

S&P Dow Jones Indices

A Division of **S&P Global**

S&P DJI ESG Score *Methodology*

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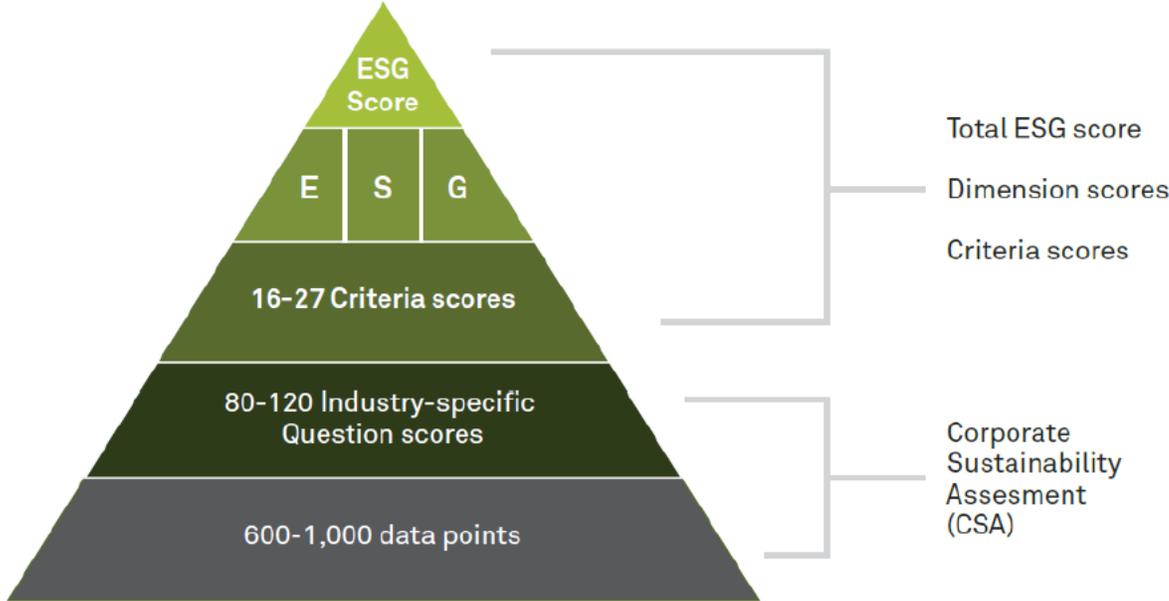
Table of Contents

Introduction	2
S&P DJI ESG Scores	2
S&P DJI ESG Score Methodology	4
S&P Global Corporate Sustainability Assessment and ESG Data Collection	4
Media and Stakeholder Analysis (MSA)	4
Controversies: MSA Overlay	4
Anchor Universe	5
Score Calculation	5
Missing Data Treatment	6
Normalization	7
Total Score and Normalized Total Score	7
Probability Score, Final Score, and S&P DJI ESG Score	8
S&P DJI ESG Score Maintenance	9
S&P DJI ESG Score Timeline	9
S&P DJI ESG Score Governance	10
S&P DJI ESG Score Methodology Committee	10
Disclaimer	11

Introduction

S&P DJI ESG Scores¹

S&P Dow Jones Indices (S&P DJI), in association with S&P Global Sustainable¹ Research, together provide Environmental, Social, and Governance (ESG) scores, (collectively known as S&P DJI ESG Scores), which robustly measure companies' overall performance relating to financially material ESG factors. The S&P Global ESG scores dataset contains a total company-level ESG score for one financial year and consists of individual environmental (E), social (S), and governance (G) dimension scores, beneath which are (on average) more than 20 industry-specific criteria scores that can be used as signals of ESG risks and repercussions.



Source: S&P Global Sustainable¹ ESG Research. Chart is provided for illustrative purposes

S&P DJI ESG Scores are based on S&P Global ESG Scores, which are derived from the S&P Global Corporate Sustainability Assessment (CSA). The S&P Global CSA -- developed and enhanced since 1999 -- is a questionnaire-based analysis process focused on ESG factors: with the aim of identifying the extent to which companies are equipped to recognize and respond to emerging sustainability opportunities and challenges in the global market. The S&P Global CSA emphasizes financially material and industry-specific sustainability issues, both of which have a link to long-term financial performance.

Companies are evaluated based on a range of financially relevant sustainability criteria, covering environmental, social, and governance dimensions. Companies' responses to questions are assigned values, which are then aggregated into criteria, dimension, and total ESG scores, using an industry-specific weighting scheme.

S&P Global Sustainable¹ Research pursues an integrated approach to analyzing sustainability performance. An interdisciplinary team of analysts designs, monitors, and refines the annual S&P Global CSA: with the purpose of generating additional insights into companies' value-creating and risk-mitigating

¹ For a summary of differences between S&P DJI ESG Scores and S&P Global ESG Scores, please see the [FAQ](#).

ESG potential. The assessment centers on sustainability criteria that are financially relevant to corporate performance, valuation, and security selection.

For the purposes of the S&P Global CSA, companies are assigned to industries defined by S&P Global Sustainable1 Research, and the assessment is largely specific to each industry. S&P Global Sustainable1 Research uses the Global Industry Classification Standard (GICS[®]) as its starting point for determining industry classification. At the industry group and sector levels, the industries match the standard GICS classifications, but some nonstandard aggregations occur at the industry level. The S&P Global CSA has separate questionnaires for each of its 61 industries. These industry-specific questionnaires, which also consist of general questions, allow for both comparison of ESG performance across industries and accountability for significant differences in materiality of ESG criteria across industries.

To mitigate biases in the data used to determine S&P Global ESG scores, and thereby provide a stronger signal of material ESG factors, S&P DJI collaborated with S&P Global Sustainable1 Research to further refine the score construction methodology: by examining how the underlying data points collected via the S&P Global CSA are managed and scored. The result is the final S&P DJI ESG Score, which more accurately depicts companies' ESG conversance relative to other companies categorized in the same industry.

S&P DJI ESG Score Methodology

S&P Global Corporate Sustainability Assessment and ESG Data Collection

Annually, S&P Global issues invitations to companies, providing the opportunity to respond directly to the CSA. The S&P Global CSA uses proprietary industry classifications, derived from GICS, to analyze companies using CSA industry-specific questionnaires. The questionnaires evaluate a range of financially relevant sustainability criteria, including a Media & Stakeholder Analysis (MSA) component, which tracks ongoing negative controversies to which companies are exposed. Analysis of the CSA results in an ESG score for each company.

Companies that fail to respond to the CSA can still be assessed and receive ESG Scores. For these companies, S&P Global Sustainable¹ Research analysts make assessments using available data and form scores based on public information about the company. Companies that do not respond to initial invitations to complete CSAs have the opportunity to engage with S&P Global and review their scores at a later stage.

For more information on the S&P Global CSA process, please refer to this website:
<https://www.spglobal.com/esg/csa/>.

Media and Stakeholder Analysis (MSA)

Although the S&P Global CSA is a tool used every year to collect fresh data on corporate sustainability practices, the reported results of the CSA are supplemented with an MSA, which examines more recent findings that have surfaced via the media and other channels. The MSA monitors a company's sustainability performance on an ongoing basis by assessing current controversies that could potentially threaten a company's reputation or financial health. The MSA is an additional overlay used to modify criteria scores downward: based on evidence ranging from deliberate involvement in -- and mismanagement of -- controversial incidents to negligent lapses in oversight.

For more information on the Media & Stakeholder Analysis component, please refer to this document:
https://portal.csa.spglobal.com/survey/documents/MSA_Methodology_Guidebook.pdf.

Controversies: MSA Overlay

S&P Global uses RepRisk, a leading data science company, for daily filtering, screening, and analysis of ESG risk incidents and controversial activities affecting companies².

S&P Global releases a Media and Stakeholder Analysis (MSA) which includes a range of issues such as economic crime and corruption, fraud, illegal commercial practices, human rights issues, labor disputes, workplace safety, catastrophic accidents, and environmental disasters.

For more information on RepRisk, please refer to www.reprisk.com. This service is not considered a direct contribution to the index construction process.

² RepRisk, an ESG data science company, leverages the combination of AI and machine learning with human intelligence to systematically analyze public information in 23 languages and identify material ESG risks. With daily data updates across 100+ ESG risk factors, RepRisk provides consistent, timely, and actionable data for risk management and ESG integration across a company's operations, business relationships, and investments.

Anchor Universe

The S&P Global CSA is performed on a universe of companies on an annual basis. Included in this universe are the constituents of the S&P Global LargeMidCap Index and S&P Global 1200 as of the Monday after the third Friday in September. The combination of the constituents of these indices determines the “anchor universe” used as a benchmark, or “reference universe,” during the normalization processes of S&P DJI ESG Score calculation. The composition of the anchor universe remains constant until the subsequent September, when ESG scores are calculated anew.

Score Calculation

During the CSA process, ESG indicators are calculated for each company covering various sustainability topics. Within each industry, each indicator has a different weight in the total company-level ESG score calculation, which is the weighted sum of all underlying indicators.

The equation for the S&P DJI ESG scores is as follows:

$$T_{it} = \sum_{j=1}^N w_{I(i)jt} \tilde{c}_{ijt}$$

In the above equation, the notations represent the following:

i = 1, 2, ..., : denotes the companies in the anchor universe

t = 1, 2, ..., : denotes the assessment years

j = 1, 2, ..., N : denotes the question level indicators

\tilde{c}_{ijt} = the adjusted indicator j for company i for year t . The adjustment is described below in the normalization section, and is calculated based on the question level indicators c_{ijt}

c_{ijt} = the indicator j at question level for company i , i.e., the S&P Global ESG Score from the CSA.

$w_{I(i)jt}$ = the weight of indicator j for company i on assessment year t , where the sum of all weights for a specific company in a specific year is one:

$$\sum_{j=1}^N w_{I(i)jt} = 1, \forall i, t.$$

$I(i) \in \{1, \dots, n\}$ = the industry of company i from the n S&P Global industries.

Because of the ESG Methodology's industry-specific approach (as defined by S&P Global Sustainable1 Research), the weights $w_{I(i)jt}$ are dependent on a company's particular S&P Global CSA Industry. Therefore, the weights for each indicator j vary across industries. Some ESG indicators are used in all industries, whereas some are industry-specific. If an indicator is irrelevant to a specific industry, the corresponding industry weight is zero.

Weights are defined in the CSA based on S&P Global Sustainable1 Research's review of the financial materiality of each topic to the specific industry. The weightings of each topic, and consideration of potentially new topics, are reviewed annually before the next CSA research cycle commences in early spring.

For up-to-date information on S&P Global's CSA Timeline, please refer to [CSA Timeline | S&P Global \(spglobal.com\)](https://www.spglobal.com).

Missing Data Treatment

The foundation for the S&P Global CSA is company information available in the public domain. Publicly available information is drawn from financial filings, sustainability reports, corporate policies, investor presentations, and other such unrestricted sources. Through direct engagement with S&P Global, companies have the option of furnishing additional information to enhance their public disclosures. Company-disclosed information is supported by the ongoing MSA process, which leverages data from RepRisk and tracks companies' exposure to, and subsequent management of, controversies.

Information gaps may exist as a result of additional disclosures being provided directly by some companies through the CSA vs. data collected by S&P Global Sustainable1 Research analysts; information gaps can also be attributed to differences in transparency found in corporate sustainability reporting. To account for these disparities, a framework is used to quantify missing data in answers to questions for which publicly available information is scarce. The public information used to assess companies includes reports, websites, or other online content found in the public domain. This information must be available to all stakeholders and valid at the time of the review of the CSA by S&P Global Sustainable1 Research. Because portions of the CSA solicit company data not commonly accessible to the public, the aforementioned framework is only applied to companies assessed by S&P Global Sustainable1 Research outside of the invitational CSA process (i.e., companies that do not furnish input and submit to assessments based solely on publicly available company information).

Generally, CSA questions are deemed mandatory if analysts are able to find information to answer such questions for more than 50% of companies screened. Based on the fundamental importance of some CSA questions, S&P Global Sustainable1 industry experts have discretion to categorize specific questions as mandatory, regardless of the response rate. Conversely, S&P Global Sustainable1 industry experts may deem CSA questions non-mandatory even if response rate for these questions is greater than 50%.

During the 2017 and 2018 yearly CSA methodology reviews, changes were made, with an added emphasis on questions requiring publicly available information from all companies, including participating companies. The changes were prompted by expanding investor expectations with regard to corporate transparency and fundamental public disclosure requirements for companies. As part of this review, the "public" questions were added to the list of mandatory questions used in the CSA methodology. As a result, the mandatory questions from 2018 onwards are based on both the 50% rule previously described, as well as all "public" questions (if not already selected as part of the 50% rule). Another result of this change is the S&P Global CSA's minimum set of mandatory questions across all three Dimensions (environmental, social, and governance), and, to preserve each dimension's overall weight in each industry, respondents are prohibited from marking any dimension "not applicable."

If a mandatory question is left unanswered, a score of zero is assigned to that question, and the total score for that company is -- calculated inclusive of the zero. Thus, companies are penalized for a lack of reporting.

If a non-mandatory question is left unanswered, the question is disregarded in the total score calculation. The weight of the indicator is redistributed among the weights of all other indicators. Following the notation above, the process followed in the case of missing information is the following for company i and question j at time t :

- If question j is mandatory, then $c_{ijt} = 0$ and the total score is calculated as usual.
- If question j is not mandatory, then $w_{I(i)jt} = 0$ and the weights are redistributed among the other questions in the same criteria/dimension pertaining to the company's CSA industry. The new weights for the other questions k in that criteria/dimension for company i are defined as follows:

$$w'_{I(i)kt} = \frac{w_{I(i)kt}}{1 - w_{I(i)jt}}, \forall i \text{ and } \forall k \neq j \text{ in that criteria/dimension}$$

Normalization

In addition to the missing data biases, there are other industry specific biases in the data gathered in the CSA. Some questions are harder than others to score well on, resulting in a lower average score. Some questions also have multiple outliers or present most of the scores concentrated in a small range of values.

In order to eliminate these biases, S&P DJI normalizes the ESG indicators. The normalized figures measure the difference between a specific value and the industry mean, accounting for the standard deviation of values for the industry.

For example, in an industry where most companies score between 60 and 70, a company scoring 80 is very good, and will receive a high score. In an industry where most of the companies score between 90 and 100, a score of 80 is quite low. This will lead to a lower score for the company compared to peers. If 95% of the companies in an industry score between 80 and 90, a company scoring 95 is far above the peers. In an industry where the score range is between 50 and 90, then a score of 95 is further above.

The normalization is performed by a sigmoid-function on a standard z-score:

$$\tilde{c}_{ijt} = \sum \left(\frac{c_{ijt} - \bar{c}_{I(i)jt}}{\sigma_{I(i)jt}} \right)$$

where:

$\bar{c}_{I(i)jt}$ = the average for indicator c_{ijt} within the peer group I(i)

$\sigma_{I(i)jt}$ = the corresponding standard deviation

$\Sigma(x) = \frac{2}{1+e^{-x}} - 1$ = the sigmoid function, which smooths the final indicator is in the range $(-1, 1)$

The average and the standard deviation are calculated only among the anchor universe within industries. Additional companies which are assessed in following months use the same normalization parameters to normalize the indicators. Consequently, their score will not modify the parameters.

Total Score and Normalized Total Score

The Total Score of a company is the weighted sum of the normalized indicators. The aggregation is done on different levels (criteria level, dimension level, and ESG level), with each company receiving one score for each criterion to which its industry is assigned: three, dimension level scores (Environmental Score, Social Score, and Governance Score) and one Total ESG Score. The weights used in the sum depend on the company's industry and the aggregation level.

For example, the Total Score at the criteria level is calculated as a weighted sum of the scores of each question in that criterion, while the dimension level Total Score is the weighted sum of scores of all the criteria in that dimension. The Total ESG Score is the weighted sum of scores of all dimensions. The Total Score is defined as:

$$T_{it} = \sum_{j=1}^N w_{I(i)jt} \tilde{c}_{ijt}$$

where:

$j = 1, 2, \dots, N$ are the set of indicators considered at the specific aggregation level.

Total Scores can still be biased, as some industries tend to have better Total Scores than others. As a result, the Total Scores are also normalized. The Normalized Total Score for each company i at year t is below:

$$\hat{T}_{it} = \frac{T_{it} - \bar{T}_{I(i)t}}{\sigma_{I(i)t}}$$

where:

$\bar{T}_{I(i)t}$ = the average of the total scores for industry I to which company i belongs and assessment year t,

$\sigma_{I(i)t}$ = the corresponding standard deviation

When Z-scores are calculated, the average and the standard deviation are calculated only among the anchor universe within Industries. Additional companies which are assessed by S&P Global in the following months use the same normalization parameters to normalize the indicators. Consequently, their score will not modify the parameters.

Probability Score, Final Score, and S&P DJI ESG Score

The Normalized Total Score gives a measure of the performance of each company compared to its CSA Industry peers. However, it is not indicative of how the company is positioned in percentile terms at GICS sector or industry group levels. The Probability Score represents what percentage of an infinitely large population each company would be better than. The Probability Score is defined as the normal cumulative density function (F) with mean 0 and standard deviation 1 calculated on the Normalized Total Score for company i and assessment year t as defined in the equation below:

$$P_{it} = F_t(\hat{T}_{it})$$

Probability Scores are then multiplied by 100, resulting in a Final Score.

This Final Score is calculated on different levels: criteria level, dimension level, and ESG level.

For each company, the Final, company-level ESG Score is called the S&P DJI ESG Score.

S&P DJI ESG Score Maintenance

S&P DJI ESG Score Timeline

S&P DJI ESG Scores are updated on an annual basis in multiple batches. The initial batch, updated in September using input data gathered from that year's S&P Global CSA, includes the top 3,500 stocks in the coverage universe by float-adjusted market capitalization. All remaining stocks in the coverage universe are assessed between September and March of the following year, and their S&P DJI ESG Scores are calculated on a monthly basis, including any updates as a result of MSA cases and other score revisions. S&P DJI ESG Scores are only made available for use in index selection after the final batch is reviewed and approved by the S&P DJI ESG Score Committee, effective at the start of May.

The mean and standard deviation used in the S&P DJI ESG Score standardization are derived from the covered companies in the anchor universe in batch one annually in September. Companies in the anchor universe that are scored as part of batch two are normalized using the mean and standard deviation from the past September.

S&P DJI ESG Score Governance

S&P DJI ESG Score Methodology Committee

The S&P DJI ESG Score methodology and structure fall under the overall supervision of the S&P DJI ESG Score Committee. All committee members are full-time professionals of both S&P DJI and S&P Global Sustainable¹ Research. The Committee meets regularly. At each meeting the Committee reviews the scoring methodology to ensure the methodology is accurate, transparent, and complete in the description of how S&P DJI ESG Scores are calculated. In addition, the Committee may revise the methodology process if the committee determines a change is needed to better implement the intent of the scoring process.

S&P Dow Jones Indices' Committees reserve the right to make exceptions when applying the methodology if the need arises. In any scenario where the treatment differs from the general rules stated in this document or supplemental documents, clients will receive sufficient notice, whenever possible.

In addition to the daily governance of the S&P DJI ESG scores and maintenance of the S&P DJI ESG Score methodology, at least once within any 12-month period, the Committee reviews the methodology to ensure the methodology continues to achieve its purpose, and that the data and calculation process remain effective.

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