

MSCI ESG Ratings Methodology: Electronic Waste Key Issue

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Introduction

This document provides essential information on the components of the Electronic Waste Key Issue to enable users of ESG Ratings to understand how our outputs are determined. Electronic Waste is a Key Issue in the Environmental Pillar of the MSCI ESG Ratings model. Companies are evaluated on their production of electronic waste, their potential exposure to electronic waste regulations and their efforts at product collection and recycling.

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
	Natural Capital	Product Carbon Footprint
		Biodiversity & Land Use
		Raw Material Sourcing
		Water Stress
	Pollution & Waste	Electronic Waste
	Environmental Opportunities	Packaging Material & Waste
		Toxic Emissions & Waste
Opportunities in Clean Tech		
Opportunities in Green Building		
Social	Human Capital	Opportunities in Renewable Energy
		Health & Safety
		Human Capital Development
		Labor Management
	Product Liability	Supply Chain Labor Standards
		Chemical Safety
		Consumer Financial Protection
		Privacy & Data Security
		Product Safety & Quality
	Stakeholder Opposition	Responsible Investment
		Community Relations
		Controversial Sourcing
	Social Opportunities	Access to Finance
Access to Health Care		
Opportunities in Nutrition & Health		
Governance	Corporate Governance	Board

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

Risks associated with this Key Issue

- Loss of access to markets due to regulatory change.
- Loss of revenue due to changing consumer demand.
- Increased costs due to compliance with producer responsibility regulations.

Electronic Waste Key Issue Score

The Electronic Waste 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 .

Electronic Waste Management Score

The Electronic Waste 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, modified by Controversies. 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 Electronic Waste Management Score - Excluding Controversies:

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

Where:

- $MGMT_{ELW,i}$ is the Electronic Waste Management Score - Excluding Controversies for company i .
- $PRA_{ELW,i}$ 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

- **Explicit ban on electronic waste exports to non-OECD countries.**
Definition: Indicates whether the company explicitly bans electronic waste exports from OECD member countries to non-OECD member countries for disposal and recovery, in accordance with the Basel Ban Amendment to the Basel Convention.
- **Overall electronic waste collection and recycling performance to date.**
Definition: Assesses the company's electronic waste and take-back programs. Expressed as a 0-10 score, where 10 indicates that the take-back amount is very high compared to peers and the company may have been recognized by a reliable outside party for take-back volume.
- **Scope of the electronic waste take-back program by location.**
Definition: The geographic scope of the company's product collection and electronic waste recycling program.
- **Scope of the electronic waste take-back program by product type.**

Definition: The scope of products that are eligible for collection and recycling under the company's electronic waste product recycling program.

- **Electronic waste take-back programs include drop-off of end-of-life products.**

Definition: Indicates whether channels for consumers to return end-of-life electronics to the company include drop-off options (at a store or designated drop-off locations).

- **Electronic waste take-back programs include mail-in of end-of-life products.**

Definition: Indicates whether available channels for consumers to return end-of-life electronics to the company include mail-in options.

- **Electronic waste take-back programs include pick-up of end-of-life products.**

Definition: Indicates whether available channels for consumers to return end-of-life electronics to the company include pick-up options.

- **Electronic waste take-back program exists but no details given.**

Definition: Indicates whether channels exist for consumers to return end-of-life electronics to the company, but details are not provided.

- **Company-operated electronic waste recycling facilities.**

Definition: Indicates whether the company operates its own electronic waste recycling facilities. The company may also use vendors or participate in recycling management organizations for electronic waste recycling.

Sources: Company disclosures, Silicon Valley Toxics Coalition, Basel Action Network, GoodElectronics, Greenpeace's Greener Electronics reports.

Controversies

A controversy deduction ranging from 0 to 5 points is subtracted from the overall Management Score, based on the severity and type of controversies facing the company on this Key Issue. The following categories of controversies are used in the assessment:

- Electronic waste controversies.

For more details on how controversies are included in the MSCI ESG Ratings model, refer to Section 3.3.2, Controversies cases, of “ESG Ratings Methodology.”

Electronic Waste Exposure Score

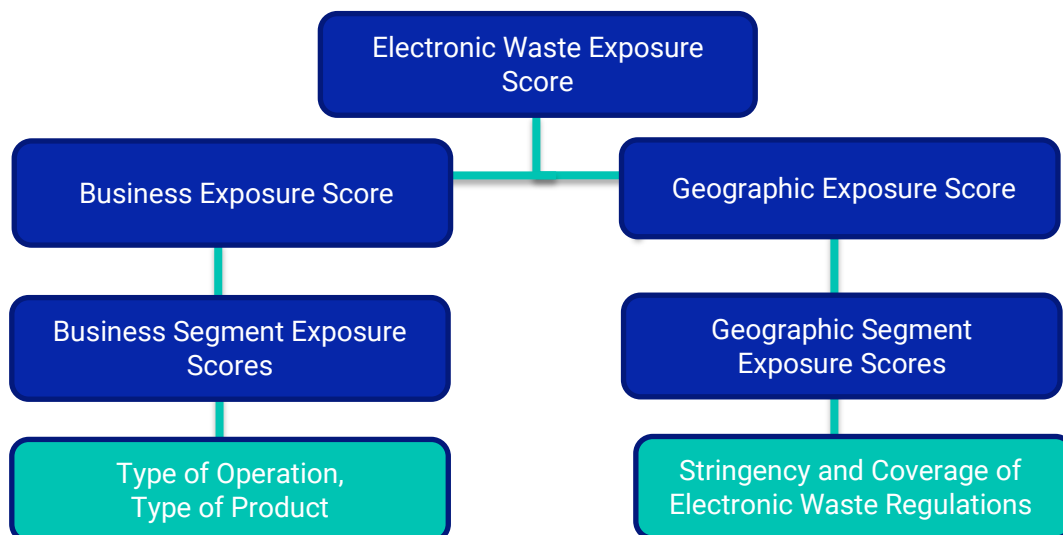
The Electronic Waste Exposure Score evaluates the company’s exposure to risks on this Key Issue. It is based on the Business and Geographic Exposure Scores. The Geographic Exposure Score functions as a multiplier on the Business Exposure Score, with an impact ranging from -50% to +50%. The Business and 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 data sources and methodologies are used in the Exposure Score calculation:

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

Where:

- $EXP_{ELW,i}$ is the Electronic Waste Exposure Score of company i .
- $BUS_{ELW,i}$ is the Business Exposure Score of company i .
- $GEO_{ELW,i}$ is the Geographic Exposure Score of company i .

Exhibit 2: Exposure Score components



Business Segment 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 revenue in each business segment, using the following formula to calculate the Business Exposure Score:

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

Where:

- $BSE_{ELW,j}$ 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 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 a weighted average of the Type of Operations Score and Type of Product Score:

$$BSE_{ELW,j} = 0.35(TOO_{ELW,j}) + 0.65(TOP_{ELW,j})$$

Where:

- $TOO_{ELW,j}$ is the Type of Operations Score for business activity j .
- $TOP_{ELW,j}$ is the Type of Product Score for business activity j .

The Type of Operations Score is assessed as a qualitative assessment of whether the type of operations of a business activity involves the manufacture and/or sale of electronic equipment and devices.

The Type of Product Score is assessed as a qualitative assessment of whether the product category of the business activity involves the manufacture and/or sale of electronic equipment and devices. The product categories considered are consumer electronics, office electronics, household appliances and professional equipment.

Geographic Exposure Score

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

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

Where:

- $GSE_{ELW,r}$ is the Geographic Segment Exposure Score in region r .
- $w_{Revenue,i,r}$ is the weight of region r for company i based on the contribution to total company revenue.
- n_i is the number of geographic segments for company i .

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

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

Where:

- $GSE_{ELW,c}$ 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 is determined by a qualitative framework to assess countries with strengthening or evolving electronic waste regulations. Higher regulation standards and wider coverage result in a higher risk exposure score for a given country.

Data Sources

The following sources are used to determine the Electronic Waste Exposure Score: Refinitiv, MSCI ESG Research, company disclosures.

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