Morningstar Sustainability Rating
Methodology

Morningstar Research
Sustainalytics Methodology & Portfolio Research
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Executive Summary

- The Morningstar Sustainability Rating is designed to support investors in evaluating the relative environmental, social, and governance risks within portfolios.
- Ratings are determined using bottom-up assessments of the underlying holdings within a portfolio, underpinned by Sustainalytics' methodologies for assessing corporate and sovereign ESG risk.
- The calculation of the Morningstar Sustainability Rating involves several steps to accurately represent the relative risk within each portfolio; however, the output of the rating is a category of 1 to 5 "globes" for each eligible portfolio.

Introduction

In 2016, Morningstar released the **Morningstar Sustainability Rating** to help investors evaluate portfolios on environmental, social, and governance factors. In several iterations, it has evolved to its current state where the rating is considered a measure of the financially material ESG risks in a fund when compared with similar funds. The methodology was updated in late 2021 to incorporate **Sustainalytics' Country Risk Ratings**, which assess the risks to a sovereign entity's socioeconomic well-being by combining an assessment of the government entity's current stock of capital with an assessment of its ability to manage the wealth in a sustainable manner. The rating is calculated for managed products and indexes using Morningstar's portfolio holdings database.

For each fund that is eligible for a Morningstar Sustainability Rating, the rating is expressed as 1 to 5 "globes," whereby a higher number of globes indicates that the portfolio has lower ESG Risk. Notably, the number of globes a fund receives is determined relative to other funds in the same **Morningstar Global Category.** This means that a fund could have more ESG risk than another fund yet still receive a better rating if those funds are in different global categories, with their own unique qualification of what is a relatively low or relatively high amount of ESG risk.

Rating Inputs

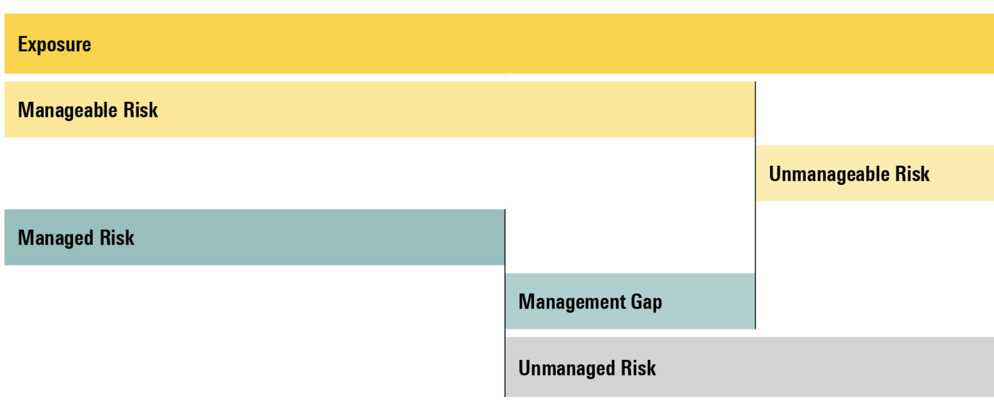
The Morningstar Sustainability Rating is calculated using **Sustainalytics' ESG Risk Ratings** for corporate issuers and Sustainalytics' Country Risk Ratings for sovereign issuers and is based on historical holdings.

Input #1: ESG Risk Ratings

Sustainalytics' ESG Risk Ratings measure the degree to which a company's economic value (enterprise value) is at risk driven by ESG factors or, more technically speaking, the magnitude of a company's unmanaged ESG risks. The rating was created to provide investors with a signal that reflects to what degree their investments (single assets or portfolios) are exposed to ESG risks that are not sufficiently managed by companies.

The overall unmanaged risk is measured by evaluating the company's **ESG Exposure** to and **ESG Management** of material ESG issues. For each issue, exposure can be broken between two types of risk, Manageable and Unmanageable risks. Unmanageable risks are those risks that are outside the boundaries of a company management's control based on the assumption that the company continues its inherent business—that is, doesn't fundamentally change what it is doing. For the portion that is manageable, a management assessment is applied based on the strength of company commitments, actions, and outcomes that demonstrate how well a company is managing the ESG exposure. The portion of manageable risk that is managed is considered Managed Risk, and the portion that is not managed is a Management Gap. Any risk to an ESG issue that is not properly managed by the company or that is unable to be managed by the company is considered Unmanaged Risk (see Exhibit 1). The resulting measure of risk for each issue is summed to provide one score that represents the company's overall ESG risk.

Exhibit 1 Combining Exposure and Management to Determine Unmanaged Risk

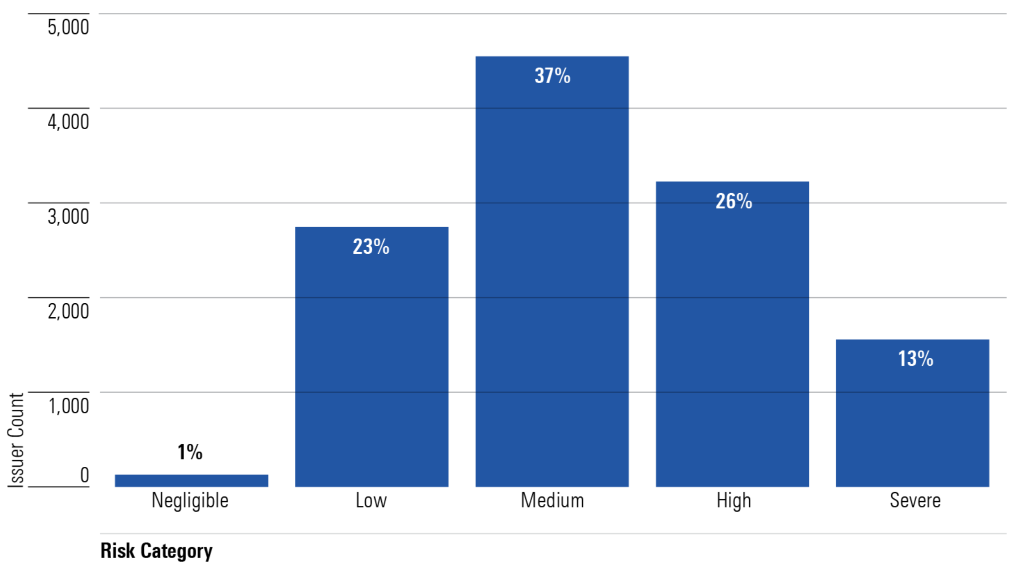


Source: Sustainalytics

The ESG Risk Ratings are considered an absolute risk assessment, which means that the output is comparable across sectors, industries, and subindustries as opposed to relative risk assessments, which calculate performance relative to peers and which may not be directly comparable to nonpeers. Based on the Unmanaged Risk scores, corporate entities are assigned to one of five ESG risk categories: Negligible, Low, Medium, High, and Severe.

Company scores are dispersed across these categories when looking at Sustainalytics' global universe of over 12,000 companies. Medium risk (37%) is the most common risk category, with a moderate skew toward High risk (26%) and Severe risk (13%).

Exhibit 1 ESG Risk Ratings Category Distribution



Source: Sustainalytics

Input #2: Country Risk Ratings

Sustainalytics' Country Risk Ratings assess the risks to a sovereign entity's socioeconomic well-being by combining an assessment of the government entity's current stock of capital with an assessment of its ability to manage the wealth in a sustainable manner. To quantify the amount of risk, the rating combines two dimensions: **Wealth** and **ESG Performance**.

Wealth reflects the vulnerability of a country in relation to ESG risks. It is measured as the value of assets within a country, as calculated by the World Bank. The higher the Wealth of a country, the lower its vulnerability to ESG risks. The assets can be organized according to four distinct stocks of wealth: Natural Capital, Produced Capital, Human Capital, and Institutional Capital.

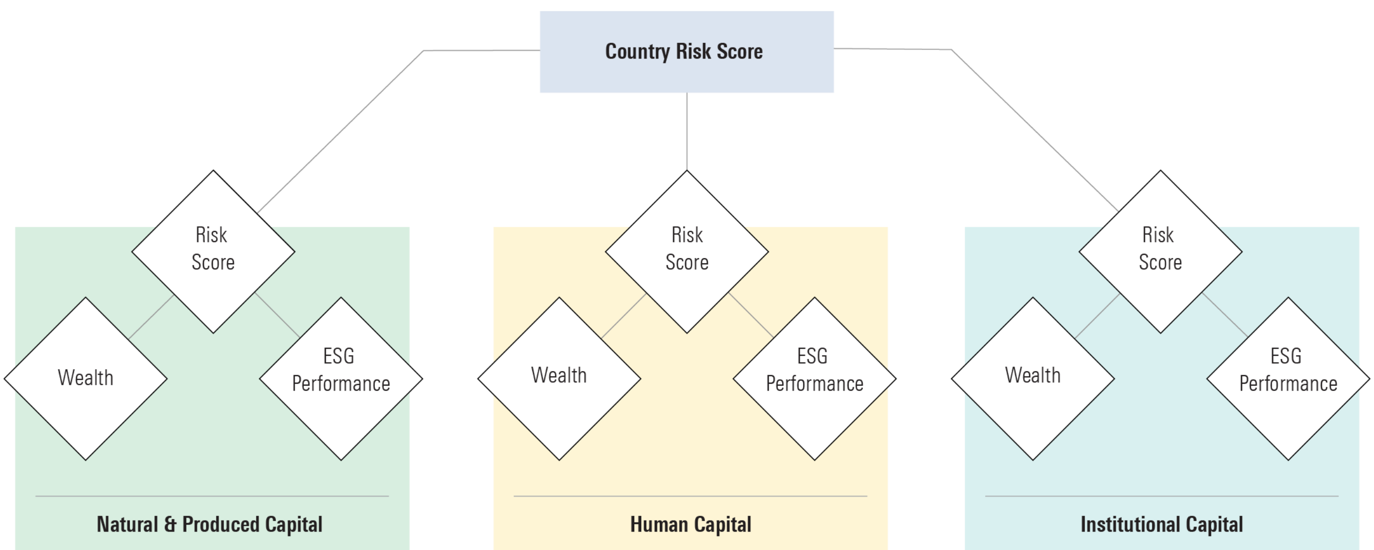
- Natural Capital is the stock of natural resources that provides inputs into economic activity as well as the ecological services upon which an economy depends.
- Produced Capital includes the stock of infrastructure, machinery, buildings, equipment, residential and nonresidential urban land, and so on that is produced through the economic activity of a region.
- Human Capital includes the stock of knowledge and skills among economic participants.

- Institutional Capital includes the social and institutional infrastructure that enables the productive functioning of a society and economy.

ESG Performance is an assessment of how well a country is managing key environmental, social and governance factors. It provides an indication on the direction of the region's future wealth, whereby strong ESG performance indicates that wealth stocks are likely to improve, while weak ESG performance indicates that wealth stocks are likely to deteriorate. ESG Performance for each capital is determined using socioeconomic indicators, analysis of trends, and assessments of any significant events that have occurred within the country.

As a starting point to determining the Country Risk Rating, the scores for Wealth and ESG Performance for each capital are averaged together to determine risk scores. Next, the risk scores for each capital are combined in a weighted sum to arrive at the overall risk score, which is its Country Risk Rating (see Exhibit 3). Based on the overall risk scores, sovereign issuers are assigned to one of five ESG risk categories: Negligible, Low, Medium, High, and Severe.

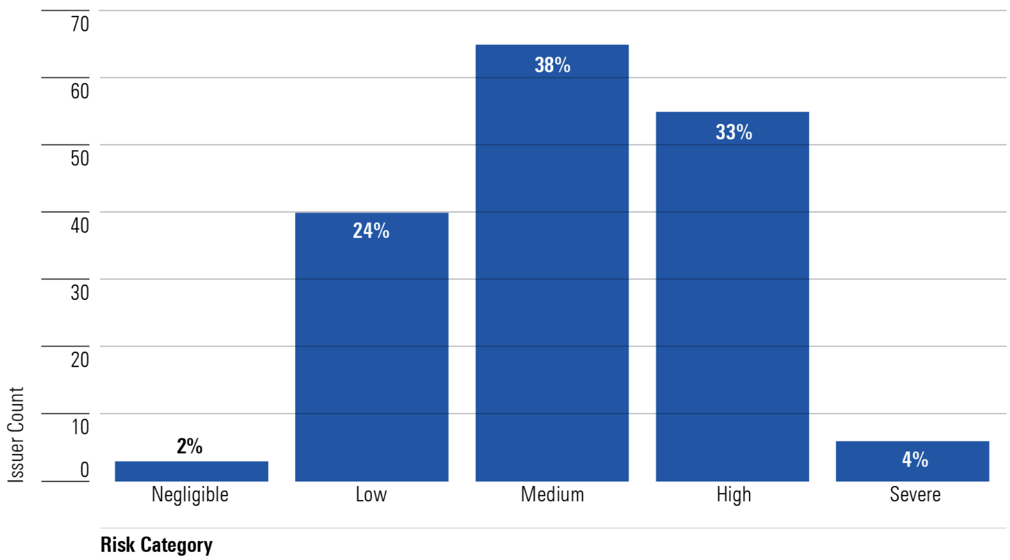
Exhibit 2 Combining Wealth and ESG Performance Scores to Determine Country Risk



Source: Sustainalytics

Country Risk Ratings are dispersed across these categories when looking at Sustainalytics' global universe of 169 countries. Medium risk (38%) and High risk (33%) are the most common risk categories.

Exhibit 3 Country Risk Ratings Category Distribution

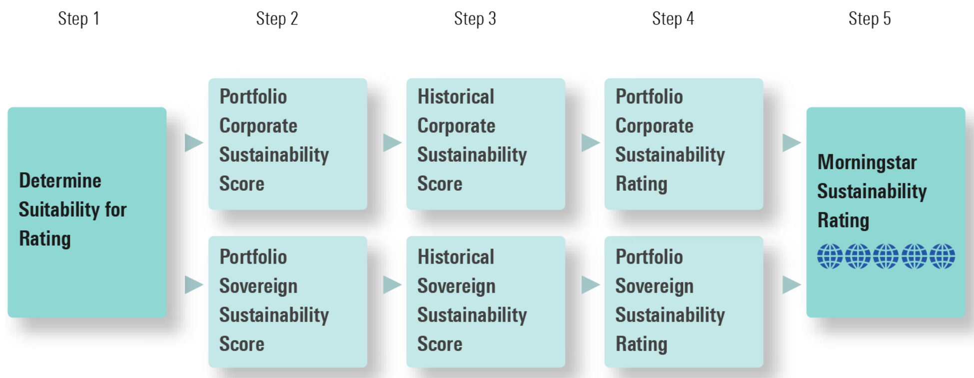


Source: Sustainalytics

Rating Calculation

The Morningstar Sustainability Rating is the result of a five-step process. First, we identify which portfolio holdings are potentially exposed to material ESG risks and which holdings fall under the corporate or sovereign risk ratings frameworks. Next, we derive the **Portfolio Corporate Sustainability Score** and **Portfolio Sovereign Sustainability Score** for every portfolio within the trailing 12 months. We then use these scores to derive a respective **Historical Corporate Sustainability Score** and **Historical Sovereign Sustainability Score.** A **Portfolio Corporate Sustainability Rating** and **Portfolio Sovereign Sustainability Rating** are determined by its respective historical scores relative to its Morningstar Global Category. Corporate scores and ratings are derived separate from the sovereign scores and ratings using the same methodology in parallel, as depicted in Exhibit 5. Finally, the Corporate and Sovereign Rating are combined proportional to the relative contribution of the corporate and sovereign positions and rounded to the nearest whole number to derive the Morningstar Sustainability Rating.

Exhibit 4 Simplified Morningstar Sustainability Rating Calculation Steps



Source: Morningstar/Sustainalytics

Step 1: Determine Suitability for Rating

The initial step of the process is to identify whether the fund is suitable for a rating. This determination is made by first identifying which portion of the fund's holdings are potentially exposed to ESG risk, known as **Qualified Holdings**. Next, as a subset of Qualified Holdings, the holdings deemed eligible to contribute a measure of risk under the Corporate or Sovereign Risk Ratings framework are identified. These are known as **Eligible Holdings** since they are eligible to contribute to the Morningstar Sustainability Rating.

Qualified Holdings

Qualified Holdings are those holdings in a portfolio that we consider in scope for a potential ESG risk assessment. This does not mean that Sustainalytics currently calculates a holdings-level rating for all qualified holding types; however, it does mean that it could one day calculate a rating for it since there is material ESG risk within that holding. Qualified Holdings include equities, fixed-income instruments, commodities, real estate, and alternatives. Excluded from this list are short positions, cash and currency, as well as derivatives and synthetic holdings.

There are three types of qualified holdings according to Morningstar's classification system: corporate, sovereign, and "other". Securities deemed to carry corporate ESG risk include equities, fixed-income securities issues by corporate entities, select securitized debt, and supranational entities. Securities deemed to carry sovereign ESG risk include fixed-income securities issues by government entities and select securitized debt. Securities deemed to carry "other" ESG risk include municipal bonds, commodities, real estate, alternative investment types, and any other securities considered to carry intrinsic ESG risk which are not already classified as corporate or sovereign.

Eligible Holdings

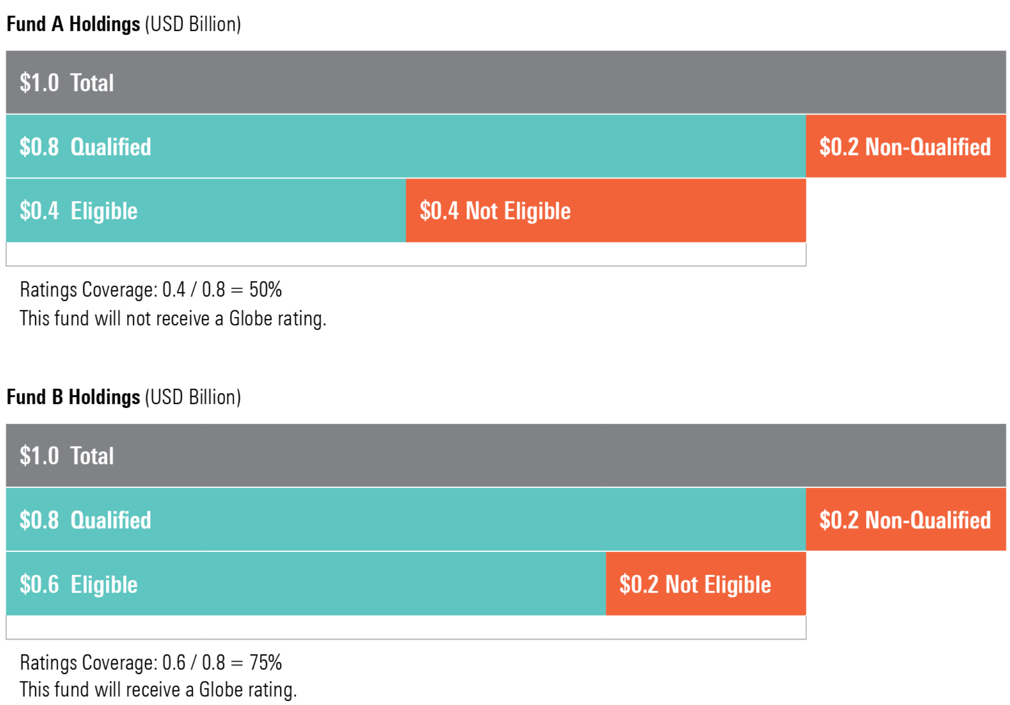
Eligible holdings are those in which a risk ratings framework exists and therefore can potentially contribute a measure of risk toward the Morningstar Sustainability Rating. Holdings classified as corporate or sovereign are considered eligible to contribute a measure of risk toward the overall rating. Each holding can only contribute an ESG Risk Rating or a Country Risk Rating, not both.

Coverage Requirement Based on Eligible Holdings[1]

The distinction between Qualified and Eligible Holdings in a fund is important because we want to avoid cases where a large portion of the fund's ESG risk is not rated by either the corporate or sovereign risk rating frameworks (hence, not eligible). Once the portion of Qualified Holdings and Eligible Holdings in the fund are determined, the value of Eligible Holdings is divided by the value of Qualified Holdings, with a requirement that at least 67% of the fund's Qualified Holdings are eligible to be rated. In cases where less than 67% of the Qualified Holdings are eligible, the fund is considered unsuitable for a Morningstar Sustainability Rating and no further steps will be performed.

Exhibit 6 provides an example of two funds, Fund A and Fund B, with equal portions of Qualified Holdings. Fund A will not have a Morningstar Sustainability Rating because only 50% of the fund's Qualified Holdings are considered eligible to be rated by the ESG Risk Ratings or Country Risk Ratings. Fund B could have a Morningstar Sustainability Rating (Note: there could be other separate conditions that exclude the fund from having a rating), based on the fact that 75% of the fund's Qualified Holdings are considered eligible to be rated by the ESG Risk Ratings or Country Risk Ratings.

Exhibit 5 Example of Determining Rating Suitability



Source: Morningstar/Sustainalytics

1 A consolidated list of all coverage requirements and other rating requirements is included in the appendix of this document.

Rescaling Holdings

All Eligible and Qualified Holdings are rescaled to 100% prior to a portfolio's exposure to corporate, sovereign, and other ESG risk being calculated.

Step 2: Portfolio Corporate Sustainability Score and Portfolio Sovereign Sustainability Score

The second step is to calculate the **Portfolio Corporate Sustainability Score** and the **Portfolio Sovereign Sustainability Score** for each portfolio. In some cases, only one of the corporate and sovereign scores is calculated because the portfolio does not have sufficient sovereign or corporate exposure within the holdings.

Morningstar Portfolio Corporate and Sovereign Sustainability Scores

The Morningstar Portfolio Corporate Sustainability Score and Portfolio Sovereign Sustainability Score are each an asset-weighted average of Sustainalytics' company-level ESG Risk Rating and Sustainalytics' Country Risk Rating, respectively:

[1]

$$Portfolio\ Corporate\ Sustainability\ Score = \sum_{i=1}^{n} ESGRisk_i \times RescaledHoldingsWeight_i$$

[2]

$$Portfolio\ Sovereign\ Sustainability\ Score = \sum_{i=1}^{n} CountryRisk_i \times RescaledHoldingsWeight_i$$

For holdings 1 to n where RescaledHoldingWeight is not null

Both scores are rendered on an open-ended scale, where lower scores are better, using an asset-weighted average of all covered securities. In practice, most scores range from 0 to 50, assigned to five risk categories as shown in Exhibit 7.

Exhibit 6 Risk Categories

Score Range	Risk Category
0-9.99	Negligible Risk
10-19.99	Low Risk
20-29.99	Medium Risk
30-39.99	High Risk
>40	Severe Risk

Source: Morningstar/Sustainalytics

Coverage Requirement Based on Holdings-Level Data Coverage

For the Corporate and Sovereign Sustainability Scores to each act as a representation of the corporate and sovereign portions of a portfolio, we require that at least 67% of the long corporate and 67% of the long sovereign positions have holdings-level data. This means that 67% of assets in the portfolio holdings identified as corporate ESG risk need to have company ESG Risk Ratings in order to calculate the Corporate Sustainability Score. Likewise, 67% of assets in the portfolio holdings identified as sovereign ESG risk need to have country ESG Risk Ratings in order to calculate the Sovereign Sustainability Score.

Step 3: Historical Corporate Sustainability Score and Historical Sovereign Sustainability Score

The third step is to calculate the **Historical Corporate Sustainability Score** and **Historical Sovereign Sustainability Score.** These are a weighted average of the trailing 12 months of Morningstar Portfolio Corporate and Sovereign Sustainability Scores, respectively. Historical scores are not equal-weighted; rather, more-recent portfolios are weighted more heavily than more-distant portfolios:

[3]

$$Historical\ Corporate\ Sustainability\ Score = \frac{\Sigma_{i=0}^{11}(12-i) \times Portfolio\_Corporate\_Sustainability_i}{\Sigma_{i=0}^{11}\ i\ +1}$$

[4]

$$Historical\ Sovereign\ Sustainability\ Score = \frac{\Sigma_{i=0}^{11}(12-i) \times Portfolio\_Sovereign\_Sustainability_i}{\Sigma_{i=0}^{11}\ i\ +1}$$

Where:

$i = number\ of\ months\ from\ present$

Combining the trailing 12 months of corporate or sovereign scores adds stability while still reflecting portfolio managers' current decisions by weighting the most recent portfolio scores more heavily.

In cases where 12 months of consecutive data are not available, a historical score will still be derived based on the most recent consecutive history of available Portfolio Corporate and Sovereign Sustainability Scores.

Step 4: Portfolio Corporate Sustainability Rating and Portfolio Sovereign Sustainability Rating

Morningstar Portfolio Corporate and Sovereign Sustainability Rankings and Ratings

The fourth step is to calculate the **Portfolio Corporate Sustainability Rating** and **Portfolio Sovereign Sustainability Rating** by ranking the respective Corporate and Sovereign Historical Sustainability Scores of all scored funds within a Morningstar Global Category. All scored funds within a Morningstar Global Category are ranked based on a normal distribution, and each receives a rating from 1 to 5, with 5 being the lowest risk (see Exhibit 8). For each Global Category of funds, the median scoring portfolio receives a '3' rating. Note, there is a requirement that the Global Category has at least 30 portfolios with respective Historical Corporate Sustainability Scores or Historical Sovereign Sustainability Scores for funds in that category to be assigned a score. Please note that lower risk results in a higher sustainability rating.

Exhibit 7 Summary of Corporate and Sovereign Sustainability Ratings Distribution

Distribution	Rating
Best 10% (Lowest Risk)	5
Next 22.5%	4
Next 35%	3
Next 22.5%	2
Worst 10% (Highest Risk)	1

Source: Morningstar/Sustainalytics

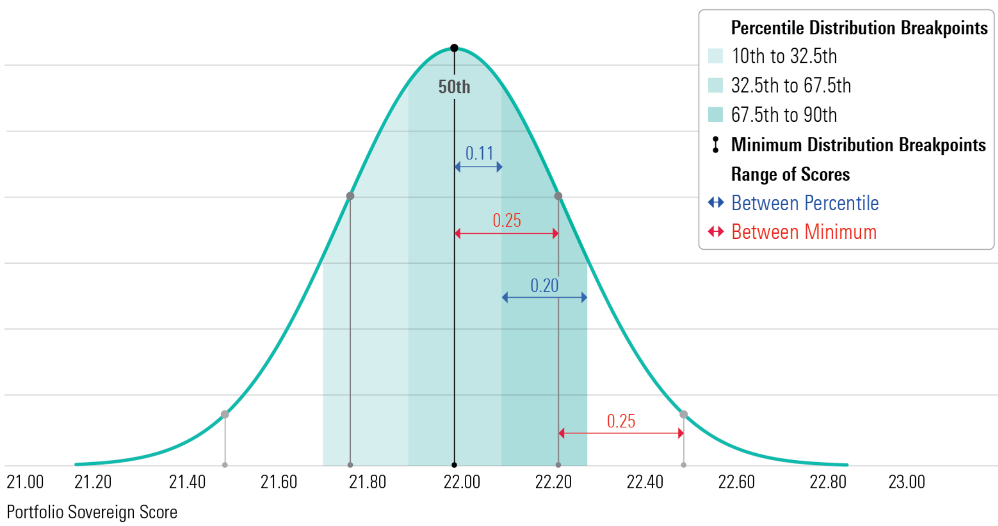
Minimum Distribution Requirement

The breakpoints used for the 1 to 5 scale can deviate from the percentile breakpoints outlined in Exhibit 8 in cases where a Global Category's Historical Corporate Sustainability Scores or Historical Sovereign Sustainability Scores are not well distributed. Scores must be sufficiently different from the median score to be assigned an ordinal rating of 2 or 4 and must be sufficiently different from the 2-3 breakpoint or 3-4 breakpoint to achieve an ordinal rating of 1 or 5, respectively.

The minimum difference between the median score and each subsequent breakpoint is set to 0.25 for sovereigns and 0.40 for corporates. This requirement guarantees a minimum distribution of scores within each rating band and prevents insignificantly small differences in scores from resulting in different ratings. In practice, this can mean that all portfolios within some peer groups may receive the same Corporate or Sovereign Rating.

Exhibit 9 demonstrates the application of the minimum 0.25 distribution requirements for sovereign scores. In this example, the 50th percentile score for this global category of funds is 22.00. The colored shading depicts where the breakpoints would fall under a normal distribution (see Exhibit 8) without any minimum distribution requirement. Without this requirement, the distribution of scores between the 50th percentile and 2-3 breakpoint has a range of 0.11, while the distribution of scores between the 2-3 breakpoint and 1-2 breakpoint has a range of 0.20. However, with the minimum distribution requirements, the breakpoint between a 3 and a 2 rating shifts from 22.11 to 22.25, and the breakpoint between a 3 and a 4 rating shifts from 22.31 to 21.75, guaranteeing a range in scores of at least 0.25 between each breakpoint.

Exhibit 8 Minimum Distribution by Breakpoint



Source: Morningstar.

Historical Corporate and Sovereign Sustainability Scores of 30 or Higher

To avoid cases where funds with significant ESG risks receive overly favorable ratings, there is a requirement that a fund's Historical Corporate or Sovereign Sustainability Score cannot exceed certain values to receive positive scores:

- Portfolios with Historical Corporate or Sovereign Sustainability Scores ranging from 30 to 34.99 can receive no better than a respective Corporate or Sovereign Sustainability Rating of 3;
- Portfolios with Historical Corporate or Sovereign Sustainability Scores ranging from 35 to 39.99 can receive no better than a respective Corporate or Sovereign Sustainability Rating of 2;
- Portfolios with Historical Corporate or Sovereign Sustainability Scores of 40 or higher receive a respective Corporate or Sovereign Sustainability Rating of 1.

Step 5: Morningstar Sustainability Rating

The fifth and final step is to calculate the Morningstar Sustainability Rating by combining the Portfolio Corporate Sustainability Rating and Portfolio Sovereign Sustainability Rating proportional to the relative contribution of its (long only) corporate and sovereign positions. The **Portfolio Sustainability Rating Corporate Contribution Percent** and **Portfolio Sustainability Rating Sovereign Contribution Percent** each represent the percentage weight between the corporate and sovereign portions of a portfolio.

[5]

$$Morningstar\ Sustainability\ Rating = (Corporate\ Sustainabilty\ Rating * Corporate\ Contribution\ Percent)\ +\ (Sovereign\ Sustainability\ Rating * Sovereign\ Contribution\ Percent)$$

The resulting value is rounded to the nearest whole number, which denotes the Morningstar Sustainability Rating and is equivalent to the number of globes a fund receives. Higher Sustainability Ratings represent lower ESG risk relative to a fund's peer group.

Exhibit 9 Morningstar Sustainability Rating Categories

Combined Corporate and Sovereign Rating	Rating Icon
>=4.5	
<4.5 AND >=3.5	
<3.5 AND >=2.5	
<2.5 AND >=1.5	
<1.5	

Source: Morningstar.

Exhibit 11 provides an example of the aggregation of the Morningstar Sustainability Rating for three separate funds, which have identical Portfolio Corporate and Portfolio Sovereign Sustainability Ratings but receive different Morningstar Sustainability Ratings because of differences in the corporate and sovereign contribution.

Exhibit 10 Example of Aggregating Portfolio Corporate and Sovereign Sustainability Ratings

Corporate Sustainability Rating	Corporate Contribution %	Sovereign Sustainability Rating	Sovereign Contribution %	Morningstar Sustainability Rating
4	50	2	50	3
4	80	2	20	4
4	20	2	80	2

Source: Morningstar/Sustainalytics.

Although the distribution may vary within certain categories, across all in-scope managed portfolios, Morningstar Sustainability Ratings are dispersed across the five rating categories following an almost perfect normal distribution centered around a 3 rating.

Coverage Requirement for Both Corporate and Sovereign Ratings

A portfolio must have both a Portfolio Corporate Sustainability Rating and a Portfolio Sovereign Sustainability Rating to receive a Morningstar Sustainability Rating, unless the portfolio is predominately exposed to only corporate or sovereign holdings. A portfolio that receives a Sovereign

Sustainability Rating but not a Corporate Sustainability Rating may still receive a Morningstar Sustainability Rating if the corporate portion of the qualified holdings is less than 5%. Similarly, a portfolio that receives a Corporate Sustainability Rating but not a Sovereign Sustainability Rating may still receive a Morningstar Sustainability Rating if the sovereign portion of the qualified holdings is smaller than 5%.

Frequency of Calculations

The Morningstar Sustainability Rating will be issued on a monthly basis, one month and six business days after the reported as-of date for company and country data from Sustainalytics. The Portfolio Corporate and Sovereign Sustainability Scores, Historical Corporate and Sovereign Scores, and Portfolio Corporate and Sovereign Sustainability Ratings are issued as part of the same monthly cadence. Portfolios will receive a rating one month and six business days after their reported as-of date based on the most recent portfolio. If an updated portfolio has not yet been received by the rating date, the most recent portfolio available will be used for score and ranking, provided the portfolio is less than 276 days old.

Appendix

Glossary of Terms

Term	Description
Eligible Holdings (for Sustainability Rating)	For the Sustainability Rating, the long positions in which a risk ratings framework exists and therefore can potentially contribute a measure of risk toward the rating. Holdings classified as corporate or sovereign are considered eligible to contribute a measure of risk toward the overall rating. Each holding can only contribute an ESG Risk Score or a Country Risk score, not both.
ESG Exposure	A measure of the extent to which a company is exposed to material ESG risks. Exposure can be considered as a sensitivity or vulnerability to ESG risks. It is one of two key dimensions in the ESG Risk Ratings.
ESG Management	A measure of a company's handling of material ESG issues through policies, programs, quantitative performance, and involvement in controversies, as well as its management of corporate governance. It is one of two key dimensions in the ESG Risk Ratings.
ESG Performance	A general term for the measurement of how well a government entity is managing on key environmental, social, and governance indicators. It provides an indication on the direction of the government entity's future wealth. It is one of two key dimensions in the Country Risk Ratings.
Historical Corporate Sustainability Score	The Morningstar Historical Corporate Sustainability Score is a weighted average of the trailing 12 months of Morningstar Portfolio Corporate Sustainability Scores. Historical portfolio scores are not equal-weighted; rather, more-recent portfolios are weighted more heavily than older portfolios. Combining the trailing 12 months of portfolio scores adds consistency while still reflecting portfolio managers' current decisions by weighting the most recent portfolio scores more heavily.
Historical Sovereign Sustainability Score	The Morningstar Historical Sovereign Sustainability Score is a weighted average of the trailing 12 months of Morningstar Portfolio Sovereign Sustainability Scores. Historical portfolio scores are not equal-weighted; rather, more-recent portfolios are weighted more heavily than older portfolios. Combining the trailing 12 months of portfolio scores adds consistency while still reflecting portfolio managers' current decisions by weighting the most recent portfolio scores more heavily.

Morningstar Global Category	The Morningstar Global Category assignments were introduced in 2010 to help investors search for similar investments domiciled across the globe. Global categories are assigned by Morningstar based on many factors, including but not limited to: familiarity with the strategy of the portfolio managers and fund family, the fund's Morningstar Retail category assignment, and a desire to portray the most accurate picture of economic exposure possible. Please refer to the Morningstar Global Category Classifications for more information.
Morningstar Sustainability Rating	Morningstar assigns Sustainability Ratings by combining a Portfolio Corporate Sustainability Rating and Portfolio Sovereign Sustainability Rating proportional to the relative weight of the (long only) corporate and sovereign positions, rounded to the nearest whole number. Historical Sovereign Sustainability Scores and Historical Corporate Sustainability Scores are ranked and rated separately to represent the ESG risk of the portfolio relative to its peers for its respective corporate and sovereign positions, and then combined by their relative weights for the Morningstar Sustainability Rating.
Portfolio Corporate Sustainability Rating	Morningstar assigns Portfolio Corporate Sustainability Ratings by ranking all scored funds within a Morningstar Global Category by their Historical Corporate Sustainability Scores. The ranked funds are then divided into five groups, based on a normal distribution, and each receives a rating from High to Low. For each peer group, the median scoring portfolio receives a 3 rating. Ratings are assigned to other portfolios in the peer group to achieve a normal distribution, with an exception made for cases where the scores within the peer group are not meaningfully differentiated. In practice, this can mean that all portfolios within some peer groups may receive the same Corporate or Sovereign Rating. Please note that lower risk results in a higher rating. Higher ratings indicate that a fund is, on average, invested in fewer companies or sovereign debt with a high ESG risk under Sustainalytics' ESG Risk and Country Risk methodologies and therefore is exposed to less risk driven by E, S, or G factors.
Portfolio Corporate Sustainability Score	The Morningstar Portfolio Corporate Sustainability Score is an asset-weighted average of Sustainalytics' company-level ESG Risk Rating The Sustainalytics' company-level ESG Risk Rating measures the degree to which a company's economic value may be at risk driven by ESG factors. Like the ESG Risk Ratings, the Portfolio Corporate Sustainability Score is rendered on a 0-100 scale, where lower scores are better, using an asset-weighted average of all covered securities. Morningstar determines whether each eligible portfolio holding can be classified under the corporate or sovereign framework. Each holding can only contribute an ESG Risk Rating or a Country Risk Rating, not both. To receive a Corporate Sustainability Score, at least 67% of a portfolio's corporate assets under management (long positions only) must have a company ESG Risk Rating.
Portfolio Sustainability Rating Corporate Contribution Percent	The percentage of the Portfolio Sustainability Rating attributable to the Portfolio Corporate Sustainability Score.
Portfolio Sovereign Sustainability Rating	Morningstar assigns Portfolio Sovereign Sustainability Ratings by ranking all scored funds within a Morningstar Global Category by their Historical Sovereign Sustainability Scores. The ranked funds are then divided into five groups, based on a normal distribution, and each receives a rating from High to Low. For each peer group, the median scoring portfolio receives a 3 rating. Ratings are assigned to other portfolios in the peer group to achieve a normal

	distribution, with an exception made for cases where the scores within the peer group are not meaningfully differentiated. In practice, this can mean that all portfolios within some peer groups may receive the same Corporate or Sovereign Rating. Please note that lower risk results in a higher rating. Higher ratings indicate that a fund is, on average, invested in fewer companies or sovereign debt with a high ESG risk under Sustainalytics' ESG Risk and Country Risk methodologies and therefore is exposed to less risk driven by E, S, or G factors.
Portfolio Sovereign Sustainability Score	The Morningstar Portfolio Sovereign Sustainability Score is an asset-weighted average of Sustainalytics' Country Risk Rating. The Sustainalytics' Country Risk Rating measures the risk to a country's long-term prosperity and economic development by assessing its wealth and its ability to managing its wealth sustainably. Like the Country Risk Ratings, the Portfolio Sovereign Sustainability Score is rendered on a 0-100 scale, where lower scores are better, using an asset-weighted average of all covered securities. Morningstar determines whether each eligible portfolio holding can be classified under the corporate or sovereign framework. Each holding can only contribute an ESG Risk Rating or a Country Risk Rating not both. To receive a Sovereign Sustainability Score, at least 67% of a portfolio's sovereign assets under management (long positions only) must have a Country Risk Rating.
Portfolio Sustainability Rating Sovereign Contribution Percent	The percentage of the Portfolio Sustainability Rating attributable to the Portfolio Sovereign Sustainability Score.
Qualified Holdings (for Sustainability Rating)	For the Sustainability Rating, the long positions considered in scope for potential ESG risk assessment. This does not mean that Sustainalytics currently calculates a holdings-level rating for all Qualified Holding types; however, it does mean that it could one day calculate a rating for it since there is material ESG risk within that holding. Qualified Holdings include equities, fixed-income instruments, commodities, real estate, and alternatives. Excluded from this list are short positions, cash, and currency, as well as derivatives and synthetic holdings.
Sustainalytics' Country Risk Ratings	Sustainalytics' ratings framework measures the risk to a country's long-term prosperity and economic development by assessing national wealth of a country and the ability to utilize and manage this wealth in an effective and sustainable manner.
Sustainalytics' ESG Risk Ratings	Sustainalytics' rating framework that measures the extent to which enterprise value is at risk, driven by environmental, social, and governance factors. The rating takes a two-dimensional approach. The exposure dimension measures a company's exposure to ESG risks, while the management dimension assesses a company's handling of these ESG risks. It is calculated as the difference between a company's overall ESG Exposure score and its overall Managed Risk score.
Wealth	A score that is based on the relative value of all the assets of worth within a region, including tangible and intangible assets. It is one of two key dimensions in the Country Risk Ratings.

Example Calculation

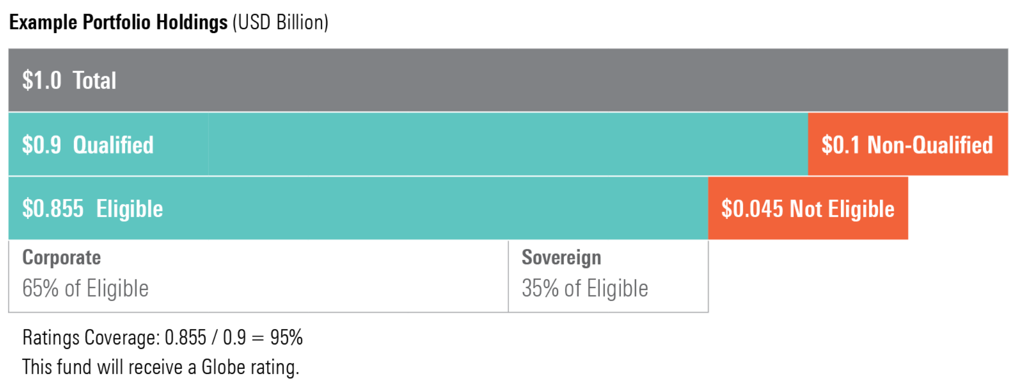
The following example uses a simplified portfolio of 10 positions. It illustrates a portfolio that would have previously not received a Morningstar Sustainability Rating.

Step 1: Determine Suitability for Rating
Qualified Holdings are identified and rescaled to 100%. Qualified Holdings include equities, fixed-income instruments, commodities, real estate, and alternatives. Excluded from this list are short positions, cash, and currency, as well as derivatives and synthetic holdings.

Morningstar breaks out Qualified Holdings into three ESG risk types—corporate ESG risk, sovereign ESG risk and other ESG risk.

Exhibit 12 illustrates identifying and classifying the qualified holdings of the portfolio.

Exhibit 11 Example of Determining Rating Suitability



Source: Morningstar/Sustainalytics.

Exhibit 13 provides an example of how holdings weights are rescaled to remove cash because it is not a Qualified Holding type (it has no material ESG risk). In this example, 90% of holdings are qualified for a rating, which exceeds the 67% coverage requirement in order to calculate a rating.

The holding weights are further rescaled to adjust for ineligible holdings. Holdings classified as corporate or sovereign are considered eligible to contribute a measure of risk toward the overall rating, while holdings that are classified as "other" are not considered eligible. In the example, this means that Alternative A holding is qualified but not eligible, and therefore its proportional weight is redistributed among the remaining holdings.

Exhibit 12 Example Portfolio - Qualified Holdings Rescaled

			Percentage of Portfolio	
Holding	Qualified Holding Type	Percentage of Portfolio	Qualified Holdings (rescaled)	Eligible Holdings (rescaled)
Cash	—	10.00	—	—
Equity A	Corporate	13.50	15.00	15.80
Equity B	Corporate	13.50	15.00	15.80
Equity C	Corporate	10.80	12.00	12.60
Corporate Bond A	Corporate	9.00	10.00	10.50
Corporate Bond B	Corporate	9.00	10.00	10.50
Sovereign Bond A	Sovereign	13.50	15.00	15.80
Sovereign Bond B	Sovereign	10.80	12.00	12.60
Sovereign Bond C	Sovereign	5.40	6.00	6..3
Alternative A	Other	4.50	5.00	—
Total		**100**	**100**	**100**

Source: Morningstar/Sustainalytics.

Step 2: Portfolio Corporate Sustainability Score and Portfolio Sovereign Sustainability Score

The Morningstar Portfolio Corporate Sustainability Score and Portfolio Sovereign Sustainability Score are each an asset-weighted average of Sustainalytics' company-level ESG Risk Rating and Sustainalytics' Country Risk Rating, respectively.

Exhibit 13 Example Portfolio - Portfolio Corporate Sustainability Score

Eligible Holdings	Percentage of Eligible Portfolio Assets	ESG Risk Rating	Percentage of Covered Corporate	Percentage of Covered Corporate x ESG Risk Rating	Corporate Sustainability Score
Equity A	15.79	22	28.85	6.35	
Equity B	15.79	21	28.85	6.06	
Equity C	12.63	20	23.08	4.62	20.67
Corporate Bond A	10.53	19	19.23	3.65	
Corporate Bond B	10.53	Not covered	0.00	0	

Source: Morningstar/Sustainalytics.

In this example, not every corporate holding has coverage of a Sustainalytics ESG Risk Rating, but there is still more than 67% of corporate securities covered, a coverage requirement to derive the final respective Corporate Rating.

Exhibit 14 Example Portfolio - Portfolio Sovereign Sustainability Score

Eligible Holdings	Percentage of Eligible Portfolio Assets	Country Risk Rating	Percentage of Covered Sovereign	Percentage of Covered Sovereign x Country Risk Rating	Sovereign Sustainability Score
Sovereign Bond A	15.79	17	45.45	7.73	
Sovereign Bond B	12.63	19	36.36	6.91	17.55
Sovereign Bond C	6.32	16	18.18	2.91	

Source: Morningstar/Sustainalytics.

Step 3: Historical Corporate Sustainability Score and Historical Sovereign Sustainability Score

The Morningstar Historical Corporate Sustainability Score and Historical Sovereign Sustainability Score are each a weighted average of the trailing 12 months of Morningstar Portfolio Corporate and Sovereign Sustainability Scores, respectively. Historical scores are not equal-weighted; rather, more-recent portfolios are weighted more heavily than more-distant portfolios:

Exhibit 15 Example Portfolio - Historical Corporate Sustainability Score

Calculation Month	Corporate Sustainability Score	Weighting %	Historical Corporate Sustainability Score
Most Recent	20.67	15.38	
(-1 month)	20.45	14.10	
(-2 months)	20.55	12.82	
(-3 months)	19.88	11.54	
(-4 months)	20.02	10.26	
(-5 months)	20.85	8.97	
(-6 months)	19.23	7.69	20.2
(-7 months)	18.70	6.41	
(-8 months)	20.25	5.13	
(-9 months)	20.47	3.85	
(-10 months)	19.78	2.56	
(-11 months)	20.97	1.28	

Source: Morningstar/Sustainalytics.

Figure 16 Example Portfolio - Historical Sovereign Sustainability Score

Calculation Month	Sovereign Sustainability Score	Weighting %	Historical Corporate Sustainability Score
Most Recent	17.55	15.38	
(-1 month)	18.50	14.10	
(-2 months)	17.75	12.82	
(-3 months)	17.23	11.54	
(-4 months)	17.67	10.26	
(-5 months)	17.47	8.97	
(-6 months)	17.15	7.69	17.58
(-7 months)	16.92	6.41	
(-8 months)	17.38	5.13	
(-9 months)	17.46	3.85	
(-10 months)	17.10	2.56	
(-11 months)	17.20	1.28	

Source: Morningstar/Sustainalytics.

Step 4: Portfolio Corporate Sustainability Rating and Portfolio Sovereign Sustainability Rating

A portfolio's Corporate Sustainability Rating and Sovereign Sustainability Rating is its normally distributed ordinal corporate or sovereign score and descriptive rank relative to the portfolio's global category. The breakpoints for the 1-5 scale can vary in cases where a Global Category does not follow a normal distribution for its portfolios' Historical Corporate Sustainability Scores or Historical Sovereign Sustainability Scores.

Using Exhibits 18 and 19 below, the Historical Corporate Sustainability Score of 20.20 would receive a Portfolio Corporate Sustainability Rating of 4, and the Historical Sovereign Sustainability Score of 17.58 would receive a Portfolio Sovereign Sustainability Rating of 2.

Exhibit 18 Example Portfolio Corporate Ratings Breakpoints

Rating Breakpoint	Historical Corporate Sustainability Score
4 to 5	18.63
3 to 4	22.6
50th Percentile	23.64
2 to 3	24.55
1 to 2	26.79

Source: Morningstar/Sustainalytics.

Exhibit 17 Example Portfolio Sovereign Ratings Breakpoints

Sovereign Global Category Breakpoint	Portfolio Sovereign Sustainability Rating Breakpoints	% of Portfolio Sovereign Sustainability Scores
4 to 5	15.26	0.10
3 to 4	15.89	0.23
50th Percentile	16.34	0.50
2 to 3	17.09	0.23
1 to 2	19.38	0.10

Source: Morningstar/Sustainalytics.

Step 5: Morningstar Sustainability Rating

Morningstar assigns Sustainability Ratings by combining a Portfolio Corporate Sustainability Rating and Portfolio Sovereign Sustainability Rating proportional to the relative weight of the (long only) corporate and sovereign positions, rounded to the nearest whole number.

Figure 18 Example Portfolio - Portfolio Sustainability Rating

Corporate			**Sovereign**				
Contribution	Rating	Contribution x Rating	Contribution	Rating	Contribution x Rating	(Corporate Contribution x Rating) + (Sovereign Contribution x Rating)	Portfolio Sustainability Rating
0.65	4	2.6	0.35	2	0.7	3.3	

Source: Morningstar/Sustainalytics.

Rating Requirements Summary

The following coverage requirements are previously noted in the document but are summarized here for ease of reference.

Coverage Requirement Based on Eligible Holdings

The distinction between Qualified and Eligible Holdings in a fund is important because we want to avoid cases where a large portion of the fund's ESG risk is not rated by either the corporate or sovereign risk rating frameworks (hence, not eligible). Once the portion of Qualified Holdings and Eligible Holdings in the fund are determined, the value of Eligible Holdings is divided by the value of Qualified Holdings, with a requirement that at least 67% of the fund's Qualified Holdings are eligible to be rated. In cases, where less than 67% of the Qualified Holdings are eligible, the fund is considered unsuitable for a Morningstar Sustainability Rating and no further steps will be performed.

Coverage Requirement Based on Holdings-Level Data Coverage

For the Corporate and Sovereign Sustainability Scores to each act as a representation of the corporate and sovereign portions of a portfolio, we require that at least 67% of the long corporate and 67% of the long sovereign positions have holdings-level data. This means that 67% of assets in the portfolio holdings identified as corporate ESG risk need to have company ESG Risk Ratings in order to calculate the Corporate Sustainability Score. Likewise, 67% of assets in the portfolio holdings identified as sovereign ESG risk need to have Country Risk Ratings in order to calculate the Sovereign Sustainability Score.

Requirement for Both Corporate and Sovereign Ratings

A portfolio must have both a Portfolio Corporate Sustainability Rating and a Portfolio Sovereign Sustainability Rating to receive a Morningstar Sustainability Rating, unless the portfolio is predominately exposed to only corporate or sovereign holdings. A portfolio that receives a Sovereign Sustainability Rating but not a Corporate Sustainability Rating may still receive a Morningstar Sustainability Rating if the corporate portion of the qualified holdings is less than 5%. Similarly, a portfolio that receives a Corporate Sustainability Rating but not a Sovereign Sustainability Rating may still receive a Morningstar Sustainability Rating if the sovereign portion of the qualified holdings is smaller than 5%.

Minimum Distribution Requirements

The breakpoints for the 1-5 scale can vary in cases where a Global Category does not follow a normal distribution for its portfolios' Historical Corporate Sustainability Scores or Historical Sovereign Sustainability Scores. Scores must be sufficiently different from the median score to be assigned an ordinal rating of 2 or 4 and must be sufficiently different from the 2-3 breakpoint or 3-4 breakpoint to achieve an ordinal rating of 1 or 5, respectively. The minimum distance between breakpoints is set to 0.25 for sovereigns and 0.4 for corporates. This requirement prevents insignificantly small differences in scores from resulting in different ratings. In practice, this can mean that all portfolios within some peer groups may receive the same Corporate or Sovereign Rating.

Historical Corporate and Sovereign Sustainability Scores of 30 or Higher

In order to avoid cases where funds with significant ESG risks receive overly favorable ratings, there is a requirement that a fund's Historical Corporate or Sovereign Sustainability Score cannot exceed certain values in order to receive positive scores:

- Portfolios with Historical Corporate or Sovereign Sustainability Scores ranging from 30 to 34.99 can receive no better than a respective Corporate or Sovereign Rating of 3;
- Portfolios with Historical Corporate or Sovereign Sustainability Scores ranging from 35 to 39.99 can receive no better than a respective Corporate or Sovereign Rating of 2;
- Portfolios with Historical Corporate or Sovereign Sustainability Scores of 40 or higher receive a respective Corporate or Sovereign Rating of 1.

References

SG Risk Ratings Methodology (2021), Sustainalytics. https://connect.sustainalytics.com/esg-risk-ratings-methodology

ESG Country Risk Ratings Methodology (2019), Sustainalytics
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Morningstar Global Category Classifications. 2018, Morningstar Inc.
https://www.morningstar.com/content/dam/marketing/shared/research/methodology/860250-GlobalCategoryClassifications.pdf

Editor's Note: This paper has been updated to correct the coverage requirement for both corporate and sovereign ratings and to correct the version number on the front page.

Methodology History

Version	Effective Date	Description
Version 1.0	March 1, 2016	Initial Launch
Version 1.1	Oct. 31, 2018	Update to use Morningstar Global Category instead of Morningstar Local Category for determining relative performance. Introduction of the 12-month historical score to increase stability.
Version 2.0	Oct. 31, 2019	Update to use Sustainalytics' ESG Risk Ratings rather than ESG Ratings as the basis of the rating. Addition of buffer rules to increase stability and handle portfolios with extremely high overall ESG risk.
Version 3.0	Nov. 8, 2021	Addition of sovereign risk to the rating. Introduction of a modular approach to combine multiple risk ratings frameworks.

The methodology for this product was established by a partnership between Sustainalytics' Methodology & Portfolio Research team and the Morningstar Research Group.

Sustainalytics Methodology & Portfolio Research Team

Sustainalytics, a Morningstar company, is a leading global provider of ESG and corporate governance products and services, supporting investors around the world in the development and implementation of responsible investment strategies. Sustainalytics' Methodology & Portfolio Research Team is responsible for the development of methodologies for all ESG-related products within Morningstar. This includes the methodologies that underly issuer-level ESG assessments, such as the ESG Risk Ratings and Country Risk Ratings, which serve as the basis of the Morningstar Sustainability Rating.

Morningstar Research

Morningstar's Research group provides independent analysis on individual securities, managed investments, portfolios, and markets. The group also collects and maintains high-quality data on the equities, managed investments, and fixed-income investments we cover in our database, one of the largest investment databases in the world. Morningstar is one of the largest independent sources of manager, equity, and credit research in the world. We transform data into insights that investors can use to reach their financial goals.

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