MSCI ESG RESEARCH LLC

October 2025

# Energy Transition Framework Methodology

MSCI ESG Research LLC

# Contents

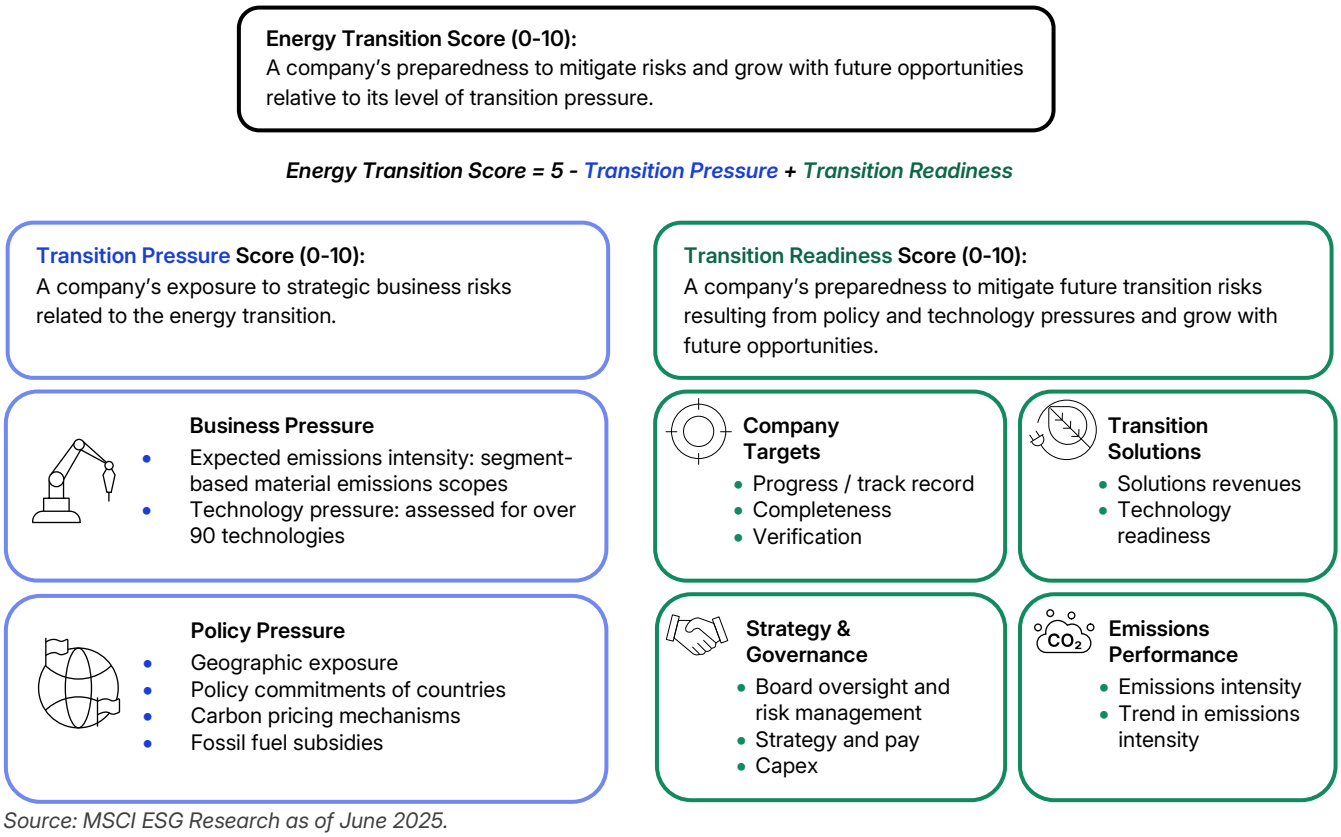
# 1 Objective

The MSCI Energy Transition Framework (the "model") produces a forward-looking composite score that assesses the level of economic risk a company may face from the energy transition in the next five to seven years and how well positioned it is to avoid associated costs and generate revenue opportunities. The objective of the overall energy transition score is to indicate how well a company is positioned – its **transition readiness** – relative to its level of risk – its **transition pressure**. The model's outputs are expressed on a 0-10 absolute scale, with 0 indicating low transition readiness relative to the company's level of transition pressure and 10 indicating high transition readiness relative to the company's level of transition pressure.

The energy transition refers to the shift in energy use in the economy toward less greenhouse-gas (GHG) emissions-intensive sources of energy.[1] The model also extends this definition to include the more general shift from high-emitting to lower-emitting processes that may not include energy, such as heavy industry uses of heat and steam. This shift may also be referred to as the low-carbon transition.

A stylized illustration of the model and its components are provided below as an overview.

**Exhibit 1: MSCI Energy Transition model and components: Illustrative overview**




*Source: MSCI ESG Research as of June 2025.*

[1] Throughout this document and unless otherwise stated, the term "emissions" refers to GHG/carbon emissions.

# 2 Calculation of model outputs

This section provides an overview of the model's scoring methodology, beginning with the top-level energy transition score and proceeding hierarchically through each of the components used to calculate that score.

The data sources used to calculate these scores are set out in section 3.1.

## 2.1 Energy transition score

The energy transition score assesses the readiness of a company to manage the risks and capitalize on the opportunities of the energy transition. It is expressed as a 0-10 score, with 10 indicating the highest level of transition readiness relative to a company's level of transition pressure. The energy transition score is calculated using the transition pressure and transition readiness scores.

$$energy\ transition\ score\ =\ 5\ -\ adjusted\ transition\ pressure\ score\ +\ transition\ readiness\ score$$

$$adjusted\ transition\ pressure\ score\ =\ (1/k\ )\ *\ ln(e^{(k*min\ pressure\ score)}\ +\ e^{(k*transition\ pressure\ score)})$$

Where:

- $k$ is a scaling factor equal to 5
- $min\ pressure\ score$ is a minimum constant equal to 2
- $transition\ pressure\ score$ is the calculated transition pressure score (see section 2.2)

Energy transition scores are constrained between 0 and 10.

## 2.2 Transition pressure

Transition pressure assesses the level of financially relevant pressure on the company from the energy transition. It is expressed as a 0-10 score, with 10 indicating the highest level of pressure to transition. It is based on the business and policy pressure scores. The policy pressure score functions as a multiplier on the business pressure score, with an impact ranging from -50% to +50%.

$$transition\ pressure\ score\ =\ business\ pressure\ score\ *\ (1\ +\ 0.1\ *\ (policy\ pressure\ score\ -\ 5))$$

Transition pressure scores are constrained between 0 and 10.

### 2.2.1 Business pressure

Business pressure score assesses the level of financially relevant pressure on the company to decarbonize its business based on the expected emissions intensity and commercial adoptability of relevant emissions mitigation technologies. It is expressed as a 0-10 score, where 10 indicates the highest pressure on the company.

Business pressure is calculated separately for each of three different emissions scopes: a) scopes 1 and 2 (combined); b) scope 3 upstream; and c) scope 3 downstream.

The business pressure calculation begins with the company's business segments (see section 2.2.1.1). For each of the three emissions scopes described above, each segment is assigned an expected emissions intensity score. Each segment is also assigned a technology pressure score (see section 2.4). For each emissions scope, the segment-level business pressure score is the product of these two scores.

The company-level business pressure score for each scope (see section 2.2.1.2) is the assets- or revenues-weighted average of the segment-level business pressure scores.

While company-level business pressure scores are calculated for all three scopes, each company is assigned only one business pressure score. This score corresponds to the company's business pressure category.

Business pressure categories (see section 2.2.1.3) are calculated at the Global Industry Classification (GICS®) Sub-Industry level.[2] Depending on the Sub-Industry's median business pressure scores and carbon footprint, business pressure category corresponds to either the emissions scope with the highest relevant business pressure score or a neutral evaluation.

Companies with a business pressure category that corresponds to an emissions scope are assigned the business pressure score calculated for that emissions scope. Companies with a neutral business pressure category are assigned the business pressure score associated with their scope 1 and 2 (combined) emissions.

The remainder of this section 2.2.1 describes each of these calculations in greater detail.

#### 2.2.1.1 Segment-level business pressure

For most companies, segment-level business pressure is calculated based on a mapping of business activities disclosed by the company to Standard Industrial Classification (SIC) codes. Each SIC code is associated with three expected emissions intensity scores – one for each of the emissions scopes described above – and a technology pressure score. These scores are used to calculate segment-level business pressure as:

$$BP_{j,scope} = EEI_{j,scope} * (1 + 0.1 * (TPS_j - 5))$$

where, for a given business segment $j$ and a given emissions scope $scope$:

- $BP_{j,scope}$ is the business pressure score for the segment/scope pair.
- $EEI_{j,scope}$ is the expected emissions intensity score for the SIC code/scope pair.
- $TPS_j$ is the technology pressure score most relevant to the activities underlying the segment's SIC code.

[2] GICS is the global industry classification standard jointly developed by MSCI and S&P Dow Jones Indices.

The ***expected emissions intensity score*** indicates the baseline transition risk faced by a business segment. For each SIC code, *expected emissions intensity scores* are calculated for scopes 1 and 2 (combined), scope 3 upstream, and scope 3 downstream.

For each SIC code-emissions scope pair, an *expected emissions intensity score* is calculated using the median emissions intensity of the companies that derived the most revenue from business activities mapped to the SIC code. Emissions intensity is calculated as mtCO2e / million USD sales. If no company derived more than 50% of its revenue from activities mapped to a SIC code, the *expected emissions intensity score* for that SIC code will reflect the value for the next level in the SIC code hierarchy.

Once derived, the *expected emissions intensity score* per business segment is converted to the 0-10 score range through log transformation and scaling.

The ***technology pressure score*** (see section 2.4) indicates the readiness of energy transition technologies relevant to a business segment. The highest *technology pressure score* relevant to a given SIC code is used as the *technology pressure score* for that SIC code. If no *technology pressure score* is mapped to a SIC code, a neutral score of 5 is used.

There are two **industry-specific deviations**:

- For automobile and motorcycle manufacturers, vehicle segments are used instead of business segments. Vehicle segments are based on vehicle type and powertrain (i.e., the vehicle's means of locomotion). The *expected emissions intensity score* of a vehicle segment is derived using min-max scaling based on the company-level emissions intensity of pureplay vehicle manufacturers (defined as companies in the Automobiles ESG Industry with greater than 90% of revenues from a particular vehicle segment).[3] For vehicle segments lacking representative pureplay vehicle manufacturers, emissions intensity is estimated using alternative data.
- For loan-making financial institutions, business pressure is calculated as a weighted average of the business pressure scores across a company's loan book. MSCI ESG Research maps company-reported loan segments to GICS classifications and aggregations of GICS classifications to produce loan segment-level business pressure scores. These loan segment-level scores represent the average business pressure score across all companies classified under the mapped GICS classification or aggregation. These loan segment-level scores are weighted by the percentage of the company's total loan book represented by each loan segment.

#### 2.2.1.2 Company-level business pressure

Company-level business pressure is calculated for each of the three emissions scopes described above as the weighted average of business pressure scores for the company's business segments.[4]

[3] ESG Ratings industries may correspond to GICS Sub-Industries or may aggregate multiple GICS Sub-Industries. See the MSCI ESG Ratings Methodology document for further details.

[4] Note that the segment-level business pressure scores published by MSCI ESG Research reflect the scores after being weighted by the segment's overall contribution to the company's financial results.

A company's **scope 1 and 2** business pressure score is weighted by the proportion of the company's **total assets** represented by each segment, calculated as:

$$BP_{S1+S2,i} = \sum_{j=1}^{n_i} w_{Asset,i,j} BP_{S1+S2,j}$$

where:

- $BP_{S1+S2,i}$ is the scope 1 and 2 business pressure score for company $i$.
- $BP_{S1+S2,j}$ is the scope 1 and 2 business pressure score for business segment $j$.
- $w_{Asset,i,j}$ is the weight of business segment $j$ for company $i$ based on its contribution to total company assets.[5]
- $n_i$ is the number of business segments of company $i$.

The company's **scopes 3 upstream and downstream** business pressure scores are weighted by the proportion of the company's **total revenue** represented by each segment, calculated as:

$$BP_{S3,i} = \sum_{j=1}^{n_i} w_{Revenue,i,j} BP_{S3,j}$$

where:

- $BP_{S3,i}$ is the scope 3 upstream or scope 3 downstream business pressure score for company $i$.
- $BP_{S3,j}$ is the scope 3 upstream or scope 3 downstream business pressure score for business segment $j$.
- $w_{Revenue,i,j}$ is the weight of business segment $j$ for company $i$ based on its contribution to total company revenue.
- $n_i$ is the number of business segments of company $i$.

#### 2.2.1.3 Business pressure relevance and categories

Each GICS Sub-Industry is assigned one of four relevance categories. A non-neutral category is only assigned to a GICS Sub-Industry if the companies within that Sub-Industry in aggregate meet or exceed the thresholds for median business pressure score and median emissions footprint attributable to the relevant scope:

[5] The percentage of assets is typically calculated as the company-reported asset value of the segment divided by the total asset value. In certain cases, industry-specific metrics are used to calculate the percentage of assets, such as power generation, production volume or reserve value. In cases where neither segment assets nor a relevant industry-specific proxy is available, the percentage is calculated based on segment revenue.

**Exhibit 2: Business pressure relevance category thresholds**

| Category | Minimum Sub-Industry business pressure score | Minimum Sub-Industry emissions footprint |
|---|---|---|
| Scopes 1 and 2 | 5 | – |
| Scope 3 upstream | 5 | 70% |
| Scope 3 downstream | 5 | 70% |
| Neutral | None of the above | None of the above |

*Source: MSCI ESG Research*

With respect to these thresholds:

- Sub-Industry business pressure score is calculated as the median business pressure score across all companies in the GICS Sub-Industry.
- Sub-Industry emissions footprint is calculated as the median of the 3-year average percentage of emissions attributable to the category's scope(s) across all companies in the GICS Sub-Industry.

If a Sub-Industry meets the criteria for multiple categories, the category with the highest median business pressure score is assigned.

Because categories are assigned at the Sub-Industry level, all companies in a Sub-Industry will have the same business pressure category. Companies' individual business pressure scores will, however, vary – even within the same Sub-Industry – due to differences in business segments.

There is one **industry-specific deviation**: loan-making financial institutions are assigned a relevance category of "scope 3 downstream", regardless of whether that category would have been assigned through the standard methodology. This adjustment reflects the industry-specific methodology used to evaluate business pressure at loan-making financial institutions (see 2.2.1.1).

Business pressure categories and category thresholds are used in several places within the model:

- In the business pressure and policy pressure components (see section 2.2.2), business pressure category determines whether the scores associated with assets or revenues at the segment level are used to calculate the transition pressure score (see section 2.1). If scope 3 upstream or scope 3 downstream is relevant, then revenues are used. Otherwise, assets are used. If segment-level asset data are missing, revenue data are substituted, or vice versa.
- In the targets assessment component (see section 2.3.3), the relevance thresholds used to assign business pressure category are used to determine which emissions scopes are material to a company when evaluating target materiality.
- The emissions performance component (see section 2.3.2) is only weighted in the transition readiness score calculation (see 2.3) if a company has a relevance category of "Scope 1 and 2"

or if the relevance threshold is not met for any emissions scope. All other companies receive an automatic emissions performance score of 5. This model choice reflects the relative lack of scope 3 reported data and the consequent difficulty in calculating emissions performance scores for those types of emissions.

### 2.2.2 Policy pressure

Companies face various levels of policy pressure based on the regions in which they operate. The policy pressure score reflects the transition risks a company may encounter due to the regulatory environments and climate policies across its geographic footprint.

The policy pressure score is a weighted average of the policy pressure for each of the company's reported geographic segments. Scores are weighted by the proportion of a company's involvement in each geographic segment using the following equation:

$$PP_i = \sum_{r=1}^{n_i} w_{financial,i,r/c} PP_{r/c}$$

Where:

- $PP_i$ is the policy pressure score for company $i$.
- $PP_{r/c}$ is the policy pressure segment score for region $r$ or country $c$.
- $w_{financial,i,r/c}$ is the weight of region $r$ or country $c$ for company $i$, as determined by the financial significance of that country or region to company $i$.
- $n_i$ is the number of geographic segments for company $i$.

The $financial$ significance factor used to weight the company's segment-level policy pressure scores is determined by the company's relevance category (see section 2.2.1.3):

**Exhibit 3: Business pressure relevance categories and corresponding financials**

| Category | Weighted financial |
|---|---|
| Scopes 1 and 2 | Assets |
| Scope 3 upstream | Revenue |
| Scope 3 downstream | Revenue |
| Neutral | Assets |

*Source: MSCI ESG Research*

The policy pressure score of a country is determined by the strength of its current government and market mechanisms to support the energy transition. This score is calculated for each country through the following equation:

$$PP_c = average(NTA_c, LTA_c, GMM_c)$$

where:

- $NTA_c$, is the near-term ambition score of country $c$.
- $LTA_c$ is the long-term ambition score of country $c$.
- $GMM_c$ is the government and market mechanisms score of country $c$.

For geographic segments reported as regions (e.g., "Asia Pacific"), a nominal GDP-weighted country aggregation is used to calculate region-level scores, using the following equation:

$$PP_r = \sum_{c=1}^{n_r} w_{GDP,r,c} PP_c$$

where:

- $PP_r$ is the policy pressure segment score for region $r$.
- $PP_c$ is the policy pressure segment score of country $c$.
- $w_{GDP,r,c}$ is the specific weight of country $c$ within region $r$.

The remainder this section describes the components of the country-level policy pressure scores in greater detail. Each of these components are regularly reviewed, typically on an annual basis. Country-level evaluations may be reviewed more frequently in response to significant changes to a country's energy transition-related government and market mechanisms.

#### 2.2.2.1 Near-term ambition score

The near-term (i.e., before 2030) ambition of a country is assessed by considering the annual emissions reduction rate needed to meet their publicly disclosed near-term climate targets. Countries with aggressive near-term targets have high emissions reduction rates and therefore a higher policy pressure segment score.

#### 2.2.2.2 Long-term ambition score

A country's long-term (i.e., after 2030) ambition indicates the strength and credibility of its long-term climate targets. Long term targets could signal the direction of future policy and regulatory developments, even in the near term.

#### 2.2.2.3 Government and market mechanisms score

The government and market mechanisms score indicates the current strength of policy and market-based mechanisms intended to drive the energy transition.

This score is calculated as the average of carbon pricing score and fossil fuel subsidies score.

$$GMM_c = \ average(carbon\ pricing\ mechanisms\ score, fossil\ fuel\ subsides\ score\ )$$

**Carbon pricing mechanisms** score indicates mechanisms such as carbon taxes or emissions trading systems that exert policy pressure on companies by assigning a direct cost to carbon emissions.

The **fossil fuel subsidies score** indicates the degree of financial support for fossil fuel consumption. Lower subsidies (higher scores) increase transition pressure by removing cost advantages, whereas high subsidies (lower scores) signal continued alignment with fossil fuel-based economic structures, thus reducing policy pressure.

In the absence of evidence from data sources indicating that a country has near- or long-term emissions reduction targets or carbon pricing mechanisms in place, a score of 0 is assigned. In the absence of a country's fossil fuel subsidy information, a score of 5 is assigned.

## 2.3 Transition readiness

The transition readiness score assesses the quality of the company's readiness to manage transition risks and opportunities. It is calculated as the weighted average of four scores calculated based on the company's strategy and governance, emissions reduction targets, emissions performance and involvement in transition solutions. It is expressed as a 0-10 score, with 10 indicating the highest level of readiness.

The transition solutions score is only weighted if the company has revenues from relevant activities that comprise 20 percent or more of their total revenues, as estimated by MSCI ESG Research.

**Exhibit 4: Transition readiness component weights**

| Model component | Component weight if transition revenues > 20% | Component weight if transition revenues < 20% |
|---|---|---|
| Strategy and governance score | 40% | 50% |
| Emissions performance score | 20% | 25% |
| Target assessment score | 20% | 25% |
| Transition solutions score | 20% | 0% |
| **Transition Readiness score** | **100%** | **100%** |

*Source: MSCI ESG Research*

The remainder of this section describes the calculation of the four components of the Transition Readiness score.

### 2.3.1 Strategy and governance

For equity issuers, the strategy and governance score is calculated as an average of the board score, risk management score, pay score, strategy score, and capex score.

$$strategy\ and\ governance\ score\ =\ average(board, risk, pay, strategy, capex)$$

For issuers that only issue fixed income securities, the governance score is calculated as the average of the strategy and capex scores.

$$strategy\ and\ governance\ score\ =\ average(strategy, capex)$$

In the formulae above:

- $board$ is the board score
- $risk$ is the risk management score
- $pay$ is the pay score
- $strategy$ is the strategy score
- $capex$ is the capex score

The remainder of this section describes these component scores in greater detail.

#### 2.3.1.1 Board score

The board score is calculated as follows:

| Criteria | Score |
|---|---|
| If the company's Sub-Industry is assessed to have no relevant emissions scopes (as derived in the business pressure component – see section 2.2.1.3):<br>• the board considers climate risk or monitors progress against goals and targets for addressing climate related issues<br>Otherwise:<br>• Evidence that (1) either the board considers climate risk or monitors progress and (2) the board has established specialized climate risk committee | 10 |
| The board considers climate risk or monitors progress and the company is in a Sub-Industry assessed to have no relevant emissions scopes | 5 |
| Otherwise | 0 |

#### 2.3.1.2 Risk management score

The risk management score is calculated as:

| Criteria | Score |
|---|---|
| The company: | 10 |

| | |
|---|---|
| • has assigned climate-related responsibilities to management-level positions or committees<br>• describes a process for managing climate-related risks, **and**<br>• identifies and assesses transition and physical risks | |
| • has assigned climate-related responsibilities to management-level positions or committees, **and**<br>• describes a process for managing climate-related risks | 7 |
| • has assigned climate-related responsibilities to management-level positions or committees, **or**<br>• describes a process for managing climate-related risks | 3 |
| Otherwise | 0 |

#### 2.3.1.3 Pay score

The pay score is calculated as:

| Criteria | Score |
|---|---|
| Both the CEO and non-CEO executive pay are linked to disclosed climate metrics | 10 |
| Either CEO or non-CEO executive pay is linked to disclosed climate metrics | 5 |
| No executive pay was disclosed as being climate linked, or the specific climate metrics were not disclosed | 0 |

#### 2.3.1.4 Strategy score

The strategy score is calculated as:

| Criteria | Score |
|---|---|
| The company disclosed both:<br>• an internal carbon price **and**<br>• the value of assets or business activities vulnerable to transition risks | 10 |
| The company disclosed either:<br>• an internal carbon price **or**<br>• the value of assets or business activities vulnerable to transition risks | 5 |

| | |
|---|---|
| Otherwise | 0 |

#### 2.3.1.5 Capex score

The capex score is calculated one of two ways:

- If the company is in the utilities sector and is not a water utility, the company is evaluated using the low-carbon capex ratio method;
- Otherwise, the company is evaluated using the disclosure-based method.

The **low-carbon capex ratio method** uses the company's low-carbon capex ratio. The ratio is calculated as the sum of capex that may facilitate the energy transition divided by the company's total capex. The following categories of capex are considered low-carbon capex:

- electricity and gas networks;
- heat networks;
- nuclear power generation;
- solar power generation;
- wind power generation; and
- hydro power generation.

The low-carbon capex ratio is converted into the capex score using the following matrix:

**a) Low-carbon capex ratio scoring matrix**

| Low carbon capex ratio | Score |
|---|---|
| >= 75% | 10 |
| >= 25% and < 75% | 7 |
| >= 0% and < 25% | 3 |
| 0% or no evidence | 0 |

If a company has reported both backward- and forward-looking capex figures, the evaluation will consider forward-looking capex figures.

The **disclosure-based method** is evaluated as:

**b) Disclosure-based scoring matrix**

| Criteria | Score |
|---|---|
| If there is evidence of capex related to climate risk or opportunity | 7 |
| Otherwise | 3 |

## 2.3.2 Emissions performance

The emissions performance score is a weighted average of emissions intensity and emissions trend scores, with weights determined by the emissions intensity score. The emissions performance score is calculated as:

$$emissions\ performance\ score\ =\ Intensity_{Score} * Intensity_{Weight} + Trend_{Score} * Trend_{Weight}$$

where:

- $Intensity_{Score}$ is the emissions intensity score
- $Intensity_{Weight}$ is the emissions intensity weight
- $Trend_{Score}$ is the emissions trend score
- $Trend_{Weight}$ is the emissions trend weight, and equals $1 - Intensity_{Weight}$

Companies that have not reported scope 1 and 2 emissions data, receive an emissions performance score of 3, and emissions intensity and emissions trend scores are shown as null (i.e., blank).

### 2.3.2.1 Emissions Intensity Score

The emissions intensity score is calculated for scope 1 and 2 emissions using million USD sales (revenue) as the denominator. MSCI ESG Research calculates scope 1 and 2 emissions intensity (mtCO2e/million USD revenue) per company using a 3-year average. Scores are then calculated using z-scores within peer groups.

Peer groups are GICS Sub-Industries, if there are 10 or more companies in the Sub-Industry at the time of the calculation; if not, the peer groups are ESG Ratings industries, as defined by MSCI ESG Research.[6] If the associated ESG Ratings industry has fewer than 10 companies, then a global peer group of all companies in ESG Ratings coverage is used.

[6] ESG Ratings industries may correspond to GICS Sub-Industries or may aggregate multiple GICS Sub-Industries. See the MSCI ESG Ratings Methodology document for further details.

For low-emissions industries – defined by MSCI ESG Research as an average Sub-Industry emissions intensity of less than 50 mtCO2e/million USD sales – emissions intensity scores are capped between 2.5 and 7.5. For other industries, emissions intensity scores range from 0 to 10.

#### 2.3.2.2 Emissions Trend Score

The emissions trend score measures year-over-year change in emissions intensity. MSCI ESG Research calculates the percentage change in emissions intensity using a 3-year rolling average and log-transforms the result. Scores are calculated using the same peer group method as emissions intensity scores.

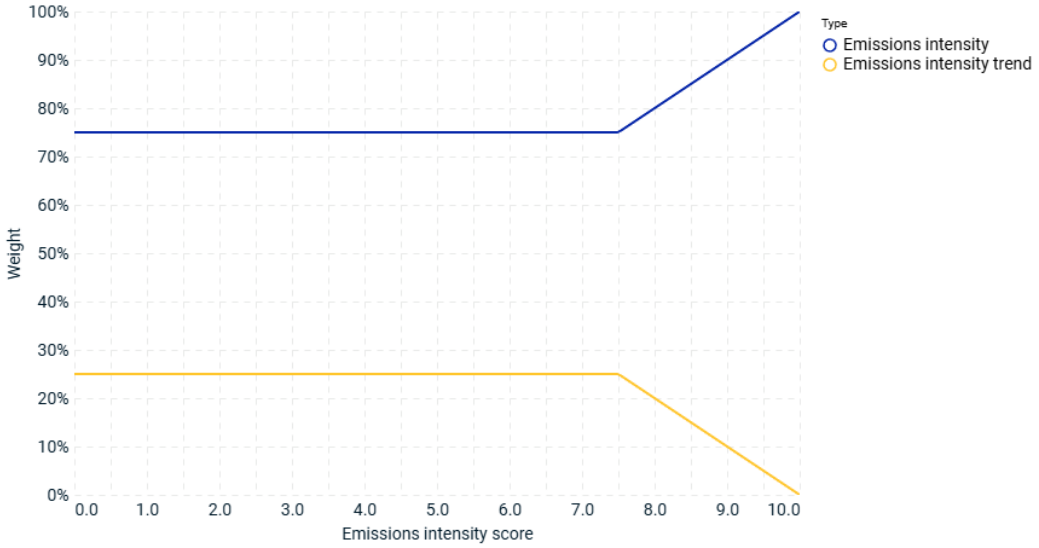
#### 2.3.2.3 Score Weights

The emissions performance component is only weighted in the transition readiness score calculation if a company has a relevance category of "Scope 1 and 2" or if the relevance threshold is not met for any emissions scope (see 2.2.1.3). All other companies receive an automatic emissions performance score of 5. This model choice reflects the relative lack of scope 3 reported data and the consequent difficulty in calculating emissions performance scores for those types of emissions.

For companies where emissions performance is weighted:

- For low-emissions industries, weights are fixed at 75% for emission intensity score and 25% for emissions trend score.
- For all other industries, the weights for emissions intensity and emissions trend scores are determined by the emissions intensity score. A company's emissions intensity score weight increases linearly from 75% to 100% as its emissions intensity score increases from 7.5 to 10. The relationship between score weights and emissions intensity score is described in Exhibit 5 below:

**Exhibit 5: Emissions intensity score weights relative to emissions intensity score**




*Source: MSCI ESG Research. As of July 2025. Applicable to companies that are not classified as being in low-emissions industries.*

### 2.3.3 Targets assessment

If a company has had any of its targets verified by the Science-based Targets initiative (SBTi)[7], the targets assessment score is an average of the target completeness, target progress and target verification scores:

$$TAS = average(TCS, TPS, TVS)$$

Otherwise, it is an average of the target completeness and target progress scores only:

$$TAS = average(TCS, TPS)$$

In the formulae above:

- $TAS$ is the target assessment score
- $TCS$ is the target completeness score
- $TPS$ is the target progress score
- $TVS$ is the target verification score

Companies that have not disclosed any emissions reduction targets are assigned a score of 0.

#### 2.3.3.1 Target completeness score

The target completeness score is the average of the target comprehensiveness score and the target materiality score.

$$target\ completeness\ score = average(target\ comprehensiveness\ score, target\ materiality\ score)$$

The **target comprehensiveness score** is based on a company's effective coverage ratio, which indicates the share of a company's total carbon footprint covered by its current emissions reduction targets. The ratio is calculated according to the MSCI Climate Change Targets and Commitments methodology.

The company's effective coverage ratio is converted into the target comprehensiveness score using the following matrix:

**Target comprehensiveness score**

| Effective coverage ratio | Target comprehensiveness score |
|---|---|
| >= 90% | 10 |
| >= 50% and < 90% | 7 |

[7] The Science Based Targets initiative (SBTi) is a global body that enables businesses and financial institutions to set greenhouse gas (GHG) emissions reduction targets in line with climate science and the goals of the Paris Agreement. Targets are considered "science-based" if they are consistent with limiting global warming to well below 2°C above pre-industrial levels, and preferably to 1.5°C, and are validated against a set of criteria and methodologies developed by the SBTi.

| | |
|---|---|
| >= 10% and < 50% | 5 |
| 0% >= and < 10% | 3 |
| 0% or N/A | 0 |

Companies that do not have a current emissions reduction target are assigned a score of 0.

The **target materiality score** indicates whether the company has targeted the emissions scopes considered relevant to its business. A scope is considered relevant to a company if the company's GICS Sub-Industry meets the relevance criteria for that scope set out above (see section 2.2.1.3). If a company has scope 3 upstream or downstream emissions as its business pressure category and its scope 3 targets do not say whether they include upstream or downstream categories, they are assumed to cover the scope 3 emissions relevant to the company.

**Target materiality score**

| Criteria | Score |
|---|---|
| Relevant scopes have targets | 10 |
| Relevant scopes do not have targets | 0 |

### 2.3.3.2 Target progress score

The target progress score assesses the degree to which a company is on track with its emissions reduction targets, as well as whether the company has a track record of achieving targets in the past five years.

If a company has achieved a target that was due to expire within (or after) the five years preceding the current evaluation year, the target progress score is calculated as:

$$target\ progress\ score\ =\ average(target\ progress\ score_{\text{initial}}, 10)$$

Otherwise, target progress score is calculated as:

$$target\ progress\ score\ =\ target\ progress\ score_{\text{initial}}$$

MSCI ESG Research identifies historic achieved targets and assess the degree to which the company is on track to meet its targets, based on the MSCI Climate Targets and Commitments methodology dataset. Using this evaluation, $target\ progress\ score_{\text{initial}}$ is calculated using the following matrix:

**Target progress score (initial):**

| Criteria | Score |
|---|---|
| On track with all targets | 10 |
| On track with some targets | 7 |

| | |
|---|---|
| Not on track with any target | 0 |

#### 2.3.3.3 Target verification score

The target verification score assesses whether the company has targets verified by the Science-based Targets initiative (SBTi).

| Criteria | Score |
|---|---|
| A company has a target that has been verified by SBTi | 10 |
| Otherwise | Not evaluated |

### 2.3.4 Transition solutions

The transition solutions score is calculated as the average of the transition revenues score and the technology readiness score:

$$transition\ solutions\ score\ =\ average(transition\ revenues\ score, technology\ readiness\ score)$$

The transition solutions score is calculated and provided where possible (i.e., when data is present for transition revenues), but the transition solutions score only contributes to the transition readiness score if the company's transition revenues are greater than or equal to 20%.

#### 2.3.4.1 Transition revenues score

The transition revenues score is generated by mapping company transition revenue exposure to different transition solutions activities to scoring thresholds.

Transition revenue exposure is defined as revenue exposure to a subset of alternative energy or energy efficiency technologies, including:

- Demand management;
- Hybrid and zero-emission vehicles (including electric vehicles);
- Battery storage;
- Nuclear power generation;
- Biomass power generation;
- Biofuels;
- Fuel cells;
- Geothermal power generation;

- Gas cogeneration;
- Small hydro power generation;
- Solar power generation;
- Waste-to-energy power generation;
- Wave tidal power generation; and
- Wind power generation.

Revenue exposure to each of these technologies is defined in the MSCI Business Involvement Screening Research methodology (for nuclear power generation) and MSCI Sustainable Impact Metrics methodology (for all other technologies).

Transition revenue exposure is converted to a transition revenue score using the following matrix:

| Transition revenue exposure | Transition revenues score |
|---|---|
| >= 90% and < 100% | 10 |
| >= 75% and < 90% | 9 |
| >= 50% and < 75% | 8 |
| >= 20% and < 50% | 7 |
| >= 10% and < 20% | 6 |
| >= 5% and < 10% | 5 |
| >= 0% and < 5% | 0 |

The non-linear mapping conveys that involvement in these technologies may not necessarily linearly correlate with growth opportunities; limited involvement may lead to greater opportunities if the market grows.

#### 2.3.4.2 Technology readiness score

MSCI ESG Research maps each transition solutions technology to a technology readiness score (see section 2.4).

## 2.4 Technology readiness

### 2.4.1 Overview

Technology readiness assesses the commercial adoptability of technologies with the potential to mitigate emissions from business activities in the next five to seven years. Technology readiness scores are used in the model to calculate business pressure scores (see section 2.2.1) and transition solutions scores (see section 2.3.4). Technology readiness scores are referred to as technology pressure scores when evaluating business pressure.

In the context of the model, the term "technology" encompasses a wide range of processes, mechanisms and operational changes that could mitigate the emissions of a business activity or that could represent a lower-emissions alternative to a higher-emissions activity. Technologies are evaluated in specific industry contexts and relative to specific emissions-generating activities. An example technology and business activity are set out in Exhibit 6 below.

**Exhibit 6: Illustrative example of a covered technology**

| Industry context | Activity | Technology pathway | Technology |
|---|---|---|---|
| Steel | Blast furnace-basic oxygen furnace (BF-BOF) primary steelmaking | Low-carbon feedstock | Use grey hydrogen as an alternative to coking coal for iron ore smelting in blast furnaces |

*Source: MSCI ESG Research. As of July 2025. This is an illustrative example and may not reflect the latest published description (if any) of the depicted technology.*

Potential emissions-reducing technologies are identified for each emissions-generating business activity covered by the model. A technology may be relevant to multiple activities, and the same technology may have a different readiness evaluation relative to two different activities or relative to the same activity in a different industry context. For example, hydrogen or carbon capture and storage can have different applications in different industries and would receive distinct assessments accordingly.

The universe of technologies and business activities covered by the model comprises a non-exhaustive list that may change. This universe is determined based on an evaluation of emissions intensities across industries.

MSCI ESG Research's ESG analytical personnel evaluate technology readiness using a pre-defined evaluation framework described in section 2.4.2. The evaluation is based on a review of current industry practices and developments, academic, scientific and industry literature and third-party analysis. The results of this evaluation are used to produce a readiness score for each technology. These evaluations are reviewed by senior ESG analytical personnel and are reassessed regularly – typically on an annual basis – to consider developments since the previous evaluation. Technology evaluations may be reviewed more frequently in response to significant developments that could affect the readiness of a technology.

Each technology is categorized within a technology pathway (e.g., electrification; energy efficiency; low-carbon fuels). Technology pathways do not impact scores but may help users of the model to categorize and compare technologies.

## 2.4.2 Technology readiness score

The technology readiness score is calculated from five sub-scores, two of which are quantitative and three of which are qualitative:

$$technology\ readiness\ score = cost\ parity\ score * (decarbonization\ score * 0.1) * qualitative\ score$$

$$qualitative\ score = 1 + average(acceptance, maturity, license) * 0.1$$

where, for the qualitative score:

- $acceptance$ is the market development and acceptance score
- $maturity$ is the resource and supply chain maturity score
- $license$ is the license to operate score

The technology readiness and qualitative scores are each constrained between 0 and 10.

Each of these sub-scores is described in greater detail below:

### 2.4.2.1 Cost parity score

A technology's cost parity score is calculated based on ESG analytical personnel evaluations of the following factors:

- Is the technology at cost parity with the business-as-usual alternative?
- Is the technology likely to be at cost parity with business-as-usual alternatives, in most cases, within five years?

The combined answers to these questions correspond to the scores set out below:

| Criteria | Score |
|---|---|
| The technology is at cost-parity with the alternative | 10 |
| The technology is likely to be at cost parity with alternatives in the next five years | 7 |
| The technology is not likely to be at cost parity in the next five years | 3 |

### 2.4.2.2 Decarbonization score

A technology's decarbonization score is calculated based on the ESG analytical personnel evaluations of the following factors, both of which are assessed with a percentage value between 0% and 100%:

- What share of the activity's emissions is this technology relevant to, typically?
- What percentage of those emissions does it have the potential to abate?

A technology's decarbonization potential is calculated as the product of the answers to these two questions. Decarbonization potential is converted into a 0 to 10 score using the following matrix:

| Decarbonization potential | Decarbonization score |
|---|---|
| >= 90% | 10 |
| >= 60% and < 90% | 9 |
| >= 50% and < 60% | 6 |
| >= 20% and < 50% | 3 |
| >= 0% and < 20% | 1 |

#### 2.4.2.3 Qualitative scores

The technology readiness score considers three qualitative sub-scores related to the following categories:

- Market development and acceptance;
- Resource and supply chain maturity; and
- License to operate.

Each qualitative category score is calculated based on ESG analytical personnel evaluations of the factors set out below. Each evaluation results in a score, and the category-level score is the average of the factor-level scores relevant to the category.

Evaluations result in a lower score if they indicate a risk to commercial adoptability. Weights may vary by factor based on the factor's perceived potential impact on a technology's commercial adoptability.

The assessment evaluation factors associated with each category are shown below:

**Exhibit 7: Qualitative technology readiness evaluation factors**

| Category | Evaluation factor |
|---|---|
| Market development and acceptance | Does the technology underperform compared to the business-as-usual alternative in important ways unlikely to be resolved in the next five years? |
| Market development and acceptance | Is the technology capital-intensive, with high upfront costs and long project lead times? |
| Market development and acceptance | Is the market for the technology in a nascent stage, with new technology advances affecting the market? |
| Market development and acceptance | Are there substantial barriers to entry from competing technologies (e.g., are there network effects that would be hard to overcome or incumbent monopolies/oligopolies)? |
| Market development and acceptance | Is the technology relevant to a large global market, as opposed to a small niche market? |
| Resource and supply chain maturity | Does the technology require significant new large-scale infrastructure investments to deploy? |
| Resource and supply chain maturity | Does the technology require the creation of new manufacturing processes or supply chain components? |
| Resource and supply chain maturity | Are there barriers to accessing critical materials that may delay deployment of the technology? |
| Resource and supply chain maturity | Does the needed workforce for the technology exist without significant re-training? |
| License to operate | Is permitting and siting complex and likely to carry across multiple jurisdictions? |
| License to operate | Does the technology create other potential environmental degradation or safety hazards? |
| License to operate | Does the technology generate negative public or community reactions that could derail or delay deployment (whether founded or unfounded)? |

#### 2.4.2.4 Additional downstream emissions technology readiness scores

In addition to the technology readiness scores produced by the evaluation above, MSCI ESG Research derives the technology pressure scores for activities related to the sale of oil, gas, and coal-based products from the technology pressures relevant to their end uses.

- For oil, a composite score based on technology pressures relevant to the end-uses of crude oil is used. This score is calculated as a weighted average based on volumetric consumption. Technology pressures are mapped to petrochemicals, gasoline, diesel (with separate values associated with diesel for transport and diesel for heavy industry), jet fuel, heavy fuel oil and ethane.
- For natural gas, a composite score based on technology pressures relevant to the end-uses of gas is used. This score is calculated as a weighted average based on volumetric consumption. Technology pressures are mapped to electricity, cooking, heating, drying, commercial, industrial and transportation.
- For coal, a composite score based on technology pressures relevant to the end-uses of coal is used. This score is calculated as a weighted average based on consumption of thermal coal, metallurgical industrial coke and metallurgical ferroalloys, with the level of technology pressure varying across the uses.

# 3 Model implementation and maintenance

## 3.1 Data sources

The model makes use of data from a variety of sources, including data produced through other publicly available MSCI ESG Research methodologies and publicly available third-party data sources. A list of methodologies per component of the model is below.

| Model Component | Data Source |
|---|---|
| Business Pressure | Company disclosures and estimates produced by MSCI ESG Research (see MSCI Greenhouse Gas Emissions Methodologies); Refinitiv |
| Policy Pressure | IMF's National Greenhouse Gas Emissions Inventories and Implied National Mitigation (Nationally Determined Contributions) Targets; Climate Watch; Net-Zero Tracker, published jointly by the Energy & Climate Intelligence Unit, the Data-Driven EnviroLab, NewClimate Institute and Oxford Net Zero; World Bank's Carbon Pricing Dashboard; U.S. Energy Information Administration; Refinitiv; UK Department for Environment, Food & Rural Affairs |
| Strategy and Governance | Company disclosures |
| Emissions Performance | Company disclosures |
| Targets Assessment | Company disclosures; Science Based Targets initiative; MSCI Climate Targets and Commitments Methodology |
| Transition Solutions | Company disclosures through MSCI Sustainable Impact Metrics Methodology and Business Involvement Screening Research Methodology |

## 3.2 Treatment of missing and insufficient data

The treatment of missing or insufficient data is described throughout section 2. In general, where insufficient data has been identified to evaluate a component of the transition readiness score, a default score will be imputed. If a company has insufficient data to compute a transition pressure score, no scores are provided for the company under the model.

The model aligns time series data sourced from multiple data products with potentially asynchronous update cycles and data time series. For example, one set of data for a given company may correspond to its most recently completed fiscal year, while another may correspond to an earlier fiscal year. In this case, the latest data from each dataset will be used. To prevent the use of significantly outdated

information, scores calculated based on data that are more than three years out of date will not be forward-filled.

Other than as described above in this section, the model does not produce or generate estimates for missing or insufficient data.

## 3.3 Data updates

The model data and scores are typically updated by MSCI ESG Research on a monthly basis. The update frequency of data sourced from other MSCI ESG Research methodologies are defined within those methodologies.

## 3.4 Coverage universe

The coverage universe of the model as of June 2025 is the MSCI World Index. This coverage universe is planned to expand to include the MSCI ACWI Investable Market Index (IMI) by September 2025. The timing of this coverage expansion is subject to change.

## 3.5 Data quality assurance

All data is subject to data quality assurance processes prior to publication to address accuracy, completeness and validity of data. Automated and manual data quality checks are conducted and data that is identified through these checks is subject to further review.

## 3.6 Consistent application of methodology

The model's processes include multiple steps to review the quality of analysis and consistent application of methodology. Technology readiness evaluations (section 2.4) and country-level policy pressure evaluations (section 2.2.2) are regularly reviewed, typically on an annual basis. These evaluations may be reviewed more frequently in response to significant developments that could affect the outcome of the evaluation.

## 3.7 Model limitations

- The model sources input data from other MSCI ESG Research models and products. These products may have methodological limitations, which would be noted within the methodology documents for those models and products. See section 3.1 for data sources used by the Energy Transition Model.
- The universe of business activities classified as transition solutions (see section 2.3.4) is non-exhaustive. Companies may benefit from transition-related opportunities that are not reflected in the model's transition solutions score if those opportunities relate to business activities that are not currently evaluated as part of the transition solutions evaluation.
- The universe of technologies, activities and business contexts covered by the technology readiness evaluation (see section 2.4) is non-exhaustive. Companies evaluated under the model may benefit from transition-related opportunities or face transition-related risks that are not reflected in their

scores if those risks or opportunities relate to technologies, activities or industry contexts that are not currently evaluated as part of the technology readiness evaluation.

## 3.8 Methodology updates

MSCI ESG Research has established an internal methodology committee that presides over the development, review and approval of all MSCI ESG Research methodologies, including the model. Methodology update proposals are subject to market consultation prior to approval for implementation by this committee.

## 3.9 Other information

- Data sourced from sustainability statements required under Directive 2013/34/EU (the directive) and Regulation (EU) 2019/2088 (the regulation): Some data used in the Energy Transition model may be disclosed by companies as part of sustainability statements required by the directive and the regulation. However, this data may also be collected independently of these disclosures. For example, companies' disclosures of carbon emissions (see section 2.3.2) may be disclosed as part of their sustainability statements required under the directive.
- Relevance of scientific evidence: The overall energy transition framework is not based on specific scientific evidence. However, the foundational premise of the methodology is consistent with the finding of the Intergovernmental Panel on Climate Change (IPCC) and other authoritative bodies such as the International Energy Agency (IEA) and Network for Greening the Financial System (NGFS) that reinforce the plausibility and policy momentum behind the energy transition. Specific components of the methodology include input from science-based assessments, such as those from SBTi, and the technology readiness assessments draw upon scientific and academic research. See section 2 for further details.
- Use, risks and limitations of artificial intelligence technologies employed for the methodology: Large language models (LLMs) are used for data collection. The use of this technology is subject to risks and limitations because of their probabilistic nature – these include inaccuracy, inconsistency and bias. LLMs are not relied upon as an authoritative source for data collection but are part of a system of data collection and data quality control.

## Change log

| Date | Key Changes |
|---|---|
| **June 2025** | Initial publication |
| **October 2025** | The truncation factor used to calculate the aggregate energy transition score was changed from 7 to 5. |

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