

# **MSCI ESG Ratings Methodology: Product Carbon Footprint Key Issue**

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## Introduction

This document provides essential information on the components of the Product Carbon Footprint Key Issue to enable users of ESG Ratings to understand how our outputs are determined. Product Carbon Footprint is a Key Issue in the Environmental Pillar of the MSCI ESG Ratings model. Companies are evaluated on the carbon intensity of their products and their ability to reduce the carbon footprint in their supply chains or in the use of their products and services.

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
Environmental	Climate Change	Carbon Emissions
		Climate Change Vulnerability
		Financing Environmental Impact
		<b>Product Carbon Footprint</b>
	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
	Stakeholder Opposition	Responsible Investment
		Community Relations
	Social Opportunities	Controversial Sourcing
		Access to Finance
		Access to Health Care
		Opportunities in Nutrition & Health

3 Pillars	10 Themes	33 ESG Key Issues
Governance	Corporate Governance	Board
		Pay
		Ownership & Control
		Accounting
	Corporate Behavior	Business Ethics
		Tax Transparency

## Risks associated with this Key Issue

- Increased costs from higher and more volatile energy prices upstream in the value chain (affecting raw materials, input, and distribution costs).
- Regulatory risks associated with downstream emissions, e.g., penalties resulting from vehicle fleet emissions standards in the automobile industry.

## Product Carbon Footprint Key Issue Score

The Product Carbon Footprint Key Issue Score evaluates the company's level of exposure to, and management of, risks on this Key Issue. The Key Issue Score on this Key Issue 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  $i$ .

## Product Carbon Footprint Management Score

The Product Carbon Footprint Management Score evaluates the company's ability to manage its exposure to risks on this Key Issue. It is based on the Management Score category 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 Product Carbon Footprint Management Score:

$$MGMT_{PCF,i} = PRA_{PCF,i}$$

Where:

- $MGMT_{PCF,i}$  is the Product Carbon Footprint Management Score for company  $i$ .
- $PRA_{PCF,i}$  is the Practices 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: Practices Score

- **Assessment of energy consumption and/or carbon emissions of suppliers.**  
**Definition:** Indicates whether the company assesses the carbon emissions and/or energy consumption of its suppliers.
- **Extent of product carbon footprint assessments.**  
**Definition:** Indicates whether the company assesses the downstream carbon emissions of its products and services.
- **Targets to reduce scope 3 upstream carbon emissions.**  
**Definition:** Indicates whether there is evidence the company has quantitative and time-bound targets to reduce scope 3 upstream carbon emissions. This may include targets regarding the company’s supply chain.
- **Energy consumption or carbon emissions assessment of distribution and store operations.**  
**Definition:** Indicates whether the company assesses the carbon emissions or energy consumption of its distribution centers and store operations.

- **Energy consumption or carbon emissions assessment of manufacturing operations (including suppliers).**

**Definition:** Indicates whether the company assesses the carbon emissions or energy consumption of its manufacturing operations, including suppliers' operations.

- **Energy consumption or carbon emissions assessment of raw materials sourcing.**

**Definition:** Indicates whether the company assesses the upstream carbon emissions or energy consumption involved in the production of raw materials.

- **Energy consumption or carbon emissions assessment of transportation and logistics.**

**Definition:** Indicates whether the company assesses the carbon emissions or energy consumption of its transportation and logistics operations.

- **Extent of energy consumption or carbon emissions reduction programs in distribution centers or store operations.**

**Definition:** The extent of the company's carbon emissions or energy reduction programs in its distribution centers or store operations. Best practice includes programs in all distribution centers or store operations.

- **Extent of energy consumption or carbon emissions reduction programs in manufacturing operations (including suppliers).**

**Definition:** The extent of the company's carbon emissions or energy reduction programs in its manufacturing operations, including suppliers' operations. Best practice includes programs covering all core production facilities.

- **Extent of energy consumption or carbon emissions reduction programs in raw materials sourcing.**

**Definition:** The extent of the company's carbon emissions or energy reduction programs in the sourcing of raw materials, including those sourced by suppliers. Best practice includes programs covering all core products.

- **Extent of energy consumption or carbon emissions reduction programs in transportation and logistics.**

**Definition:** The extent of the company's carbon emissions or energy reduction programs in the transportation and logistics stages. Best practice includes improvements in fleet efficiency combined with improvements in load/packaging optimization.

Sources: Company disclosures, CDP, International Council on Clean Transportation, Environmental Protection Agency, European Environment Agency, Korea Energy Industry.

## Product Carbon Footprint Exposure Score

The Product Carbon Footprint Exposure Score evaluates the company's exposure to risks on this Key Issue. It is based on the Business Exposure Scores only, except for the automobile and motorcycle manufacturing industry. For the automobile and motorcycle manufacturing industry, it is based on the Business Exposure Score and the Geographic Exposure Score. The Business Exposure Score is 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 formulas are used in the Exposure Score calculation:

**For the automobile and motorcycle manufacturing industry:**

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

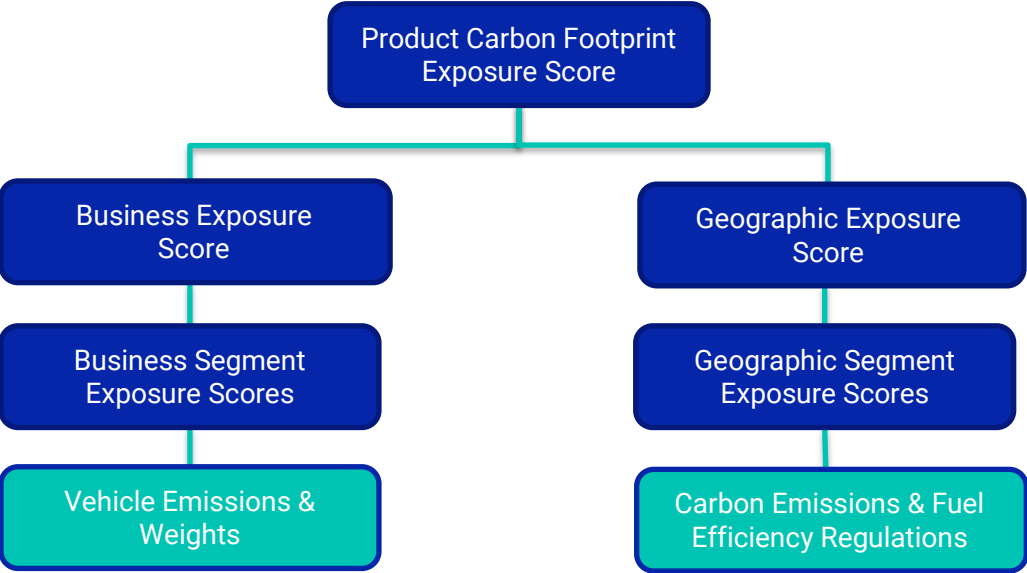
Where:

- $EXP_{PCF,i}$  is the Product Carbon Footprint Exposure Score of company  $i$ .
- $BUS_{PCF,i}$  is the Business Exposure Score of company  $i$ .
- $GEO_{PCF,i}$  is the Geographic Exposure Score of company  $i$ .

For all other industries:

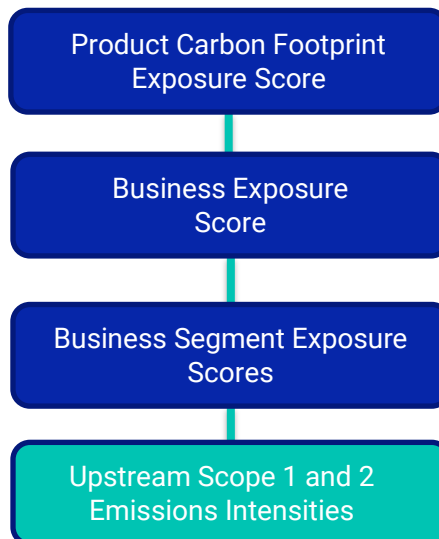
$$EXP_{PCF,i} = BUS_{PCF,i}$$

Exhibit 2: Exposure Score components for the automobile and motorcycle manufacturing industry





### Exhibit 3: Exposure Score components for all other industries



### Business Exposure Score

The Business Exposure Score is a weighted average of the Business Segment Exposure Scores of a company's business segments. For the automobile and motorcycle manufacturing industry, scores are weighted by a company's number of vehicle units sold of a particular vehicle class compared to a company's total number of vehicle units sold, using the following formula to calculate the Business Exposure Score:

**For the automobile and motorcycle manufacturing industry:**

$$BUS_{PCF,i} = \sum_{k=1}^{n_i} w_{Vehicle\ Units,i,k} BSE_{PCF,k}$$

Where:

- $BSE_{PCF,k}$  is the Business Segment Exposure Score for vehicle class segment  $k$ .
- $w_{Vehicle\ Units,i,k}$  is the weight derived from vehicle class segment  $k$  units sold for company  $i$  based on the contribution to total vehicle units sold for company  $i$ .
- $n_i$  is the number of geographic or vehicle class segments for company  $i$ .

For other industries, scores are weighted by the proportion of a company's total revenue in each business segment, using the following formula to calculate the Business Exposure Score:

**For all other industries:**

$$BUS_{PCF,i} = \sum_{j=1}^{n_i} w_{Revenue,i,j} BSE_{PCF,j}$$

Where:

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

## Business Segment Exposure Scores

The Business Segment Exposure Score 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.

**For the automobile and motorcycle manufacturing industry:**

Each business activity score is determined by a qualitative assessment of specific vehicle class emissions and vehicle weights in a business activity. The highest resulting Business Exposure Scores correspond to the passenger vehicle classes with the highest emissions intensities and vehicle weights. Passenger vehicle classes are generally considered to face stricter regulations than commercial vehicles or two-wheelers.

**For all other industries:**

Each business activity score is determined by the upstream greenhouse gas emissions intensities of the business activity:

$$BSE_{PCF,j} = GHG_{Upstream,j}$$

Where:

- $GHG_{Upstream,j}$  is the Upstream Greenhouse Gas Emissions Score for business activity  $j$ .

## Geographic Exposure Score

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

$$GEO_{PCF,i} = \sum_{r=1}^{n_i} w_{Revenue,i,r} GSE_{PCF,r}$$

Where:

- $GSE_{PCF,r}$  is the Geographic Segment Exposure Score in region  $r$ .
- $w_{Revenue,i,r}$  is the weight of total revenue 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:

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

Where:

- $GSE_{PCF,c}$  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

### For the automobile and motorcycle manufacturing industry:

The Geographic Segment Exposure Score is determined by regulatory requirements for vehicle carbon emissions or fuel efficiency in specific locations. Stricter regulatory requirements for vehicle carbon emissions or fuel efficiency increase exposure.



## Data Sources

The following sources are used to determine the Product Carbon Footprint Business Exposure Score:

IERS' Comprehensive Environmental Data Archive (CEDA), Refinitiv, MSCI ESG Research, company disclosures.

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