

Construction Rules for the Morningstar Global Emerging Green Technologies Select Index



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Overview

The Morningstar Global Emerging Green Technologies Select Index is designed to deliver exposure to companies that generate at least a quarter of their revenue from innovative green technologies by drawing on the in-depth knowledge and forward-looking insights of Morningstar's equity research team and data from Morningstar Sustainalytics.

Index Inception and Performance Start Date

The index inception date is Nov. 29, 2022, and the performance start date, when the first back-tested index value was calculated, is Dec. 21, 2018.

Index Construction

Methodology Summary

Starting Universe

- Morningstar Global Markets ex-India Index
 - Covers stocks representing the top 97% of the investable market

Eligibility

- Companies must be covered by Morningstar equity research and Sustainalytics and:
 - pass product involvement and liquidity screens
 - not have a Controversy Rating of 5 (severe)
 - have a non-zero adoption curve score
 - derive at least 25% of revenue from products and services classified as "emerging green technologies"

Portfolio Construction

- Companies are ranked by exposure score and assigned to Tier 1 or Tier 2
- All Tier 1 companies are included in the index. If there are fewer than 50 Tier 1 companies, the highest-ranking Tier 2 companies are selected until the target count of 50 is reached
- Stocks are weighted by float adjusted market-cap, subject to security- and industry-level caps

Morningstar Global
Emerging Green
Technologies Select
Index

Starting Universe

At each reconstitution, constituents of the Morningstar Global Emerging Green Technologies Select Index are derived from the Morningstar Global Markets ex-India Index (benchmark). For more details on benchmark construction, refer to the [Construction Rules for the Morningstar Global Markets Indexes](#).

Eligibility

To be eligible for index inclusion, all constituents must meet the following criteria:

- Companies must pass the Product Involvement screens. Please see Appendix 4 for more information.
- Companies must not have a Controversy level of 5 or a missing value.
- Companies must pass the Controversial Weapons and Nuclear Weapons screens. Please see Appendix 5 for more information
- Companies must generate at least 25% of their revenue from products/services classified as "emerging green technologies." This is calculated from the aggregation of Sustainable Activities Involvement (SAI) revenue percentage of categories (as defined in Appendix 2) where each company scores greater than 0 on the adoption curve. Appendix 2 provides further details.
- Companies with average three-month trailing daily trading volume less than \$2 million or free-float market capitalizations less than \$300 million are ineligible for the index.

- Buffer rules: Current index constituents are eliminated if they have average three-month trading volume less than \$1.5 million or free-float market capitalization less than \$200 million.
- If a company has more than one eligible share class:
 - Select the one that is a current index constituent.
 - Otherwise, select the most liquid share class determined by Morningstar Indexes.

Portfolio Construction

- For all eligible securities, calculate product-level score as Adoption Curve Score x Revenue Exposure % for all Sustainable Activity Involvement (SAI) categories shown in Appendix 2. The sum of product-level scores is defined as the Total Score (company-level score)
- Qualifying potential constituents are then assigned a Tier 1 or Tier 2 rating based on the following criteria.
 - Tier 1: Constituents having a Total Score greater than or equal to 1.5.
 - Tier 2: All eligible securities not assigned a Tier 1 rating are defined as Tier 2.
All Tier 1 constituents are selected. Tier 2 constituents are ranked as below by descending order of absolute preference:
 - Higher Total Score.
 - Company total market capitalization, preferring smaller over larger.
- If the total number of Tier 1 constituents is greater than or equal to 50, then all such Tier 1 constituents are selected. If the total number of Tier 1 constituents is less than 50, then the shortfall is filled with Tier 2 constituents. The index can contain a maximum of 50 securities if Tier 2 constituents are selected.

Number of Stocks

During reconstitution, if the total number of Tier 1 constituents is greater than or equal to 50, then the number of stocks in the index is subject to the selection and eligibility criteria at the time of reconstitution. If the total number of Tier 1 constituents is less than 50, then the index can have a maximum of 50 stocks. However, if securities fall short of the selection and eligibility criteria, or if securities are added or deleted as a result of corporate actions after reconstitution, the index can have more or fewer than the maximum number of stocks. During reconstitution all eligible securities would be selected, and the weight of the constituents will be determined based on the index weighting scheme. The schedule for reconstitution and corporate actions is available in the “Index Maintenance and Calculation” section.

Index Weighting

The index is float-adjusted market capitalization-weighted with B-A-C capping of 4.5-6-45 and industry capping of 15%. These caps are applied iteratively, starting with B-A-C capping and until both the conditions are satisfied.¹ This means no single constituent can have a weight greater than 6% and the sum of those with weights greater than 4.5% cannot exceed 45%. For more details, refer to the [Morningstar Indexes Calculation Methodology rulebook](#).

¹ If the capping rules are not feasible, B-A-C security capping is relaxed in steps of 0.5% to a maximum of 9.5% and the industry capping will be relaxed to 30% in steps of 2.5% iteratively, starting with the B-A-C security capping.

Index Maintenance and Calculation

Reconstitution and Rebalancing²

The index is reconstituted annually in December and rebalanced quarterly. Changes are implemented after the close of business on the third Friday of December, March, June and September, and are effective the following Monday. If that Monday is a holiday, it is effective on the immediately following business day. During each rebalance, membership in the parent index (Global Markets ex-India) is checked at company level and the weights are rebalanced as per the weighting scheme using updated float market capitalization data.

The market data used for reconstitution and rebalancing are as of the end of November, February, May and August. The theme scores used for reconstitution are based on data as of the end of September.³

Because the reconstitution of the Morningstar Global Emerging Green Technologies Select Index is less frequent than the parent index (Morningstar Global Markets ex-India Index), the securities excluded from the parent index at the reconstitution effective date are also deleted from Morningstar Global Emerging Green Technologies Select Index. For clarity, this means that any constituent excluded from the parent index during its reconstitution is also excluded from the Morningstar Global Emerging Green Technologies Select Index at the same date. It will not be replaced, and its weight is reallocated among existing constituents in proportion to its existing weight.

Index files are published according to the global calendar schedule. For more information, please refer to the [Morningstar Indexes Holiday Calendar](#).

Corporate Actions

The treatment of corporate actions will be as per the float-adjusted market capitalization-weighted indexes corporate action methodology. For more details, please refer to the [Morningstar Indexes Corporate Actions Methodology rulebook](#).

Index Calculation and Price Data

Details about index calculations and price data can be found in their respective rulebooks: [Morningstar Indexes Calculation Methodology](#) and [Equity Closing Prices Used for Index Calculation](#).

² Buffers mentioned in the Eligibility section were not applied at the Dec.20, 2021, reconstitution to simulate an initial construction for the index at that date.

If the number of eligible securities falls below 20 during the reconstitution of index, Morningstar Indexes reserves the right to calculate and maintain the index without reconstitution or decommissioning such an index with a sufficient notice period. Any such decision will be communicated with sufficient advance notice, as per the Morningstar Indexes announcement policy.

³ For the purpose of back-test, the sustainable revenue exposure data and Adoption Curve scores as of June 2022 are back-propagated for the entire history of the back-test period.

Methodology Review and Index Decommissioning Policy

The index methodology is continually reviewed to ensure it achieves all stated objectives. These reviews consider corporate action treatment, selection, and maintenance procedures. Subscribers to the index will be notified before any methodology changes are made. For more details, refer to the [Morningstar Index Methodology Change Policy](#).

Morningstar Indexes notifies all subscribers and stakeholders of the index that circumstances might arise that require a material change to, or a possible cessation of, the index. These circumstances are generally not within Morningstar's control and may include significant changes to the underlying market structure, inadequate access to necessary data, geo-political events, and regulatory changes. In addition, factors such as low usage or methodology convergence may result in the cessation of an index.

Because the cessation of the index or benchmark index could disrupt subscriber products that reference this index, all subscribers are encouraged to have robust fallback procedures if an index is terminated. For more details, refer to the [Morningstar Index Decommissioning Policy](#).

Data Correction and Precision

Intraday Index Data Corrections

Commercially reasonable efforts are made to ensure the accuracy of data used in real-time index calculations. If incorrect price or corporate action data affects index calculations, corrections are applied prospectively.

Index-Related Data and Divisor Corrections

Incorrect pricing and corporate action data for individual issues in the database will be corrected upon detection. In addition, an incorrect divisor of an index, if discovered if discovered within two days of its occurrence will be fixed retroactively on the day it is discovered to prevent an error from being carried forward. Commercially reasonable efforts are made to correct an older error subject to its significance and feasibility.

For more details, refer to the [Recalculation Guidelines](#).

Exceptions

While Morningstar will seek to apply the methodology as described within this document, the market environment, supervisory, legal, financial, or tax reasons may require an alternative approach to be adopted. A decision to take an alternative approach will be made by the Morningstar Index Methodology Committee, and in all instances, the application of a nonstandard process will be reported to the Morningstar Index Oversight Committee.

Appendixes

Appendix 1: Modifications to the Rulebook

Section	Description of Change	Update Date
Appendix 2	Replaced references to the Sustainable Product Research (SPR) data with Sustainable Activities Involvement (SAI) data.	October 2023
Eligibility	Modified language in Step 4 to drive clarity	October 2023
Data Correction and Precision	Computational and Reporting Precision Section Removed	May 2025

Appendix 2: Morningstar's Global Equity Research Adoption Curve Scoring Process

Start with the Morningstar Global Markets ex-India Index as the parent index

- 1) Exclude all companies with total sustainable activities involvement (SAI) revenue of less than 25%. SAI data is calculated by Sustainalytics. This data reflects the current percentage of companywide revenue from the following categories:

-Category	Sustainable Activities Involvement Metric
Energy Efficiency	Consumer Electronics Energy Efficiency Technologies Energy Efficiency Distribution Technologies Energy Efficiency Industrials Technologies Energy Efficiency Materials Transmission Energy Efficiency Distribution
Green Building	Construction Green Buildings Development Green Buildings Renovation Green Buildings Acquisition Green Buildings Devices Green Buildings Equipment Green Buildings Professional Services Green Buildings Technologies Maintenance Green Buildings Technologies Green Buildings
Green Transportation	Low Carbon Infrastructure Green Transportation Rail Infrastructure Green Transportation Interurban Passengers Green Transportation Urban Green Transportation Batteries Green Transportation Technologies Green Transportation Technologies Green Vehicles
Pollution Prevention & Reduction	Technologies Pollution Prevention Hazardous Waste Management
Resource Efficiency	Non-Hazardous Waste Recycling Services

	Machinery Recycling
	Non-Hazardous Waste Recycling Sales
Renewable Energy	Bioenergy Renewable Energy Generation CSP Renewable Energy Generation Geothermal Renewable Energy Generation Hydropower Renewable Energy Generation Ocean Renewable Energy Generation Solar PV Renewable Energy Generation Wind Renewable Energy Generation Bioenergy Renewable Energy Support CSP Renewable Energy Support Geothermal Renewable Energy Support Hydropower Renewable Energy Support Ocean Renewable Energy Support Solar PV Renewable Energy Support Technologies Maintenance Renewable Energy Technologies Renewable Energy Wind Renewable Energy Support
Water	Water Adaptation Wetlands Adaptation Construction Wastewater Infrastructure Construction Water Supply Infrastructure Renewal Wastewater Infrastructure Renewal Water Supply Infrastructure Technologies Water Construction Wastewater Services Construction Water Supply Services
Sustainable Agriculture, Food & Forestry	Machinery Sustainable Agriculture Manufacturing Sustainable Agriculture Pesticides and Fertilizers Sustainable Fertilizers Aquaculture Sustainable Agriculture Livestock Sustainable Agriculture Non Perennials Sustainable Agriculture Perennials Sustainable Agriculture Dairy Sustainable Food Packaged Food Sustainable Food Food Distribution Sustainable Food Grocery Stores Sustainable Food Management Sustainable Forestry Wooden Goods Sustainable Forestry

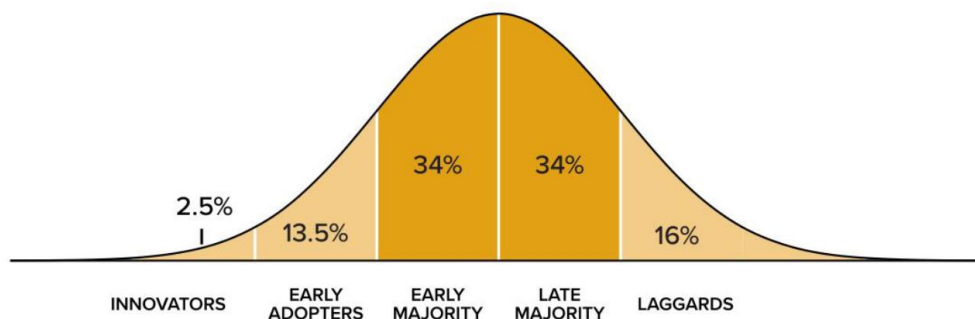
- 2) For each company identified by Sustainalytics as having at least 25% of its revenue tied to the SAI metrics in the table above, Morningstar equity analysts research the products/services supporting this revenue across each of the

eight eligible SAI categories. Morningstar equity analysts then determine which of the following classifications best describes these products/services within each of these eight categories:

- a. They qualify as “green technologies” and are highly innovative toward greater sustainability. Revenue tied to products/services defined as “green technologies” is eligible toward index inclusion.
- b. They represent “green services” but, rather than being highly innovative themselves, these services rely on innovative technologies developed by other companies. Revenue tied to products/services defined as “green services” is NOT eligible toward index inclusion.
- c. They have “green certifications” from industry regulators or other third parties but don’t represent innovative “green technologies.” Product sets classified as “green certified” are deemed (by industry regulators or other third parties) as being sustainable or have elements within their supply chain that are certified as being sustainable. Revenue tied to products/services stemming from “green certifications” is NOT eligible toward index inclusion.

To help classify products/services across these three categories, Morningstar equity analysts rely on various metrics, including research and development as a percentage of revenue and company-level patent application data.

- 3) For a given company to be included in the index, it must derive at least 25% of its revenue from products/services classified by Morningstar Equity Research as being emerging green technologies.
- 4) For companies with at least 25% of their revenue driven by products/services classified as emerging green technologies, Morningstar equity analysts then estimate where their associated products/services are positioned on the Rogers innovation adoption curve:
 - a. Innovators = 3 points
 - b. Early Adopters = 2 points
 - c. Early Majority = 1 point
 - d. Late Majority = 0 points
 - e. Laggards = 0 points



- 5) Product-level scores are converted to company-level scores as follows:
 - a. For each SAI product category in step 2, the company’s product-level score (0-3) is multiplied by the company’s percentage of SAI revenue for that product category.
 - b. These scores are then added together across all SAI categories to determine a company-level score.

Appendix 3: Key Definitions & Descriptions

Referencing material from Everett M. Rogers' book *Diffusion of Innovations*, the adopter categories are described in more detail below.

Innovators:

"Innovators are active information seekers about new ideas. Being an innovator has several prerequisites. Control of substantial financial resources is helpful in absorbing the possible losses from an unprofitable innovation. The ability to understand and apply complex technical knowledge is also needed. The innovator must be able to cope with a high degree of uncertainty about an innovation at the time he or she adopts. The salient value of the innovator is venturesomeness, due to a desire for the rash, the daring, and the risky. The innovator must also be willing to accept an occasional setback when a new idea proves unsuccessful, as inevitably happens... The innovator plays an important role in the diffusion process: that of launching the new idea in the system by importing the innovation from outside of the system's boundaries. Thus, the innovator plays a gatekeeping role in the flow of new ideas into a system."

Early Adopters:

"Potential adopters look to early adopters for advice and information about an innovation. The early adopter is considered by many to be 'the individual to check with' before adopting a new idea. This adopter category is generally sought by change agents as a local missionary for speeding the diffusion process. Because early adopters are not too far ahead of the average individual in innovativeness, they serve as a role model for many other members of a social system. Early adopters help trigger the critical mass when they adopt an innovation. The early adopter decreases uncertainty about a new idea by adopting it, and then conveying a subjective evaluation of the innovation to near peers through interpersonal networks. In one sense, early adopters put their stamp of approval on a new idea by adopting it."

Early Majority:

"The early majority adopt new ideas just before the average member of a system. The early majority interact frequently with their peers but seldom hold positions of opinion leadership in a system. The early majority's unique location between the very early and the relatively late to adopt makes them an important link in the diffusion process. They provide interconnectedness in the system's interpersonal networks. The early majority are one of the most numerous adopter categories, making up one third of all members of a system. The early majority may deliberate for some time before completely adopting a new idea. Their innovation-decision period is relatively longer than that of the innovators and the early adopters."

Late Majority:

"The late majority adopt new ideas just after the average member of a system. Like the early majority, the late majority make up one third of the members of a system. Adoption may be both an economic necessity for the late majority and the result of increasing peer pressures. Innovations are approached with a skeptical and cautious air, and the late majority do not adopt until most others in their system have already done so. The weight of system norms must favor an innovation before the late majority are convinced to adopt. The pressure of peers is necessary to motivate adoption. Their relatively scarce resources mean that most of the uncertainty about a new idea must be removed before the late majority feel that it is safe to adopt."

Laggards:

"Traditional Laggards are the last in a social system to adopt an innovation. They possess almost no opinion leadership. Laggards are the most localite of all adopter categories in their outlook. Many are near isolates in the social networks of their system. The point of reference for the laggard is the past. Decisions are often made in terms of what has been done previously, and these individuals interact primarily with others who also have relatively traditional values. Laggards tend to be suspicious of innovations and of change agents. Their innovation-decision process is relatively lengthy, with adoption and use lagging far

behind awareness-knowledge of a new idea. Resistance to innovations on the part of laggards may be entirely rational from the laggards' viewpoint, as their resources are limited, and they must be certain that a new idea will not fail before they can adopt."

Additionally, Rogers defines an "innovation" as follows:

"An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is 'objectively' new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If an idea seems new to the individual, it is an innovation. Newness in an innovation need not just involve new knowledge. Someone may have known about an innovation for some time but not yet developed a favorable or unfavorable attitude toward it, nor have adopted or rejected it. 'Newness' of an innovation may be expressed in terms of knowledge, persuasion, or a decision to adopt."

Accordingly, it follows that the "innovative technologies" associated with the companies included in the Index represent technologies that individuals perceive as being "new" even if the underlying idea has existed for quite some time. Indeed, a considerable amount of time can sometimes pass before a new discovery or idea can be translated into an "innovative technology" that might achieve broader appeal and, in turn, adoption.

Appendix 4: Product Involvement Screens

Screen	Exclusion Criteria
Overall United Nations Global Compact Compliance Status	Non-compliant
Small Arms Civilian Customers (Assault Weapons)—Level of Involvement	>0%
Small Arms Civilian Customers (Nonassault Weapons)—Level of Involvement	>0%
Small Arms Key Components—Level of Involvement	>0%
Small Arms Retail/Distribution (Nonassault Weapons)—Level of Involvement	>=5%
Small Arms Retail/Distribution (Assault Weapons)—Level of Involvement	>=5%
Thermal Coal Extraction—Revenue Percentage	>=5%
Thermal Coal Power Generation—Revenue Percentage	>=5%
Oil Sands Extraction—Revenue Percentage	>=5%
Tobacco Products Production—Level of Involvement	>0%
Tobacco Products Retail—Level of Involvement	>=5%
Tobacco Products Related Products/Services—Level of Involvement	>=5%

Note: Missing values prior to June 2019 ("backfill date") for Overall United Nations Global Compact Compliance Status were backfilled using June 2019 values. Missing values prior to December 2019 ("backfill date") for all other product involvement screens were backfilled using December 2019 values. Before the backfill date, any company missing data even after backfill is deemed passing the screening criteria. Post the backfill date, such companies are not eligible for the index.

Appendix 5: Controversial Weapons and Nuclear Weapons Screens

Screen	Exclusion Criteria
Antipersonnel Mines—Category of Involvement Id	Any involvement
Biological and Chemical Weapons—Category of Involvement Id	Any involvement
Cluster Weapons—Category of Involvement Id	Any involvement
Depleted Uranium—Category of Involvement Id	Any involvement

Nuclear Weapons—Category of Involvement Id	Any involvement
White Phosphorus—Category of Involvement Id	Any involvement
Antipersonnel Mines—Ownership Percentage	>20%
Biological and Chemical Weapons—Ownership Percentage	>20%
Cluster Weapons—Ownership Percentage	>20%
Depleted Uranium—Ownership Percentage	>20%
Nuclear Weapons—Ownership Percentage	>20%
White Phosphorus—Ownership Percentage	>20%

Note: Missing values prior to December 2020 ("backfill date") for Category of Involvement Id screens were backfilled using December 2020 values. Before the backfill date, any company missing data even after backfill is deemed passing the screening criteria. Post the backfill date, such companies are not eligible for the index.

All missing values in Ownership Percentage fields are treated as 0%.

About Morningstar Indexes

Morningstar Indexes was built to keep up with the evolving needs of investors—and to be a leading-edge advocate for them. Our rich heritage as a transparent, investor-focused leader in data and research uniquely equips us to support individuals, institutions, wealth managers, and advisors in navigating investment opportunities across major asset classes, styles, and strategies. From traditional benchmarks and unique IP-driven indexes to index design, calculation, and distribution services, our solutions span an investment landscape as diverse as investors themselves.

Morningstar Index Methodology Committee

The Morningstar Index Methodology Committee oversees all new index development, index methodology changes, and cessation of indexes for any indexes where Morningstar owns the intellectual property. This committee is also charged with ensuring that indexes align with Morningstar Research principles and values. The group comprises members of the index team with index research, product development, product management, client service, index implementation, and operation expertise who provide the first layer of governance over index design and methodology.

Morningstar Index Operations Committee

The Morningstar Index Operations Committee governs the processes, systems, and exception handling of the day-to-day management of all live indexes, including index rebalancing and reconstitution, restatements, market classification, and contingency management. The committee oversees the annual review of index methodology (as required by U.K. and EU benchmark regulations, or BMR), ensuring that methodologies remain fit for purpose and continue to achieve their stated investment objectives. The group comprises members of the index team with data, operations, corporate actions, product development, index launch, client service, and index management experience who provide the first layer of governance over index operations.

Morningstar Index Oversight Committee

The Morningstar Index Oversight Committee is responsible for the index oversight function as per the requirements of the U.K. and European BMR, providing independent oversight of all aspects of the governance of benchmark administration as required by the relevant BMR. Its remit extends to all calculation and administration-related business activities of Morningstar Indexes, including administration of Morningstar-owned benchmarks as well as client-owned benchmarks and index calculation. The oversight function is part of the organizational structure of Morningstar but is separate and independent from the index business, index management, and the other index committees.

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