MSCI ESG Ratings Methodology: Carbon Emissions Key Issue

MSCI ESG Research LLC

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Contents

Introduction

This document provides essential information on the components of the Carbon Emissions Key Issue to enable users of ESG Ratings to understand how our outputs are determined. Carbon Emissions is a Key Issue in the Environmental Pillar of the MSCI ESG Ratings model. Companies are evaluated on the carbon intensity of their operations and their efforts to manage climate-related risks and opportunities.

For additional details on the MSCI ESG Ratings Model, refer to Section 2, Data, ratings and scores, of "ESG Ratings Methodology."

Exhibit 1: MSCI ESG Key Issue hierarchy

3 Pillars	10 Themes	33 ESG Key Issues
Environment	**Climate Change**	**Carbon Emissions**
		Climate Change Vulnerability
		Financing Environmental Impact
		Product Carbon Footprint
	Natural Capital	Biodiversity & Land Use
		Raw Material Sourcing
		Water Stress
	Pollution & Waste	Electronic Waste
		Packaging Material & Waste
		Toxic Emissions & Waste
	Environmental Opportunities	Opportunities in Clean Tech
		Opportunities in Green Building
		Opportunities in Renewable Energy
Social	Human Capital	Health & Safety
		Human Capital Development
		Labor Management
		Supply Chain Labor Standards
	Product Liability	Chemical Safety
		Consumer Financial Protection
		Privacy & Data Security
		Product Safety & Quality
		Responsible Investment
	Stakeholder Opposition	Community Relations
		Controversial Sourcing
	Social Opportunities	Access to Finance
		Access to Health Care
		Opportunities in Nutrition & Health
Governance	Corporate Governance	Board
		Pay
		Ownership & Control

3 Pillars	10 Themes	33 ESG Key Issues
		Accounting
	Corporate Behavior	Business Ethics
		Tax Transparency

Risks associated with this Key Issue

- Increased costs linked to carbon pricing or trading.
- Facility retrofits or operational disruptions due to regulatory caps.

Carbon Emissions Key Issue Score

The Carbon Emissions Key Issue Score evaluates the company's level of exposure to, and management of risks on this Key Issue. The Key Issue Score is based on the Exposure Score and the Management Score using the formula below. The Exposure Score and the Management Score are combined such that a higher level of exposure requires a higher level of demonstrated management capability in order to achieve the same overall Key Issue Score.

$$KI_i = 7 - (\max(EXP_i, 2) - MGMT_i)$$

Where:

- KI_i is the Key Issue Score for company i.
- EXP_i is the Exposure Score for company i.
- $MGMT_i$ is the Management Score for company i.

Carbon Emissions Management Score

The Carbon Emissions Management Score evaluates the company's ability to manage its exposure to risks on this Key Issue. It is based on an average of the scores associated with each of the Management Score categories listed below. These scores are derived from data points that are scored on a 0-10 scale, with 10 corresponding to best practice and 0 corresponding to lack of management. Refer to Section 3.3, Analyzing risk management, of "ESG Ratings Methodology" for additional details. Sources are company disclosures except where otherwise indicated. The following formula is used to calculate the Carbon Emissions Management Score:

$$MGMT_{CBN,i} = \frac{TARG_{CBN,i} + MIT_{CBN,i} + PERF_{CBN,i}}{3}$$

Where:

- $MGMT_{CBN,i}$ is the Carbon Emissions Management Score for company i.
- $TARG_{CBN,\,i}$ is the Targets Score for company i.
- $MIT_{CBN,i}$ is the Mitigation Score for company i.
- $PERF_{CBN,i}$ is the Performance Score for company i.

The following data points, without constituting an exhaustive list, are representative of the inputs to the Management Score and are used in the Management Score calculation:

Management Score category: Targets Score

- **Aggressiveness of carbon emissions reduction target.**

  Definition: Indicates whether the company has a carbon emissions reduction target and our assessment of how aggressive any target is. .

- **Track record of achieving carbon reduction targets.**

  Definition: Indicates whether the company has a demonstrated track record of achieving its carbon reduction targets.

Management Score category: Mitigation Score

- **Use of cleaner sources of energy.**

  Definition: Assesses how aggressively the company has sought to mitigate its carbon emissions through the use of cleaner sources of energy such as solar, wind, geothermal, co-generation, or natural gas in place of oil or coal.

- **Efforts to capture GHG emissions.**

Definition: Assesses the aggressiveness of a company's efforts to use greenhouse gas (GHG) capture and storage/sequestration of its operational emissions. '

- **Other efforts to reduce carbon emissions.**

  Definition: Assesses how aggressively the company has sought to mitigate its operational and/or value chain carbon emissions through other efforts (including purchasing carbon offsets, but excluding energy efficiency, clean energy use, carbon capture or demand-side management). The assessment is based on industry-specific criteria.

- **CDP disclosure.**

  Definition: Indicates whether the company reports its carbon emissions to the CDP.

Management Score category: Performance Score

Assesses the company's performance on carbon emissions metrics relative to industry peers. Expressed as a 0-10 score, where 10 indicates the highest level of performance on the relevant metrics, including GHG emissions/million USD sales, GHG emissions/unit of production, and the trend in GHG emissions intensities.

Representative performance metrics:

- Trend in GHG emissions intensity.
- GHG emissions intensity relative to industry peers.
  - Scope 1 + 2 GHG emissions intensity – metric tons of CO_2e/USD million sales.
  - Scope 1 + 2 GHG emissions intensity – metric tons of CO_2e/unit of production

Sources: Company disclosures, CDP

Carbon Emissions Exposure Score

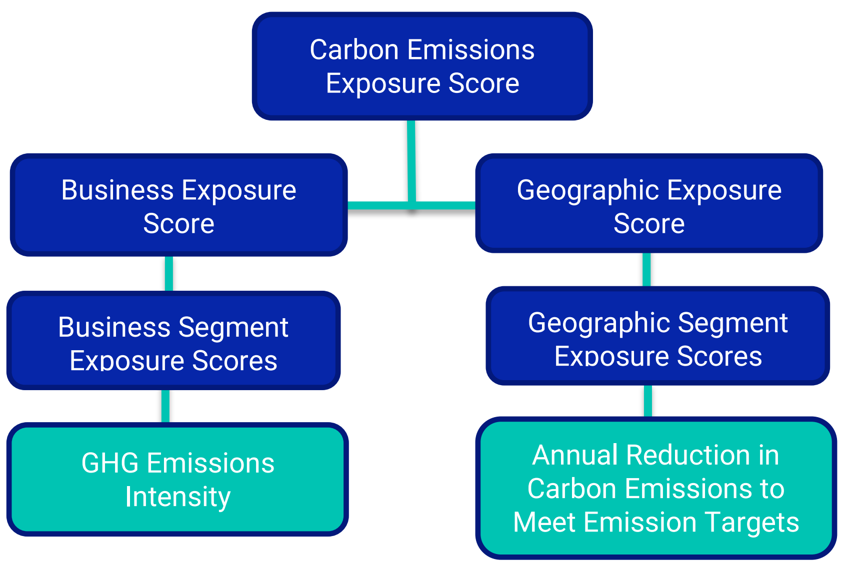
The Carbon Emissions Exposure Score evaluates the company's exposure to risks on this Key Issue. It is based on the Business and Geographic Exposure Scores. The Geographic Exposure Score functions as a multiplier on the Business Exposure Score, with an impact ranging from -50% to +50%. The Business and Geographic Exposure Scores are scored on a 0-10 scale, with 10 corresponding to the highest risk and 0 corresponding to the lowest risk. Refer to Section 3.2, Analyzing risk exposure, of "ESG Ratings Methodology" for additional details. The following formula is used in the Exposure Score calculation:

$$EXP_{CBN,i} = BUS_{CBN,i}(1 + 0.1(GEO_{CBN,i} - 5))$$

Where:

- $EXP_{CBN,i}$ is the Carbon Emissions Exposure Score of company i.
- $BUS_{CBN,i}$ is the Business Exposure Score of company i.
- $GEO_{CBN,i}$ is the Geographic Exposure Score of company i.

Exhibit 2: Exposure Score components



Business Exposure Score

The Business Exposure Score is a weighted average of the Business Segment Exposure Scores of a company's business segments. Scores are weighted by the proportion of a company's total assets in each business segment,[1] using the following formula to calculate the Business Exposure Score:

$$BUS_{CBN,i} = \sum_{j=1}^{n_i} w_{Asset,i,j} BSE_{CBN,j}$$

Where:

- $BSE_{CBN,j}$ is the Business Segment Exposure Score for the business segment j.
- $w_{Asset,i,j}$ is the weight of business segment j for company i based on the contribution to total company assets.
- n_i is the number of business segments of company i.

Business Segment Exposure Scores

The Business Segment Exposure Score of a business segment is based on a mapping of the business segment as disclosed by the company to a corresponding business activity. MSCI ESG Research uses the Standard Industrial Classification (SIC) system along with industry-specific adjustments to define business activities. The score associated with a business activity is used to calculate a Business Segment Exposure Score. Each business activity score is determined by aggregating normalized GHG emissions intensity scores from three different sources:

1. Comprehensive Environmental Data Archive (CEDA) data - direct GHG emissions intensity
2. Eurostat - Air Emissions intensity by activity
3. Company-level GHG emission intensities assessed by MSCI ESG Research, and aggregated at a business activity level

[1] 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.

An average of the above three emissions intensity scores at a business activity level gives a normalized score between 0 and 10 as the Business Segment Exposure Score.

$$BSE_{CBN,j} = Avg(EI_{j,CEDA}, EI_{j,EU}, EI_{j,MSCI})$$

Where:

- $EI_{j,CEDA}$ is the emissions intensity for the business activity j as per CEDA.
- $EI_{j,EU}$ is the emissions intensity for the business activity j as per Eurostat.
- $EI_{j,MSCI}$ is the emissions intensity for the business activity j aggregated from company-level data assessed by MSCI ESG Research.

For business activities that involve power generation, the Business Segment Exposure Score is determined by the life cycle emissions intensity, as shown below:

$$BSE_{CBN,j} = \frac{LCE_j}{LCOE_j}$$

Where:

- $BSE_{CBN,j}$ is the Business Exposure Segment Score for utilities business activity j.
- LCE_j is the life cycle emissions for the electricity supply technology adopted by the utilities business activity j.
- $LCOE_j$ is the levelized cost of electricity for the electric supply technology adopted by the utilities business activity j.

Life cycle emissions include all the emissions occurring from a power plant during its entire period of activity. Levelized cost of electricity is the average revenue per unit of electricity generated and needed to recover the building and operating costs of a power plant over its life cycle. ”

For business activities related to electricity transmission and distribution (T&D) in particular, the Business Segment Exposure Score is derived by aggregating the emissions intensities of pure-play T&D companies as assessed by MSCI ESG research.

$$BSE_{CBN,j} = EI_{j,MSCI}$$

Geographic Exposure Score

The Geographic Exposure Score is a weighted average of the Geographic Segment Exposure Scores of the countries and regions in which a company operates. Scores are weighted by the proportion of a company's total assets in each geographic segment using the following equation:

$$GEO_{CBN,i} = \sum_{r=1}^{n_i} w_{Asset,i,r} GSE_{CBN,r}$$

Where:

- $GSE_{CBN,r}$ is the Geographic Segment Exposure Score in region r.
- $w_{Asset,i,r}$ is the weight of total assets in region r for company i.
- n_i is the number of geographic segments for company i.

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

$$GSE_{CBN,r} = \sum_{c=1}^{n_r} w_{GDP,r,c} GSE_{CBN,c}$$

Where:

- $GSE_{CBN,c}$ is the Geographic Segment Exposure Score of country c.
- $w_{GDP,r,c}$ is the specific weight of country c within region r.

Geographic Segment Exposure Scores

The Geographic Segment Exposure score for a country is determined by looking at the annual reduction in greenhouse gas emissions required to meet its publicly disclosed greenhouse gas emission targets.

$$GSE_{CBN,c} = AER_c$$

Where:

- AER_c is the Annual Emissions Reduction Score of the country c.

Where a country's ability to achieve its greenhouse gas emissions target is contingent on external support, then the Annual Emissions Reduction Score is reduced by half:

$$GSE_{CBN,c} = \frac{AER_c}{2}$$

Data Sources

The following sources are used to determine the Carbon Emissions Exposure Score:

IERS'' Comprehensive Environmental Data Archive (CEDA) data, direct GHG emissions intensity; Eurostat, Air Emissions Accounts by Activity; Refinitiv; International Energy Agency (2020), Projected Costs of Generating Electricity 2020; The United Nations Economic Commission for Europe, Life Cycle Assessment of Electricity Generation Options; GHG emissions intensities compiled by MSCI ESG Research; company disclosures.

Contact us

msci.com/contact-us

AMERICAS

Americas	1 888 588 4567 *
Atlanta	+ 1 404 551 3212
Boston	+ 1 617 532 0920
Chicago	+ 1 312 675 0545
Monterrey	+ 52 81 1253 4020
New York	+ 1 212 804 3901
San Francisco	+ 1 415 836 8800
São Paulo	+ 55 11 3706 1360
Toronto	+ 1 416 628 1007

EUROPE, MIDDLE EAST & AFRICA

Cape Town	+ 27 21 673 0100
Frankfurt	+ 49 69 133 859 00
Geneva	+ 41 22 817 9777
London	+ 44 20 7618 2222
Milan	+ 39 02 5849 0415
Paris	0800 91 59 17 *

ASIA PACIFIC

China North	10800 852 1032 *
China South	10800 152 1032 *
Hong Kong	+ 852 2844 9333
Mumbai	+ 91 22 6784 9160
Seoul	00798 8521 3392 *
Singapore	800 852 3749 *
Sydney	+ 61 2 9033 9333
Taipei	008 0112 7513 *
Thailand	0018 0015 6207 7181 *
Tokyo	+ 81 3 5290 1555

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