using the most commonly adopted retirement age. For Executive Pay Equity, CEO pay is subtracted from total executive pay, in order to calculate a pay equity ratio. In the Shareholder Rights Theme, for some companies, shareholders do not vote on directors every fiscal year (due to reasons like a classified board structure), a carry-forward calculation may be applied to get the latest director vote result data available. In such cases, the derived field values, instead of the original input field values, are scored.

Annex 5: Description of Environmental and Social Scoring Models

Intensity Indicators

A large number of indicator types represent various quantities (e.g., number of spills, amount of emissions) that need to be scaled by an activity metric before they can be scored. Regression techniques are employed here. Parameters that describe the relationship between the activity metric and field values for particular peer groups are estimated. The assumed distribution in each case depends on the type of field value. Thus, separate processes are required to estimate regular Intensity fields and Count Intensity fields.

Regular Intensity Indicators ("Intensity")

ESG analysts commonly use intensity ratios to determine a company's environmental or social impact as it pertains to a particular ESG field, especially those related to the economics of production such as greenhouse gas emissions. The intensity ratio is calculated as Field Value/Activity Level. Accordingly, Intensity fields are paired with activity metrics to allow the scoring of the field value relative to a company's activity level. This is done to address the extent to which the size of a company or the extent of its physical processes that drive emissions may influence the associated sustainability exposures. An example would be to analyze and rank companies' GHG Scope 1 emissions relative to production. Bloomberg's empirical analysis suggests that this can be enhanced in two ways:

- The relationships are closer to linear on logarithmic scales, rather than nominal.
- Plotting Activity versus Field Value shows diminishing marginal intensity for some fields and industries. In other words, in certain industries, as company activity grows, the incremental amount of impact (emissions produced, for example) per unit of activity falls.

One consequence of this is that nominal ratios can be biased against smaller companies for activities that display a pattern of diminishing marginal intensity. The methodology proposed here is flexible and appears to better fit the economics of production and scale patterns that are evident in the data.

In further detail, the current estimation process for scoring these fields is as follows. A company's intensity ratio is typically expressed as:

$$Intensity = \frac{Impact}{Activity}$$

This can be rewritten as:

$$Impact = Intensity \times Activity^{\gamma}$$

We introduce the exponent γ to capture possible nonlinearity between production activities and their impacts. If γ=1, then the relationship is linear; γ<1 would imply marginal impact that decreases with increasing levels of activity.

Rewriting this equation in logarithmic terms and introducing an innovation term ε, we have:

$$log\ Impact = logIntensity + \gamma logActivity + \varepsilon$$

This allows us to utilize regression techniques to estimate the necessary parameters. The intensity term is the intercept, the elasticity term (γ) is the slope coefficient and the innovation (ε) is the company-specific term. E is assumed to be normally distributed, with a mean of zero and a standard deviation of σ.

We first estimate the intensity, elasticity, and standard deviation of the innovations (σ) for all companies in a given peer group (e.g., industry) for a specific year. We then average the estimated intensities, elasticities, and standard deviation of the innovations over the three most recent years. This provides us with a model to predict a company's Impact given its level of Activity. The Field Score for Company *I* is calculated in terms of the normalized innovation as:

$$Score_i = 10 \times \left[1 - CDF\left(\frac{\varepsilon_i}{\sigma}\right)\right]$$

That is, ε_i is the difference between a company's actual and expected Impact (in log terms) and the Score is a function of how much lower or higher the company's Impact is relative to what is predicted by the properties estimated from its peer group. CDF is the cumulative distribution function for the standard normal distribution (with a mean of 0 and a standard deviation of 1). According to this model, a company that has a lower impact than is predicted from the properties of its peer group (i.e., a negative innovation) will receive a high score and vice versa.

Finally, it is worth pointing out that in all cases where the elasticity (γ) is 1 – which is the traditional assumption – the ranking on intensities (Impact/Activity) is equivalent to the ranking on innovations (ε).

Figure 9 shows an example for scoring Scope 1 Greenhouse Gas (GHG) emissions. The dashed line represents the line that can be drawn from the estimated intercept () and slope coefficient (γ). Any data points on this line are considered "average" and would receive a score of 5. Points above the line, coloured in shades of red, indicate companies that have higher–than-average GHG emissions than their peers, adjusted for their size (i.e., the activity metric – revenue in this case), and receive lower scores. Similarly, points below the line, coloured in shades of green, represent companies that have performed better relative to their peers and thus receive higher scores.

As an example, in 2018, Chemicals company LG Chem (051910 KS) reported 5.42 million metric tons of Scope 1 GHG emissions and its revenue was approximately $25.6 billion. This point lies below the estimated line and resulted in a score of 7.8. Air Liquide (AI FP) reported similar revenue, approximately $24.8 billion, but had 15.39 million metric tons of GHG emissions which resulted in a score of 2.9.

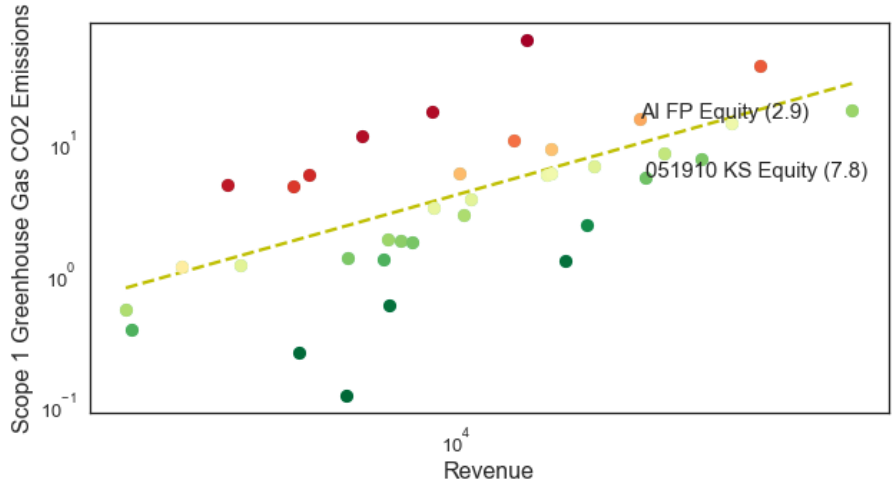

FIGURE 9 - EXAMPLE OF SCORING SCOPE 1 GHG CO2 EMISSIONS

Count Intensity Fields – Negative Polarity ("Count")

Many count fields, such as those that enumerate incidents and spills, have negative polarity. We estimate the parameters for these fields using regression techniques as well, but rather than implementing the (log-log) linear regression illustrated previously, we assume a negative binomial distribution for count fields. This captures the nature of the values (being integers) and shows that many of the values are zero.

Figure 10 shows the scoring curve for the Number of Significant Spills. The dashed line represents the combination of the Number of Significant Spills and revenue that would be considered "average" and receive a score of 5. Values that are reported as exactly 0 are shown as stars. In 2018, a Chemicals company Rongsheng Petro Chemical Company (002493 CH) had revenue of approximately $13.8 billion. It reported no Significant Spills and received a score of 10 as a result. On the other hand, Eastman Chemical Company (EMN US) had approximately $10.2 billion in revenue but reported 54 Significant Spills. This is significantly higher than the Number of Spills considered average for that level of Revenue and, accordingly, resulted in a score of 0.8.

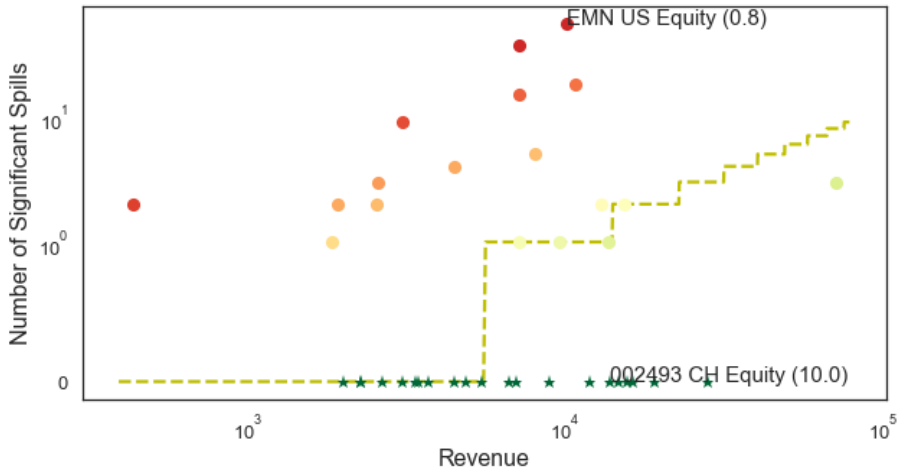

FIGURE 10 - 2018 SCCORING CURVE FOR NUMBER OF SIGNIFICANT SPILLS

Zero-inflated Intensity Fields ("Amount")

Some fields have values that can be assumed to be continuously distributed, but with a positive mass at zero; an example would be the volume or number of hydrocarbon spills.[8] In such cases, we use a Tweedie distribution (specifically, a compound Poisson–gamma distribution) to account for the nature of the distribution. Field values equal to 0 are assigned a score of 10, while other field values are scored based on the activity metric and the relevant parameters estimated for the field.

Figure 11 shows that Oil & Gas company Medco Energy (MEDC) reported 356m^3 of hydrocarbons spilled in 2018. It had $5.8 billion of TIC and received a score of 0.38. Kosmos Energy (KOS) reported 0m^3 of hydrocarbons spilled and received a score of 10. Its TIC of $5.1 billion was not a relevant input into the score calculation since all companies reporting 0m^3 of spills are awarded a perfect score.

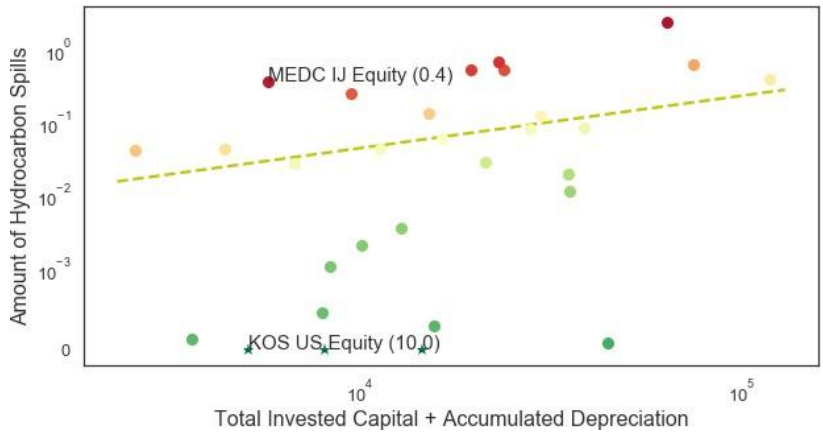

FIGURE 11 - EXAMPLE OF SCORING HYDROCARBON SPILLS

Percentage Fields ("Percent", "Percent-Defined")

Percentage fields lie on a range from 0 to 100, which means values of either 0 or 100 should get full credit (i.e., a score of 10), depending on the polarity. For such fields, the cumulative distribution function (CDF) for beta distribution is used to define a scoring curve. Beta distributions are a family of continuous probability distributions defined on an interval from 0 to 1 parametrized by two positive-shape parameters, denoted by α and β. In the following example, the score appears on the Y-axis, while the field value appears on the X-axis.

Figure 12 provides an example; Chemicals company, Nitto Denko Corporation (6988 JP) – which reported 20.6% Hazardous Waste out of Total Waste discarded in 2018 – received a score of 6.0; PPG Industries (PPG US) reported 49.7% in the same year and received a score of 1.8.

[8] A continuous random variable is one for which the set of possible values (its range) is infinite, as contrasted to a discrete random variable that has a countable set of possible values (e.g., the roll of a die). Since the continuous random variable has an infinite number of possible values, the probability of observing any single specific value is zero (only ranges of its values can have a non-zero probability). However, since many companies can report zero hydrocarbon spills, the probability of observing a value of exactly zero is not zero. Hence, we utilize a distribution in which the probability of observing a zero value is inflated.

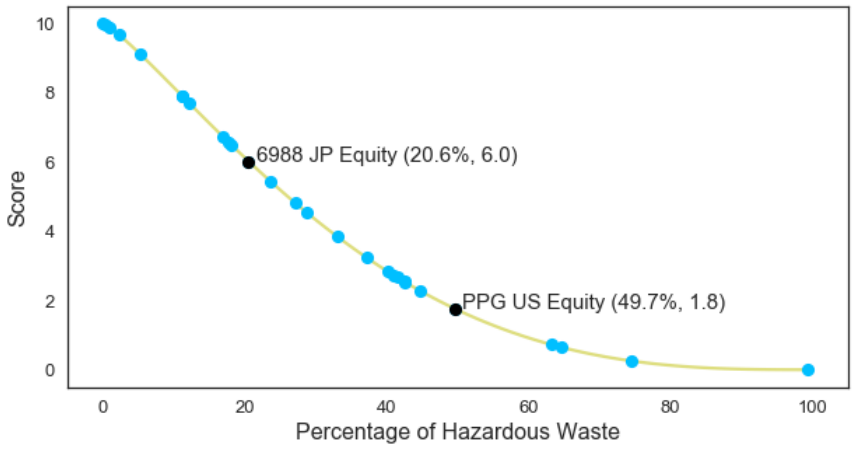

FIGURE 12 - 2018 SCORING CURVE FOR PERCENTAGE OF HAZARDOUS WASTE

Rate Fields ("Rate-Anchored", "Rate-Defined", "Rate-Intensity", "Rate-Pos", "Rate-Neg")

Fields for which the unit is a rate are scored slightly differently depending on properties of the rate field such as its polarity, the expected mode of the distribution, and whether zero rates are common. For example, incident rates and fatalities both have negative polarities and commonly reported zero values. On the other hand, some fields that would typically be scored as regular intensity fields are reported as rates.

In the case of a regular intensity field, as we have described previously, we take logs of the field's value and its corresponding activity metric and score it using standard regression techniques and an assumed normal distribution. Consequently, when the relationship is reported as a rate—e.g., Training spending per employee or Energy per unit of production—a lognormal distribution is the most appropriate and it is equivalent to scoring the field as a regular intensity field when the elasticity of the intensity is believed to be 1.

Rate Type	Has Zeros?	Mode	Polarity	Distribution	# of Parameters	Examples	Notes
Episodic Rate	Y	0	-	Exponential	1	Total recordable incident rate	Exponential distribution fits data characteristics (0 is a common incident rate) and one parameter leads to stable estimates
Fatality Rate	Y	0 or higher	-	Gamma	2	Fatality rate	An extra

							parameter is needed to fit the tail to better differentiate low performance
Intensity Rate	N	Strictly positive	+ or -	Lognormal	2	Training spending per employee, Energy per unit of production	Data and mode are strictly positive

Episodic Rate Fields – Negative Polarity ("Rate-Neg")

Fields for which the unit is incidents per unit time and have a negative polarity associated with them are scored using curves specified by the exponential distribution. This guarantees a score of 10 for fields with a value of 0.

Figure 13 shows an example of such a field. Bharat Petroleum (BPCL) reported a total recordable incident rate for contractors of 0.05 (per 200,000 hours worked or per 100 contractors) in 2018 and received a score of 9.02, while EQT Corporation (EQT) reported a rate of 0.79 and received a score of 1.73.

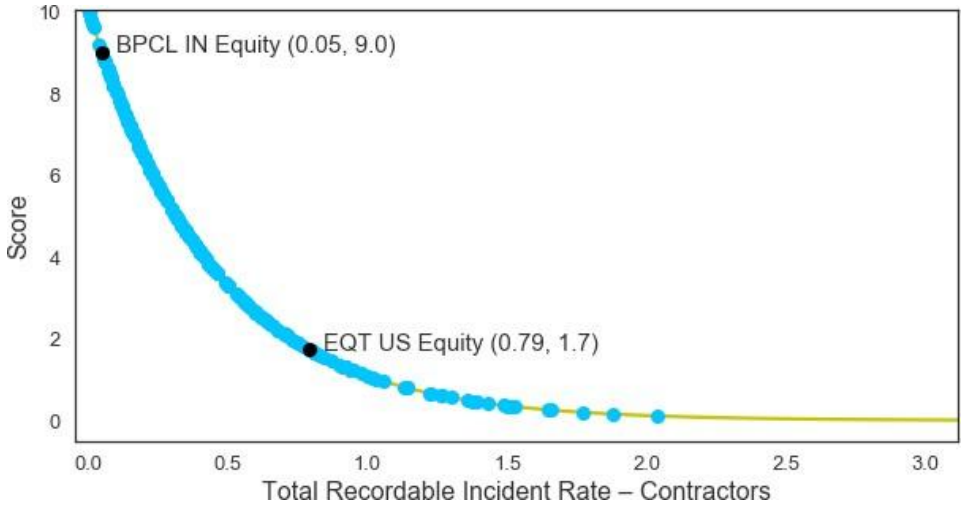

FIGURE 13 - 2018 SCORING CURVE FOR TOTAL RECORDABLE INCIDENT RATE (TRIR)

Fatality Rate Fields – Negative Polarity ("Fatality")

For fatality rates, the scoring curve is specified by a gamma distribution and the parameters are not estimated from the data, but are defined to result in a scoring curve with the following properties:

A fatality rate of 0 will result in a score of 10.

Any fatality rate above 0 will have its score adjusted by a factor of 0.7. Thus, the maximum possible score for a non-zero fatality rate is 7.

A fatality rate of 1 (in 1,000) will get a score near 1, while rates greater than 2.5 will receive scores near 0.

As seen in Figure 14, John Wood Group (WG/) had a fatality rate of 0.02 in 2018 and its score was 5.13. Baytex Energy (BTE) had a fatality rate of 0.57 and so its score was 1.36.

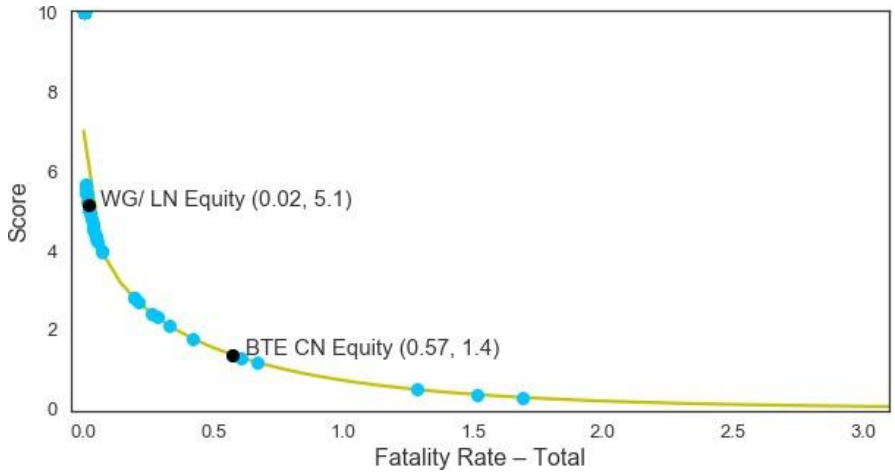

FIGURE 14 – SCORING CURVE FOR TOTAL WORKFORCE FATALITY RATE

Rate Intensity Fields ("Rate-Intensity", "Rate-Pos")

Sometimes, a field that would typically be scored as a regular intensity field is reported as a rate. In such cases, we estimate the parameters for a rate intensity field using a lognormal distribution. The mean and standard deviation are estimated to correspond to the central tendency and width of the distribution. Since there is no previously determined ideal rate for these positive polarity rate fields, as is the case with negative polarity rate fields, the field value that receives a score of 10 is also determined empirically for that field.

Figure 15 shows the scoring curve for Energy Per Unit of Production, which has a negative polarity. In 2018, Nucor Corporation (NUE) reported 1.36 Mega Watt hours (MWh) of energy consumed per unit of production, resulting in a score of 9.8. Severstal (CHMF), on the other hand, reported 6.68 MWh of energy consumed per unit of production and received a score of 2.3.

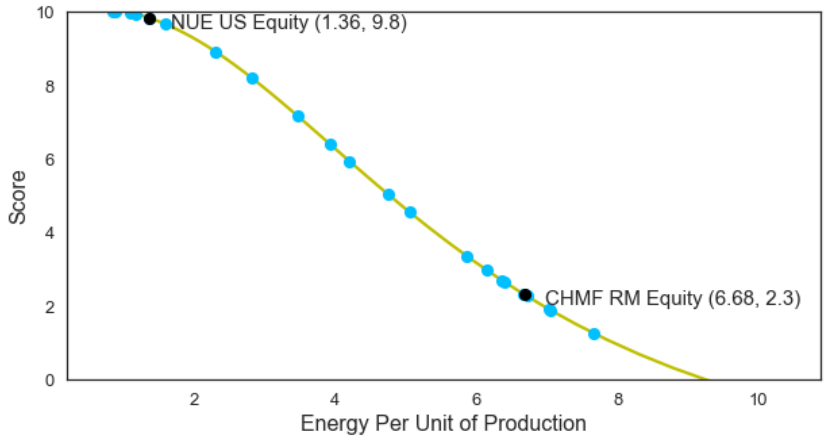

FIGURE 15 - SCORING CURVE FOR ENERGY PER UNIT OF PRODUCTION

Figure 16 shows an example of a positive polarity rate intensity field: Training Spending per Employee. Saipem (SPM) received a score of 0.98 for $187 spent per employee in 2018, while KS Innovation (096770) scored 9.43 for $3,118 spent per employee.

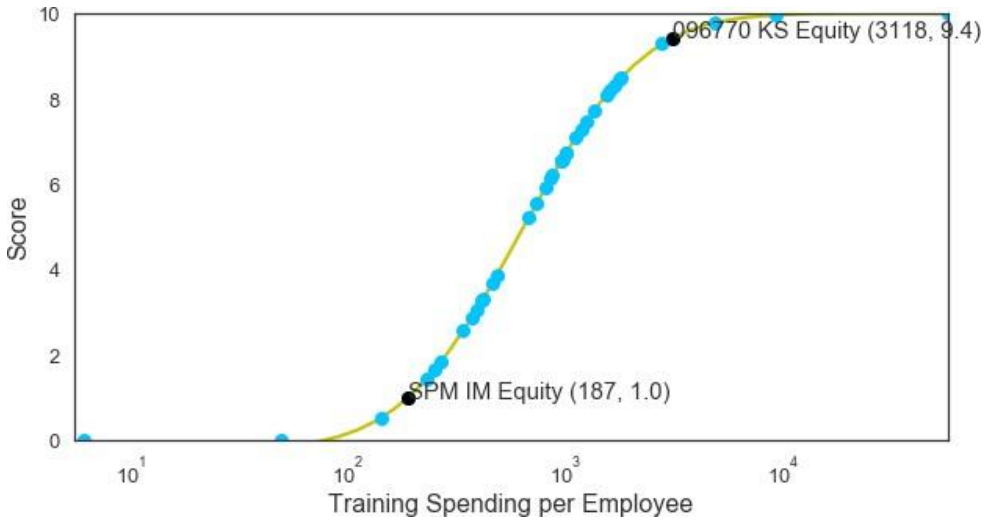

FIGURE 16 - 2018 SCORING CURVE FOR TRAINING SPENDING PER EMPLOYEE

Categorical Scoring Fields ("Categorical-Intensity", "Categorical-Level")

In certain cases, where data is insufficient for estimating parameters reliably, the scores are determined by grouping ranges of outcomes into categories and assigning the same score for all values within a range. Such fields may or may not have associated activity metrics; those that do are assigned to the "Categorical-Intensity" model and those that do not are assigned to "Categorical-Level". A complete list of categorical scoring fields and associated values is available in the Companion File.

Two examples of this type would be: 1) the number of environmental fines (Categorical-Level) and 2) the amount of environmental fines (Categorical-Intensity). The first example illustrates the concept that companies fined a small number of times will receive a penalty for one to nine fines, whereas companies fined a substantial number of times will receive harsher score penalties.

In the second example, for the amount of environmental fines, 1% of revenues is used as a commonly accepted threshold for financial materiality, with the deepest penalty at 1% or more of revenue. Amounts greater than 0 and up to 1% will receive a small penalty.

Value	Score
0	10
1-9	6
10-99	3
100+	0

EXAMPLE 1: CATEGORICAL-LEVEL SCORING FOR NUMBER OF ENVIRONMENTAL FINES (ES032)

Value	Score
0%	10
Greater than 0% and up to 1%	7
Greater than 1% and up to 2%	2
Greater than 2% and up to 5%	1
Greater than 5%	0

EXAMPLE 2: CATEGORICAL-INTENSITY SCORING FOR AMOUNT OF ENVIRONMENTAL FINES (ES033) WITH ACTIVITY METRIC DEFINED AS SALES REVENUE TURNOVER (IS010)

Binary Fields ("Binary")

Binary fields represent Bloomberg ESG policy fields, which are given a value of Y or 1 if the company discloses on the selected topic, and a value of N or 0 if the company does not disclose on that topic. In other words, these fields are indicative of disclosure, not the company's actual performance on the topic described in the disclosure.

If the field is Binary, the company gets either a full credit (a score of 10), or zero credit (a score of 0) based on the field value (Y/N), as well as taking polarity (positive vs. negative) into account. As an example, SA161 – GHG Emissions Reduction Policy indicates whether the company has disclosed a policy or a strategy to reduce GHG emissions specifically. If the company has disclosed, it gets a score of 10; otherwise, it gets a score of 0.

Binary+ Fields ("Binary+")

Binary+ fields are similar to Binary fields. However, in this case there is a quantitative element underpinning the policy that is disclosed. An example of such a field is SA559 – Net Zero Emissions Target which indicates whether a company has set Emissions Targets to become carbon neutral by a target date in the future.

Similar to a Binary field, a company will get a full credit (a score of 10) or no credit (a score of 0) based on the field value (Y or N, respectively). In addition to this, the company will also earn disclosure credit (relative to its disclosure rating) depending on the field value (Y/N). If the field value is Y its disclosure points will contribute to the points earned, and if the field value is N, it will not receive those disclosure points.

Annex 6: Description of G Scoring Models

Scoring Curves

Where quantitative guidance is available, the current version of the Governance Scores attempts to integrate meaningful thresholds as anchor points. In practice, guidance from external research and analyst judgment are regularly used to set a range of "anchor points" through which we specify scoring curves. See the individual Governance Scores Theme Guides for a full list of related scoring curves.

Smooth Curve

Scoring curves are specific types of interpolations between anchoring points that are determined based on corporate governance guidance. Across the entire scoring process, Bloomberg has regularly used external research and analyst judgment to set a range of parameters through fine-tuning the curves by dropping "anchors" in benchmark scoring curves.

Figure 17 shows an example for scoring the Percentage of Women on Board (CG627). A company where the board composition by gender is 30% women receives a score of 5; with 40%, it receives a score of 8. Once the board composition reaches 50%, the score rises to 10.

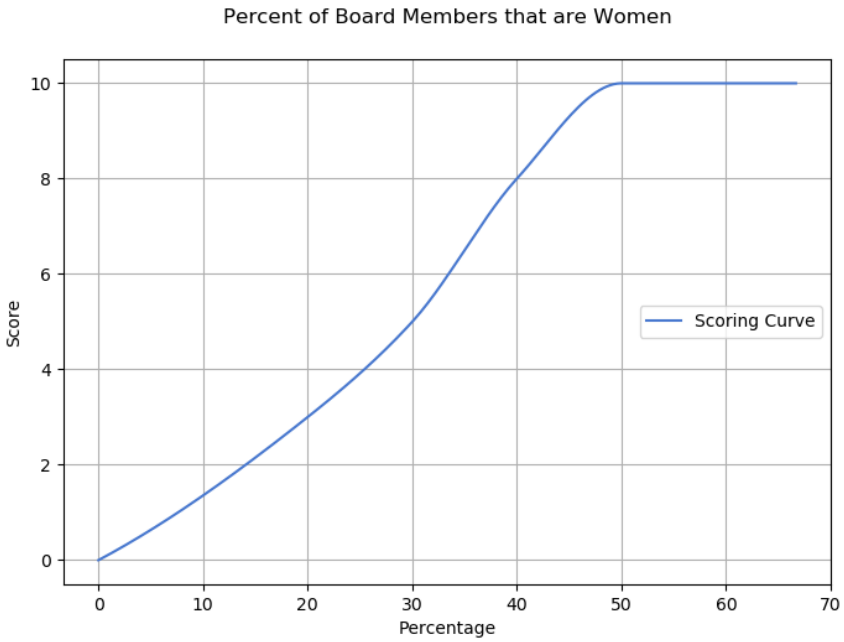

FIGURE 17 - SCORING CURVE FOR PERCENT OF WOMEN ON THE BOARD

For certain indicators, the age of the firm is also considered, in order to avoid penalizing a young company. For example, Chairman Tenure (CG690) combined with the estimated Firm Age is used to compute scores for the Chairman Tenure indicator group within the Refreshment Issue of Board Composition. The score takes Firm Age into consideration, so that a new firm (less than 3 years old) is not penalized for a short chairman tenure.

Scoring curve with contingency

Certain indicators, such Board Duration (ES064) are scored with a contingency on the value of additional fields. In the context of director terms scoring, classified (staggered)

boards and multi-year director terms are both discouraged, so the field Board Duration (ES064) is scored contingent on field Classified Board System (ES183). Different anchor points are used based on whether the company has a classified board or not. In general, for the same board duration, companies with a classified board will receive a lower score compared to companies with a non-classified board.

Step Curve

Sometimes indicators have discrete outcomes, i.e., they take a finite number of values. Since the number of values is finite and usually countable, step functions[9] are used for scoring. Below is an example of step scores used in the Director Roles Issue on field CG651 – the Number of Board Positions CEO Holds (at other firms). Scores are pre-specified for each discrete value based on anchor points and decrease abruptly from one constant value to another, as the number of board positions a CEO holds at other firms increases.

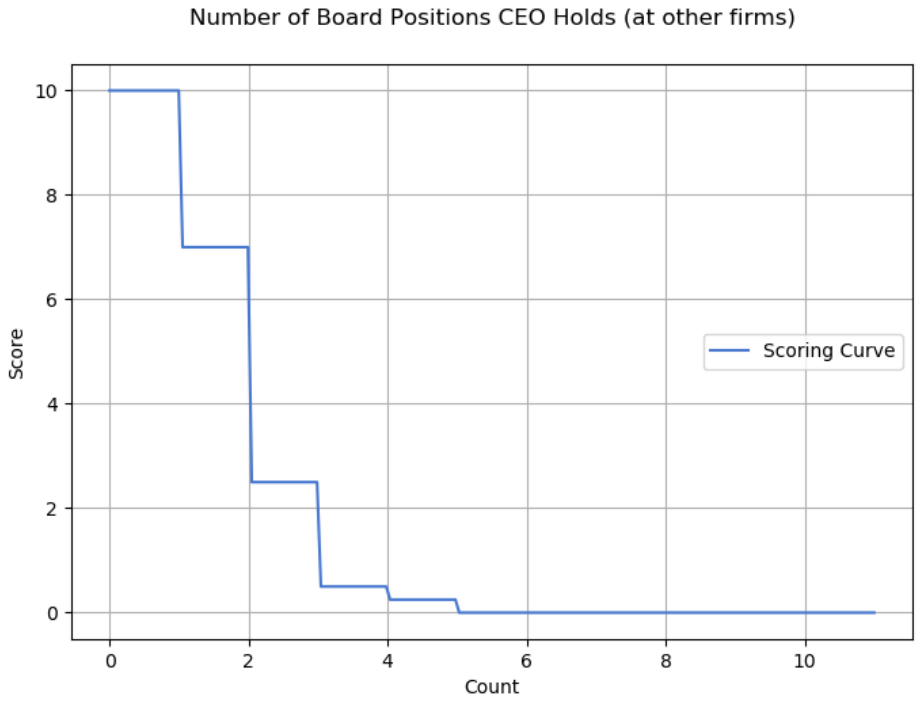

FIGURE 18 - SCORING CURVE FOR NUMBER OF BOARD POSITIONS HELD BY THE CEO

Other Methods

Not all fields can be scored via a scoring curve, whether it would be a smooth curve or a step curve. In addition, some fields are scored based on more than one field value as input.

Binary Fields

In cases where input fields are based on one or more binary fields, an information lookup is utilized based on a defined set of outcomes.[10] For example, the Board Leadership Independence Score is based on the following combination of binary fields:

[9] A step function is a piecewise constant function, with only finitely many pieces and with constant values within each interval.
[10] The rationale for scores of each case can be found in the Research and Analysis section of each Governance Theme Guide.

Case	Score
Separate CEO/Chair and independent Chair with or without independent Lead Director	10
Separate CEO/Chair with non-independent Chair and independent Lead Director	7
CEO duality (chair is the CEO) with independent Lead Director	5
Separate CEO/Chair with non-independent Chair and no independent Lead Director	3
CEO duality with no independent Lead Director	0

Balance Fields

The objective of these metrics is to identify how well-balanced values are between multiple input fields, for example, board tenure "buckets" or cash vs. equity executive compensation.

Below is an example of Board Balance. The measurement of Board Balance is based on the board tenure state, which consists of three buckets that are calculated in the "Field Pre-Processing" step.

Based on research, optimally balanced board tenures would result in a distribution of [3/8, 3/8, 2/8], given the three buckets.[11] In analysing various board tenure states to develop scores on board balance, the following scoring principles have been applied:

- If all board members are in the 10+ year tenure bucket (B3), the score is 0.
- If all board members are in the 5–10-year tenure bucket (B2), the score is 1.
- If all board members are in the 0–5-year tenure bucket (B1), the score is 2.

Given the board size, the bucket state that is closest to the target distribution of [3/8, 3/8, 2/8] should get a score of 10.

The Number of steps is an integer that represents the minimum distance to the optimal state. Thus, if the partition is optimal relative to the desired distribution, steps=0. Otherwise, the steps are greater than 0. Scores should reflect the Number of steps in rank order (longer distance results in lower scores).

Score increments should vary smoothly, i.e., each "transition" would ideally result in the same score increment.

Scores are calibrated based on those principles using mathematical tools (a Quadratic Programming Solver125). Consider an example of board balance for a board with 8 directors in total. Based on the definition of perfectly balanced board tenures, the number of directors in each bucket, given the board size: 3, 3, with 2 in the last bucket. In the ternary figure, each node represents a board tenure state, with the three numbers following the node, from left to right, representing number of directors in the 0–5-year tenure bucket, the 5–10-year tenure bucket, and the 10+ year tenure bucket. Scores are calibrated and displayed above each tenure state.

Size Dependent Fields

Similar to the Board Balance scoring methodology, these fields leverage more than one input field to obtain the score (board or committee size is considered in addition to the underlying numbers). Scores are calibrated by leveraging mathematical tools

[11] Additional information on optimal tenure buckets distribution can be found in the Board Composition Theme Guide.

[12] Quadratic programming (QP) is a particular type of nonlinear programming focused on the process of solving a special type of mathematical optimization problem – specifically, a linearly constrained) quadratic optimization problem.

based on principles determined from Bloomberg analyses of numerous corporate governance codes around the world.

A sample of scores on the number of independent directors vs. total number of directors is shown below; these calculations are based on a defined set of outcomes, given the number of independent directors on board (lookup by row) and total number of directors on board (lookup by column). Scores for different states are highlighted with different colours to help distinguish good and bad practices.

Number of Independent Directors	Total Number of Directors on Board									
	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0
1	3	1.78	1.37	1.14	0.95	0.77	0.67	0.6	0.51	0.47
2	7	3.72	2.95	2.47	2.08	1.76	1.55	1.36	1.23	1.13
3	10	7	4.5	3.71	3.22	2.77	2.4	2.19	1.97	1.81
4		10	7.5	5	4.3	3.69	3.33	2.93	2.67	2.38
5			10	8	5.9	4.74	4.16	3.76	3.4	3.11
6				10	9	6.92	5	4.56	4.09	3.65
7					10	10	7.64	5.6	4.82	4.4
8						10	10	8.12	6.32	5
9							10	10	8.61	6.86
10								10	10	9.03
11									10	10
12										10

FIGURE 19 - INDEPENDENT DIRECTOR SCORE

Source: Bloomberg. Dark green represents the best practice of independent directors on board, and dark red represents a complete lack of independent directors on the board.

Parametric Approach

Unlike other Governance fields that are scored based on scoring curves or a scoring matrix constructed using anchor points, for some fields there may be no well-established consensus formula or anchor points. In such cases, we leverage an empirical, parametric approach to evaluate performance using disclosed data. Two typical examples of field scoring using the parameter estimation approach are the parameterized hierarchical regression model on Pay for Performance, and Director Support fields using scoring curves with anchor points referencing estimates based on empirical distributions.

See the Governance Scores Theme Guides for Executive Compensation and Shareholder Rights for additional information.

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