



# ENVIRONMENTAL, SOCIAL AND GOVERNANCE SCORES FROM REFINITIV

November 2021



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# Executive summary

Refinitiv recognises the increasingly critical importance of transparent, accurate and comparable environmental, social and governance (ESG) data and analytics for the financial industry. We strive to be the trusted and preferred partner in the transition to sustainable finance and are committed to bringing to the market an array of best-in-class data, analytics and workflow solutions, which allow customers to use Refinitiv data as the backbone of their investment processes.

Refinitiv offers one of the most comprehensive ESG databases in the industry, covering over 80% of the global market cap, across more than 500 different ESG metrics, with history dating back to 2002.

With Refinitiv, you can easily integrate ESG factors into portfolio analysis, equity research, screening or quantitative analysis. We offer users the possibility to combine and analyse ESG data using cutting-edge applications for in-depth analysis.

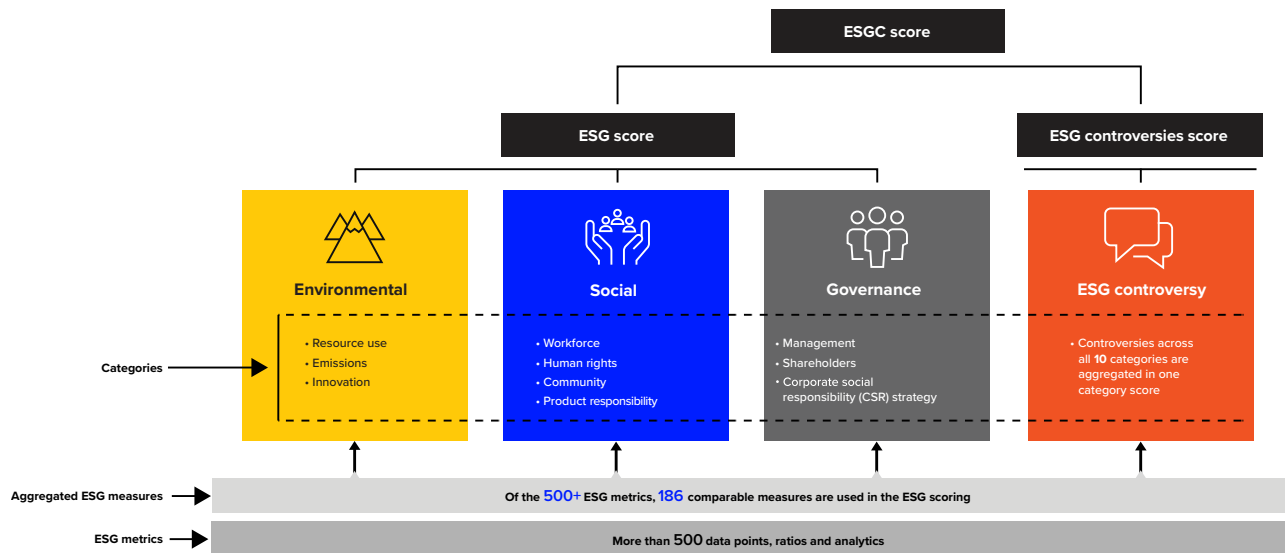
ESG scores from Refinitiv are designed to transparently and objectively measure a company's relative ESG performance, commitment and effectiveness, based on company-reported data. This covers 10 main themes including emissions, environmental product innovation, human rights, shareholders and so on. We also provide an overall ESG combined (ESGC) score, which is discounted for significant ESG controversies impacting the corporations we cover. Ratings are available on over 11,000 companies globally, with time series data going back to 2002. The percentile rank scores are simple to understand (available in both percentages and letter grades from D- to A+). They are benchmarked against The Refinitiv Business Classifications (TRBC – Industry Group) for all environmental and social categories, as well as the controversies score. They are also measured against the country of incorporation for all governance categories.

The Refinitiv ESG scores are data-driven, accounting for the most material industry metrics, with minimal company size and transparency biases.

The scores are based on relative performance of ESG factors with the company's sector (for environmental and social) and

country of incorporation (for governance). Refinitiv does not presume to define what 'good' looks like; we let the data determine industry-based relative performance within the construct of our criteria and data model. Refinitiv's ESG scoring methodology has a number of key calculation principles set out below.

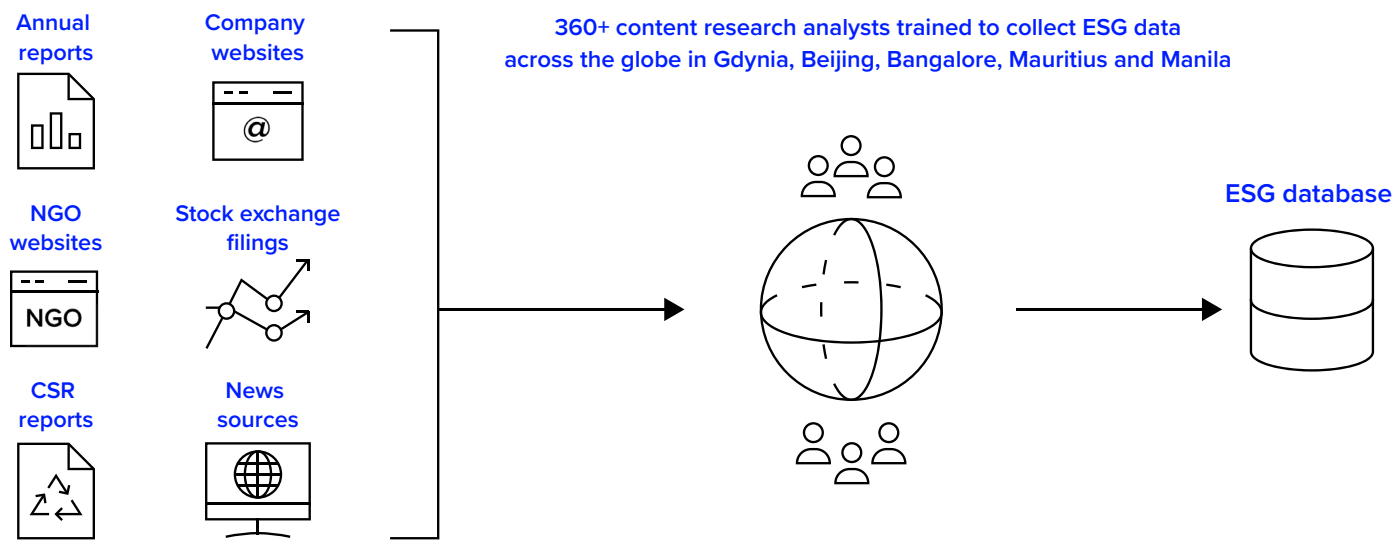
1. **Unique ESG magnitude (materiality) weightings have been included** – as the importance of ESG factors differs across industries, we have mapped each metric's materiality for each industry on a scale of 1 to 10.
2. **Transparency stimulation** – company disclosure is at the core of our methodology. With applied weighting, not reporting 'immaterial' data points doesn't greatly affect a company's score, whereas not reporting on 'highly material' data points will negatively affect a company's score.
3. **ESG controversies overlay** – we verify companies' actions against commitments, to magnify the impact of significant controversies on the overall ESG scoring. The scoring methodology aims to address the market cap bias from which large companies suffer by introducing severity weights, which ensure controversy scores are adjusted based on a company's size.
4. **Industry and country benchmarks at the data point scoring level** – to facilitate comparable analysis within peer groups.
5. **Percentile rank scoring methodology** – to eliminate hidden layers of calculations. This methodology enables Refinitiv to produce a score between 0 and 100, as well as easy-to-understand letter grades.



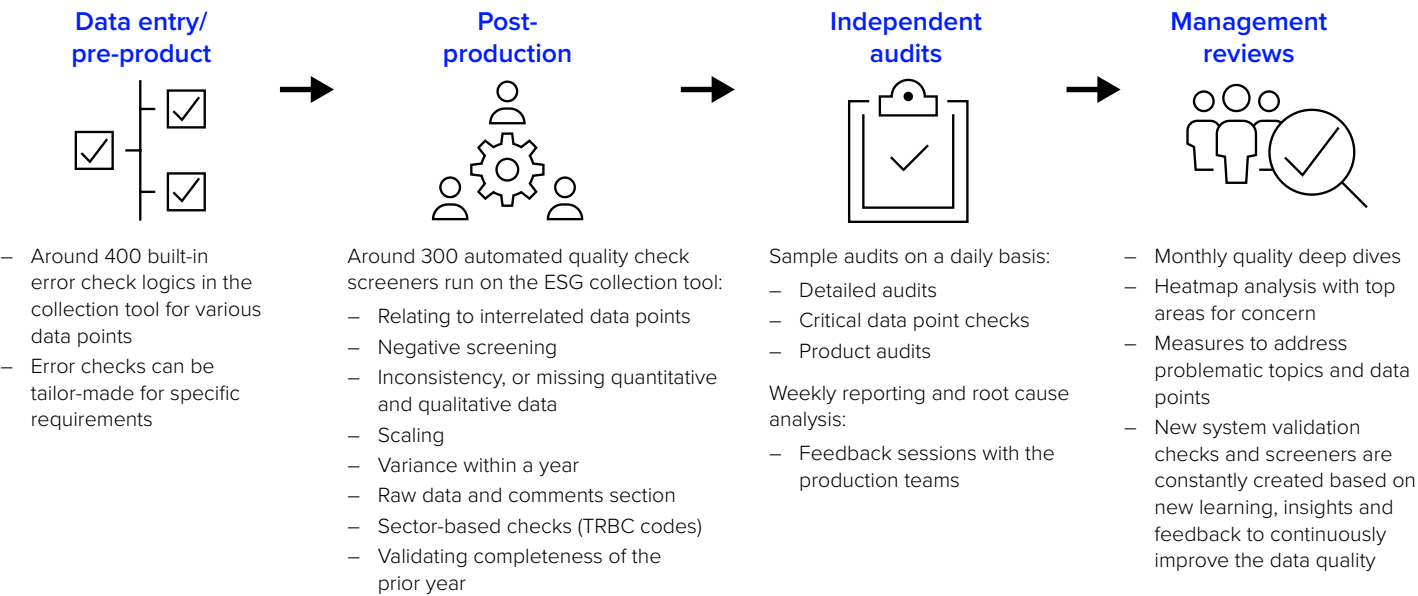
# Data process

With over 150 content research analysts trained to collect ESG data, we have one of the largest ESG content collection operations in the world. With local language expertise and operating from different locations across the globe, we process numerous publicly available information sources with the aim of providing up-to-date, objective and comprehensive coverage. There are over 500 ESG measures, which our analysts process manually for each company within the ESG universe. Each measure undergoes a careful process to standardise the information and guarantee it is comparable across the entire range of companies.

The database is updated on a continuous basis – aligned with corporate reporting patterns – and data is refreshed on products every week, including the recalculation of the ESG scores. Updates could include a brand new company being added to the database, the latest fiscal year update or the inclusion of new controversy events. In most cases, reported ESG data is updated once a year in line with companies' own ESG disclosure. We refresh data more frequently in exceptional cases, usually when there is a significant change in the reporting or corporate structure during the year. ESG news and controversies are updated on a continuous basis, as and when such events occur and get picked up by global media.



Data quality is a key part of the collection process; that is why we use a combination of both algorithmic and human processes to make sure we achieve as close to 100% data quality as possible. Below is an overview of the various methods we use to achieve this goal.



# Frequency of updates

All Refinitiv ESG scores, including controversies scores, are updated on a weekly basis.

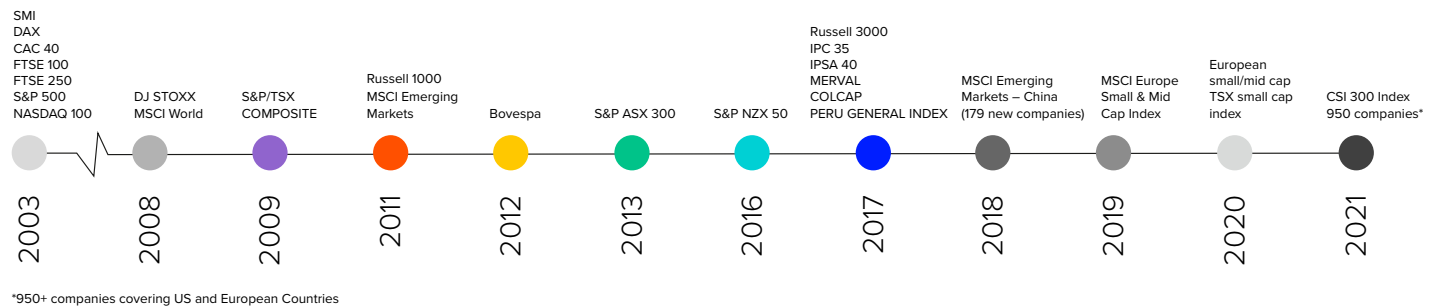
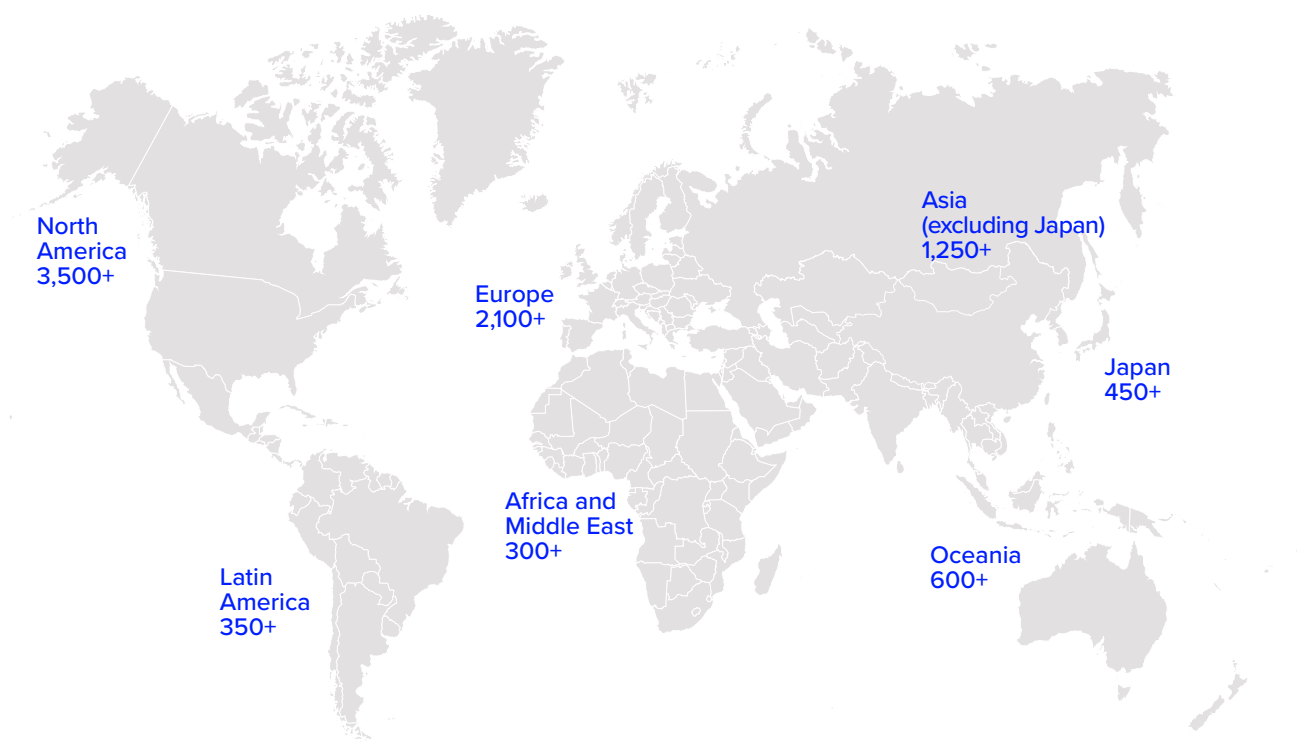
## Definitive scores

Scores will be marked as ‘definitive’ for all historical years excluding the five most recent. For instance, if the most recent fiscal year is FY2020, then all historical scores prior to FY2016 will be considered definitive – but not those between FY2016 and FY2020. Definitive scores remain unchanged, even if there are changes to the underlying data due to company restatements or data corrections.

# Global coverage

The universe of companies for which ESG data is maintained and ESG scores are calculated consists of 9,000 companies globally. Regional breakdown is provided in the illustration below.

Our coverage has evolved over time and is continuously expanding as we include more indices. We review the constituents of these indices on a quarterly basis, when additional companies are also included in our coverage. We have added Russell 3000 Index companies to the coverage. The illustration below shows a timeline of various indices’ inclusion in the ESG universe.





# Scores overview

Refinitiv ESG scores reflect the underlying ESG data framework and are a transparent, data-driven assessment of companies' relative ESG performance and capacity, integrating and accounting for industry materiality and company size biases. Refinitiv's ESG scoring methodology follows a number of key calculation principles (set out below). An overall ESGC score is also calculated, which discounts the ESG score for news controversies that materially impact corporations. The underlying measures are granular enough to differentiate effectively between companies that have limited reporting and are not transparent, or deliver minimal implementation and execution, versus companies that 'walk the talk' and emerge as leaders in their respective industries or regions.

ESG scores are calculated and available for all companies and historical fiscal periods in the ESG global coverage, i.e., back to fiscal year 2002 for approximately 1,000 companies (mainly US and European).

The model comprises two overall ESG scores:

- 1. **ESG score** – measures the company's ESG performance based on verifiable reported data in the public domain.
- 2. **ESGC score**– overlays the ESG score with ESG controversies to provide a comprehensive evaluation of the company's sustainability impact and conduct over time.

The availability of the two overall scores and underlying category assessments allows users to adopt and apply the scoring that meets their requirements, mandates or investment criteria.

# Scores structure

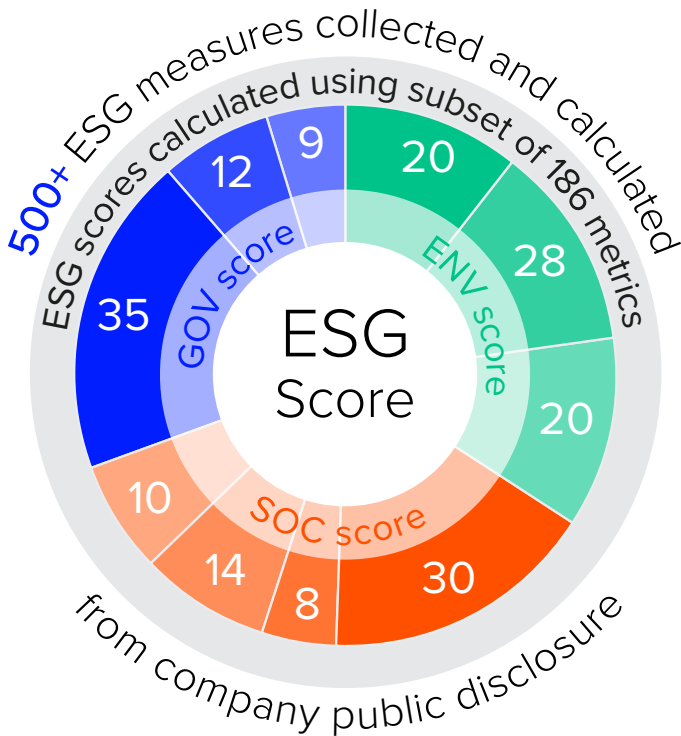
The model is fully automated, data-driven and transparent, which makes it free from subjectivity and hidden calculations or inputs.

## ESG score

Refinitiv captures and calculates over 500 company-level ESG measures, of which a subset of 186 (details in the ESG glossary, available on request) of the most comparable and material per industry, power the overall company assessment and scoring process.

These are grouped into 10 categories that reformulate the three pillar scores and the final ESG score, which is a reflection of the company's ESG performance, commitment and effectiveness based on publicly-reported information.

The category scores are rolled up into three pillar scores – environmental, social and corporate governance. The ESG pillar score is a relative sum of the category weights, which vary per industry for the environmental and social categories. For governance, the weights remain the same across all industries. The pillar weights are normalised to percentages ranging between 0 and 100 (for further details, refer to [Appendix C](#) on page 19 of this document).



- Environmental
  - Resource use
  - Emissions
  - Innovation
- Social
  - Workforce
  - Human rights
  - Community
  - Product responsibility
- Governance
  - Management
  - Shareholders
  - CSR strategy

Category definitions are available in [Appendix F](#).

## ESGC score

ESGC scores provide a rounded and comprehensive scoring of a company's ESG performance, based on the reported information pertaining to the ESG pillars, with the ESG controversies overlay captured from global media sources. The main objective of this score is to discount the ESG performance score based on negative media stories. It does this by incorporating the impact of significant, material ESG controversies in the overall ESGC score.

When companies are involved in ESG controversies, the ESGC score is calculated as the weighted average of the ESG scores and ESG controversies score per fiscal period, with recent controversies reflected in the latest completed period. When companies are not involved in ESG controversies, the ESGC score is equal to the ESG score.

## ESG controversies category

The ESG controversies score is calculated based on 23 ESG controversy topics. During the year, if a scandal occurs, the company involved is penalised and this affects their overall ESGC score and grading. The impact of the event may still be seen in the following year if there are new developments related to the negative event, for example, lawsuits, ongoing legislation disputes or fines. All new media materials are captured as the controversy

progresses. The controversies score also addresses the market cap bias from which large-cap companies suffer, as they attract more media attention than smaller-cap companies.

## Easily identify companies with strong ESG practices or exposure to ESG risks

ESG scores are available on Refinitiv® Eikon for seamless integration into users' workflows. They are accessible via ESG company views, the Screener app, Eikon for Office and Eikon Portfolio Analytics (PORTF) app. The ESG views show the scores in letter grades to show at a glance how companies are performing relative to their peers, and where a company's ESG weaknesses and strengths lie.

ESG scores are available on Eikon, the Microsoft® Excel® add-in, Refinitiv® Datastream® and via Datastream Data Loader (DDL). Plus, Refinitiv® Quantitative Analytics offers automated processing and integration of all ESG data and scores into users' quant models and analytics tools. The scores, as well as all underlying ESG data and analytics, are also available via a cloud-based delivery solution on the Refinitiv Data Platform.

The conversion from a percentile score to a letter grade is based on the logic in the table below.

| Score range                  | Grade | Description  |
|------------------------------|-------|--|
| 0.0 <= score <= 0.083333     | D -   | 'D' score indicates poor relative ESG performance and insufficient degree of transparency in reporting material ESG data publicly.     |
| 0.083333 < score <= 0.166666 | D     |  |
| 0.166666 < score <= 0.250000 | D +   |  |
| 0.250000 < score <= 0.333333 | C -   | 'C' score indicates satisfactory relative ESG performance and moderate degree of transparency in reporting material ESG data publicly. |
| 0.333333 < score <= 0.416666 | C     |  |
| 0.416666 < score <= 0.500000 | C +   |  |
| 0.500000 < score <= 0.583333 | B -   | 'B' score indicates good relative ESG performance and above-average degree of transparency in reporting material ESG data publicly.    |
| 0.583333 < score <= 0.666666 | B     |  |
| 0.666666 < score <= 0.750000 | B +   |  |
| 0.750000 < score <= 0.833333 | A -   | 'A' score indicates excellent relative ESG performance and high degree of transparency in reporting material ESG data publicly.        |
| 0.833333 < score <= 0.916666 | A     |  |
| 0.916666 < score <= 1        | A +   |  |

ESG  
laggards

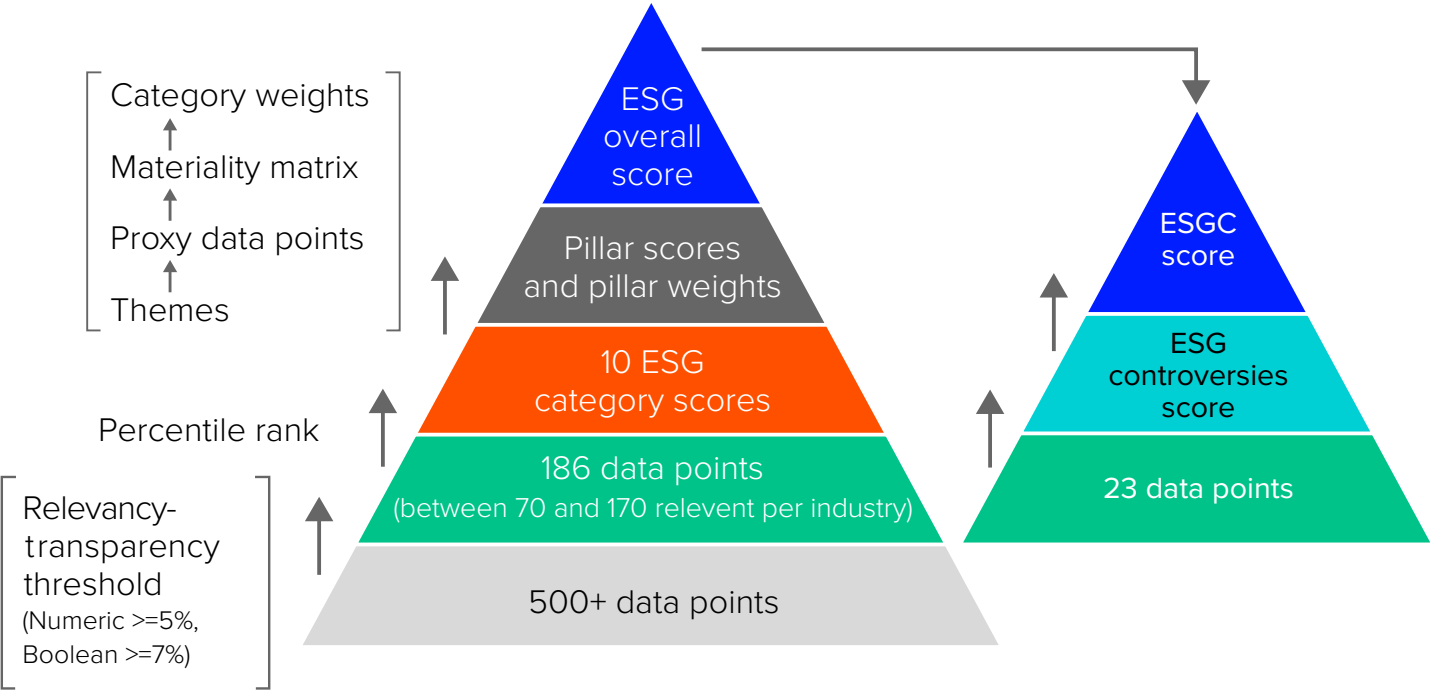


ESG  
leaders

# Scores calculation methodology

We believe that ESG data is fundamentally relevant to informed investment decision making and as such, transparency is a key component of our customers' trust and confidence in the data we provide to them. This section describes the Refinitiv ESG scoring methodology in detail.

The Refinitiv ESG scoring methodology can be summarised and illustrated by means of a five-step process flow.





# Step 1: ESG category scores

## Treatment of underlying data points – Boolean and numeric

### 1. Boolean data

Boolean questions are typically answered with 'Yes' 'No' or 'Null'. For instance, the answer to 'Does the company have a water efficiency policy?' can be 'Yes' (which is equal to a value of 1) if this is indeed the case, or 'No' if the company in question does not have such a policy, or if it reports only partial information (which is equivalent to 'No'). In such cases, a default value of 0 is automatically assigned by the system. In other words, a default value of 0 is assigned for Boolean data points when no relevant data is found in the public disclosure of companies.

Each measure has a polarity indicating whether a higher value is positive or negative. For instance, having an emissions reduction policy is positive, but having environmental controversies is negative.

Based on the polarity of the data point (i.e., is having a higher value 'better' or 'worse?'), Boolean data points are converted to numeric values for the percentile score calculation. Details are available in the table below:

| Default values |              |             |
|----------------|--------------|-------------|
| Positive       | Yes = 1      | No/Null = 0 |
| Negative       | Yes/Null = 0 | No = 1      |

Note: only for TR.CriticalCountry1 is a default value of 1 assigned for 'Null', assuming those companies do not have operations in the listed critical countries.

### 2. Numeric data

A relative percentile ranking is only applied if a numeric data point is reported by a company, while all the companies in an industry group report that respective data point.

Again, each measure has a polarity indicating whether a higher value is positive or negative. For instance, more water recycled is positive, but more emissions is negative.

#### Industry group relevancy

Some indicators are industry-specific and thus not relevant for all companies. If an indicator is irrelevant for a particular sector, then it is excluded from the calculation and its value will be deemed not relevant (N/R).

Example: the indicator Environmental Assets Under Management is relevant only for the financial sector.

## Category scores calculation methodology

Percentile rank scoring methodology is adopted to calculate the 10 category scores and the ESG controversies score. It is based on three factors:

- How many companies are worse than the current one?
- How many companies have the same value?
- How many companies have a value at all?

Percentile rank score is based on the rank, and therefore is not very sensitive to outliers.

$$\text{score} = \frac{\text{no. of companies with a worse value} + \frac{\text{no. of companies with the same value included in the current one}}{2}}{\text{no. of companies with a value}}$$

## Peer group/category and benchmark

To calculate the environmental and social category scores, as well as the controversies score, the TRBC industry group is used as the benchmark, as these topics are more relevant and material to companies within the same industries.

To calculate the governance categories, the country of incorporation is used as the benchmark, as best governance practices are more consistent within countries.

The category scoring example can be found in [Appendix A](#).

## Step 2: Materiality matrix

To apply an objective, impartial and trusted assessment of the importance of each ESG theme to different industries, the Refinitiv ESG magnitude matrix was developed as a proprietary model and is applied at the category level. Importantly, the magnitude values are automatically and dynamically adjusted as ESG corporate disclosure evolves and matures.

### Introduction to Refinitiv ESG materiality matrix

Materiality for Refinitiv ESG is defined in the form of category weights. Category weights are calculated based on an objective and data-driven approach to determine the relative importance of each theme to each individual industry group. Based on the themes covered in each category, data points with sufficient disclosure are used as a proxy for industry magnitude. Themes and data points have a one-to-one relationship; in other words, there is one data point identified per theme. For some themes, there are no data points that may be used as good proxies of relative importance, due primarily to insufficient disclosure. These themes are not included in the scoring methodology to derive the materiality matrix, but are present in corporate ESG reporting and the Refinitiv ESG database. Listing all the individual themes enables Refinitiv to identify critical data points across the themes where reporting is sufficient, to use as a proxy of materiality.

The table below provides a detailed view on the ESG themes covered in each category, with the respective data points evaluated as proxies of ESG magnitude per industry group.

| Pillars       | Categories             | Themes   | Data points  | Weight method   |
|---------------|------------------------|--|--|---|
| Environmental | Emission               | Emissions  | TR.AnalyticCO2   | Quant industry median   |
|               |                        | Waste  | TR.AnalyticTotalWaste                                    | Quant industry median   |
|               |                        | Biodiversity*  |  |   |
|               |                        | Environmental management systems*  |  |   |
|               | Innovation             | Product innovation   | TR.EnvProducts   | Transparency weights  |
|               |                        | Green revenues, research and development (R&D) and capital expenditures (CapEx)            | TR.AnalyticEnvRD   | Quant industry median   |
|               | Resource use           | Water  | TR.AnalyticWaterUse                                      | Quant industry median   |
|               |                        | Energy   | TR.AnalyticEnergyUse                                     | Quant industry median   |
|               |                        | Sustainable packaging*   |  |   |
|               |                        | Environmental supply chain*  |  |   |
| Social        | Community              | Equally important to all industry groups, hence a median weight of five is assigned to all |  | Equally important to all industry groups  |
|               | Human rights           | Human rights   | TR.PolicyHumanRights                                     | Transparency weights  |
|               | Product responsibility | Responsible marketing  | TR.PolicyResponsibleMarketing                            | Transparency weights  |
|               |                        | Product quality  | TR.ProductQualityMonitoring                              | Transparency weights  |
|               |                        | Data privacy   | TR.PolicyDataPrivacy                                     | Transparency weights  |
|               | Workforce              | Diversity and inclusion  | TR.WomenEmployees  | Quant industry median   |
|               |                        | Career development and training  | TR.AvgTrainingHours                                      | Transparency weights  |
|               |                        | Working conditions   | TR.TradeUnionRep   | Quant industry median   |
|               |                        | Health and safety  | TR.AnalyticLostDays                                      | Transparency weights  |
| Governance    | CSR strategy           | CSR strategy   | Data points in governance category and governance pillar | Count of data points in each governance category/all data points in governance pillar |
|               |                        | ESG reporting and transparency   |  |   |
|               | Management             | Structure (independence, diversity, committees)  | Data points in governance category and governance pillar | Count of data points in each governance category/all data points in governance pillar |
|               |                        | Compensation   |  |   |
|               | Shareholders           | Shareholder rights   | Data points in governance category and governance pillar | Count of data points in each governance category/all data points in governance pillar |
|               |                        | Takeover defenses  |  |   |

\*No data points available that may be used as a proxy for ESG magnitude/materiality

## Category weight highlights

Below are a few highlights regarding how category weights are calculated:

- The category weights are normalised to percentages ranging between 0 and 100
- Across categories of more than one theme and respective data point, the scoring methodology takes the average of each data point per industry group to calculate the weight at a category level
- The default category weights start at five points, which is the median, with the points' distribution ranging from 1 to 10. The adjustment is determined on the basis of the industry group data point median
- For environmental and social categories, a combination of industry medians and transparency (see 1 and 2 below) is applied to arrive at the category weights, based on the weight method described in the table above
- The community category is given equal weight across all industry groups as it is equally important to all of these
- As all the data points are equally important to the calculation of magnitude weights for corporate governance in all industry groups, this calculation is based not on themes but rather on underlying data points. The default category weights are assigned at five points, with the points' distribution ranging from 1 to 10. Since governance comprises three categories, the total points under governance would be 15. To derive the magnitude weight for governance, all data points per category are divided by the total of governance data points (part of scoring) and then multiplied by the total of 15 points. For example, the shareholders' category gains three points, i.e.,  $(12/56) \times 15 = 3$
- In the innovation category, the availability of 'environmental' R&D expenditure data for roughly half of the industry groups does not meet the 5% transparency threshold; thus, a default weight of one is assigned
- As responsible product marketing is a sector-specific data point, and the data availability for roughly 80% of industry groups does not meet the 7% transparency threshold, a default weight of one is assigned in the product responsibility category

## Two methods for calculating the magnitude matrix

The magnitude matrix is calculated using the following two methods for numeric and Boolean data points, used as a proxy of magnitude for environmental and social pillars.

### 1. Industry median

Primarily used for numeric data points with environmental and social impact. Materiality weighting is to be based on the relative proportion that a particular sector contributes to the overall gross number in the full ESG universe.

- The question of materiality, or in other words, the relative weight, is determined by the relative median value for a company in that industry group. The relative median values for each industry group to which the data point is material are compared, and decile ranks are assigned. The decile rank determines the relative weight assigned to that data point in determining the industry weight – from 1 to 10

### 2. Transparency weights

Primarily used for Boolean data points. Boolean data points are measures with a value of 'Yes' or 'No' (see page 9). Magnitude weights are based on the level of disclosure of each data point in a given industry group.

- The question of materiality, or in other words, the relative weight, is determined based on the disclosure of relative level in that industry group. The disclosure percentage for each industry group to which the data point is material is identified, and decile ranks are assigned. The decile rank determines the relative weight assigned to that data point in determining the industry weight – from 1 to 10

## Category weight calculation

The magnitude weights of all 10 categories are summed up for each respective industry group. Each category's magnitude weight is divided by the sum of the magnitude weights of the respective industry group to derive the category weight.

$$\text{Category weight of an industry group} = \frac{\text{Magnitude weight of a category}}{\text{Sum of magnitudes of all categories}}$$

To summarise, below are the steps involved in the calculation of category weights for the environmental and social pillars:

- Data points that are a good proxy for assessing industry impact across environmental and social topics are used for the calculation of materiality (magnitude matrix)
- Industry medians per data point, per industry group, are calculated and a relative median is derived. The relative median is equal to the median value of an industry group, divided by the sum of the medians of all industry groups for the respective data point. Deciles are identified on relative median values and deciles' weights are applied between 0 and 10 accordingly
- If a category has more than one data point, the average of decile weight is considered to derive the magnitude weight for that category
- The magnitude weights for corporate governance are calculated by a count of data points in each governance category/total data points in the governance pillar, multiplied by the default category weights of 15
- Category weights are then derived using the magnitude weights of all the categories for an industry group

Note: relevancy, category weights and pillar weights will be calculated against the latest data for all companies within Refinitiv's ESG coverage (FY0). Once defined, the analysis behind the weights will be run on an annual basis and the results benchmarked against preset thresholds to determine if an adjustment to the weights is required. The revisions will be applied only to active fiscal years (where data collection for fiscal years is still in process). Only large- and mid-cap companies are considered to identify relevancy and category weights, as small-cap companies tend to report less data, which might impact the relevancy percentage and weights.

For further details, refer to [Appendix B](#) – magnitude matrix and [Appendix C](#) – category weights matrix.

# Step 3: Overall ESG score calculation and pillar score

To calculate the overall pillar and ESG scores, category weights per industry are applied using data-driven and objective logic.

## Calculation of overall ESG score

ESG scores are aggregated based on the 10 category weights, which are calculated based on the Refinitiv magnitude matrix. Detailed ESG score calculations are available [here](#).

|                             | Environmental |            |              | Social       |                        |           |           | Governance |              |              |             |
|-----------------------------|---------------|------------|--------------|--------------|------------------------|-----------|-----------|------------|--------------|--------------|-------------|
| Industry group              | Emission      | Innovation | Resource use | Human rights | Product responsibility | Workforce | Community | Management | Shareholders | CSR strategy | ESG scores  |
| Water and related utilities | 0.15          | 0.13       | 0.15         | 0.05         | 0.04                   | 0.13      | 0.09      | 0.17       | 0.05         | 0.03         |             |
| ABC                         | 0.66          | 0.00       | 0.44         | 0.05         | 0.58                   | 0.89      | 0.34      | 0.99       | 0.84         | 0.56         | 0.571146184 |
| CBD                         | 0.71          | 0.96       | 0.38         | 0.00         | 0.69                   | 0.66      | 0.70      | 0.37       | 0.01         | 0.56         | 0.547913483 |
| DEF                         | 0.03          | 0.00       | 0.00         | 0.00         | 0.00                   | 0.57      | 0.11      | 0.21       | 0.14         | 0.54         | 0.150536652 |
| EFG                         | 0.00          | 0.31       | 0.03         | 0.00         | 0.00                   | 0.25      | 0.59      | 0.89       | 0.94         | 0.00         | 0.327824384 |
| EMJ                         | 0.87          | 0.31       | 0.68         | 0.20         | 0.86                   | 0.84      | 0.98      | 0.33       | 0.87         | 0.68         | 0.639400132 |
| EMQ                         | 0.00          | 0.00       | 0.00         | 0.00         | 0.00                   | 0.30      | 0.02      | 0.88       | 0.08         | 0.01         | 0.194782046 |
| ENR                         | 0.92          | 0.81       | 0.85         | 0.75         | 0.97                   | 0.93      | 0.66      | 0.40       | 0.49         | 0.86         | 0.756319427 |
| GPQ                         | 0.24          | 0.31       | 0.00         | 0.00         | 0.17                   | 0.02      | 0.16      | 0.56       | 0.56         | 0.00         | 0.223443757 |
| HIJ                         | 0.61          | 0.31       | 0.50         | 0.65         | 0.42                   | 0.80      | 0.80      | 0.48       | 0.27         | 0.37         | 0.54145808  |
| IBD                         | 0.00          | 0.00       | 0.00         | 0.00         | 0.00                   | 0.07      | 0.30      | 0.51       | 0.49         | 0.00         | 0.145398367 |
| JKL                         | 0.50          | 0.73       | 0.74         | 0.00         | 0.78                   | 0.43      | 0.93      | 0.62       | 0.89         | 0.26         | 0.611504799 |
| LMN                         | 0.76          | 0.31       | 0.56         | 0.00         | 0.47                   | 0.48      | 0.48      | 0.17       | 0.24         | 0.26         | 0.415151441 |
| MNO                         | 0.82          | 0.31       | 0.91         | 0.40         | 0.58                   | 0.61      | 0.07      | 0.33       | 0.52         | 0.63         | 0.539888776 |
| MSE                         | 0.55          | 0.00       | 0.62         | 0.85         | 0.17                   | 0.75      | 0.84      | 0.77       | 0.35         | 0.91         | 0.581805891 |
| OPQ                         | 0.29          | 0.00       | 0.32         | 0.00         | 0.17                   | 0.16      | 0.48      | 0.15       | 0.42         | 0.08         | 0.212906948 |
| PQR                         | 0.45          | 0.65       | 0.79         | 0.55         | 0.78                   | 0.52      | 0.75      | 0.76       | 0.76         | 0.16         | 0.640379494 |
| PSF                         | 0.97          | 0.88       | 0.97         | 0.95         | 0.92                   | 0.98      | 0.89      | 0.15       | 0.73         | 0.34         | 0.776142465 |
| RST                         | 0.08          | 0.31       | 0.00         | 0.00         | 0.17                   | 0.20      | 0.59      | 0.42       | 0.42         | 0.00         | 0.228111754 |
| UVW                         | 0.34          | 0.00       | 0.26         | 0.20         | 0.58                   | 0.70      | 0.39      | 0.26       | 0.16         | 0.31         | 0.316400123 |
| VPF                         | 0.16          | 0.31       | 0.15         | 0.00         | 0.17                   | 0.11      | 0.25      | 0.88       | 0.90         | 0.00         | 0.325828115 |
| XYZ                         | 0.39          | 0.00       | 0.21         | 0.40         | 0.17                   | 0.39      | 0.48      | 0.95       | 0.73         | 0.51         | 0.429105164 |
| YQM                         | 0.16          | 0.00       | 0.09         | 0.00         | 0.36                   | 0.34      | 0.20      | 0.69       | 0.34         | 0.00         | 0.25005416  |

## Calculation of pillar scores

ESG pillar scores are the relative sum of the category weights. Calculations to derive pillar scores are illustrated below:

| Pillar               | Category               | Category scores* | Category weights | Sum of category weights | Formula: sum of category weights | New category weights* | Formula: new category weights | Pillar scores | Formula: pillar scores                                      |
|----------------------|------------------------|------------------|------------------|-------------------------|----------------------------------|-----------------------|-------------------------------|---------------|---|
| Environmental        | Emissions              | 0.98             | 0.15             | 0.44                    |                                  | 0.35                  | (0.15/0.44)                   | 0.94          | (0.98*0.35)+<br>(0.97*0.35)+<br>(0.85*0.29)                 |
| Environmental        | Resource use           | 0.97             | 0.15             |                         | (0.15+0.15+0.13)                 | 0.35                  | (0.15/0.44)                   |               |   |
| Environmental        | Innovation             | 0.85             | 0.13             |                         |                                  | 0.29                  | (0.13/0.44)                   |               |   |
| Social               | Community              | 0.89             | 0.09             | 0.31                    |                                  | 0.28                  | (0.09/0.31)                   | 0.94          | (0.89*0.28)+<br>(0.95*0.17)+<br>(0.92*0.13)+<br>(0.98*0.43) |
| Social               | Human rights           | 0.95             | 0.05             |                         | (0.09+0.05+0.04+0.13)            | 0.17                  | (0.05/0.31)                   |               |   |
| Social               | Product responsibility | 0.92             | 0.04             |                         |                                  | 0.13                  | (0.04/0.31)                   |               |   |
| Social               | Workforce              | 0.98             | 0.13             |                         |                                  | 0.43                  | (0.13/0.31)                   |               |   |
| Corporate governance | Shareholders           | 0.73             | 0.05             | 0.26                    |                                  | 0.20                  | (0.05/0.26)                   | 0.32          | (0.73*0.20)+<br>(0.34* 0.13)+<br>(0.19*0.67)                |
| Corporate governance | CSR strategy           | 0.34             | 0.03             |                         | (0.05+0.03+0.17)                 | 0.13                  | (0.03/0.26)                   |               |   |
| Corporate governance | Management             | 0.19             | 0.17             |                         |                                  | 0.67                  | (0.17/0.26)                   |               |   |

\*Decimal places to be considered

See example in [Appendix D](#).

## Step 4: Controversies scores calculation

ESG controversies score is calculated based on 23 ESG controversy topics, with recent controversies reflected in the latest complete period (for further details, refer to [Appendix G](#) of this document).

- Default value of all controversy measures is 0
- All recent controversies are counted in the latest closed fiscal year and no controversy is double-counted
- Controversies are benchmarked on industry group
- Companies with no controversies will get a score of 100
- Controversy score calculation addresses the market cap bias from which large-cap companies suffer, as they attract more media attention than smaller-cap companies
- Severity weights are applied to address market cap bias and are applicable for the calculation of current and historical periods. The calculation of controversy scores based on the market cap grouping is defined as follows:

| Global benchmark | Cap class | Severity rate* |
|------------------|-----------|----------------|
| >=10 billion     | Large     | 0.33           |
| >=2 billion      | Mid       | 0.67           |
| <2 billion       | Small     | 1              |

\*Logic to derive weights: large = 1/3 or 0.33, mid = 0.67, small = 0.33+0.67 = 1.

Recent controversies are accounted as follows:

- For instance, the last completed fiscal year for a company is 31 December 2019. If there is one controversy on 1 May 2020, and another on 1 March 2021, both are accounted under 'recent controversies' and included in the scoring for FY2019
- Once FY2020 is completed, the two recent controversies are moved to FY2020. The controversy related to 1 May 2020, is moved to the 'normal' controversy data point, while the controversy related to 1 March 2021 remains under 'recent' but is accounted for in FY2020
- When FY2021 is completed, the controversy related to 1 March 2021 will be removed from 'recent' controversy within FY2020 and added to the 'normal' controversy data point in FY2021

See example in [Appendix H](#).



# Step 5: ESGC score

The ESGC score is calculated as the average of the ESG score and ESG controversies score when there are controversies during the fiscal year. When the controversies score is greater than the ESG score, then the ESG score is equal to the [ESGC score](#).

| Industry group              | Environmental |            |              | Social       |                        |           |           | Governance |              |              | ESG scores  | Controversy scores | Combined scores |
|-----------------------------|---------------|------------|--------------|--------------|------------------------|-----------|-----------|------------|--------------|--------------|-------------|--------------------|-----------------|
|                             | Emission      | Innovation | Resource use | Human rights | Product responsibility | Workforce | Community | Management | Shareholders | CSR strategy |             |                    |                 |
| Water and related utilities | 0.15          | 0.13       | 0.15         | 0.05         | 0.04                   | 0.13      | 0.09      | 0.17       | 0.05         | 0.03         |             |                    |                 |
| ABC                         | 0.66          | 0.00       | 0.44         | 0.05         | 0.58                   | 0.89      | 0.34      | 0.99       | 0.84         | 0.56         | 0.571146184 | 1                  | 0.571146184     |
| CBD                         | 0.71          | 0.96       | 0.38         | 0.00         | 0.69                   | 0.66      | 0.70      | 0.37       | 0.01         | 0.56         | 0.547913483 | 1                  | 0.547913483     |
| DEF                         | 0.03          | 0.00       | 0.00         | 0.00         | 0.00                   | 0.57      | 0.11      | 0.21       | 0.14         | 0.54         | 0.150536652 | 1                  | 0.150536652     |
| EFG                         | 0.00          | 0.31       | 0.03         | 0.00         | 0.00                   | 0.25      | 0.59      | 0.89       | 0.94         | 0.00         | 0.327824384 | 1                  | 0.327824384     |
| EMJ                         | 0.87          | 0.31       | 0.68         | 0.20         | 0.86                   | 0.84      | 0.98      | 0.33       | 0.87         | 0.68         | 0.639400132 | 0.25               | 0.444700066     |
| EMQ                         | 0.00          | 0.00       | 0.00         | 0.00         | 0.00                   | 0.30      | 0.02      | 0.88       | 0.08         | 0.01         | 0.194782046 | 1                  | 0.194782046     |
| ENR                         | 0.92          | 0.81       | 0.85         | 0.75         | 0.97                   | 0.93      | 0.66      | 0.40       | 0.49         | 0.86         | 0.756319427 | 1                  | 0.756319427     |
| GPQ                         | 0.24          | 0.31       | 0.00         | 0.00         | 0.17                   | 0.02      | 0.16      | 0.56       | 0.56         | 0.00         | 0.223443757 | 1                  | 0.223443757     |
| HIJ                         | 0.61          | 0.31       | 0.50         | 0.65         | 0.42                   | 0.80      | 0.80      | 0.48       | 0.27         | 0.37         | 0.54145808  | 1                  | 0.54145808      |
| IBD                         | 0.00          | 0.00       | 0.00         | 0.00         | 0.00                   | 0.07      | 0.30      | 0.51       | 0.49         | 0.00         | 0.145398367 | 1                  | 0.145398367     |
| JKL                         | 0.50          | 0.73       | 0.74         | 0.00         | 0.78                   | 0.43      | 0.93      | 0.62       | 0.89         | 0.26         | 0.611504799 | 1                  | 0.611504799     |
| LMN                         | 0.76          | 0.31       | 0.56         | 0.00         | 0.47                   | 0.48      | 0.48      | 0.17       | 0.24         | 0.26         | 0.415151441 | 0.75               | 0.415151441     |
| MNO                         | 0.82          | 0.31       | 0.91         | 0.40         | 0.58                   | 0.61      | 0.07      | 0.33       | 0.52         | 0.63         | 0.539888776 | 1                  | 0.539888776     |
| MSE                         | 0.55          | 0.00       | 0.62         | 0.85         | 0.17                   | 0.75      | 0.84      | 0.77       | 0.35         | 0.91         | 0.581805891 | 1                  | 0.581805891     |
| OPQ                         | 0.29          | 0.00       | 0.32         | 0.00         | 0.17                   | 0.16      | 0.48      | 0.15       | 0.42         | 0.08         | 0.212906948 | 1                  | 0.212906948     |
| PQR                         | 0.45          | 0.65       | 0.79         | 0.55         | 0.78                   | 0.52      | 0.75      | 0.76       | 0.76         | 0.16         | 0.640379494 | 1                  | 0.640379494     |
| PSF                         | 0.97          | 0.88       | 0.97         | 0.95         | 0.92                   | 0.98      | 0.89      | 0.15       | 0.73         | 0.34         | 0.776142465 | 1                  | 0.776142465     |
| RST                         | 0.08          | 0.31       | 0.00         | 0.00         | 0.17                   | 0.20      | 0.59      | 0.42       | 0.42         | 0.00         | 0.228111754 | 1                  | 0.228111754     |
| UVW                         | 0.34          | 0.00       | 0.26         | 0.20         | 0.58                   | 0.70      | 0.39      | 0.26       | 0.16         | 0.31         | 0.316400123 | 1                  | 0.316400123     |
| VPF                         | 0.16          | 0.31       | 0.15         | 0.00         | 0.17                   | 0.11      | 0.25      | 0.88       | 0.90         | 0.00         | 0.325828115 | 1                  | 0.325828115     |
| XYZ                         | 0.39          | 0.00       | 0.21         | 0.40         | 0.17                   | 0.39      | 0.48      | 0.95       | 0.73         | 0.51         | 0.429105164 | 1                  | 0.429105164     |
| YQM                         | 0.16          | 0.00       | 0.09         | 0.00         | 0.36                   | 0.34      | 0.20      | 0.69       | 0.34         | 0.00         | 0.25005416  | 1                  | 0.25005416      |

Refer to the below table for combined score logics:

| Scenario  | ESG controversies score | ESG score | ESGC score |
|---|-------------------------|-----------|------------|
| If controversies score is >=ESG score, then ESG score = ESGC score                              | 100                     | 89        | 89         |
| If controversies scores is <ESG score, then ESGC score = average of ESG and controversies score | 48                      | 49        | 48.5       |

## Appendix A

### Category scoring example

This section illustrates how a category score is calculated, using the data available in the ESG database as of March 2020 for all water and related utilities industry companies (e.g., the emission category score for FY2017 across the 22 companies in this industry).

Detailed calculations of emission category scores are available [here](#).

#### Step-by-step illustration

- There are 22 metrics that are considered in calculating emission category scores
- Values are extracted for all 22 metrics
- Numeric metrics are considered only if reported by the company
- Relevant numeric values are assigned and calculated for Boolean metrics
- Percentile score calculation formulas are applied for each measure

The following illustrates how the percentile formula is applied for a numeric data point 'TR.AnalyticCO2', which is a negative polarity data point (i.e., the lower the better).

| Description                       | JKL |  | ABC |  |
|-----------------------------------|-----|--|-----|--|
| No. of companies with worse value | 10  |  | 9   |  |
| No. of companies with same value  | 1   |  | 1   |  |
| No. of companies with value       | 11  |  | 11  |  |

| Company name | Eikon code     | DFO codes | Value    | Score    | Year            |
|--------------|----------------|-----------|----------|----------|-----------------|
| JKL          | TR.AnalyticCo2 | ENERO03V  | 0.000005 | 0.954545 | $(10+(1/2))/11$ |
| ABC          | TR.AnalyticCo2 | ENERO03V  | 0.000123 | 0.863636 | $(9+(1/2))/11$  |
| LMN          | TR.AnalyticCo2 | ENERO03V  | 0.000182 | 0.772727 | $(8+(1/2))/11$  |
| PQR          | TR.AnalyticCo2 | ENERO03V  | 0.000189 | 0.681818 | $(7+(1/2))/11$  |
| ENR          | TR.AnalyticCo2 | ENERO03V  | 0.00019  | 0.590909 | $(6+(1/2))/11$  |
| MSE          | TR.AnalyticCo2 | ENERO03V  | 0.000211 | 0.5      | $(5+(1/2))/11$  |
| MNO          | TR.AnalyticCo2 | ENERO03V  | 0.000218 | 0.409091 | $(4+(1/2))/11$  |
| EMJ          | TR.AnalyticCo2 | ENERO03V  | 0.000314 | 0.318182 | $(3+(1/2))/11$  |
| UVW          | TR.AnalyticCo2 | ENERO03V  | 0.000438 | 0.227273 | $(2+(1/2))/11$  |
| CBD          | TR.AnalyticCo2 | ENERO03V  | 0.001081 | 0.136364 | $(1+(1/2))/11$  |
| PSF          | TR.AnalyticCo2 | ENERO03V  | 0.001142 | 0.045455 | $(0+(1/2))/11$  |

The following illustrates how the percentile formula is applied for a Boolean data point 'TR.PolicyEmissions', which is a positive polarity data point (i.e., the higher the better).

| Company name | Eikon code         | DFO codes  | Value | Default value for Boolean | Percentile score | Percentile score formula applied |
|--------------|--------------------|------------|-------|---------------------------|------------------|----------------------------------|
| JKL          | TR.PolicyEmissions | ENERDP0051 | Yes   | 1                         | 0.791666667      | $(7+(5/2))/12$                   |
| ABC          | TR.PolicyEmissions | ENERDP0051 | Yes   | 1                         | 0.791666667      | $(7+(5/2))/12$                   |
| LMN          | TR.PolicyEmissions | ENERDP0051 | Yes   | 1                         | 0.791666667      | $(7+(5/2))/12$                   |
| PQR          | TR.PolicyEmissions | ENERDP0051 | Yes   | 1                         | 0.791666667      | $(7+(5/2))/12$                   |
| ENR          | TR.PolicyEmissions | ENERDP0051 | Yes   | 1                         | 0.791666667      | $(7+(5/2))/12$                   |
| MSE          | TR.PolicyEmissions | ENERDP0051 | No    | 0                         | 0                | 0                                |
| MNO          | TR.PolicyEmissions | ENERDP0051 | No    | 0                         | 0                | 0                                |
| EMJ          | TR.PolicyEmissions | ENERDP0051 | No    | 0                         | 0                | 0                                |
| UVW          | TR.PolicyEmissions | ENERDP0051 | Null  | 0                         | 0                | 0                                |
| CBD          | TR.PolicyEmissions | ENERDP0051 | Null  | 0                         | 0                | 0                                |
| PSF          | TR.PolicyEmissions | ENERDP0051 | Null  | 0                         | 0                | 0                                |
| XYZ          | TR.PolicyEmissions | ENERDP0051 | Null  | 0                         | 0                | 0                                |

- The same steps are applied to all other data points in the category
- After deriving percentile scores at a data point level, percentile scores are summed up at a company level as described in the table below

| Company name                 | Eikon code                     | DFO codes  | Values      | Percentile scores |
|------------------------------|--------------------------------|------------|-------------|-------------------|
| ABC                          | TR.AnalyticCO2                 | ENERO03V   | 0.000166844 | 0.833333333       |
| ABC                          | TR.PolicyEmissions             | ENERDP0051 | 1           | 0.7               |
| ABC                          | TR.TargetsEmissions            | ENERDP0161 | 1           | 0.9               |
| ABC                          | TR.BiodiversityImpactReduction | ENERDP019  | 1           | 0.766666667       |
| ABC                          | TR.WasteReductionInitiatives   | ENERDP062  | 1           | 0.933333333       |
| ABC                          | TR.EnvPartnerships             | ENERDP070  | 1           | 0.766666667       |
| ABC                          | TR.EnvRestorationInitiatives   | ENERDP076  | 1           | 0.8               |
| ABC                          | TR.ClimateChangeRisksOpp       | ENERDP089  | 1           | 0.733333333       |
| ABC                          | TR.PolicyWaterEfficiency       | ENRRDP0121 | 0           | 0                 |
| ABC                          | TR.PolicyEnergyEfficiency      | ENRRDP0122 | 0           | 0                 |
| ABC                          | TR.TargetsWaterEfficiency      | ENRRDP0191 | 0           | 0                 |
| ABC                          | TR.NOxSOxEmissionsReduction    | ENERDP033  | 0           | 0                 |
| ABC                          | TR.eWasteReduction             | ENERDP063  | 0           | 0                 |
| Sum of all percentile scores |                                |            |             | 6.433333          |

- Percentile scores at company level are sorted from highest to lowest
- Apply percentile scores formula to derive emission category score

## Appendix B

The table below provides an indicative ESG magnitude (materiality) matrix based on assessment of sample ESG data. It is not a definitive matrix to be used in the final scoring.

|  | Environmental |            |              | Social       |                        |           |           | Governance |              |              |
|--|---------------|------------|--------------|--------------|------------------------|-----------|-----------|------------|--------------|--------------|
| Industry group                                     | Emission      | Innovation | Resource use | Human rights | Product responsibility | Workforce | Community | Management | Shareholders | CSR strategy |
| Aerospace and defense                              | 4             | 4          | 3            | 7            | 3                      | 5         | 5         | 10         | 3            | 2            |
| Automobiles and auto parts                         | 6             | 10         | 5            | 9            | 5                      | 6         | 5         | 10         | 3            | 2            |
| Banking services                                   | 1             | 4          | 1            | 4            | 4                      | 8         | 5         | 10         | 3            | 2            |
| Beverages  | 8             | 3          | 8            | 9            | 7                      | 6         | 5         | 10         | 3            | 2            |
| Biotechnology and medical research                 | 4             | 1          | 6            | 1            | 5                      | 3         | 5         | 10         | 3            | 2            |
| Chemicals  | 9             | 9          | 9            | 10           | 5                      | 6         | 5         | 10         | 3            | 2            |
| Coal   | 10            | 1          | 10           | 3            | 1                      | 5         | 5         | 10         | 3            | 2            |
| Collective investments                             | 1             | 1          | 1            | 1            | 2                      | 3         | 5         | 10         | 3            | 2            |
| Communications and networking                      | 2             | 4          | 3            | 2            | 5                      | 3         | 5         | 10         | 3            | 2            |
| Computers, phones and household electronics        | 3             | 8          | 2            | 10           | 6                      | 6         | 5         | 10         | 3            | 2            |
| Construction and engineering                       | 8             | 8          | 5            | 7            | 3                      | 6         | 5         | 10         | 3            | 2            |
| Construction materials                             | 10            | 8          | 10           | 7            | 3                      | 7         | 5         | 10         | 3            | 2            |
| Containers and packaging                           | 9             | 6          | 9            | 10           | 5                      | 6         | 5         | 10         | 3            | 2            |
| Diversified industrial goods wholesalers           | 3             | 7          | 4            | 9            | 1                      | 6         | 5         | 10         | 3            | 2            |
| Diversified retail                                 | 6             | 2          | 6            | 2            | 4                      | 4         | 5         | 10         | 3            | 2            |
| Electric utilities and IPPs                        | 10            | 8          | 9            | 4            | 3                      | 8         | 5         | 10         | 3            | 2            |
| Electronic equipment and parts                     | 7             | 6          | 8            | 5            | 2                      | 4         | 5         | 10         | 3            | 2            |
| Food and drug retailing                            | 6             | 3          | 4            | 5            | 8                      | 6         | 5         | 10         | 3            | 2            |
| Food and tobacco                                   | 8             | 2          | 8            | 7            | 8                      | 6         | 5         | 10         | 3            | 2            |
| Freight and logistics services                     | 7             | 6          | 6            | 4            | 4                      | 7         | 5         | 10         | 3            | 2            |
| Healthcare equipment and supplies                  | 3             | 3          | 2            | 5            | 6                      | 4         | 5         | 10         | 3            | 2            |
| Healthcare providers and services                  | 3             | 1          | 4            | 3            | 6                      | 4         | 5         | 10         | 3            | 2            |
| Homebuilding and construction supplies             | 6             | 9          | 6            | 8            | 5                      | 6         | 5         | 10         | 3            | 2            |
| Hotels and entertainment services                  | 6             | 1          | 7            | 4            | 9                      | 5         | 5         | 10         | 3            | 2            |
| Household goods                                    | 6             | 10         | 5            | 7            | 5                      | 5         | 5         | 10         | 3            | 2            |
| Industrial conglomerates                           | 7             | 9          | 7            | 9            | 5                      | 6         | 5         | 10         | 3            | 2            |
| Insurance  | 1             | 3          | 1            | 3            | 4                      | 6         | 5         | 10         | 3            | 2            |
| Investment banking and investment services         | 1             | 3          | 1            | 1            | 3                      | 4         | 5         | 10         | 3            | 2            |
| Investment holding companies                       | 7             | 2          | 8            | 2            | 1                      | 2         | 5         | 10         | 3            | 2            |
| Leisure products                                   | 2             | 3          | 2            | 4            | 9                      | 3         | 5         | 10         | 3            | 2            |
| Machinery, tools, heavy vehicles, trains and ships | 5             | 10         | 4            | 6            | 5                      | 4         | 5         | 10         | 3            | 2            |
| Media and publishing                               | 2             | 2          | 2            | 4            | 6                      | 5         | 5         | 10         | 3            | 2            |
| Metals and mining                                  | 10            | 2          | 10           | 10           | 2                      | 7         | 5         | 10         | 3            | 2            |
| Multiline utilities                                | 10            | 9          | 9            | 6            | 4                      | 7         | 5         | 10         | 3            | 2            |
| Natural gas utilities                              | 7             | 7          | 8            | 5            | 5                      | 8         | 5         | 10         | 3            | 2            |
| Office equipment                                   | 4             | 10         | 3            | 10           | 7                      | 5         | 5         | 10         | 3            | 2            |
| Oil and gas  | 7             | 7          | 9            | 10           | 4                      | 8         | 5         | 10         | 3            | 2            |
| Oil and gas related equipment and services         | 8             | 3          | 7            | 8            | 2                      | 6         | 5         | 10         | 3            | 2            |
| Paper and forest products                          | 10            | 9          | 10           | 6            | 1                      | 7         | 5         | 10         | 3            | 2            |
| Passenger transportation services                  | 7             | 3          | 7            | 5            | 4                      | 8         | 5         | 10         | 3            | 2            |
| Personal and household products and services       | 6             | 4          | 6            | 8            | 10                     | 7         | 5         | 10         | 3            | 2            |
| Pharmaceuticals                                    | 5             | 2          | 5            | 7            | 5                      | 6         | 5         | 10         | 3            | 2            |
| Professional and commercial services               | 4             | 3          | 4            | 6            | 4                      | 5         | 5         | 10         | 3            | 2            |
| Real estate operations                             | 6             | 4          | 6            | 2            | 2                      | 8         | 5         | 10         | 3            | 2            |
| Renewable energy                                   | 6             | 6          | 6            | 1            | 3                      | 3         | 5         | 10         | 3            | 2            |
| Residential and commercial REITs                   | 8             | 2          | 8            | 1            | 3                      | 5         | 5         | 10         | 3            | 2            |
| Semiconductors and semiconductor equipment         | 6             | 7          | 6            | 9            | 5                      | 6         | 5         | 10         | 3            | 2            |
| Software and IT services                           | 1             | 2          | 2            | 2            | 4                      | 2         | 5         | 10         | 3            | 2            |
| Specialty retailers                                | 3             | 2          | 3            | 3            | 5                      | 4         | 5         | 10         | 3            | 2            |
| Telecommunications services                        | 4             | 4          | 4            | 8            | 9                      | 8         | 5         | 10         | 3            | 2            |
| Textiles and apparel                               | 3             | 4          | 4            | 8            | 7                      | 8         | 5         | 10         | 3            | 2            |
| Transport infrastructure                           | 7             | 2          | 7            | 6            | 3                      | 9         | 5         | 10         | 3            | 2            |
| Uranium  | 10            | 1          | 10           | 1            | 3                      | 3         | 5         | 10         | 3            | 2            |
| Water and related utilities                        | 9             | 8          | 9            | 3            | 2                      | 8         | 5         | 10         | 3            | 2            |

## Appendix C

The table below provides an indicative ESG category weights matrix based on assessment of sample ESG data. It is not a definitive matrix to be used in the final scoring.

|  | Environmental |            |              | Social       |                        |           |           | Governance |              |              |
|--|---------------|------------|--------------|--------------|------------------------|-----------|-----------|------------|--------------|--------------|
| Industry group                                     | Emission      | Innovation | Resource use | Human rights | Product responsibility | Workforce | Community | Management | Shareholders | CSR strategy |
| Aerospace and defense                              | 0.09          | 0.09       | 0.06         | 0.15         | 0.07                   | 0.11      | 0.11      | 0.22       | 0.06         | 0.04         |
| Automobiles and auto parts                         | 0.10          | 0.16       | 0.08         | 0.15         | 0.09                   | 0.10      | 0.08      | 0.16       | 0.05         | 0.03         |
| Banking services                                   | 0.02          | 0.10       | 0.02         | 0.10         | 0.09                   | 0.19      | 0.12      | 0.24       | 0.07         | 0.05         |
| Beverages  | 0.12          | 0.04       | 0.13         | 0.15         | 0.12                   | 0.10      | 0.08      | 0.17       | 0.05         | 0.03         |
| Biotechnology and medical research                 | 0.09          | 0.03       | 0.14         | 0.03         | 0.12                   | 0.08      | 0.13      | 0.26       | 0.08         | 0.05         |
| Chemicals  | 0.13          | 0.13       | 0.13         | 0.15         | 0.07                   | 0.09      | 0.07      | 0.15       | 0.04         | 0.03         |
| Coal   | 0.20          | 0.02       | 0.19         | 0.06         | 0.02                   | 0.10      | 0.10      | 0.20       | 0.06         | 0.04         |
| Collective investments                             | 0.03          | 0.03       | 0.03         | 0.03         | 0.08                   | 0.09      | 0.17      | 0.34       | 0.10         | 0.07         |
| Communications and networking                      | 0.05          | 0.10       | 0.07         | 0.05         | 0.14                   | 0.07      | 0.13      | 0.26       | 0.08         | 0.05         |
| Computers, phones and household electronics        | 0.06          | 0.14       | 0.04         | 0.18         | 0.11                   | 0.11      | 0.09      | 0.18       | 0.06         | 0.04         |
| Construction and engineering                       | 0.14          | 0.14       | 0.09         | 0.12         | 0.05                   | 0.11      | 0.09      | 0.18       | 0.05         | 0.04         |
| Construction materials                             | 0.15          | 0.12       | 0.15         | 0.11         | 0.04                   | 0.11      | 0.08      | 0.16       | 0.05         | 0.03         |
| Containers and packaging                           | 0.13          | 0.09       | 0.14         | 0.16         | 0.07                   | 0.09      | 0.08      | 0.16       | 0.05         | 0.03         |
| Diversified industrial goods wholesalers           | 0.06          | 0.14       | 0.08         | 0.18         | 0.02                   | 0.12      | 0.10      | 0.20       | 0.06         | 0.04         |
| Diversified retail                                 | 0.13          | 0.03       | 0.14         | 0.05         | 0.10                   | 0.09      | 0.12      | 0.23       | 0.07         | 0.05         |
| Electric utilities and IPPs                        | 0.16          | 0.13       | 0.14         | 0.07         | 0.05                   | 0.13      | 0.08      | 0.17       | 0.05         | 0.03         |
| Electronic equipment and parts                     | 0.13          | 0.11       | 0.15         | 0.10         | 0.04                   | 0.08      | 0.10      | 0.20       | 0.06         | 0.04         |
| Food and drug retailing                            | 0.11          | 0.05       | 0.08         | 0.10         | 0.15                   | 0.12      | 0.10      | 0.20       | 0.06         | 0.04         |
| Food and tobacco                                   | 0.13          | 0.03       | 0.13         | 0.12         | 0.13                   | 0.11      | 0.09      | 0.17       | 0.05         | 0.03         |
| Freight and logistics services                     | 0.12          | 0.11       | 0.10         | 0.08         | 0.08                   | 0.12      | 0.10      | 0.19       | 0.06         | 0.04         |
| Healthcare equipment and supplies                  | 0.06          | 0.06       | 0.05         | 0.12         | 0.14                   | 0.09      | 0.12      | 0.24       | 0.07         | 0.05         |
| Healthcare providers and services                  | 0.07          | 0.02       | 0.09         | 0.07         | 0.15                   | 0.10      | 0.12      | 0.25       | 0.07         | 0.05         |
| Homebuilding and construction supplies             | 0.09          | 0.15       | 0.09         | 0.14         | 0.09                   | 0.09      | 0.09      | 0.17       | 0.05         | 0.03         |
| Hotels and entertainment services                  | 0.12          | 0.02       | 0.13         | 0.08         | 0.18                   | 0.09      | 0.10      | 0.20       | 0.06         | 0.04         |
| Household goods                                    | 0.10          | 0.16       | 0.08         | 0.12         | 0.09                   | 0.09      | 0.09      | 0.17       | 0.05         | 0.03         |
| Industrial conglomerates                           | 0.11          | 0.15       | 0.11         | 0.15         | 0.08                   | 0.09      | 0.08      | 0.16       | 0.05         | 0.03         |
| Insurance  | 0.03          | 0.08       | 0.03         | 0.08         | 0.11                   | 0.15      | 0.13      | 0.27       | 0.08         | 0.05         |
| Investment banking and investment services         | 0.03          | 0.08       | 0.03         | 0.03         | 0.08                   | 0.12      | 0.16      | 0.31       | 0.09         | 0.06         |
| Investment holding companies                       | 0.16          | 0.04       | 0.19         | 0.05         | 0.02                   | 0.05      | 0.12      | 0.24       | 0.07         | 0.05         |
| Leisure products                                   | 0.04          | 0.06       | 0.04         | 0.10         | 0.22                   | 0.07      | 0.12      | 0.24       | 0.07         | 0.05         |
| Machinery, tools, heavy vehicles, trains and ships | 0.09          | 0.18       | 0.08         | 0.11         | 0.09                   | 0.08      | 0.09      | 0.19       | 0.06         | 0.04         |
| Media and publishing                               | 0.05          | 0.04       | 0.04         | 0.10         | 0.15                   | 0.12      | 0.13      | 0.25       | 0.08         | 0.05         |
| Metals and mining                                  | 0.16          | 0.03       | 0.16         | 0.16         | 0.04                   | 0.12      | 0.08      | 0.16       | 0.05         | 0.03         |
| Multiline utilities                                | 0.15          | 0.13       | 0.14         | 0.09         | 0.06                   | 0.10      | 0.08      | 0.16       | 0.05         | 0.03         |
| Natural gas utilities                              | 0.12          | 0.12       | 0.13         | 0.08         | 0.08                   | 0.13      | 0.08      | 0.17       | 0.05         | 0.03         |
| Office equipment                                   | 0.06          | 0.16       | 0.05         | 0.17         | 0.12                   | 0.09      | 0.09      | 0.17       | 0.05         | 0.03         |
| Oil and gas  | 0.11          | 0.10       | 0.13         | 0.16         | 0.06                   | 0.12      | 0.08      | 0.16       | 0.05         | 0.03         |
| Oil and gas related equipment and services         | 0.15          | 0.05       | 0.13         | 0.15         | 0.04                   | 0.11      | 0.09      | 0.19       | 0.06         | 0.04         |
| Paper and forest products                          | 0.15          | 0.14       | 0.16         | 0.10         | 0.02                   | 0.11      | 0.08      | 0.16       | 0.05         | 0.03         |
| Passenger transportation services                  | 0.12          | 0.06       | 0.13         | 0.09         | 0.08                   | 0.14      | 0.09      | 0.19       | 0.06         | 0.04         |
| Personal and household products and services       | 0.09          | 0.07       | 0.09         | 0.14         | 0.16                   | 0.11      | 0.08      | 0.17       | 0.05         | 0.03         |
| Pharmaceuticals                                    | 0.09          | 0.03       | 0.10         | 0.14         | 0.10                   | 0.12      | 0.10      | 0.21       | 0.06         | 0.04         |
| Professional and commercial services               | 0.08          | 0.07       | 0.09         | 0.13         | 0.08                   | 0.10      | 0.11      | 0.22       | 0.07         | 0.04         |
| Real estate operations                             | 0.12          | 0.08       | 0.12         | 0.04         | 0.04                   | 0.16      | 0.11      | 0.22       | 0.07         | 0.04         |
| Renewable energy                                   | 0.14          | 0.13       | 0.13         | 0.02         | 0.07                   | 0.07      | 0.11      | 0.23       | 0.07         | 0.05         |
| Residential and commercial REITs                   | 0.16          | 0.04       | 0.17         | 0.02         | 0.07                   | 0.10      | 0.11      | 0.21       | 0.06         | 0.04         |
| Semiconductors and semiconductor equipment         | 0.10          | 0.12       | 0.10         | 0.16         | 0.09                   | 0.10      | 0.09      | 0.17       | 0.05         | 0.03         |
| Software and IT services                           | 0.03          | 0.06       | 0.05         | 0.06         | 0.11                   | 0.07      | 0.15      | 0.31       | 0.09         | 0.06         |
| Specialty retailers                                | 0.08          | 0.05       | 0.06         | 0.08         | 0.12                   | 0.10      | 0.13      | 0.26       | 0.08         | 0.05         |
| Telecommunications services                        | 0.07          | 0.06       | 0.07         | 0.14         | 0.16                   | 0.14      | 0.09      | 0.18       | 0.05         | 0.04         |
| Textiles and apparel                               | 0.05          | 0.07       | 0.07         | 0.15         | 0.13                   | 0.15      | 0.10      | 0.19       | 0.06         | 0.04         |
| Transport infrastructure                           | 0.12          | 0.04       | 0.13         | 0.11         | 0.06                   | 0.16      | 0.09      | 0.19       | 0.06         | 0.04         |
| Uranium  | 0.21          | 0.02       | 0.21         | 0.02         | 0.07                   | 0.07      | 0.10      | 0.21       | 0.06         | 0.04         |
| Water and related utilities                        | 0.15          | 0.13       | 0.15         | 0.05         | 0.04                   | 0.13      | 0.09      | 0.17       | 0.05         | 0.03         |

## Appendix D

### Pillar scoring example

In this section is an illustration of how [pillar scores are calculated](#) for the water and related utilities industry group, using the data available in the ESG database for FY2017.

| Water and related utilities |          |            |              | Illustration of calculation of pillar scores |              |                        |           |           |                      |            |              |              |                          |
|-----------------------------|----------|------------|--------------|--|--------------|------------------------|-----------|-----------|----------------------|------------|--------------|--------------|--------------------------|
| Industry group              | Emission | Innovation | Resource use | Environmental pillar scores                  | Human rights | Product responsibility | Workforce | Community | Social pillar scores | Management | Shareholders | CSR strategy | Governance pillar scores |
| Pillar weights              | 0.35     | 0.29       | 0.35         |  | 0.17         | 0.13                   | 0.43      | 0.28      |                      | 0.67       | 0.20         | 0.13         |                          |
| ABC                         | 0.66     | 0.00       | 0.44         | 0.39   | 0.05         | 0.58                   | 0.89      | 0.34      | 0.56                 | 0.99       | 0.84         | 0.56         | 0.90                     |
| CBD                         | 0.71     | 0.96       | 0.38         | 0.67   | 0.00         | 0.69                   | 0.66      | 0.70      | 0.57                 | 0.37       | 0.01         | 0.56         | 0.32                     |
| DEF                         | 0.03     | 0.00       | 0.00         | 0.01   | 0.00         | 0.00                   | 0.57      | 0.11      | 0.27                 | 0.21       | 0.14         | 0.54         | 0.24                     |
| EFG                         | 0.00     | 0.31       | 0.03         | 0.10   | 0.00         | 0.00                   | 0.25      | 0.59      | 0.27                 | 0.89       | 0.94         | 0.00         | 0.78                     |
| EMJ                         | 0.87     | 0.31       | 0.68         | 0.64   | 0.20         | 0.86                   | 0.84      | 0.98      | 0.77                 | 0.33       | 0.87         | 0.68         | 0.48                     |
| EMQ                         | 0.00     | 0.00       | 0.00         | 0.00   | 0.00         | 0.00                   | 0.30      | 0.02      | 0.13                 | 0.88       | 0.08         | 0.01         | 0.60                     |
| ENR                         | 0.92     | 0.81       | 0.85         | 0.86   | 0.75         | 0.97                   | 0.93      | 0.66      | 0.83                 | 0.40       | 0.49         | 0.86         | 0.48                     |
| GPQ                         | 0.24     | 0.31       | 0.00         | 0.17   | 0.00         | 0.17                   | 0.02      | 0.16      | 0.08                 | 0.56       | 0.56         | 0.00         | 0.49                     |
| HIJ                         | 0.61     | 0.31       | 0.50         | 0.48   | 0.65         | 0.42                   | 0.80      | 0.80      | 0.72                 | 0.48       | 0.27         | 0.37         | 0.43                     |
| IBD                         | 0.00     | 0.00       | 0.00         | 0.00   | 0.00         | 0.00                   | 0.07      | 0.30      | 0.11                 | 0.51       | 0.49         | 0.00         | 0.43                     |
| JKL                         | 0.50     | 0.73       | 0.74         | 0.65   | 0.00         | 0.78                   | 0.43      | 0.93      | 0.54                 | 0.62       | 0.89         | 0.26         | 0.63                     |
| LMN                         | 0.76     | 0.31       | 0.56         | 0.56   | 0.00         | 0.47                   | 0.48      | 0.48      | 0.40                 | 0.17       | 0.24         | 0.26         | 0.20                     |
| MNO                         | 0.82     | 0.31       | 0.91         | 0.70   | 0.40         | 0.58                   | 0.61      | 0.07      | 0.42                 | 0.33       | 0.52         | 0.63         | 0.41                     |
| MSE                         | 0.55     | 0.00       | 0.62         | 0.41   | 0.85         | 0.17                   | 0.75      | 0.84      | 0.72                 | 0.77       | 0.35         | 0.91         | 0.71                     |
| OPQ                         | 0.29     | 0.00       | 0.32         | 0.22   | 0.00         | 0.17                   | 0.16      | 0.48      | 0.22                 | 0.15       | 0.42         | 0.08         | 0.20                     |
| PQR                         | 0.45     | 0.65       | 0.79         | 0.63   | 0.55         | 0.78                   | 0.52      | 0.75      | 0.62                 | 0.76       | 0.76         | 0.16         | 0.68                     |
| PSF                         | 0.97     | 0.88       | 0.97         | 0.95   | 0.95         | 0.92                   | 0.98      | 0.89      | 0.94                 | 0.15       | 0.73         | 0.34         | 0.29                     |
| RST                         | 0.08     | 0.31       | 0.00         | 0.12   | 0.00         | 0.17                   | 0.20      | 0.59      | 0.27                 | 0.42       | 0.42         | 0.00         | 0.36                     |
| UVW                         | 0.34     | 0.00       | 0.26         | 0.21   | 0.20         | 0.58                   | 0.70      | 0.39      | 0.52                 | 0.26       | 0.16         | 0.31         | 0.25                     |
| VPF                         | 0.16     | 0.31       | 0.15         | 0.20   | 0.00         | 0.17                   | 0.11      | 0.25      | 0.14                 | 0.88       | 0.90         | 0.00         | 0.77                     |
| XYZ                         | 0.39     | 0.00       | 0.21         | 0.21   | 0.40         | 0.17                   | 0.39      | 0.48      | 0.39                 | 0.95       | 0.73         | 0.51         | 0.85                     |
| YQM                         | 0.16     | 0.00       | 0.09         | 0.09   | 0.00         | 0.36                   | 0.34      | 0.20      | 0.25                 | 0.69       | 0.34         | 0.00         | 0.53                     |

#### Steps:

- **Sum of category weights:** sum each category weight of respective pillars. The calculation to derive the sum of category weights is illustrated below:
  - Environmental pillar categories = resource use (0.08) + emissions (0.10) + innovation (0.16) = 0.34
  - Social pillar categories = workforce (0.10) + human rights (0.15) + community (0.08) + product responsibility (0.09) = 0.42
  - Corporate governance categories = management (0.16) + shareholders (0.05) + CSR strategy (0.03) = 0.24
- **New category weights:** new category weights are calculated based on the sum of the category weights calculated above. New category weights = category weights divided by the sum of the category weights of the respective pillar. The calculation of new category weights for environmental pillar is as below:
  - New category weight for resource use = 0.08 divided by 0.34 = 0.24
  - New category weight for emissions = 0.10 divided by 0.34 = 0.29
  - New category weight for innovation = 0.16 divided by 0.34 = 0.48
  - (new category weights for social and corporate governance are similarly calculated)
- **Pillar score calculation:** category scores multiplied by new category weights = pillar scores. The calculation of the environmental pillar score is shown below:
  - (Resource use score\*0.24) + (emission score\*0.29) + (innovation score\*0.48) = 0.91 (environmental pillar score).
  - Social and corporate governance pillar scores are calculated similarly



## Appendix E

The table below provides an indicative ESG pillar weights matrix, based on an assessment of sample ESG data. It is not a definitive matrix to be used in the final scoring.

|  | Environmental |            |              | Social       |                        |           |           | Governance |              |              |
|--|---------------|------------|--------------|--------------|------------------------|-----------|-----------|------------|--------------|--------------|
| Industry group                                     | Emission      | Innovation | Resource use | Human rights | Product responsibility | Workforce | Community | Management | Shareholders | CSR strategy |
| Aerospace and defense                              | 0.36          | 0.36       | 0.27         | 0.34         | 0.16                   | 0.25      | 0.25      | 0.67       | 0.20         | 0.13         |
| Automobiles and auto parts                         | 0.29          | 0.48       | 0.24         | 0.35         | 0.21                   | 0.24      | 0.20      | 0.67       | 0.20         | 0.13         |
| Banking services                                   | 0.17          | 0.67       | 0.17         | 0.19         | 0.18                   | 0.39      | 0.24      | 0.67       | 0.20         | 0.13         |
| Beverages  | 0.42          | 0.14       | 0.44         | 0.33         | 0.27                   | 0.23      | 0.18      | 0.67       | 0.20         | 0.13         |
| Biotechnology and medical research                 | 0.35          | 0.10       | 0.55         | 0.07         | 0.34                   | 0.22      | 0.37      | 0.67       | 0.20         | 0.13         |
| Chemicals  | 0.32          | 0.34       | 0.34         | 0.39         | 0.18                   | 0.23      | 0.20      | 0.67       | 0.20         | 0.13         |
| Coal   | 0.49          | 0.05       | 0.46         | 0.22         | 0.07                   | 0.35      | 0.36      | 0.67       | 0.20         | 0.13         |
| Collective investments                             | 0.33          | 0.33       | 0.33         | 0.09         | 0.21                   | 0.25      | 0.45      | 0.67       | 0.20         | 0.13         |
| Communications and networking                      | 0.24          | 0.47       | 0.29         | 0.13         | 0.36                   | 0.17      | 0.34      | 0.67       | 0.20         | 0.13         |
| Computers, phones and household electronics        | 0.24          | 0.60       | 0.16         | 0.37         | 0.22                   | 0.21      | 0.19      | 0.67       | 0.20         | 0.13         |
| Construction and engineering                       | 0.38          | 0.38       | 0.24         | 0.34         | 0.13                   | 0.29      | 0.24      | 0.67       | 0.20         | 0.13         |
| Construction materials                             | 0.36          | 0.28       | 0.36         | 0.33         | 0.12                   | 0.32      | 0.23      | 0.67       | 0.20         | 0.13         |
| Containers and packaging                           | 0.37          | 0.24       | 0.39         | 0.39         | 0.18                   | 0.23      | 0.20      | 0.67       | 0.20         | 0.13         |
| Diversified industrial goods wholesalers           | 0.21          | 0.50       | 0.29         | 0.43         | 0.05                   | 0.29      | 0.24      | 0.67       | 0.20         | 0.13         |
| Diversified retail                                 | 0.42          | 0.12       | 0.46         | 0.13         | 0.28                   | 0.26      | 0.33      | 0.67       | 0.20         | 0.13         |
| Electric utilities and IPPs                        | 0.37          | 0.29       | 0.33         | 0.21         | 0.15                   | 0.38      | 0.26      | 0.67       | 0.20         | 0.13         |
| Electronic equipment and parts                     | 0.33          | 0.28       | 0.38         | 0.31         | 0.12                   | 0.26      | 0.31      | 0.67       | 0.20         | 0.13         |
| Food and drug retailing                            | 0.46          | 0.21       | 0.33         | 0.21         | 0.32                   | 0.26      | 0.21      | 0.67       | 0.20         | 0.13         |
| Food and tobacco                                   | 0.45          | 0.09       | 0.45         | 0.27         | 0.30                   | 0.24      | 0.19      | 0.67       | 0.20         | 0.13         |
| Freight and logistics services                     | 0.36          | 0.33       | 0.31         | 0.21         | 0.21                   | 0.33      | 0.26      | 0.67       | 0.20         | 0.13         |
| Healthcare equipment and supplies                  | 0.36          | 0.36       | 0.29         | 0.25         | 0.30                   | 0.19      | 0.25      | 0.67       | 0.20         | 0.13         |
| Healthcare providers and services                  | 0.40          | 0.13       | 0.47         | 0.17         | 0.33                   | 0.22      | 0.28      | 0.67       | 0.20         | 0.13         |
| Homebuilding and construction supplies             | 0.28          | 0.44       | 0.28         | 0.34         | 0.21                   | 0.23      | 0.21      | 0.67       | 0.20         | 0.13         |
| Hotels and entertainment services                  | 0.44          | 0.07       | 0.48         | 0.18         | 0.40                   | 0.20      | 0.22      | 0.67       | 0.20         | 0.13         |
| Household goods                                    | 0.30          | 0.48       | 0.23         | 0.31         | 0.24                   | 0.23      | 0.22      | 0.67       | 0.20         | 0.13         |
| Industrial conglomerates                           | 0.30          | 0.41       | 0.30         | 0.37         | 0.19                   | 0.24      | 0.20      | 0.67       | 0.20         | 0.13         |
| Insurance  | 0.20          | 0.60       | 0.20         | 0.17         | 0.23                   | 0.31      | 0.29      | 0.67       | 0.20         | 0.13         |
| Investment banking and investment services         | 0.22          | 0.56       | 0.22         | 0.08         | 0.21                   | 0.32      | 0.39      | 0.67       | 0.20         | 0.13         |
| Investment holding companies                       | 0.41          | 0.09       | 0.50         | 0.20         | 0.10                   | 0.22      | 0.49      | 0.67       | 0.20         | 0.13         |
| Leisure products                                   | 0.27          | 0.45       | 0.27         | 0.19         | 0.43                   | 0.13      | 0.24      | 0.67       | 0.20         | 0.13         |
| Machinery, tools, heavy vehicles, trains and ships | 0.25          | 0.53       | 0.22         | 0.31         | 0.24                   | 0.20      | 0.25      | 0.67       | 0.20         | 0.13         |
| Media and publishing                               | 0.40          | 0.30       | 0.30         | 0.20         | 0.30                   | 0.24      | 0.25      | 0.67       | 0.20         | 0.13         |
| Metals and mining                                  | 0.44          | 0.09       | 0.47         | 0.41         | 0.09                   | 0.29      | 0.20      | 0.67       | 0.20         | 0.13         |
| Multiline utilities                                | 0.35          | 0.31       | 0.33         | 0.28         | 0.19                   | 0.30      | 0.23      | 0.67       | 0.20         | 0.13         |
| Natural gas utilities                              | 0.33          | 0.33       | 0.35         | 0.22         | 0.22                   | 0.35      | 0.22      | 0.67       | 0.20         | 0.13         |
| Office equipment                                   | 0.22          | 0.59       | 0.19         | 0.37         | 0.26                   | 0.19      | 0.18      | 0.67       | 0.20         | 0.13         |
| Oil and gas  | 0.32          | 0.30       | 0.39         | 0.37         | 0.15                   | 0.29      | 0.19      | 0.67       | 0.20         | 0.13         |
| Oil and gas related equipment and services         | 0.46          | 0.14       | 0.40         | 0.38         | 0.11                   | 0.28      | 0.23      | 0.67       | 0.20         | 0.13         |
| Paper and forest products                          | 0.33          | 0.32       | 0.35         | 0.32         | 0.05                   | 0.37      | 0.26      | 0.67       | 0.20         | 0.13         |
| Passenger transportation services                  | 0.39          | 0.18       | 0.42         | 0.23         | 0.20                   | 0.35      | 0.23      | 0.67       | 0.20         | 0.13         |
| Personal and household products and services       | 0.37          | 0.27       | 0.37         | 0.27         | 0.33                   | 0.22      | 0.17      | 0.67       | 0.20         | 0.13         |
| Pharmaceuticals                                    | 0.41          | 0.14       | 0.45         | 0.31         | 0.21                   | 0.26      | 0.22      | 0.67       | 0.20         | 0.13         |
| Professional and commercial services               | 0.33          | 0.29       | 0.38         | 0.31         | 0.19                   | 0.23      | 0.26      | 0.67       | 0.20         | 0.13         |
| Real estate operations                             | 0.38          | 0.24       | 0.38         | 0.12         | 0.12                   | 0.45      | 0.30      | 0.67       | 0.20         | 0.13         |
| Renewable energy                                   | 0.35          | 0.32       | 0.32         | 0.08         | 0.25                   | 0.25      | 0.42      | 0.67       | 0.20         | 0.13         |
| Residential and commercial REITs                   | 0.43          | 0.11       | 0.46         | 0.07         | 0.24                   | 0.34      | 0.36      | 0.67       | 0.20         | 0.13         |
| Semiconductors and semiconductor equipment         | 0.31          | 0.39       | 0.31         | 0.36         | 0.20                   | 0.23      | 0.20      | 0.67       | 0.20         | 0.13         |
| Software and IT services                           | 0.22          | 0.44       | 0.33         | 0.15         | 0.28                   | 0.17      | 0.39      | 0.67       | 0.20         | 0.13         |
| Specialty retailers                                | 0.40          | 0.27       | 0.33         | 0.18         | 0.28                   | 0.24      | 0.30      | 0.67       | 0.20         | 0.13         |
| Telecommunications services                        | 0.35          | 0.30       | 0.35         | 0.27         | 0.31                   | 0.26      | 0.17      | 0.67       | 0.20         | 0.13         |
| Textiles and apparel                               | 0.26          | 0.37       | 0.37         | 0.29         | 0.25                   | 0.28      | 0.18      | 0.67       | 0.20         | 0.13         |
| Transport infrastructure                           | 0.42          | 0.13       | 0.45         | 0.26         | 0.13                   | 0.38      | 0.22      | 0.67       | 0.20         | 0.13         |
| Uranium  | 0.48          | 0.05       | 0.48         | 0.08         | 0.26                   | 0.26      | 0.40      | 0.67       | 0.20         | 0.13         |
| Water and related utilities                        | 0.35          | 0.29       | 0.35         | 0.17         | 0.13                   | 0.43      | 0.28      | 0.67       | 0.20         | 0.13         |

## Appendix F

### Category scores

The table below lists the category scores and their definitions.

| Score                                      | Definition  |
|--|---|
| Refinitiv ESG resource use score           | The resource use score reflects a company's performance and capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management.  |
| Refinitiv ESG emissions reduction score    | The emission reduction score measures a company's commitment and effectiveness towards reducing environmental emissions in its production and operational processes.  |
| Refinitiv ESG innovation score             | The innovation score reflects a company's capacity to reduce the environmental costs and burdens for its customers, thereby creating new market opportunities through new environmental technologies and processes, or eco-designed products. |
| Refinitiv ESG workforce score              | The workforce score measures a company's effectiveness in terms of providing job satisfaction, a healthy and safe workplace, maintaining diversity and equal opportunities, and development opportunities for its workforce.                  |
| Refinitiv ESG human rights score           | The human rights score measures a company's effectiveness in terms of respecting fundamental human rights conventions.  |
| Refinitiv ESG community score              | The community score measures the company's commitment to being a good citizen, protecting public health and respecting business ethics.   |
| Refinitiv ESG product responsibility score | The product responsibility score reflects a company's capacity to produce quality goods and services, integrating the customer's health and safety, integrity and data privacy.   |
| Refinitiv ESG management score             | The management score measures a company's commitment and effectiveness towards following best practice corporate governance principles.   |
| Refinitiv ESG shareholders score           | The shareholders score measures a company's effectiveness towards equal treatment of shareholders and the use of anti-takeover devices.   |
| Refinitiv ESG CSR strategy score           | The CSR strategy score reflects a company's practices to communicate that it integrates economic (financial), social and environmental dimensions into its day-to-day decision-making processes.  |

## Controversy measures

List of all controversy measures that make up the ESG controversy category score.

| Category               | Name (N)                       | Label (L)                                   | Description (D)  |
|------------------------|--------------------------------|---|--|
| Community              | TR.ControvAntiCompetition      | Anti-competition controversy                | Number of controversies published in the media linked to anti-competitive behaviour (e.g., anti-trust and monopoly), price-fixing or kickbacks.                                  |
| Community              | TR.ControvBusinessEthics       | Business ethics controversies               | Number of controversies published in the media linked to business ethics in general, political contributions or bribery and corruption.  |
| Community              | TR.ControvCopyrights           | Intellectual property controversies         | Number of controversies published in the media linked to patents and intellectual property infringements.  |
| Community              | TR.ControvCriticalCountries    | Critical countries controversies            | Number of controversies published in the media linked to activities in critical, undemocratic countries that do not respect fundamental human rights principles.                 |
| Community              | TR.ControvPublicHealth         | Public health controversies                 | Number of controversies published in the media linked to public health or industrial accidents harming the health and safety of third parties (non-employees and non-customers). |
| Community              | TR.ControvTaxFraud             | Tax fraud controversies                     | Number of controversies published in the media linked to tax fraud, parallel imports or money laundering.  |
| Human rights           | TR.ControvChildLabor           | Child labour controversies                  | Number of controversies published in the media linked to use of child labour issues.   |
| Human rights           | TR.ControvHumanRights          | Human rights controversies                  | Number of controversies published in the media linked to human rights issues.  |
| Management             | TR.ControvMgtComp              | Management compensation controversies count | Number of controversies published in the media linked to high executive or board compensation.   |
| Product responsibility | TR.ControvConsumer             | Consumer controversies                      | Number of controversies published in the media linked to consumer complaints or dissatisfaction directly linked to the company's products or services.                           |
| Product responsibility | TR.ControvCustomerHS           | Customer health and safety controversies    | Number of controversies published in the media linked to customer health and safety.   |
| Product responsibility | TR.ControvPrivacy              | Privacy controversies                       | Number of controversies published in the media linked to employee or customer privacy and integrity.   |
| Product responsibility | TR.ControvProductAccess        | Product access controversies                | Number of controversies published in the media linked to product access.   |
| Product responsibility | TR.ControvRespMarketing        | Responsible marketing controversies         | Number of controversies published in the media linked to the company's marketing practices, such as over-marketing of unhealthy food to vulnerable consumers.                    |
| Product responsibility | TR.ControvResponsibleRD        | Responsible R&D controversies               | Number of controversies published in the media linked to responsible R&D.  |
| Resource use           | TR.ControvEnv                  | Environmental controversies                 | Number of controversies related to the environmental impact of the company's operations on natural resources or local communities.   |
| Shareholders           | TR.ControvAccounting           | Accounting controversies count              | Number of controversies published in the media linked to aggressive or non-transparent accounting issues.  |
| Shareholders           | TR.ControvInsiderDealings      | Insider dealings controversies              | Number of controversies published in the media linked to insider dealings and other share price manipulations.   |
| Shareholders           | TR.ControvShareholders         | Shareholder rights controversies            | Number of controversies published in the media linked to shareholder rights infringements.   |
| Workforce              | TR.ControvDiversityOpportunity | Diversity and opportunity controversies     | Number of controversies published in the media linked to workforce diversity and opportunity (e.g., wages, promotion, discrimination and harassment).                            |
| Workforce              | TR.ControvEmployeesHS          | Employee health and safety controversies    | Number of controversies published in the media linked to workforce health and safety.  |
| Workforce              | TR.ControvWorkingCondition     | Wages or working conditions controversies   | Number of controversies published in the media linked to the company's relations with employees or relating to wages or wage disputes.   |
| Workforce              | TR.Strikes                     | Strikes                                     | Has there has been a strike or an industrial dispute that led to lost working days?  |

## Appendix H

### Controversies scoring example

This section illustrates how a [controversy score](#) is calculated for a water and related utilities industry group, using the data available in the ESG database for FY2017.

| Company name | Market cap class | TRBC industry group name    | Count of controversies per company | Severity weight | Value after applying severity weight | Controversies score | Grade |
|--------------|------------------|-----------------------------|------------------------------------|-----------------|--------------------------------------|---------------------|-------|
| PSF          | Large            | Water and related utilities | 0                                  | 0.33            | 0                                    | 100%                | A+    |
| ENR          | Mid              | Water and related utilities | 0                                  | 0.67            | 0                                    | 100%                | A+    |
| MNO          | Mid              | Water and related utilities | 0                                  | 0.67            | 0                                    | 100%                | A+    |
| CBD          | Small            | Water and related utilities | 0                                  | 1               | 0                                    | 100%                | A+    |
| ABC          | Mid              | Water and related utilities | 0                                  | 0.67            | 0                                    | 100%                | A+    |
| HIJ          | Mid              | Water and related utilities | 0                                  | 0.67            | 0                                    | 100%                | A+    |
| MSE          | Mid              | Water and related utilities | 0                                  | 0.67            | 0                                    | 100%                | A+    |
| JKL          | Mid              | Water and related utilities | 0                                  | 0.67            | 0                                    | 100%                | A+    |
| PQR          | Large            | Water and related utilities | 0                                  | 0.33            | 0                                    | 100%                | A+    |
| XYZ          | Mid              | Water and related utilities | 0                                  | 0.67            | 0                                    | 100%                | A+    |
| UVW          | Small            | Water and related utilities | 0                                  | 1               | 0                                    | 100%                | A+    |
| OPQ          | Small            | Water and related utilities | 0                                  | 1               | 0                                    | 100%                | A+    |
| GPQ          | Small            | Water and related utilities | 0                                  | 1               | 0                                    | 100%                | A+    |
| VPF          | Small            | Water and related utilities | 0                                  | 1               | 0                                    | 100%                | A+    |
| RST          | Small            | Water and related utilities | 0                                  | 1               | 0                                    | 100%                | A+    |
| EMQ          | Mid              | Water and related utilities | 0                                  | 0.67            | 0                                    | 100%                | A+    |
| IBD          | Small            | Water and related utilities | 0                                  | 1               | 0                                    | 100%                | A+    |
| YQM          | Small            | Water and related utilities | 0                                  | 1               | 0                                    | 100%                | A+    |
| DEF          | Mid              | Water and related utilities | 0                                  | 0.67            | 0                                    | 100%                | A+    |
| EFG          | Small            | Water and related utilities | 0                                  | 1               | 0                                    | 100%                | A+    |
| LMN          | Mid              | Water and related utilities | 1                                  | 0.67            | 0.67                                 | 75%                 | B+    |
| EMJ          | Small            | Water and related utilities | 1                                  | 1               | 1                                    | 25%                 | D+    |

#### Steps:

- Extract values pertaining to controversies for all companies of FY2017 and get the count of controversies per company
- Based on the market cap class, multiply the count of controversies by the severity weight
- Sort the companies from lowest to highest (lowest being better) considering the values after applying the severity weights
- Apply percentile rank formula to derive the ESG controversies scores

| Company name | Market cap class | Count of controversies per company | Severity weight | Value after applying severity weight | Controversies score | Percentile formula applied only for companies with controversies | Grade |
|--------------|------------------|------------------------------------|-----------------|--------------------------------------|---------------------|--|-------|
| PSF          | Large            | 0                                  | 0.33            | 0                                    | 100%                | 100%   | A+    |
| ENR          | Mid              | 0                                  | 0.67            | 0                                    | 100%                | 100%   | A+    |
| YQM          | Small            | 0                                  | 1               | 0                                    | 100%                | 100%   | A+    |
| DEF          | Mid              | 0                                  | 0.67            | 0                                    | 100%                | 100%   | A+    |
| EFG          | Small            | 0                                  | 1               | 0                                    | 100%                | 100%   | A+    |
| LMN          | Mid              | 1                                  | 0.67            | 0.67                                 | 75%                 | $(1+(1/2))/2$  | B+    |
| EMJ          | Small            | 1                                  | 1               | 1                                    | 25%                 | $(0+(1/2))/2$  | D+    |

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