

MSCI ESG Ratings Methodology: Water Stress Key Issue

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October 2023

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Introduction

This document provides essential information on the components of the Water Stress Key Issue to enable users of ESG Ratings to understand how our outputs are determined. Water Stress is a Key Issue in the Environmental Pillar of the MSCI ESG Ratings model. Companies are evaluated on the water intensity of their operations, the water stress in their areas of operations, and their efforts to manage water-related risks.

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 |
| | | Product Carbon Footprint |
| | Natural Capital | Biodiversity & Land Use |
| | | Raw Material Sourcing |
| | | Water Stress |
| | Pollution & Waste | Electronic Waste |
| | | Packaging Material & Waste |
| | | Toxic Emissions & Waste |
| Social | Environmental Opportunities | Opportunities in Clean Tech |
| | | Opportunities in Green Building |
| | | Opportunities in Renewable Energy |
| | 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 |
| | | Controversial Sourcing |
| | Social Opportunities | Access to Finance |
| | | Access to Health Care |
| | | Opportunities in Nutrition & Health |
| Governance | Corporate Governance | Board |
| | | Pay |

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

Risks associated with this Key Issue

- Operational disruptions to production processes requiring water as a critical input.
- Loss of access to markets through community opposition and heightened regulatory hurdles.
- Increased costs to comply with more stringent regulations and install equipment and systems to reduce water use.
- Higher water use costs.

Water Stress Key Issue Score

The Water Stress 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 .

Water Stress Management Score

The Water Stress 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, 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 Water Stress Management Score - Excluding Controversies:

$$MGMT_{WAS,i} = \frac{GOVS_{WAS,i} + PERF_{WAS,i}}{2}$$

Where:

- $MGMT_{WAS,i}$ is the Water Stress Management Score - Excluding Controversies for company i .
- $GOVS_{WAS,i}$ is the Governance & Strategy Score for company i .
- $PERF_{WAS,i}$ 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: Governance & Strategy Score

- **Evidence of using alternative water sources.**
Definition: Indicates whether there is evidence that the company uses some alternative water sources, but a percentage is not available. Alternative water sources include seawater, brackish water, gray water and rainwater.
- **Percentage of water use from alternative water sources.**
Definition: The amount of water that the company obtains from alternative sources. Alternative water sources includes seawater, brackish water, gray water, and rainwater.

- **Implementation of water-efficient production processes.**

Definition: Assesses how effectively the company has implemented water efficiency measures into its production processes. Expressed as a 0-10 score, where 10 indicates forward-looking technology upgrades and process changes (e.g., closed-loop, desalinization, wastewater treatment and recycling).

- **Water recycling rate.**

Definition: The percentage of recycled or recirculated water of total water usage.

- **CEO is responsible for water management strategy and performance.**

Definition: Indicates whether the CEO is responsible for water management strategy and performance.

- **CSR or sustainability committee is responsible for water management strategy and performance.**

Definition: Indicates whether corporate social responsibility or sustainability committees are responsible for water management strategy and performance.

- **Nonexecutive- or non-committee-level task force is responsible for water management strategy and performance.**

Definition: Indicates whether responsibility for water management strategy and performance is with a nonexecutive- or non-committee-level task force or risk officer.

- **Senior executive or executive committee is responsible for water management strategy and performance.**

Definition: Indicates whether a senior executive or executive committee are responsible for water management strategy and performance.

Management Score category: Targets

- **Water reduction strategy.**

Definition: Assesses the degree to which the company has articulated a detailed strategy for reducing its water intensity. Expressed as a 0-10 score, where 10 indicates the company has a target and there is clear evidence of a robust overarching strategy and of substantial details on meaningful programs.

- **Track record of achieving water use reduction targets.**

Definition: Assesses the company track record of achieving water reduction targets. Expressed as a 0-10 score, where 10 indicates that the company has a track record of meeting targets and reducing its water usage.

- **Aggressiveness of water use reduction targets.**

Definition: Assesses the aggressiveness of the company's water use reduction targets. Expressed as a 0-10 score, where 10 indicates a very aggressive reduction target that is applicable to the majority of relevant operations. Targets are differentiated based on the average annual improvement, the comprehensiveness of the target's application, and whether it is relative or absolute.

Management Score category: Performance Score

Assesses the company's performance on water stress metrics, including the company's water withdrawal and/or water consumption intensities (normalized by million USD sales or a relevant unit of production), relative to its peers. Expressed as a 0-10 score, where 10 indicates the highest level of performance.

Representative performance metrics:

- Water intensity trend.
- Water intensity vs peers.

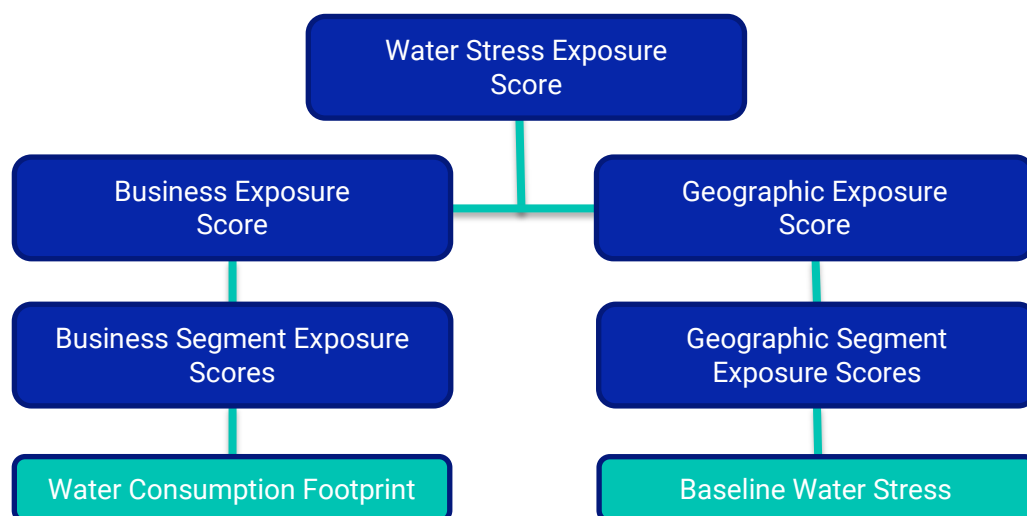
Controversies

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:

- Water conflicts 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.”

Exhibit 2: Exposure Score Components



Water Stress Exposure Score

The Water Stress Exposure Score evaluates the company’s exposure to risks on this Key Issue. It is based on the average of the Business and Company-Specific Exposure Scores, combined with the Geographic Exposure Score. The Geographic Exposure Score functions as a multiplier on the Business Exposure Score, with an impact ranging from -50% to +50%. The Business Exposure Score, Geographic Exposure Score and Company-Specific Exposure Score 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:

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

Where:

- $EXP_{WAS,i}$ is the Water Stress Exposure Score of company i .
- $BUS_{WAS,i}$ is the Business Exposure Score of company i .
- $GEO_{WAS,i}$ is the Water Stress Geographic Exposure Score of company i .

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:

$$BUS_{WAS,i} = \sum_{j=1}^{n_i} w_{Assets,i,j} BSE_{WAS,j}$$

Where:

- $BSE_{WAS,j}$ is the Business Segment Exposure Score for business segment j .
- $w_{Assets,i,j}$ 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

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.

Segment Exposure Score. Each business activity score is determined by the water footprint of the business activity:

$$BSE_{WAS,j} = WF_j$$

Where:

- WF_j is the Water Footprint Score for business activity j .

For business activities related to agriculture, tobacco, leather, food and beverages the Business Segment Exposure Score is derived as:

$$BSE_{WAS,j} = AWF_j$$

Where:

- AWF_j is the Agricultural Water Footprint Score, which is assessed according to the water consumed in business activity j per ton of product.

The Water Footprint Score is determined by aggregating the company-level water withdrawal or water consumption per unit of revenue at the business activity level. This indicator is scored on a 0-10 scale, with 10 corresponding to the highest water intensity and 0 to the lowest water intensity.

The Agricultural Water Footprint Score is determined by considering the volume of water required to produce a ton of product. Business activities are mapped to specific products such as cereals, oil crops, cotton fabric and tobacco. This indicator is scored on a 0-10 scale, with 10 corresponding to the highest water footprint and 0 corresponding to the lowest water footprint.

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 through the following equation:

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

Where:

- $GSE_{WAS,r}$ is the Geographic Segment Exposure Score of 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:

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

Where:

- $GSE_{WAS,c}$ 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 the baseline water stress of the region.

$$GSE_{WAS,c} = 2 \times BWS_c$$

Where:

- BWS_c is the Baseline Water Stress Score of the country c .

The Baseline Water Stress Score is calculated from the ratio of total water withdrawals to the available renewable water supply in a region, such that a higher value indicates greater water stress.

Data Sources

The following sources are used to determine the Water Stress Exposure Score:

The International Earth Rotation Service's Comprehensive Environmental Data Archive; MSCI ESG Research; Refinitiv; company disclosures; World Resources Institute Aqueduct; M.M. Mekonnen and A.Y. Hoekstra, "The green, blue and grey water footprint of crops and derived crop products," *Hydrology and Earth System Sciences* 15, no. 5 (2011): 1,577-1,600.

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