

Bloomberg ESG Scores

Methodology

December 2025

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Document and Model Version Information

Document Version Control	
Date of Issue	September 2023
Date of Last Update <i>(For a full version history, refer to Annex 2 of this document)</i>	December 2025 - Updates to Version History to account for model version increment (see Annex 2 for additional information)

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 (all together the “Scores”). Capitalized terms used in this Methodology, unless otherwise defined, have the meanings provided in the Annex (Glossary of Terms). Unless otherwise noted, supplementary documents referenced herein are available on the Bloomberg Terminal® (Terminal®) at BESH <GO>, under “Bloomberg Scores”.

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 summarize corporate sustainability data and simplify the integration of ESG analysis into business and investment analysis.

Bloomberg’s Scores have been developed by a group of specialized cross-business contributors in research and consultation with external experts, and through active engagement with clients to learn from their observations and experiences in sourcing and analyzing ESG data.

Key Contributors to Bloomberg’s Scores	
Sustainable Finance Solutions	Global Data
Sustainable Finance Quantitative Research	BloombergNEF
Bloomberg Intelligence	
Bloomberg Industry Group	

1.1. Key Features of Bloomberg's Scores

Materiality-based

Bloomberg's 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.

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 disclosure of quantitative data as a dimension of performance.

Transparent

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

Integrated and Customizable

Bloomberg's Scores are integrated into the Bloomberg Terminal® – including analytics and research solutions, news and media platforms – and via Enterprise data feeds. Input data as well as score model parameters are available for customized score construction.

1.2. Bloomberg's Process for Scores Product Development

Bloomberg's Scores bring together various data sources offered on the Bloomberg Terminal® service, principally company-reported sustainability information and financial fundamentals data, with proprietary research assets and analytics, such as Bloomberg Intelligence (BI) ESG research and the Bloomberg Industry Classification System (BICS) and Bloomberg ESG Classification System (BECS).

Bloomberg's Scores are supported by evidence, research, consultation, and analytical rigor. Bloomberg Intelligence's dedicated ESG team conducts top-down materiality assessments by industry; these are further detailed in this document. A broader, bottom-up consultation assesses existing and new data to determine their suitability for describing and quantifying material sustainability issues. Rigorous 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 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 disclosure and suitability, to describe key sustainability issues and activity metrics for normalization
New ESG Fields	Development and collection of new ESG data fields to fill gaps in industry-specific sustainability information
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
Data Attributes	Where relevant, assignment of field qualifiers for importance of disclosure, polarity (e.g., positive = better or worse), fit, consistency, and quality of data fields
Quantitative Data Survey	Quantitative evaluation of quality and coverage of ESG data
Field Scoring	Deployment of field-level, industry- and market-specific scoring methodologies
Aggregation and Weighting	Incorporation of weighting schema to aggregate from Bloomberg Field 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

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) 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.

Finally, while frameworks and reporting recommendations are useful, interpreting and deriving insights from this guidance requires substantial research, informed judgment, and analytical resources. Research-driven scores have thus far stood as the main summary indicators of performance for investment managers, asset owners, corporate leaders, and others. However, such scores often diverge for reasons that are not necessarily clear to users of this information.

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 in existing data fields 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.

As an example of this consultative process, Bloomberg referred to the following ESG reporting frameworks as well as numerous industry associations during the development of its ES Scores. For a complete list of frameworks and industry associations by sector, please refer to the Industry Guides.

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

1.2.2 Approach to Governance Scores

Combining data from the Bloomberg Terminal® with insights from Bloomberg Intelligence and Bloomberg Law, Bloomberg Governance (G) Scores offer quantitative, transparent analyses. Under the Governance pillar, the themes of Board Composition, Executive Compensation, Shareholder Rights, and Audit touch on a number of 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

1.3. Bloomberg ESG Classification System (BECS)

Scoring peer groups are based on Bloomberg ESG Industry Classification System (BECS), which is a purpose-built classification for the analysis of ESG risks and opportunities. BECS peer groups are comprised of companies that share similar business models, products and services, supply chains, clients and risks, and are therefore exposed to similar material issues.

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

Users can view a company’s BECS classification on the Terminal® at ESG SCORE <GO> and CCB BECS <GO> and can access full lists of companies in each peer group using ICS BECS <GO>. A BICS-BECS mapping is also available via BESG <GO>.

2. Objective

2.1. What Do Bloomberg Scores Measure?

Bloomberg's Scores measure a company's management of financially material ESG issues. Financial materiality is defined as issues that can have a negative or positive impact on a company's financial performance, such as revenue streams, operating costs, cost of capital, asset value and liabilities. Bloomberg identifies financially material issues based on proprietary research, which is shared transparently and is based on an assessment of probability, magnitude and timing of impact.

The Scores consider both current exposure and management performance. Each Issue and Sub-Issue can be composed of metrics reflecting the performance, commitments and targets as well as policies that reflect the company's management approach towards ESG risks and opportunities. Bloomberg Scores measure best-in-class performance within peer groups. Scores consider disclosure of quantitative data as a dimension of performance, expressed using an absolute Disclosure Factor to adjust Issue-level Scores. Each indicator is scored using a quantitative methodology, taking into account normalization, polarity and the type of the data field.

2.2. Scores Structure

The foundation of scoring ESG material issues is selection and development of data fields capturing company-reported information that describes and quantifies those issues. Once fields are selected, field qualifiers or attributes are assigned to guide selection of field scoring techniques and to inform aggregation of fields to higher score levels. Bloomberg Scores aggregate information across multiple levels of granularity:

Field Scores score input data fields and are aggregated into a Sub-Issue score based on the Fit/Quality attribute. Input fields are given attributes based on their fit (fit for purpose for the intended performance indicator) and quality (quality of disclosure and comparability) and scored into Field Scores. Each field is scored using a quantitative methodology, in consideration of the normalization, polarity and the type of the field.

Sub-Issue Scores are aggregated from Field Scores by a weighted average, depending on the Fit/Quality attribute of fields in the Sub-Issue.

Issue Scores are a function of the weighted generalized mean (power/p-mean) of the Sub-Issue. 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.

Zero-Centered Scores (ZCS) provide a cross-peer group comparable version of the Overall ESG Score. The ZCS represents 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, outperforming companies have ZCS greater than 0 and underperforming companies have ZCS less than 0. 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 linearly rescale the Zero-Centered Scores to produce values that range from 0 to 10, with the median equal to 5 and higher scores again being indicative of better relative performance against the company's peers. Similar to ZCS, 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.

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.

ESG Scores Structure

Pillar Scores (0-10, 10 is best)
Weighted generalized mean* of Issue (ES) or Theme (G) Scores

Issue Scores (0-10, 10 is best)
Represent the Issue Performance Score scaled and shifted into a range determined by the Disclosure Factor

Consists of:

Issue Performance Score (0-10, 10 is best) - weighted generalized mean* of Sub-Issue Scores
Disclosure Factor (0-1, 1 is best) - measure of quantitative field disclosure; determines Issue Score range

Percentiles (0-100, 100 is best) are available for Overall, Theme, Pillar and Issue Scores. Percentiles are computed for each BECS Level 3 and allow for comparison across scores for companies in different peer groups

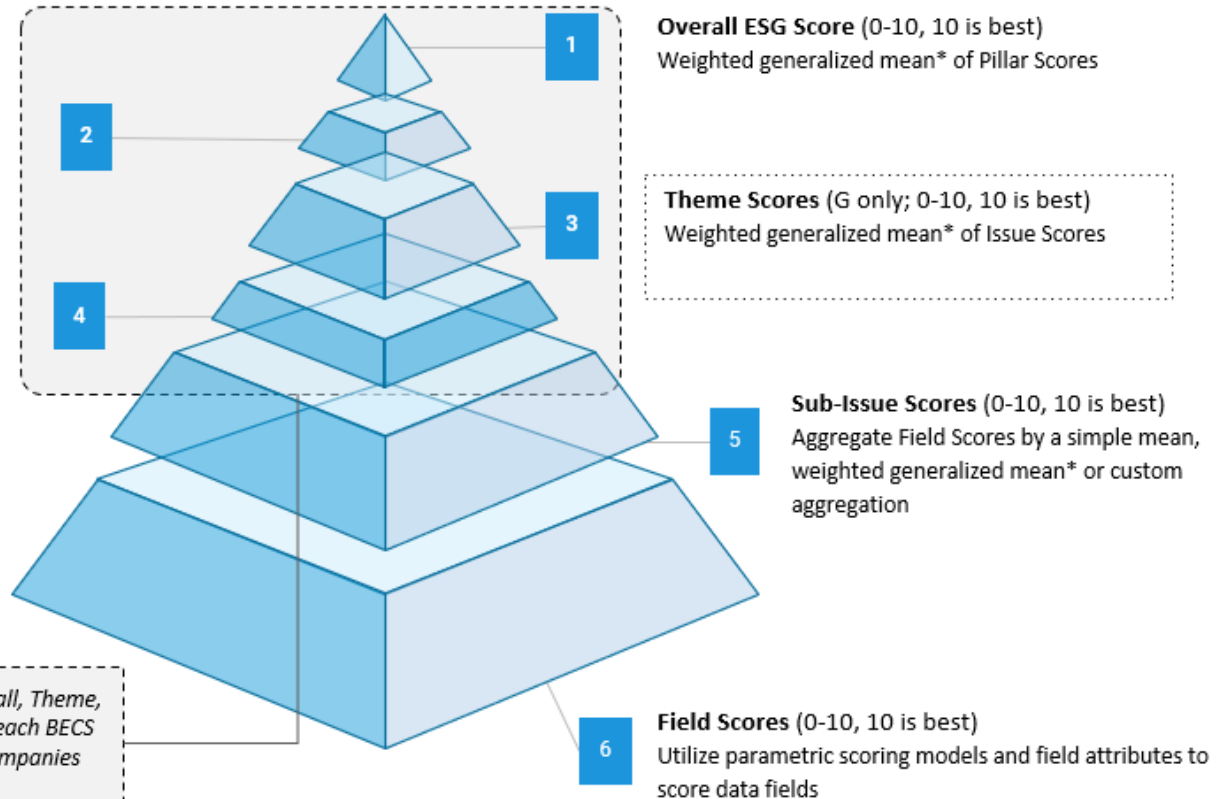


FIGURE 1: ESG SCORES STRUCTURE

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. At this time, Bloomberg does not directly use questionnaires or surveys to develop its Scores. In historical years, Scores may make use of data disclosed via the Bloomberg Gender Equality Index survey. In all years, Scores may make use of data disclosed by companies via the annual CDP survey. With respect to the use of estimated data, in limited cases Bloomberg currently employs estimation techniques such as the use of regional averages to approximate company values only when company-reported data is not available. In such instances, the averages produced are reviewed at least annually to account for and ensure robustness to newly reported data. Use of and approaches to imputation are described in detail in, for example, the Governance Scores Theme Guides.

Data used in the Scores is transparent, including 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.

While Bloomberg does not proactively reach out to companies to discuss the Scores, resources are available through which scored companies can request detailed reports and provide verification of input data points. Bloomberg analysts may contact companies in case further clarification is required to confirm reported data (i.e., in the case of significant outliers, lack of reported units of measurement, etc.).

3.2. Updates to Input Data

While the reporting cycle for ESG data is typically annual, data is reviewed, acquired and incorporated into Scores on a monthly basis, to account for company-specific variation in reporting timelines.

Bloomberg does not proactively notify clients or the public regarding standard updates to input data used to compute ESG Scores, including newly disclosed data, restatements and/or error corrections. Bloomberg clients as well as scored companies can leverage Bloomberg Terminal® functionality and established communication channels (described in Section 8 below) to review input data and engage with Bloomberg analysts on any questions related to input sources and updates. In the event of any overarching, material change to input data sources and/or processing—such as inclusion or removal of data sources, or changes in treatment of data gaps—Bloomberg will communicate details regarding the change via the Methodology and established communication channels.

4. Calculation Methodology

4.1. Calculation

Bloomberg's approach to scoring ESG performance is characterized by a bottom-up, model-driven method driven primarily by self-reported, publicly available information that results in a transparent, parametric and rules-based scoring framework. It features:

- Qualitative input from research analysts and industry experts for identifying appropriate fields and metrics, 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 data fields
- Factor analysis to aid in identifying unique Issues and Sub-Issues
- Parametric methods that closely approximate the empirical distribution of quantitative fields with 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 analyzing 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 fields
- Data science techniques can be used to assist in identifying peer groups
- Scoring from data fields up to higher levels requires an aggregation approach that rewards consistent performance and penalizes uneven performance
- Disclosure must be a dimension of scoring due to limited reporting and wider efforts to improve transparency and standardization of reporting

The following sections and annexes detail technical protocols for generating Scores. Annex 3 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 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:

1. The parent has a valid ESG score (SR001).
2. The issuer and parent share the same sector (BICS Level 2).

A transparency field identifies the applicable parent entity from which the score is assigned, allowing users to trace coverage clearly and consistently.

Field ID	Mnemonic	Description
ST301	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 Intelligence 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 ES 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's Scores draw on major sustainability reporting frameworks used by public companies around the world to highlight the most 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 Intelligence conducted an industry-specific assessment of sustainability issues, prioritizing and ranking the sets of Issues using proprietary and external sources. The analysis of what is relevant and material for each industry provides context for the categorization of Sub-Issues, as well as data field 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 File will also provide 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 metrics and fields used to score each industry.

4.2.1 ES Score Framework and Structure

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. 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

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

4.2.2 G Score Framework and Structure

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, available via the Bloomberg Terminal®.

THEMES, ISSUES AND SUB-ISSUES

BOARD COMPOSITION

Director Roles

CEO Roles
Chair Roles
Board Roles

Diversity

Age Diversity
Gender Diversity

Independence

Board Leadership Independence
Board Independence

Refreshment

Board Refreshment
Chair Refreshment

EXECUTIVE COMPENSATION

Incentive Structure

CEO Incentive Plan Design
Executive Incentive Plan Design
Executive Pay Equity
Executive Pay Linkages

Pay Governance

Compensation Board Oversight
Say on Pay
Pay Policies

Pay for Performance

Fixed Pay Alignment
Variable Pay Performance

SHAREHOLDER RIGHTS

Shareholder Policies

Takeover Defense
Voting Rights
Director Election Policies

Director Voting

Director Terms
Director Support

AUDIT

Audit Committee

Audit Committee Meetings
Audit Committee Structure

External Auditor

Auditor Approval
Auditor Fees
Auditor Tenure

Audit Outcome

Accounting Restatements
Auditor Opinion

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 input fields are scored using different quantitative methodologies depending on factors such as the field 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 field is then scored as a GHG intensity metric relative to the peer group.

A field quantifying "Amount of Anti-Competition Fines", for example, may be scored using a model based on categorical ranges. In this case, the field is scored based on the amount of fines (in currency) 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 categorial range thresholds reflect levels of performance.

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

4.3.1 Field Attributes

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 captured for use as score inputs. Industry specific model inputs are provided in the Industry Guides.

BI 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.

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

Fit/Quality for ES field values are also determined by BI analysts. These values can be High, Medium, or Low and are used to weight individual Field Scores into aggregated Sub-Issue Scores.

- High (H): The metric is a good measure of what is called for in at least one ESG disclosure framework, and the data is comparable.¹
- Medium (M): The metric is either a good measure (as above), or the data is comparable, but not both.
- Low (L): The metric is not a good measure and the data is not comparable, or the field is a qualitative Policy field.

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 field 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 field is assigned a DF rating of A, B, or C.²

¹ Comparable data has the same accounting methodology, similar scope of disclosure, and the same unit of measure (or can be reasonably converted to the same unit of measure) across the companies in a peer group.

² Fields may also receive a DF Rating of A- or B- in the special circumstances described in "Issue Scores and Disclosure Factors - Technical Description"

- DF Rating A: Fields 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: Fields used in the scoring model that are a proxy for fields 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: Fields that are either immaterial for certain companies, not directly disclosed, or whose disclosure is already captured by other fields 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 with number of employees. In cases where precise scaling quantities are not available, more 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.

Fields 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.

Fields that are categorical or binary, including policy fields, are not assigned corresponding activity metrics.

Similarly, fields 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 a field 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 a field 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 a field will affect scoring. If this value is blank, it means that the field remains material and will be included in the scoring framework.

4.3.2 ES Field Scoring

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

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

Depending on the type of field and the nature and availability of accompanying data, parameters are estimated, and fields 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 field.

Finally, in a few cases, some fields are not relevant to all companies in a sector and, so, may not have values disclosed. An example would be Nuclear Waste (SA141). In such cases, a set of conditions is used to determine if the field is relevant to a company. If it is found to be relevant, the field is scored normally following the process detailed above. However, if the field is determined to not be relevant—in this example, because a company does not have any nuclear operations—then the field 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 ES fields. 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
Binary	Used to score policy fields, which return a binary (Y/N, 1/0) outcome. Fields scored with this model do not affect the Disclosure Factor
Binary+	Used to score policy fields that have a quantitative element underpinning the policy. Fields 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. fields 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 fields
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

4.3.3 G Field Scoring

In general, G input field scoring is determined based on guidance provided by Bloomberg Intelligence research, 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 fields with quantitative outcomes use estimated parameters in building scoring curves and models. 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.

The table below summarizes types of scoring models used to score G fields. Further descriptions of these curves and other scoring methods, as well as examples are available in Annex 5. Tables summarizing how fields within different Themes are scored and details about field-level scoring, including graphs of field 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 a field with a contingency on the value of additional fields
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 fields or groups of fields
Size Dependent	Leverages more than one input 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 fields where there may be no well-established consensus formula or anchor points

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 metrics 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

Data fields currently falling into the commitments and targets category typically capture whether or not 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 particular businesses from investing, financing or underwriting activities
- Targets for inclusion of sustainable/ESG-related finance in investment, lending, and/or underwriting portfolios

Such data fields 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. Please see 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. Weightings

4.5.1 ES Issue Priority

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 Intelligence 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 Intelligence industry analysts
- Analysis and news by Bloomberg Intelligence and Bloomberg Law and Government 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.

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

	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

Dark green represents the highest priorities and gray represents the lowest priorities.



EXAMPLE HEAT MAP OF ISSUE PRIORITIES FOR THE OIL & GAS INDUSTRY - SOCIAL

	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

Dark green represents the highest priorities and gray represents the lowest priorities.



4.5.2 G Theme Priority

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 Intelligence analysts
- Analysis and news by Bloomberg Intelligence and Bloomberg Law and Government 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

HEAT MAP OF GOVERNANCE THEMES AND PRIORITIES

Governance Score	BI 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%

Dark green represents the highest priority and light green represents the lowest priority.



4.5.3 ES Score Aggregation

Overview

Generating a composite score that describes performance across broader sustainability issues can be complex in light of the disclosure issues discussed previously. As a consequence, 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 Issue Priorities.

Field Scores, as described above, roll up to Sub-Issue Scores, Issue Scores, and Pillar Scores.

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

Sub-Issue Scores

Sub-Issue Scores are aggregated from Field Scores by a weighted average, depending on the Fit/Quality attribute. The Fit/Quality level is used to determine the weight, where High = 9, Medium = 4, and Low = 1. If a

company does not disclose on a given field in a given year, that field is ignored, resulting in a redistribution of the weights attached to each field. The levels for each field are determined by BI analysts, as described elsewhere.

Issue Scores and Disclosure Factors

Sub-Issue Scores are aggregated into Issue Scores. In addition to capturing sustainability performance Issues prioritized by materiality rank, Issue Scores highlight disclosure performance. By incorporating the level of disclosure at the Issue Score level, Sub-Issue and Field Scores reflect only disclosed performance (or are blank due to lack of available data).

Only quantitative fields and Binary+ fields are considered in the calculation of the Disclosure Factor. First, binary policy fields reflect disclosure in and of themselves; if Bloomberg does not find evidence of a certain policy, the field is set to "No" and is not blank. Second, companies may disclose qualitative information, but not supply data for the quantitative fields. For example, in the Water Management Issue, many companies report on water policies (e.g., ES247), but fewer companies disclose the amount of freshwater they withdraw (SA020). It is harder to evaluate qualitative disclosures given their wide-ranging content and complexity.

As a result, Bloomberg's approach to aggregation at the Issue level emphasizes quantitative disclosure to avoid a perfect policy performance score, with poor or zero quantitative disclosures. Essentially, the aggregation approach aims to minimize the potential to score well by disclosing only qualitative information.

In order to accomplish this, the disclosure levels are built into a 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 sum, this approach at the Issue Score level is motivated by the following principles:

- **No use of imputation for undisclosed values:** Bloomberg's Scores currently reflect self-reported, publicly available information, or lack thereof. This advances the goal of incentivizing transparency. Using imputation would have the opposite effect.
- **Desirability of both good disclosure and good performance:** The best scores should come from transparent and decision-useful sustainability disclosures, as well as from good sustainability performance. If only one aspect is good, the scores are capped.
- **Incentives for disclosure:** Bloomberg's core value is transparency. The Scores offer an incentive to disclose quantitative ESG information, even if a disclosure reflects poor performance.

In summary, Issue Scores work as follows:

1. Determine an average performance score of Sub-Issue Scores; this is the "Performance Score."
2. Measure disclosure of quantitative and Binary+ fields, with the result being a weighted percentage, called a "Disclosure Factor."
3. The Disclosure Factor determines the performance range.
4. Scale and shift the Performance Score into the disclosure-driven range, as depicted below.

Disclosure Factor	Issue Score Range
0	0-3
1	0-10

5. Zero disclosure results in Performance Scores being adjusted to a 0-3 range. Perfect disclosure results in Performance Scores being adjusted to a 0-10 range.

6. Additionally, there is a disclosure-incentive Issue Score boost for all but the lowest Performance Scores (everything above 1.5).

Technical Description

Issue Scores are a function of the weighted generalized mean (p-mean) of the Sub-Issue Scores (i.e., the Performance Score) and a Disclosure Factor (DF).

The Sub-Issue Score weights are given by:

- One quarter (¼) if the Sub-Issue only contains binary policy fields
- One (1) otherwise

P-means are used to reward excellence across the board and to penalize less consistent performance between the various Sub-Issues being aggregated. We use weighted shifted p-means with the power $p=0.5$ and shift $s=1$.³

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

As noted previously, Disclosure Factors (DF) are assigned at the field level to determine treatment of missing data in the scores model, with the following ratings of A, B, and C. Each connotes expectations about the nature of disclosure.

Policy fields are binary and always have a value of Yes (the specified policy is publicly disclosed) or No (the policy is not publicly disclosed), and thus do not require missing data treatment and do not have a Disclosure Factor.

A company's Disclosure Factor score for an Issue is computed as a weighted percentage over all fields within an Issue topic. Points are earned if the field is disclosed and the activity metric is disclosed (where relevant), 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 following table.

Certain input fields are less detailed or transparent than their A or B counterparts. These fields are designated A- or B- and are assigned 25% of the point value of the full letter rank. For example, the optimal reporting procedure for Total Recordable Incident Rate is to report for employees (ES121) and contractors (ES261) separately. Accordingly, both of those fields have a Disclosure Rank of A. However, if a company only discloses an aggregated number for the entire workforce (SA201), that field has a DF of A- and receives some points, but not the full point value for the disclosure.

Disclosure Factor	Point Value
A	5
A-	1.25
B	2
B-	0.5
C	0

³ 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.

The Disclosure Factor is then computed as below:

$$DF = \frac{\sum_{\text{Fields}} \text{Point Value if field can be scored}}{\sum_{\text{Fields}} \text{Point Value}}$$

This results in a number between 0 and 1.

The Disclosure Factor is used to determine Upper and Lower Targets (UT and LT) for Issue Scores. Both targets increase with increasing levels of disclosure. This is illustrated in the table above.

The Upper Target is 3 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 3. 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 DF will account for the lack of full disclosure by capping the score at the UT. The UT is a curved line that increases more dramatically at lower levels of disclosure, reflecting the higher marginal value of new disclosure at low levels of disclosure.

$$UT = 3 + [\sqrt{DF} \times (10 - 3)]$$

The LT, for Performance Scores 1.5 or greater,⁴ is 0.45 if the DF is 0 and it is 4 if the DF is 10. The LT is meant to provide a score incentive to increase disclosure, even for fields where performance is not exemplary, as all but the lowest Performance Scores (those below 1.5) will see Issue Scores proportionally floored at the LT that corresponds to the DF.

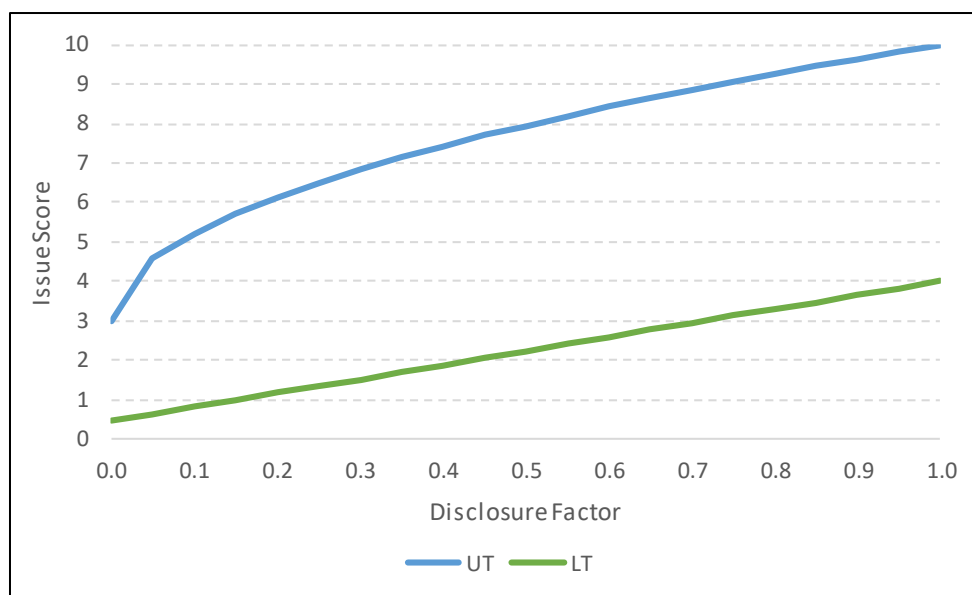


FIGURE 14: UPPER AND LOWER TARGETS (UT AND LT) AS A FUNCTION OF DISCLOSURE FACTOR

Given the Sub-Issue p-mean M (i.e., the Performance Score) and Upper and Lower Targets, the formula for the Issue Score is the below:

⁴ More precisely, when the weighted p-mean of policy and disclosed quantitative Field Scores is 1.5 or greater.

$$Issue\ Score(M, DF) = \begin{cases} \frac{LT}{1.5} \times M & M < 1.5 \\ LT + \left[\left(\frac{UT - LT}{8.5} \right) \times (M - 1.5) \right] & 1.5 \leq M \leq 10 \end{cases}$$

Visually, Figures 15-17 show how the Upper Target (UT) and Lower Target (LT) define a target range of possible Issue Scores along the Y-axis. This target range is a function of the level of disclosure. Only very poor performance (i.e., a Performance Score of less than 1.5) results in a score below target.

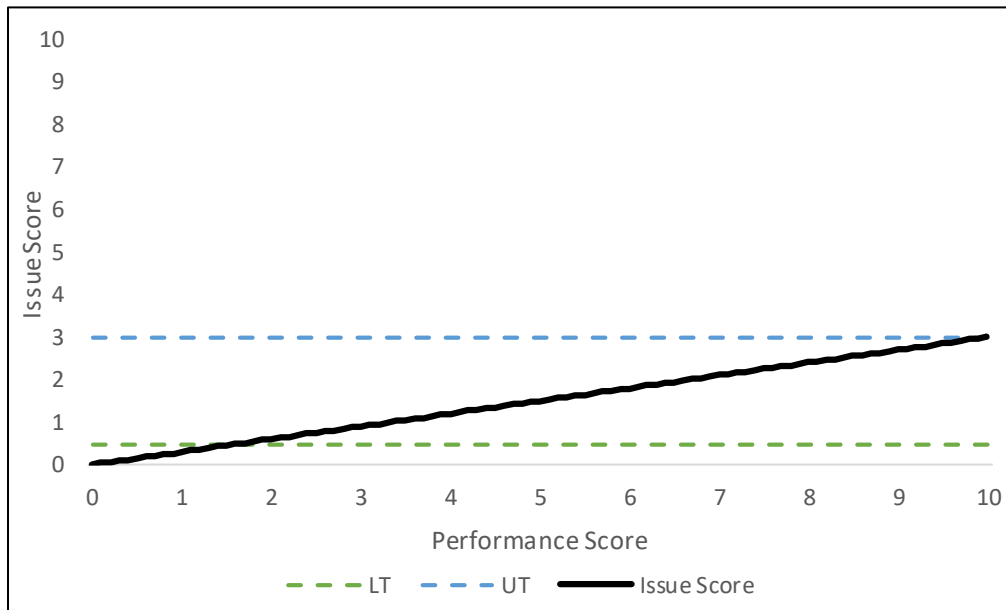


FIGURE 15: ILLUSTRATION OF ISSUE SCORE WHEN DISCLOSURE FACTOR=0

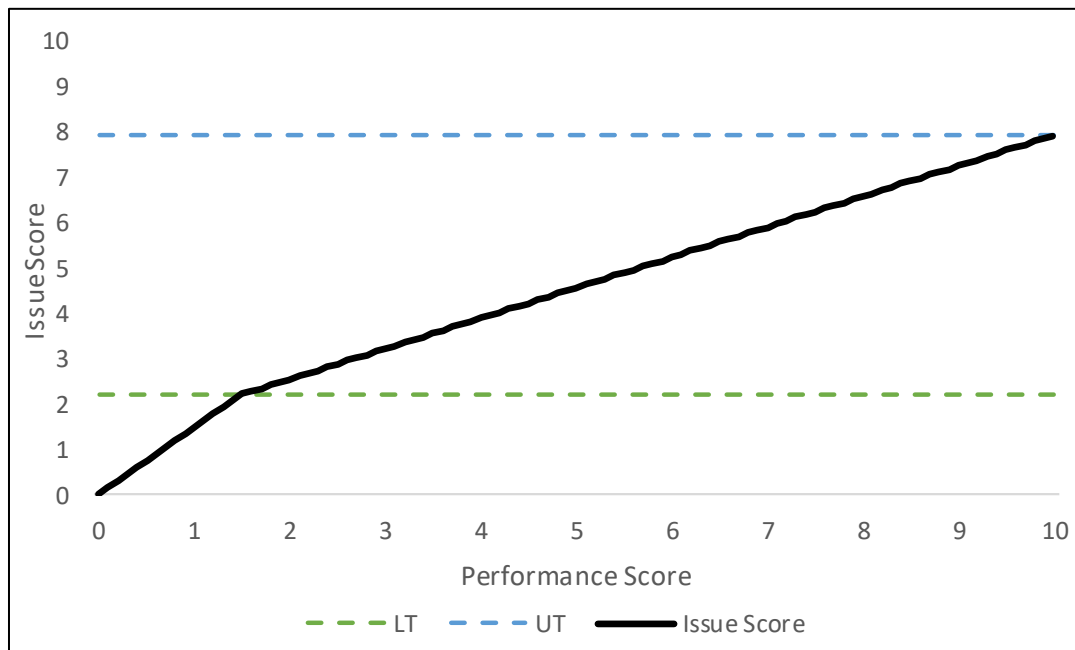


FIGURE 16: ILLUSTRATION OF ISSUE SCORE WHEN DISCLOSURE FACTOR=0.5

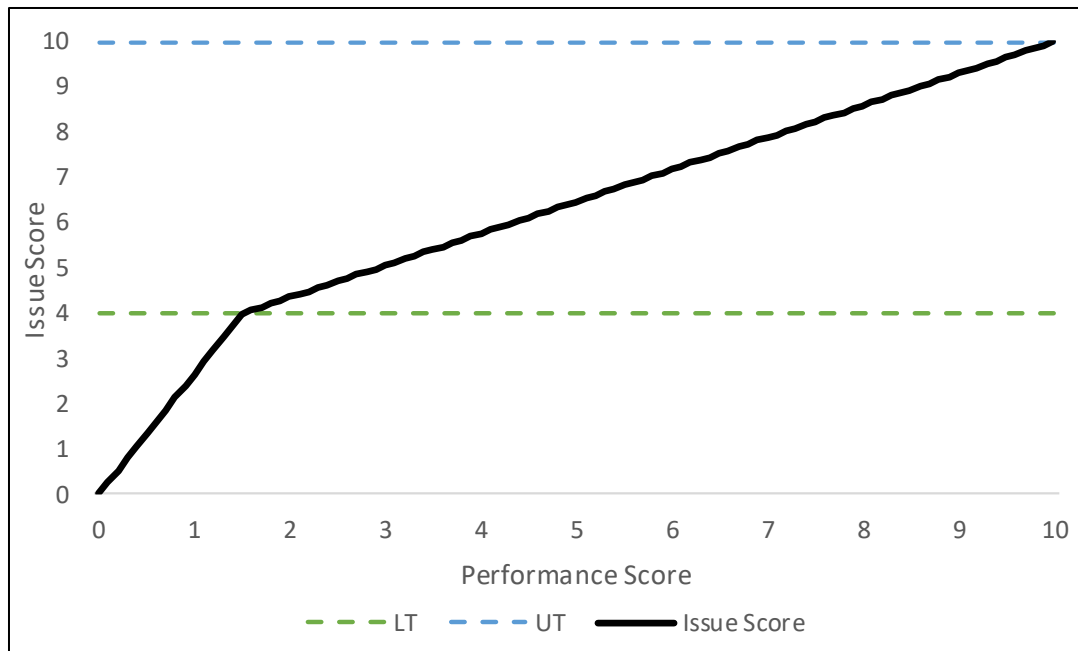


FIGURE 17: ILLUSTRATION OF ISSUE SCORE WHEN DISCLOSURE FACTOR=1

Pillar Scores

The Pillar Score is a weighted generalized mean (p-mean) of Issue Scores, where the weights are determined by the Issue Priority ranking. The values of the power and shift ($p=0.5$ and $s=1$) are the same as they are in the calculation of Issue scores.

Step 1: Initial Weights

BI Issue 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. This reflects the relatively high importance of the top rankings and implies that lower priority Issues have a lesser effect on Pillar Scores, while still serving an essential disclosure role.

Step 2: Weighting Adjustment

Issue Scores containing only binary fields have their weight reduced by 80% to reflect that quantitative fields have better scoring power than binary fields.

$$PD = \frac{\sum_{\text{Fields}} \text{Point Value if disclosed}}{\sum_{\text{Fields}} \text{Point Value}}$$

4.5.4 G 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 taken into account 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 $s=1$.⁵

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

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.⁶

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 Field Scores (Say on Pay Support Level and Frequency of Say on Pay Votes) are multiplied to generate the Sub-Issue score, as shown below:

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

⁵ 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.

⁶ The presence of a chairperson may not always be relevant, as some companies have no established chairperson on the board.

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.⁷

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.⁸

Score aggregations for each Sub-Issue are detailed in the specific Governance Scores Theme Guides.

Issue Scores and Disclosure Factor

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 Field 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 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.

In order 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.⁹

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 below table:

Disclosure Factor	Point Value
A	5.0
B	2.0
C	0.0

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

⁷ See the Say on Pay Categorical Scoring table in the Executive Compensation Theme Guide.

⁸ It is a best practice for companies to hold a say on pay vote annually, though in some markets a less frequent vote may be allowed.

⁹ 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.

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:

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

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:

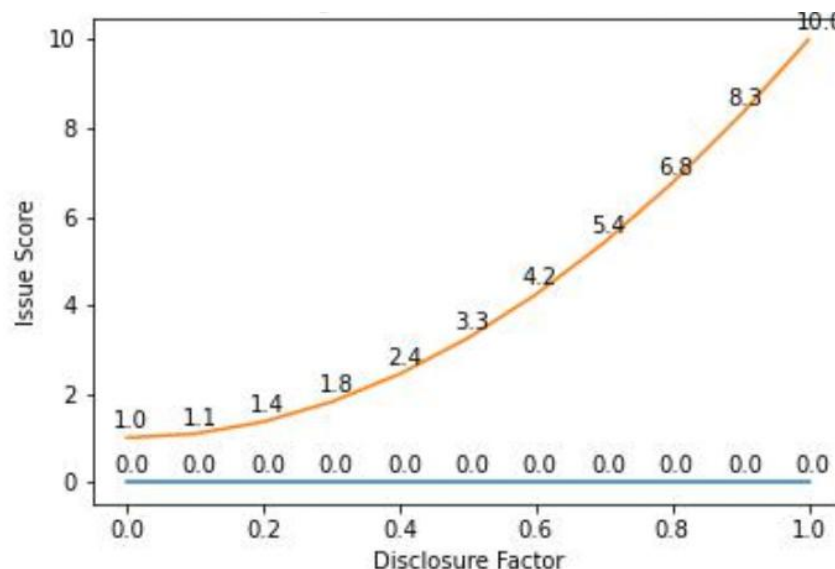


FIGURE 18: RELATIONSHIP BETWEEN UPPER TARGET AND "ACHIEVABLE" ISSUE SCORE

Step 5:

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

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

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:

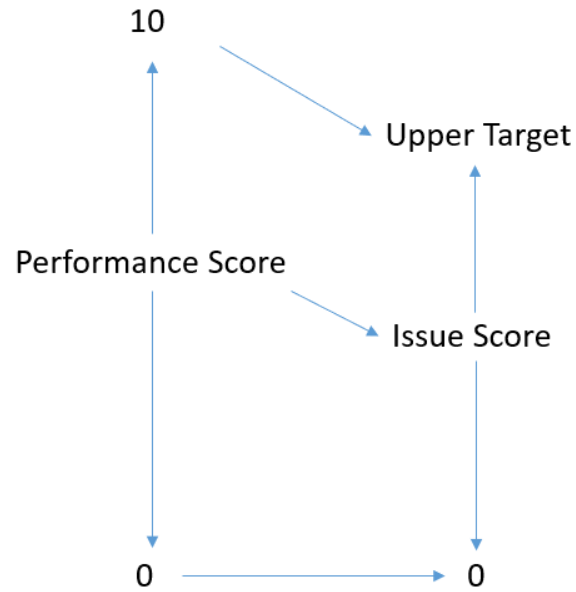


FIGURE 19: SCALING PERFORMANCE SCORE USING UPPER TARGET TO GENERATE ISSUE SCORE

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.

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.¹⁰ 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 in order to calculate the Governance Pillar Score.

¹⁰ 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.

4.5.5 Pillar Disclosure

The Pillar Disclosure measures the level of disclosure a company offers for the fields under each of its Pillars. Unlike the Disclosure factor that is used to compute Issue Scores, the Pillar Disclosure requires only the relevant Quantitative or Binary+ field to be disclosed and does not require the activity metric to be disclosed to earn the associated Points.

The Pillar Disclosure value is computed as follows:

$$PD = \frac{\sum_{\text{Fields}} \text{Point Value if disclosed}}{\sum_{\text{Fields}} \text{Point Value}}$$

This results in a number between 0 and 1.

The Pillar Disclosure does not affect the Pillar Score and should be used for informational purposes as a measure of disclosure only.

4.5.6 Overall ESG Score Aggregation

The Overall ESG Score is a weighted generalized mean (power mean) of a company's E, S and G Pillar Scores. 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.

The combined ESG Score is based on industry-specific relative weighting of E and S Issues. For each industry, the E, S and G Pillars have been ranked on a scale of 1 to 5, with 1 reflecting the highest importance. G Scores have been 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 were assessed based on Bloomberg Intelligence analysis of the relative exposure to E and S Issues identified in the industry's E and S materiality framework; the rankings were then translated into a percent weight. For instance, for companies in the Tobacco peer group, social factors were viewed as reflecting the dominant financially material issues and weighted 1 while the Environmental Pillar was weighted 5. This resulted 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 were deemed most material with the Pillar weighted 1 while the Social Pillar, reflecting issues related to safety, was weighted 3, resulting in 45.5% and 27.3% weights respectively.

For more information on ESG Overall Score weights please refer to the Overall ESG Score Pillar Weighting file available on BESG <GO> under "Bloomberg Scores".

4.6. Assessment Category

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:

- Field 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-Centered 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-Centered 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-Centered 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 labeled A-G, with A being best.

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

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

The Scores are calculated monthly to account for newly available data as well as updates to previously disclosed information. As ESG data is typically reported on a fiscal year basis 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.

"Latest" Scores use the most current information available, supplementing the most recent complete fiscal year's data with any newly disclosed information. "Fiscal Year" Scores are only provided for a given company once complete ESG data for a specific fiscal year has been published. The oldest data points used in the calculation of Latest Scores are inputs sourced from the last fiscal year for which a Fiscal Year score has been calculated.

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

5. Methodology Limitations

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

Current limitations are primarily 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.
- **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 companies appear to be reporting on the same issue.
- **Timeliness and frequency:** Most ESG data is disclosed annually, and with significant time lags—often several months after the end of a fiscal year.
- **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.

Given these and other challenges, Bloomberg's 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. Score users are expected to combine these Scores with their own analysis and judgment to determine their suitability for the intended goal.

Methodology enhancements will focus on improving the effectiveness of the Scores in assessing both sustainability performance and the quality and comprehensiveness of disclosure. These enhancements may result in changes to the scoring templates and parameters that currently 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 behavior, such as that related to the European Union Taxonomy and Corporate Sustainability Reporting Directive and similar measures in other markets.

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 backtesting 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

Bloomberg conducts reviews of this Methodology and relevant components of models, processes and procedures described herein on at least an annual basis; ad hoc triggers (such as significant changes in disclosure, emergent issues, or observations from model monitoring) may result in a more frequent review cycle. All such reviews will be conducted in line with the processes for research and product development described in this and related documents. In the event that changes are made to review processes, Bloomberg will make necessary updates to the Methodology to accurately reflect them.

Methodology updates that are deemed to be “material changes” can include but are not limited to:

- Updates to calculation methods
- Updates to the Scores hierarchy (as laid out in the “Evaluation Criteria” section)
- Inclusion or removal of input data sources and/or indicators
- Changes to the time horizon of the assessment
- Changes in the scope of business activities and group entities included in the assessment
- Changes in how gaps and/or errors in input data are processed
- Changes that result in a change in output exceeding certain quantitative thresholds

Bloomberg will communicate any changes that are deemed to be material to users and covered companies. Specifically, users who consume the data under the Bloomberg Data License agreement will be sent at least a 30 day notice for changes in the layout of the file or large changes in the data being delivered. Bloomberg Terminal® clients can find notifications on any methodology updates by navigating to BNEW ESG <GO>.

7. Restatements, Output Updates, Cessation

7.1. Restatements and Other Output Updates

Similar to “Updates to Input Data” outlined in Section 3.2, changes to 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.

7.2. Cessation of Scores

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. Communication Channels

Companies can contact us to review Bloomberg Scores attributed to them and relevant input data used in a variety of ways.

Bloomberg customers can:

- contact their Bloomberg Relationship Manager via email or phone;
- submit their inquiry to the Bloomberg Support Desk, which can be reached by typing the "HELP" key twice on the Bloomberg TERMINAL service;
- submit their inquiry via [Bloomberg Customer Service Center](#); or

Non-Bloomberg customers can:

- send an email to esgcorporate@bloomberg.net;
- access Bloomberg Scores via the [Bloomberg Data Upload Portal \(BDUP\)](#), or
- contact us [here](#).

We will be happy to arrange calls and/or meetings on request to discuss the information sources used by Bloomberg or any factual errors identified during your review.

Product specialists will consider any information provided in respect of potential errors and assess if a change in the assessment or this Methodology is required.

For further information, please refer to Bloomberg's Procedures of Engagement [here](#).

Annex 1: Glossary of Terms

- **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.
- **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
2.02	6.2	December 2025	Updates to Version History to account for model version increment
2.01	6.1	November 2025	<ul style="list-style-type: none"> 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-Centered 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
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	<p>Release of below enhancements; for additional details, see the Industry Guides and Industry Guide Companion File for ES, and Theme Guides for G:</p> <ul style="list-style-type: none"> Introduction of a Physical Risk Sub-Issue in the Climate Exposure Issue, in addition to the existing Transition Risk Sub-Issue <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Climate Exposure Energy Management Sustainable Product Labor and Employment Practices 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> • 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-Centered and Standardized Scores and Score Bands
1.0	September 2024	<p>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):</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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: 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. Often, however, there is inadequate data to determine that the datasets are statistically different. In that case, the ES Scores approach defers to the opinion of fundamental industry and ESG analysts’ judgement.

In cases where established external benchmarks or widespread consensus of ideal standards exist, Field 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 Field 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.

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="ISO50", 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” 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, 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 field-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 4: Description of ES Scoring Models

Intensity Fields

A large number of field 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 Fields ("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 $\gamma=1$, then the relationship is linear; $\gamma<1$ 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:

$$\log Impact = \log Intensity + \gamma \log Activity + \epsilon$$

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 co-efficient and the innovation (ϵ) is the company-specific term. ϵ 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:

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

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 what 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 2 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 (β) and slope co-efficient (γ). Any data points on this line are considered "average" and would receive a score of 5. Points above the line, colored 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, colored 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.

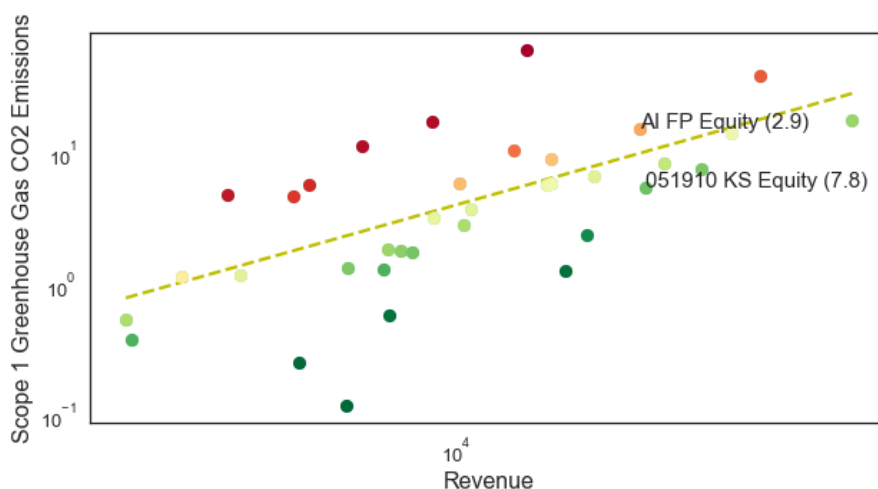


FIGURE 2: EXAMPLE OF SCORING SCOPE 1 GHG CO2 EMISSIONS (F0947)

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 3 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, 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.

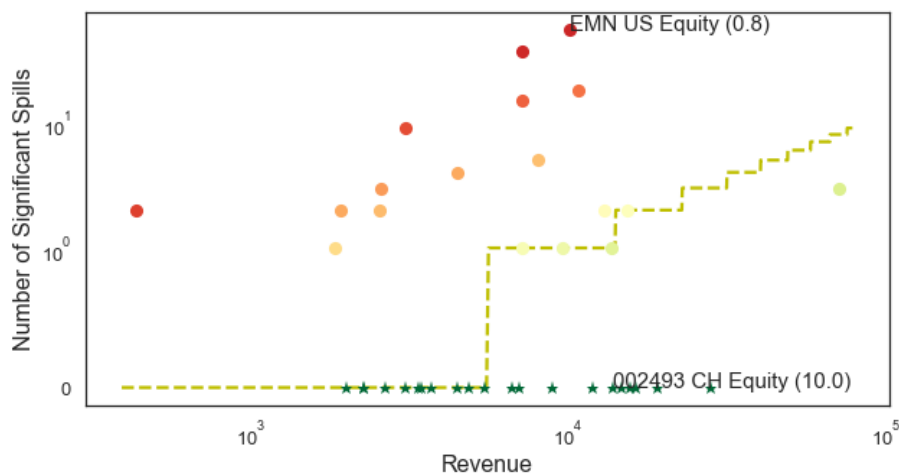


FIGURE 3: 2018 SCORING CURVE FOR NUMBER OF SIGNIFICANT SPILLS (SA215)

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.¹¹ 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 4 shows that Oil & Gas company Medco Energy (MEDC) reported 356m³ of hydrocarbons spilled in 2018. It had \$5.8 billion of TIC and received a score of 0.38. Kosmos Energy (KOS) reported 0m³ 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 0m³ of spills are awarded a perfect score.

¹¹ 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.

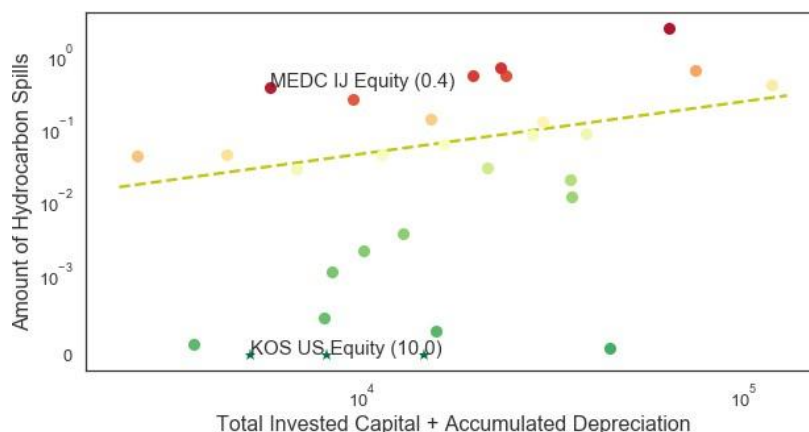


FIGURE 4: EXAMPLE OF SCORING HYDROCARBON SPILLS (ES249)

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 5 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.

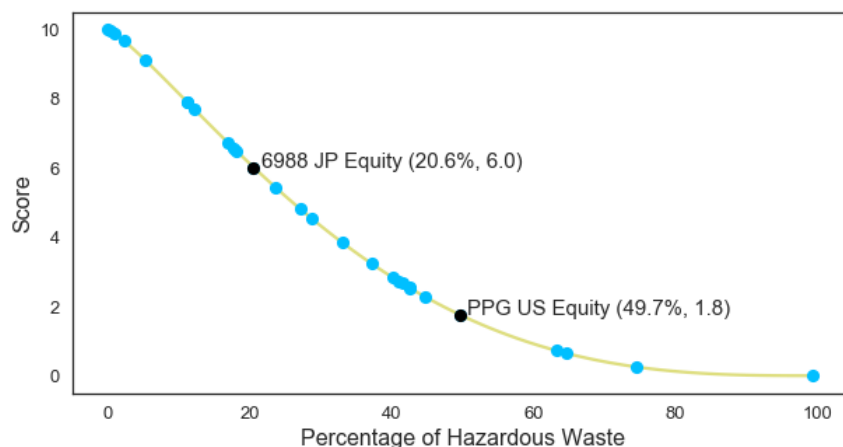


FIGURE 5: 2018 SCORING CURVE FOR PERCENTAGE OF HAZARDOUS WASTE (SP016)

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 6 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.

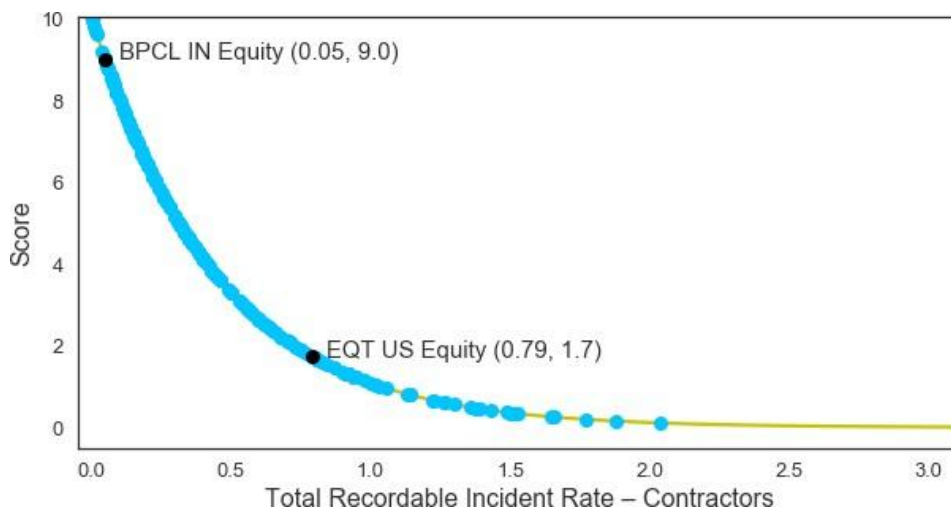


FIGURE 6: 2018 SCORING CURVE FOR TOTAL RECORDABLE INCIDENT RATE - CONTRACTORS (ES261)

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 7, 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.

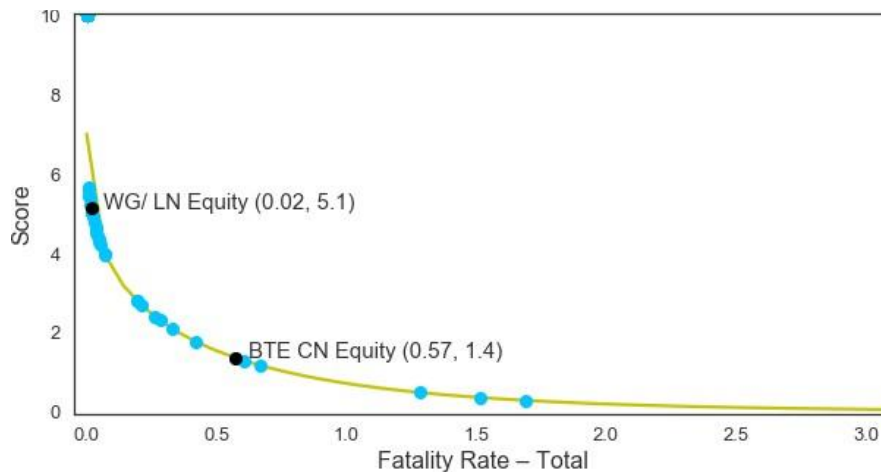


FIGURE 7: TOTAL WORKFORCE FATALITY RATE SCORING CURVE (RX389)

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 8 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.

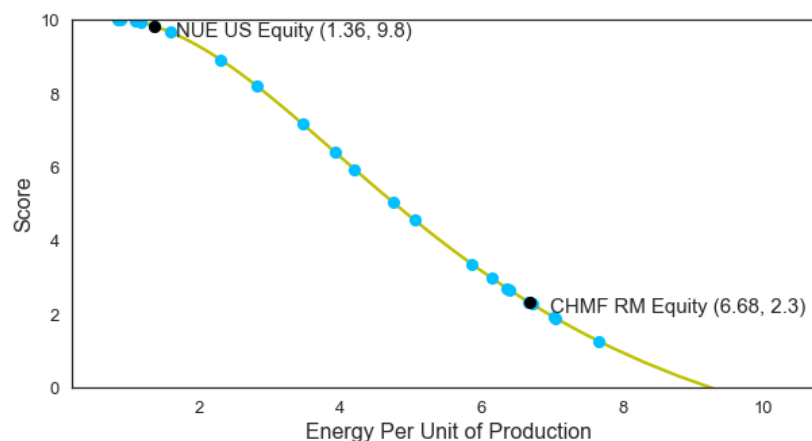


FIGURE 8: 2018 SCORING CURVE FOR ENERGY PER UNIT OF PRODUCTION (ES494)

Figure 9 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.

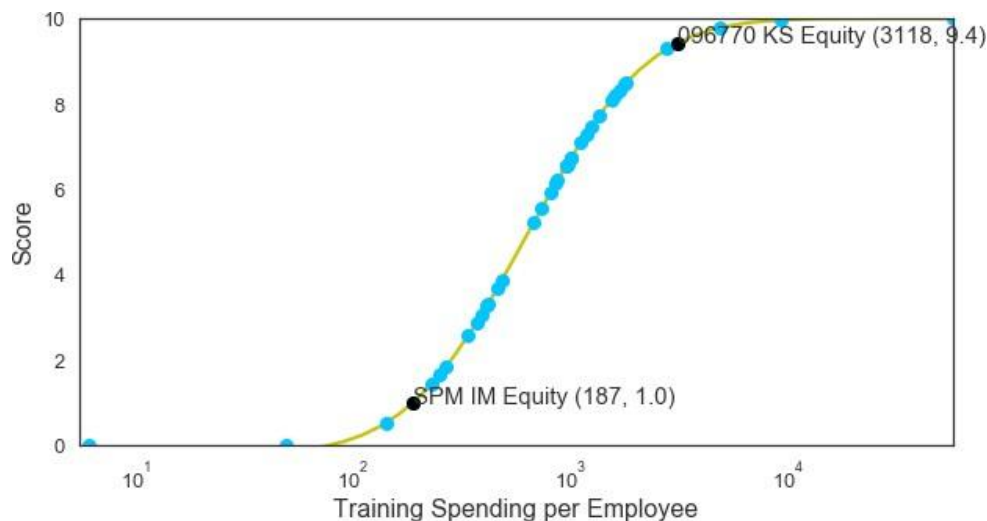


FIGURE 9: 2018 SCORING CURVE FOR TRAINING SPENDING PER EMPLOYEE (RX321)

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 (ISO10)

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 or not 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 5: 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 10 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.

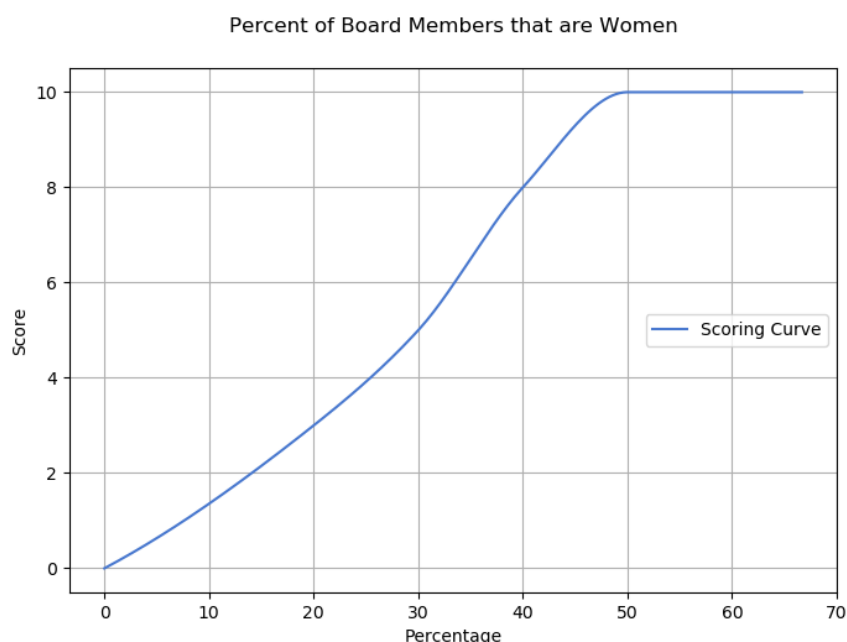


FIGURE 10: SCORING CURVE FOR PERCENT OF BOARD MEMBERS THAT ARE WOMEN (CG627)

For certain fields, 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 field 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 fields, such as 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 fields have discrete outcomes, i.e., they take a finite number of values. Since the number of values is finite and usually countable, step functions¹² 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.

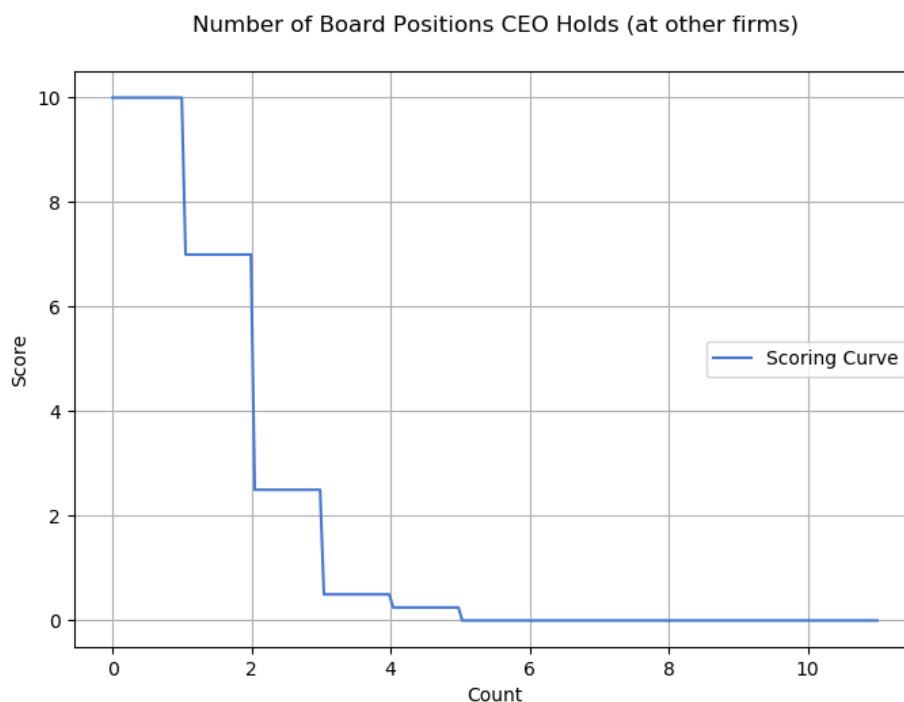


FIGURE 11: SCORING CURVE FOR NUMBER OF BOARD POSITIONS CEO HOLDS (CG651)

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.¹³ For example, the Board Leadership Independence Score is based on the following combination of binary fields:

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

¹² A step function is a piecewise constant function, with only finitely many pieces and with constant values within each interval.

¹³ The rationale for scores of each case can be found in the Research and Analysis section of each Governance Theme Guide.

Balance Fields

The objective of these metrics is to identify how well-balanced values are between multiple 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.¹⁴ In analyzing 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 Solver¹⁵). 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.

¹⁴ Additional information on optimal tenure buckets distribution can be found in the Board Composition Theme Guide.

¹⁵ 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.

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 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 colors 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 13: INDEPENDENT DIRECTOR SCORE

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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