Trucost
ESG Analysis

S&P Global

# Trucost Environmental Register

## Methodology FAQs

*March 2019*

**This document provides answers to common *Frequently Asked Questions (FAQs)* regarding research methodology and data services for Trucost's Environmental Register database. Throughout this document references are made to other documentation that can provide further elaboration of some concepts.**

For access to these resources, please contact Trucostinfo@spglobal.com.

## ABOUT TRUCOST

Trucost is part of S&P Global. A leader in carbon and environmental data and risk analysis, Trucost assesses risks relating to climate change, natural resource constraints, and broader environmental, social, and governance factors. Companies and financial institutions use Trucost intelligence to understand their ESG exposure to these factors, inform resilience and identify transformative solutions for a more sustainable global economy. S&P Global's commitment to environmental analysis and product innovation allows us to deliver essential ESG investment-related information to the global marketplace. For more information, visit www.trucost.com.

## ABOUT S&P GLOBAL

S&P Global (NYSE: SPGI) is a leading provider of transparent and independent ratings, benchmarks, analytics and data to the capital and commodity markets worldwide. For more information, visit www.spglobal.com.

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# DATA

***What is the universe Trucost's data covers?***

Trucost researches, standardizes and validates environmental performance data of over 14,000 of the world's largest listed equity companies, representing approximately 99% of global market capitalization:

- S&P Broad Market Index (BMI) (*circa 11,500 large-, mid-, small- and micro-cap companies);*
- Additional indices: S&P China A SmallCap 300 Index, S&P 500 Index, S&P Global 1200 Index, S&P/TOPIX 150 Index, S&P/TSX Composite Index, S&P/ASX 200 Index, S&P/ASX 300 Index;
- Other large listed companies added per client request (*circa 1,500 companies*)

Trucost refers to this as its '*Core Plus*' universe in literature, differentiating it from its '*Core'* universe of approximately 6,500 companies covered up to the 2016 financial year (2017 data is currently being analysed).

***What is the historical coverage?***

Trucost's data for some companies (approximately 3,500) begins in the 2005 financial year. These companies are mainly large-cap, developed market listed companies. Trucost's expanded universe coverage of mid-, small and micro-cap companies in global, emerging and frontier markets to the 14,000+ companies begins from the financial year 2016.

***What asset classes does Trucost's data cover?***

Trucost's global database of over 14,000 listed equity companies is relevant to both their equity and debt financing assets. In addition, Trucost's *Client Delivery Teams* provide consultancy research services including sovereign bond, real estate and infrastructure, forestry, agricultural and primary extractive asset carbon footprint analyses, and the analysis of a multi-asset portfolio's green- or brown-share, energy transition exposure, earnings-at-risk, and their carbon savings (net-benefit analysis). For more information, please contact Trucostinfo@spglobal.com.

***What data subscriptions does Trucost offer?***

Trucost offers a variety of greenhouse gas, environmental, company sector revenue, extractive fossil fuel, power generation and transition data sets. Each are available for different histories and universes. For more information see ***Trucost's Data Product Brochure*** (to request a Data Product Brochure contact Trucostinfo@spglobal.com).

***I have an S&P Dow Jones Indices contract, does this allow me access to Trucost's environmental data? / Can I access other S&P data with a Trucost data subscription?***

Access to Trucost's data requires a separate data license with Trucost. For more information, contact Trucostinfo@spglobal.com.

***How does Trucost deliver its data to its clients?***

Trucost's clients can access data via weekly scheduled data feeds (via S&P's SFTP platform, 'EDX'), via Trucost's data screening and portfolio analytics client interface, 'EBoard', or a range of external data providers (FactSet, Bloomberg Polarlake, Style Research).

- **S&P Enterprise Data Exchange (EDX) - SFTP Data Feed**
  https://edx.standardandpoors.com/mailbox/jsp/login.jsp

Trucost's scheduled data feeds are accessible either via the S&P-hosted web-based portal or an SFTP client. Data feeds are delivered on a weekly basis with the latest Trucost research available.

- **EBoard:**
  https://eboard.trucost.com

EBoard is an interactive online platform that enables investors to perform environmental analysis on a selected universe, company or portfolio. EBoard is a robust analytical tool designed by Trucost to help investors identify environmental risk and opportunity from growing natural resource pressures and increasing environmental regulation. Powered by our comprehensive natural capital data and insight, EBoard provides a comprehensive range of natural capital metrics to support company and portfolio level analysis.

- **External Data Vendors:** FactSet and Bloomberg Polarlake, Style Research

Trucost data can be accessed via external data distribution platform. Please contact Trucostinfo@spglobal.com for more information.

***What is a scheduled data feed?***

A scheduled data feed is a secure means of sending a data file from a source to a location and automated to be sent at regular intervals. Trucost's scheduled data feeds are sent to client account inboxes on a weekly basis so that its clients receive the latest data updates in a timely way.

***What does SFTP mean?***

'SFTP' or *Secured File Transfer Protocol* is a secured means of transferring data files via a Secure Shell (SSH) data stream. SFTP is a secure version of 'File Transfer Protocol' (FTP) and is part of the SSH Protocol. This term is also known as SSH File Transfer Protocol.

***Where does Trucost derive its data from?***

The company-disclosed, non-modelled data used by Trucost comes from a variety of publically disclosed sources such as company financial reports (*Annual Reports, Financial Statements, 10-K/20-F reports, SEC/regulatory filings*) and environmental data sources (*CSR, Sustainability or Environmental*

*Reports, the CDP*, *EPA filings*), in addition to data published on company websites or other public sources. Trucost also provides each company the opportunity to share data directly via its direct engagement and data verification process. Company GICS sectors and identifiers are taken from S&P's listed equities database, and these sources are also referenced at several stages of the analysis process.

***How often is data revised?***

There is no one day per year that we make our next data year active. Each Trucost environmental data point is for a complete company financial year. Therefore, Trucost's research process is annual with a new company year added to its database as companies complete their financial years and relevant data is publically disclosed.

In addition, it is common for a company's data disclosure to have valuable information pertaining to previous financial years (time-series performance) that can allow Trucost to refine its modelling or take a disclosed value for a prior year instead of previously estimated values. Trucost's research process is continuous so such historical revisions may occur at any point in the year as and when the company discloses information and further completes our quality checks, engagement and data verification steps. Once this process is complete, data is fed into Trucost's EBoard platform, and sent in our SFTP scheduled data feeds over the following weekend. Company data re-statements are not typically taken into account in the data, apart from in cases where there has been an error in disclosures.

In the SFTP scheduled data feed products we send to clients, our '*EffectiveDate*' column informs you of when any metric in the company year row in question has seen a revision to its data. Therefore, these effective dates may not be in chronological order with the company's financial years since, for example, a company's 2010 financial year only may have been amended, meaning that this company year will have a more recent effective date than all other years.

***How does Trucost schedule the companies in its research process?***

As a general rule, companies in high impact sectors (e.g. Utilities, Energy, and Materials) are prioritised in Trucost's annual research process scheduling subject to the date of their reporting disclosures. As an additional overlay where in previous years a company has disclosed environmental data in sources that are not yet available at the point of researching (e.g. Sustainability/CDR Reports, CDP responses) this company's data for that financial year will only become 'final' and shared in data products once these equivalent data sources are published and their data incorporated into Trucost's data.

This approach was instituted in early-2018 for the 2017 financial year's research process following a period of consultation with several of Trucost's clients: It was found that many clients preferred to receive data that had become available at the end of Trucost's typical research life-cycle, and that was not expected to be amended after later reports or CDP data becoming released (as opposed to data derived from previous year data or early disclosure sources).

***What is Trucost's 'EEIO model'*, and *how does it estimate environmental KPIs in the absence of company disclosures*?**

For more information, see the ***Trucost EEIO Methodology Overview*** document.

Trucost's Environmentally-Extended Input-Output (EEIO) Model brings together our vast database of industry-specific environmental impact data with quantitative macroeconomic data on the flow of goods & services between different sectors in the economy. The EEIO model enables us to estimate environmental impacts for a company's own operations and across their entire global supply chain, provided we know the revenue breakdown of the company by industry sector.

<u>The EEIO model</u>

Trucost's EEIO model includes data on the operational environmental impacts associated with more than 450 distinct industry sectors across over 100 environmental KPIs, covering the most material drivers of impacts across greenhouse gas emissions, pollution of air, land & water, waste generation, and water & other natural resource use. These environmental intensity factors are reported in units of emissions or resource use per dollar of industry output (or company revenue), and are derived from a wide array of national, international and industry databases. Trucost tests this data against the many thousands of disclosures it collects from companies during its annual engagement program. Where available, Trucost uses country-specific information to inform global average intensity factors, which are weighted by production value. This approach allows Trucost to take into account differences in the emissions profiles of different sectors within its global model.

Within Trucost's EEIO model, the industry-specific environmental intensity data described above is combined with an expanded input-output database derived from the latest 'make and use' tables published by the United States Department of Commerce, Bureau of Economic Analysis. The Bureau of Economic Analysis compiles data from a wide range of sources, including its Economic Census (conducted every five years) and annual surveys for specific industries including agriculture, mining, manufacturing, wholesale trade, retail trade, transportation, communications, utilities, finance, insurance and real estate. Data is collated and homogenized so that each industry's inputs reflect, as far as possible, a unique set of inputs from around 400 industries. It is largely due to this level of detail that Trucost has chosen to use the US economy as a proxy for the world economy and as a starting point for the creation of its supply chain model. Additionally, the US economy has the advantage of being highly diversified, so major commodities can be included.

Input-output (IO) tables are created detailing the ratio of expenditure from one sector with every other sector of the economy, termed "intermediate demands". In other words, for a single unit of revenue in a given sector, an I-O model quantifies the amount of expenditure required in other sectors across its entire supply chain – from raw material sourcing all the way through to a company's own operations.

Trucost further expands the input-output tables developed by the Bureau of Economic Analysis in order to provide additional detail on a number of environmentally important sectors, such as the mining, power generation and wholesale & retail trade sectors. In these cases, Trucost has disaggregated the IO tables proportionally. For example, power generation is represented by twelve separate sectors within the Trucost model. In total, Trucost has further expanded the supply chain model to create entries for an additional 50 sectors across the global economy.

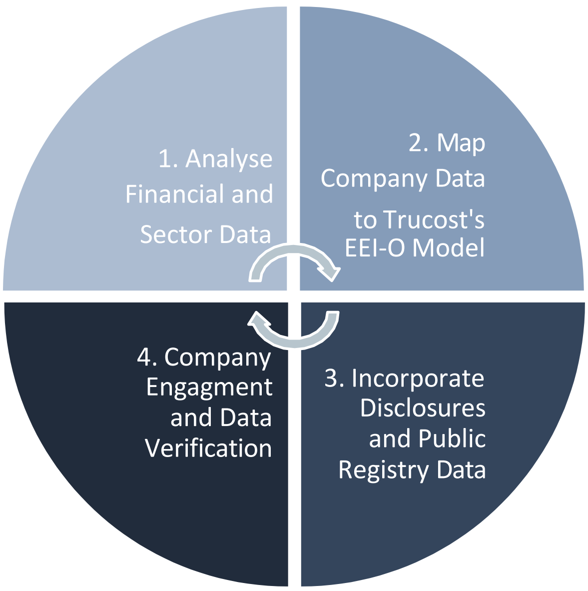
Application to estimate environmental KPIs

By combining the expanded IO tables with the industry-specific environmental intensity factors described above, Trucost is able to assess the environmental impacts of companies across their own operations and their entire supply chains, including primary resource extraction, secondary processing and final product assembly. Estimates can be derived in the absence of disclosure, provided the total revenue generated by the company can be aligned to one or more of the 450+ industry sectors included within the model.

Trucost's EEIO model uses best-in-class scientific literature to calculate the environmental impacts of different business activities. This includes industry "top-down" data from the World Bank, US EPA Toxic Inventories, UK Atmospheric Emissions Inventories and National Institutes for Environmental Studies, as well as sector-specific, "bottom-up" data from the United Nations Food and Agriculture Organization (FAO) and peer-reviewed life cycle assessment (LCA) studies by university researchers. When applying the model, Trucost analysts also use company disclosed data where possible – for example, when it is of high quality and relates to very specific business activities, rather than a mix of company business activities. Environmental intensity factors are revised annually for each industry sector, in light of improved research and updated data on emissions and resource use.

***How does Trucost research companies for the Environmental Register database?***

Trucost's unique environmental impact modelling approach enables complete coverage of most clients' investment universes, including private equity in addition to modelling listed securities, despite non-universal environmental data reporting among all companies.



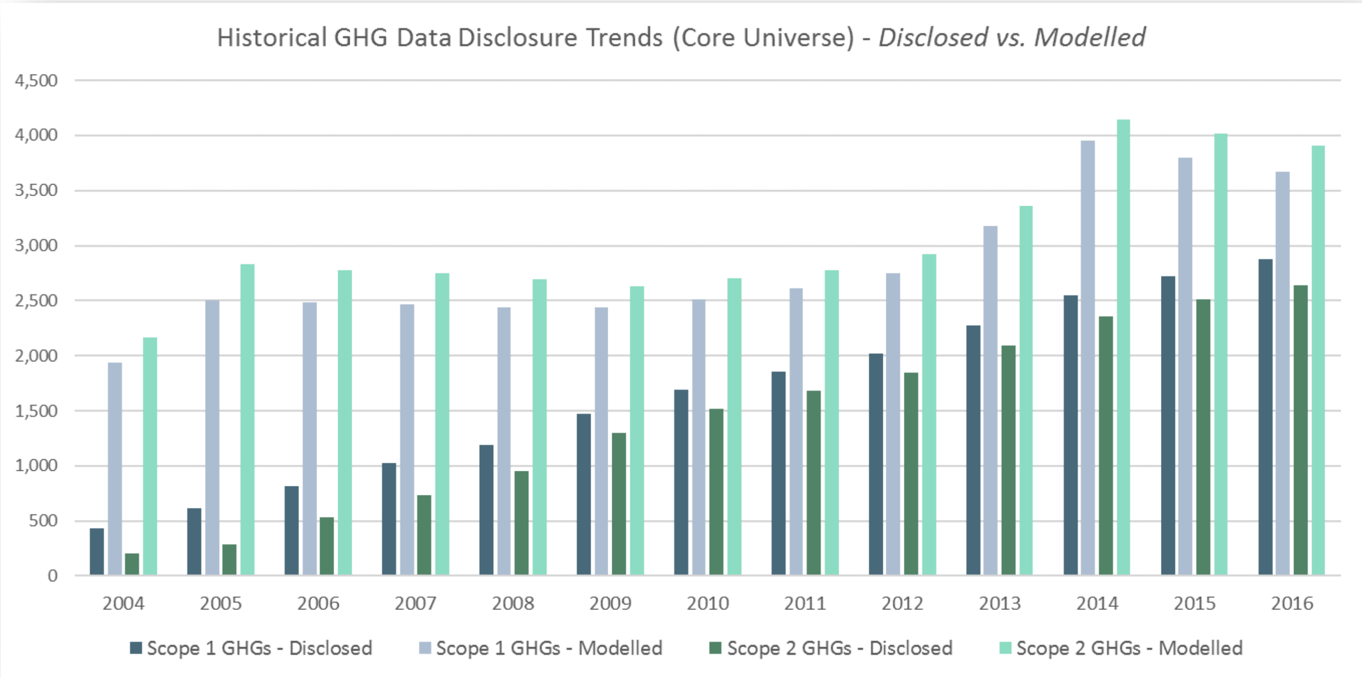

Trucost's company analysis process can be described as shown below:

1. A company's financials are analysed, collecting consolidated revenues for all companies and specifying their reporting scopes and operational boundaries.

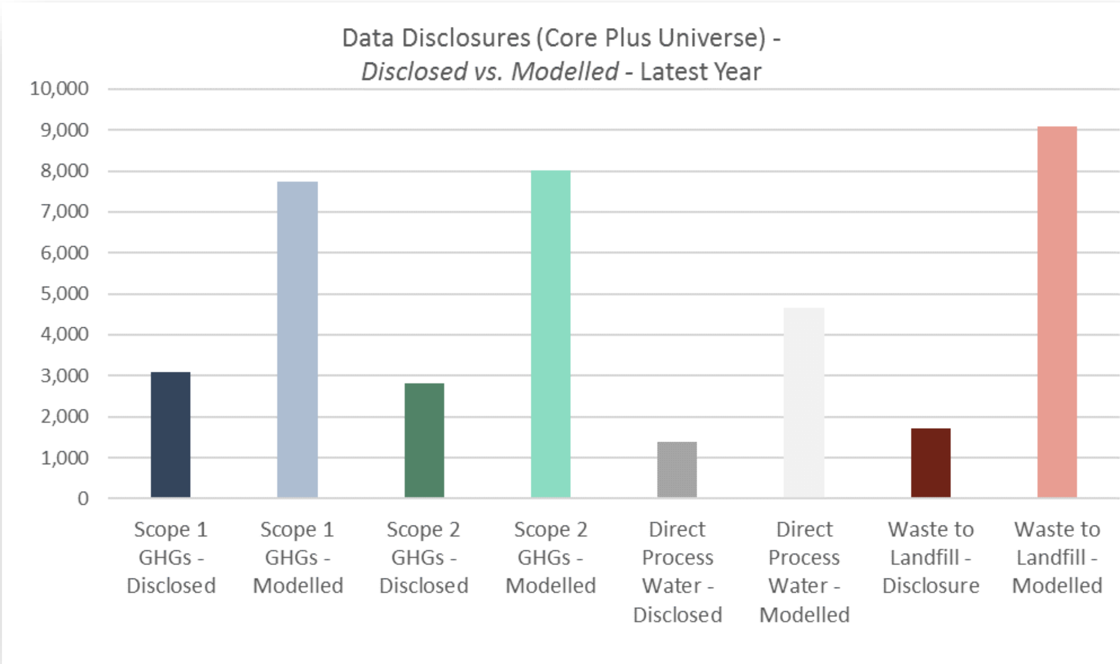
2. Trucost uses 450+ sectors (broadly aligned to the NAICS, with some additional sectors included to distinguish key activities with materially different physical impacts) to model a company by assigning different proportions of its company revenues to one or more of the 450+ sectors within the EEIO model. Trucost's environmental extended input-output (EEIO) model then estimates the pollutant emissions and resource use associated with each business activity, both directly (for a company's own operations) and across the supply chain, using the revenue sector breakdown.
3. Trucost then searches all publically disclosed data sources of companies to find usable environmental data that will be used to overwrite Trucost's modelled estimates. Trucost ensures the scope and time horizon of any environmental data found matches that of its financials.
4. Trucost's analysts quality check the entire research process internally, then share company data per company directly with each company analysed by Trucost via its secure online portal. Companies are given one month to respond to Trucost to verify its data or directly engage to provide either refined, additional or non-public data. Where Trucost deems any additional data from this process useful, it will integrate this into its analysis, quality check the research process, and move the company's data for that year to 'final'. Only at this stage will this data become available to clients.

***How much of Trucost's data is from company sources versus estimations?***

Trucost's Core Universe has seen an increase in the rates of disclosures since 2004, either full or partial. The chart below compares the greenhouse gas data disclosures sources of Core Universe companies (approximately 6,500 companies) over the period:



In 2016, Trucost's universe was expanded to more than 13,000 companies to its *Core Plus* universe. Considering the latest year of available data for each company in this universe, the composition of companies with modelled and disclosed data is shown below:




**NOTE:** On water use, Trucost's model does not estimate direct water use for all Trucost sectors – sectors which are services and/or office-based would only have purchased (first-tier indirect) water use. Hence, the lower figures for water in both charts.

***When collating data, are comparisons made with other data sources?***

Yes, we sense check all data points as companies often make mistakes in their reporting. When we consider a data point we will be looking at what our model estimates it should be. As part of Trucost's standard research process it checks the environmental data of companies in sectors and checks for outliers using statistical testing techniques, and further investigates and qualifies notable exceptions to sector averages. Similarly, company environmental metrics are compared year-on-year to investigate any large fluctuations in data, with legitimate variations qualified and quality checked. Trucost's data and research process is also governed by a quality assurance process and is managed by its Data Strategy and Operations Team, a dedicated team of more than 40 people.

***Why may Trucost's data differ to the values disclosed by companies in publically disclosed sources?***

As part of Trucost's research methodology, disclosures are checked for their scope and boundary to ensure all of the same operations as those deriving the company's revenues are accounted for (whether this be all locations or subsidiaries). Similarly, for consistency Trucost ensures that disclosures refer to the same metrics across all companies covered. For example, in some CDP Climate Change responses it is unclear as to whether a company's disclosed emissions are only $tCO_2$ or whether they have been converted to $tCO_2e$ (perhaps CDP figures differs from those in another disclosure source). Therefore, if the scope of a CDP or other disclosure is believed to be only $tCO_2$ for example, it would be entered into Trucost's database as such, and Trucost's EEIO model would calculate the likely $tCO_2e$ emissions using this $tCO_2$ disclosure and additional modelling of the company's other relevant business activities.

### *What explains some large changes in data year-on-year?*

Commonly, significant year-on-year changes in company data can be explained by at least one of the following reasons:

- Significant year-on-year changes in revenues and the business activities in which the company is engaged;
- Changes in reporting methodologies adopted by companies;
- Increased scope of company reporting compared to previous years (it may not have previously been apparent that the previous scope was narrower than desired). Previous year data would subsequently be adjusted to ensure consistency;
- Corporate actions (spin off, acquisition, merger etc.);
- Significant changes in company operations (e.g. where a company drastically improves its energy efficiency or carbon reduction strategies;
- Improvements in the level of accuracy a company measures their environmental impacts;
- A company's first year of data can cause figures rather different to previous modelled values.

### *What sector classifications does Trucost use?*

Trucost splits the world economy into more than 450 distinct business activities. This is based on the North American Classification System (NAICS), but it goes into greater granularity in some areas such as power generating utilities. Trucost sectors are mapped to GICS sectors for use across our products.

### What do the various 'sources' (e.g. AR*, CDP, TC etc.) refer to in Trucost's data offerings?

These codes reference the source we've taken a particular data point from. For a description of each Trucost data source flag, per source, see *Appendix 1*.

| Source Symbol | Definition |
|---|---|
| 'TC':<br>***Modelled*** | Modelled by Trucost's environmental extended input-output (EEIO) model in the absence of disclosure. |
| 'PRE' | Values derived from a previous year's disclosed data using changes in business activities and consolidated revenues. This is preferred to EEIO modelling. |
| 'Disclosure*' (e.g. 'CDP*'):<br>***Partial Disclosures*** | Trucost has used data disclosed by a company but has made adjustments to match the reporting scope required by its research process (e.g. where a company discloses its emissions deriving from 85% of its operational sites, this data is used to model 100% of its emissions). |
| Non-'*' Disclosure (e.g. 'CDP'):<br>***Full Disclosures*** | Trucost has used data disclosed by a company as disclosed as it matches the reporting scope required by its research process. |

## ORGANISATIONAL

Trucost Plc. was founded in 2000. On 3rd Oct 2016, S&P Global Indices UK Ltd. (a UK subsidiary of S&P Dow Jones Indices LLC) and CME Group acquired Trucost Plc. (becoming the joint-venture, *S&P Trucost Ltd*.).

## SPECIFIC CONCEPTS:

***What is a carbon intensity?***

A 'carbon intensity' is a metric that denominates a quantity of greenhouse gas emissions (e.g. $tCO_2e$) with another data point: *a normalising factor*. Trucost's standard carbon intensity metric, and perhaps the most widely used carbon intensity metric, denominates emissions by a company's annual consolidated revenues in millions of US dollars: *$tCO_2e$/US$ mn Revenues.* Carbon intensities are useful in comparing companies both within and across different sectors. The can control for different company characteristics, such as size, making it possible to assess the carbon efficiency of a company.

***Why are carbon intensities denominated by company revenues?***

Greenhouse gas emissions are generated by a company's direct and indirect operations so a suitable normalising factor should also be correlated with direct and indirect operations for the carbon intensity metric to reflect the carbon efficiencies of companies. Since it is deemed that a company's revenues are reasonably correlated with its scale of operations, at least within a sector, revenues have become the market-standard carbon intensity normalising factor (i.e. all other things held constant, the greater a company's revenues, the greater their emissions).

It is also deemed desirable for the intensity metric to be in some way linked to a company's financial performance in order to begin to understand the relationship between greenhouse gas emissions and financial risk. Hence, the *$tCO_2e$/US$ mn Revenues* metric indicates the dependency on the generation of greenhouse gas emissions a company has in generating revenues.

***What are 'environmental damage costs', and how should I interpret them?***

'Damage costs' are estimates of the negative externality associated with the use of a resource or the emission of a pollutant. They reflect the environmental impact of a business activity in monetary terms. Damage costs are based on the assumption that the cost of maintaining an environmental benefit is a reasonable estimate of its value. They are calculated by multiplying company data on the quantity of resources used or pollutants emitted (i.e. $tCO_2e$, $m^3$ of water use, kg of waste generated etc.) by Trucost's *environmental valuation coefficients* (see *"What are Trucost's environmental valuation coefficients?"* for more information).

An externality, or *external cost*, is a consequence of an industrial or commercial activity that affects other parties (such as society or the environment), but is not reflected in market prices. An 'environmental damage cost' is the quantification of the negative externalities caused by a company's use of a resource or emission of a pollutant across all *impact categories.*

'Impact categories' are the different environmental impacts deriving from a company's activities and cover their greenhouse gases, water use, waste generated, land, water and air pollutants generated, and natural resources used.

Environmental damage costs can be either direct or indirect. *Direct damage costs* are those associated with a company's direct operations, while *indirect damage costs* are those that are borne in the company's supply chain. *Total damage costs* are the sum of both of these.

'Damage costs' are a useful measure of a company's overall environmental impact, since they are denominated in a common unit (US$ million) and bring together a range of environmental impacts with different units (for example, greenhouse gas emissions are measured in $tCO_2e$, while water used is measured in cubic meters). Damage costs can also be used alongside other financial metrics due to their US$ unit.

***What are 'impact ratios', and how should I interpret them?***

'Impact ratios' are a metric used to normalise the environmental damage costs of companies to facilitate comparisons. The metrics take a company's Total Damage Cost (US$ mn) and divide it by their total revenues (US$ mn) for the same financial year. The resulting metric quantifies the percentage of a company's annual earnings at risk should the company be held accountable for the negative environmental impacts.

***What are Trucost's environmental valuation coefficients?***

Trucost's environmental valuation coefficients are factors that represent the average damage value, representing the external cost of damages to human, natural and built capital, resulting from an organisation's direct and indirect emission of pollutants or extraction of raw materials. They are used along with quantitative environmental data to quantify damage costs. All values employed are secondary - the synthesis of existing published and unpublished literature.

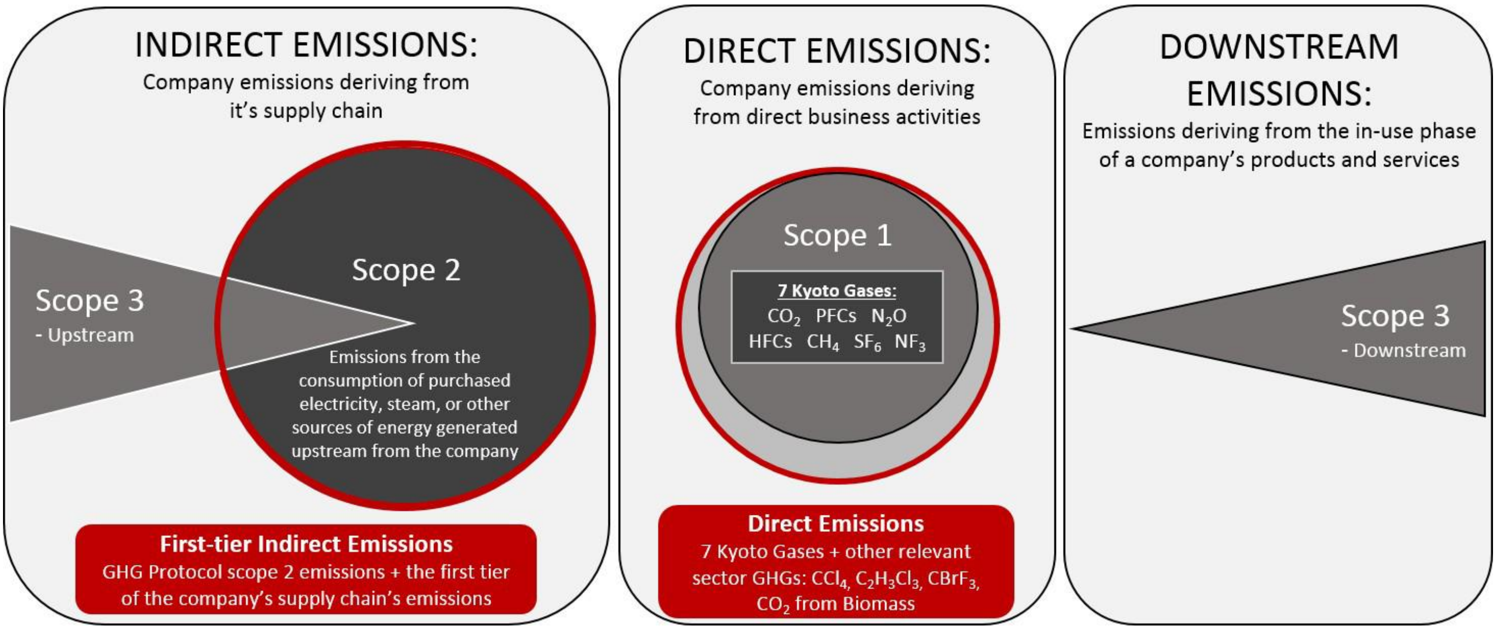
***What are 'Direct' and 'First-tier Indirect' emissions, and how do they differ to the Greenhouse Gas Protocol's scopes 1, 2 and 3 emissions?***

Trucost's default emissions scope is its *Direct* and *First-tier Indirect Emissions* that differ slightly to the Greenhouse Gas (GHG) Protocol's scopes 1 and 2 emissions.

*Scope 1 emissions* are emissions from directly emitting sources that are owned or controlled by a company, for example, the emissions produced by the internal combustion engines of a trucking company's lorry fleet.

*Scope 2 emissions* are emissions from the consumption of purchased electricity, steam, or other sources of energy generated upstream from a company's direct operations.

*Scope 3 emissions* are all other emissions associated with a company's operations but that are not directly owned or controlled by the company. Scope 3 emissions therefore include several sources of indirect emissions in both the company's supply chain and downstream from the company's owned or controlled operations (e.g. the emissions from the in-use phase of a company's products or services, such as the driving of a lorry produced by automobile manufacturer). By such a definition, scope 3 emissions are attributed the largest quantity of a company's emissions footprint.




Trucost defines '*Direct Emissions*' as the GHG Protocol's scope 1 emissions, plus any other emissions derived from a wider range of greenhouse gases relevant to a company's operations.

'*First-tier Indirect Emissions'* are defined as GHG Protocol scope 2 emissions, *plus* the company's first-tier upstream supply chain – their direct suppliers. This enhancement is to include some of the company's most relevant upstream scope 3 emissions while also limiting the extent of the double counting of emissions. The upstream supply-chain of companies in Trucost's database are calculated using its EEI-O model.

***Does Trucost have scope 3 data?***

Trucost provides upstream scope 3 data in its data products. However, the data team only collects disclosed upstream scope 3 emissions from truck, rail, and air transport sources ("Transport and distribution" under the Greenhouse Gas Protocol's 'Corporate Value Chain (Scope 3) Standard'[1]) since this tends to be the most common of the 8 upstream scope 3 categories. In the absence of such disclosures, and for all other upstream scope 3 sources, Trucost's environmentally extended input-output (EEI-O) model models scope 3 emissions. Downstream emissions are often a central feature to some of its bespoke consultancy research projects such as

[1] Source: WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard, page 5. Available at: http://www.ghgprotocol.org/standards/scope-3-standard Accessed on: 21/01/2018.

net-benefit analyses or sector-specific analyses, but are not a part of the ‘Scope 3’ data field in our standard data products.

***What is a ‘weighted’ data disclosure?***

A ‘weighted disclosure’ (%) is the proportion of direct external cost calculated by Trucost for a given environmental category that is disclosed by the company. For example, if a company discloses its scope 1 emissions (for example, 2,000 $tCO_2e$ emissions) but not its scope 2 emissions (so Trucost would estimate them, in this example as 18,000 $tCO_2e$ emissions), the company’s carbon weighted disclosure would be 10% (i.e. 10% of the company’s carbon emissions are disclosed).

***What are ‘fossil fuel companies’?***

Trucost’s standard definition of ‘fossil fuel companies’ are those engaged in primary fossil fuel extractive industries’ as defined by the following 7 Trucost Sectors: ‘*Bituminous Coal and Lignite Surface Mining’, ‘Bituminous Coal Underground Mining’, ‘Crude Petroleum and Natural Gas Extraction’, ‘Drilling Oil and Gas Wells’, ‘Natural Gas Liquid Extraction’, ‘Support Activities for Oil and Gas Operations’,* and *‘Tar Sands Extraction’.*

***What are ‘coal companies’?***

Trucost’s standard definition of ‘coal companies’ are those engaged in coal extraction and power generation, as defined by 3 Trucost Sectors: ‘*Bituminous Coal and Lignite Surface Mining’, ‘Bituminous Coal Underground Mining*’, and *‘Coal Power Generation’.*

***What are ‘renewables companies’?***

Trucost’s standard definition of ‘renewables companies’ are those engaged in renewables power generation that can be seen in their renewable generation data (GWhs) where disclosed. Alternatively, these companies can be seen in Trucost’s sector revenues data, defined by having business activities in 5 Trucost Sectors: ‘*Geothermal Power Generation’,* ‘*Hydroelectric Power Generation’,* ‘*Solar Power Generation’, ‘Wave & Tidal Power Generation’* and ‘*Wind Power Generation’.*

***What are ‘fossil fuel power generation companies’?***

Trucost’s standard definition of companies engaged in fossil fuel power generation activities are those with some generation production data (GWhs) from any coal, natural gas (including LNG, LPG) and petroleum (including conventional, unconventional or fuel oils).

Alternatively, sector revenues data can be used to screen for companies engaged in fossil fuel power generation, as defined by 3 Trucost Sectors: ‘*Coal Power Generation’,* ‘*Natural Gas Power Generation’* and ‘*Petroleum Power Generation’.*

***What is a 'TC UID'?***

A 'TC UID' is a Trucost unique identifier. It is either a 5 or 6-digit number that is unique to the corporate entity and used internally in Trucost's database to identify companies from one another. For each financial year, each TC UID will have one value for each environmental KPI in Trucost's database.

***What is Trucost's 'premium-enriched multi-sector evaluation' methodology?***

Trucost's Premium Enriched Multi-sector Evaluation research methodology is its most advanced and standard approach taken to researching its *Core Plus* universe (over 14,000 listed equity companies). This modelling is a multi-sector, granular analysis but company environmental data disclosures are then imposed in place of modelled values. Once internally quality checked, the environmental data is sent to each company for them to verify or provide alternative data not previously disclosed (see *Modelling* above).

This research methodology is different to Trucost's single or multi-sector evaluation methods that performs the same modelling steps as described above modelling at either a single or multi-sector level, but without the use of disclosed environmental data. Such modelling may be carried out for clients who wish to have additional companies analysed that are not within Trucost's *Core Plus* universe. Such companies are not in Trucost's standards data products.

***How does Trucost treat holding companies?***

As per its general research approach, Trucost endeavours to cover the consolidated operations of a company, therefore in the case of a holding company, assigning the proportion of a holding's/company's revenues owned by the holding company to the holding company. Trucost will do this in all cases, disclosures permitting. The next consideration is to assign the revenues from a specific holding to a specific Trucost sector. *Trucost uses a rule for this:*

- If the stake in the holding/company is greater than 20% of the asset/company, we assign the sectors relevant to the holdings' business sector (i.e. coal power generation to a coal power generation asset) under the logic that a greater than 20% ownership attributes the holding company sufficient control over the holding in order to influence it, thereby able to be held accountable for it (scope 1 & 2 for the holding company).

- If the stake in the holding/company is less than 20% of the asset/company, we assign these revenues to the Trucost sector, '*Management of companies and enterprises'*. This would presume insufficient control over the held company, making the coal power generation example 'downstream scope 3' emissions. Our modelling estimates some emissions from these revenues, but not the emissions as would be modelled by the business sectors the asset/company owned is involved in. These estimated emissions would just be from the company's operations as a holding company (the *Management of companies and enterprises*).

The use of this 20% threshold is for an estimate of *reasonable control* in order to assign 'downstream activity' emissions to the holding company or not (in terms of the logic/method used in the banking sector). In all cases, due to the assignment of the revenues from a holding, are emissions modelled or disclosed emissions attributed to the company, but the actual sector used for modelling would depend on the level of ownership.

***How does Trucost account for corporate actions?***

Trucost's data accounts for M&A activity, though there tends to be a lag in the data reflecting such activities. The reason for this is fundamental to our research methodology: Each observation in our data is a complete financial year. Therefore, should any M&A activity occur, this will only be reflected in our data once i) the financial year has concluded; ii) the company has disclosed its year-end performance data, and; iii) Trucost has analysed, quality checked and engaged with the company to attempt to validate our data for it. Regarding the specific actions taken, these will differ depending on each scenario.

<u>Acquisitions:</u>

In such cases, we are likely to consolidate the entities into the Trucost unique identifier (TC UID) profile of the 'acquirer', and retire the 'acquired' company in subsequent financial years. The acquired company then has its designation changed from being a member of our 'maintained universe' (the universe of companies Trucost commits to analysing on an annual basis) to our 'cemetery universe' (those companies no longer maintained).

The acquired company's historical data will remain under its prior profile to reflect its prior identity as independent of its acquirer. The specific treatment of each company where acquisitions occur mid-financial year will also depend on how the companies in question report their year-end financial data.

For example, some companies will report this final year's financial data (e.g. consolidated revenues) as separate companies, in which case Trucost would assign the environmental data for each company to them as separate entities.

Another example would be where the acquired company does not report and the acquiring company internalises the complete financial year's performance of the company acquired. In such a case, no financial year's data is entered in the acquired company's legacy Trucost profile with all of this company's performance, in addition to its own, being accounted for in the profile of the acquirer.

One final scenario is where each company reports partial financial year data (e.g. the 8 month's performance prior to the acquisition for the acquired, and a complete financial year for the acquirer, though with the last 4 months representing an alternate corporate structure). For Trucost's data to be comparable across all companies, each observation must be complete 12 month financial years. Therefore, in the case of the acquired the 8 months of data would not be collected in the data. This financial year in the company's history would therefore be missing with the company's final data point being its previous complete financial year prior to its acquisition. The acquiring company's data however would be collected since it would reflect a complete 12 month cycle.

<u>Mergers:</u>

In the case of mergers where there is no clear acquirer, and often where the merger results in a new corporate entity to form, Trucost would retire both entities to its cemetery universe and create a new profile for the new company without any data history. For example, in September 2017 *DuPont* and *The Dow Chemical Company* merged to become *DowDuPont*. This new corporate entity will have a new Trucost profile and unique identifier (TC UID) created where data for this new corporate entity will be collected or modelled once it has completed its first complete, 12 month financial year.

<u>De-mergers:</u>

For de-mergers, only once the new companies have completed their first full financial years after the corporate action will these companies be accounted for in Trucost's data. Often this implies that the incomplete financial year in which the de-merger occurred is not capture in either company's history, or the profile of the pre-de-merged company.

<u>Name changes:</u>

Some companies may change their names due to rebranding or other reasons while their corporate structure remains unchanged. In such cases, the company retains its same Trucost profile and TC UID, but its name is amended to reflect its current name. This new name would also be referenced against any historical data for the company, even in years prior to the name change.

<u>M&A Activity and security identifiers:</u>

Often the securities owned by an investor pre- and post-corporate actions will have the same identifiers (e.g. ISINs) despite now relating to a new corporate entity. In regards to mapping these securities to Trucost's data, mappings in existence prior to the corporate action would remain until Trucost's database has a new profile for the new entity and has this identifier reassigned to it. This implies that for a period of time the security's attributed data does not necessarily reflect the company's true operational impacts.

***Where do the exchange rates used by Trucost come from?***

The exchange rates used by Trucost come from S&P Market Intelligence. These are not redistributed to clients, instead are used internally for the production of derivative metrics, such as carbon intensities denominated in different currencies.

***Where do the market capitalisation and enterprise value data used by Trucost come from?***

Market caps and enterprise value data are provided by S&P Global's listed equity database and S&P Capital IQ. These are not redistributed to clients, instead are used internally for the production of derivative works, such as carbon footprint reports.

Trucost's database contains the market caps and enterprise values as of the 25th of each month for each company-year to facilitate the portfolio carbon footprint greenhouse gas apportionment calculations in EBoard. When selecting the month-year combination in the portfolio upload field in the *Portfolio Analysis* EBoard module, this selects the corresponding market caps and enterprise values in our database. Therefore, it is advised that clients use their 'end-of-month' holdings data (ideally as at the 25th of each calendar month) to perform portfolio analysis so that the date of the market caps and enterprise values match their date of holding. This data is received in Trucost's database on the 6th calendar day of each month and then incorporated into our database within the two next working days. Only once this process is complete will that previous month be available as an analysis month in the *Portfolio Analysis* module in EBoard.

***Why is the ISIN used by Trucost different to the one I have?***

The ISINs shown in Trucost's data products and EBoard are each company's 'primary ISINs' as defined by Trucost. They are equity ISINs as opposed to bond ISINs. Many corporate entities have multiple securities associated with them for both listed equity and fixed income debt. For the purpose of data delivery and display, Trucost only provides one ISIN per company Trucost unique identifier ('*TC UID*'), but the corporate entity-level data can be used for both listed equities and fixed income instruments (for information on this methodology, see the *Trucost Carbon Footprinting Guide – this can be accessed via [www.trucost.com](www.trucost.com)*). This ISIN is the ISIN believed to be most commonly used.

ISIN mappings have been provided by S&P Global's listed equity database since 2016 but in the past had been mapped using FactSet. Trucost's database has all listed equity ISINs stored and mapped to the appropriate UID so that when an ISIN is uploaded into EBoard's *Portfolio Analysis* module it will be mapped to the appropriate data. ISINs are only provided to clients with a license with CUSIP.

***Why are the emissions for two ISINs of the same company the same?***

Different listings or share classes are all assigned to the same underling corporate entity and their environmental impacts. Therefore, two different ISINs (or other identifier) for the same company maps to the same TC UID.

***Where does Trucost's revenue data come from?***

Trucost's *Data Strategy & Operations Team,* who performs the annual research process to all companies, sources company revenue data from public sources such as Annual Reports, Financial Statements, 10-K/20-F reports, SEC/regulatory filings. The team then researches the company to determine how to assign company revenues to a combination of the 450+ industry sectors in Trucost's EEIO model, for its initial modelling phase. Use of publically available revenues data allows the subsequent sector revenue data to be redistribute.

***Why does Trucost use consolidated revenues?***

Trucost uses consolidated revenues in its intensity metrics to ensure the financial reporting boundary matches that of a company's environmental (operational control) operating boundaries. Just as Trucost's methodology attributes all environmental impacts a company is responsible for on an ownership basis to a company, it is necessary to assign all consolidated revenues also to ensure intensity metrics are accurate for meaningful comparisons across companies.

***What scope of company control does Trucost use in its analysis of companies?***

Trucost aims to use financial control as this connects financial and environmental responsibility (aligns with overall Trucost remit), meaning company's carbon intensity would have the same control scope in its numerator (carbon) and denominator (revenues). Sometimes though we are a bit flexible depending on company disclosure – i.e. we would use disclosure not reported based on financial control rather than take modelled estimates if the data disclosed is valuable.

# APPENDIX

## Appendix 1: Trucost Data Disclosure Flags

| Eboard short Flag | Carbon Disclosure Flag |
|---|---|
| TC | Estimate derived from production data |
| TC | Estimate scaled according to company-specific data |
| TC | Estimate used instead of disclosure - data does not cover global operations |
| TC | Estimate used instead of disclosure - data is normalised and no aggregating factor is available |
| TC | Estimated data |
| PRE | Derived from previous year |
| AR* | Data approximated from chart/graph in Annual Report/10-K/Financial Accounts |
| AR* | Estimate based on partial data disclosure in Annual Report/10-K/Financial Accounts |
| AR* | Value derived from data provided in Annual Report/Financial Accounts Disclosure |
| AR* | Value derived from fuel use provided in Annual Report/Financial Accounts Disclosure |
| AR* | Value split from data provided in Annual Report/Financial Accounts Disclosure |
| AR* | Value summed up from data provided in Annual Report/Financial Accounts Disclosure |

| | |
|---|---|
| ENV* | Data approximated from chart/graph in Environmental Report/CSR Report/Website |
| ENV* | Estimate based on partial data disclosure in Environmental/CSR |
| ENV* | Value derived from data provided in Environmental/CSR |
| ENV* | Value derived from fuel use provided in Environmental/CSR |
| ENV* | Value split from data provided in Environmental/CSR |
| ENV* | Value summed up from data provided in Environmental/CSR |
| CDP* | Estimate based on partial data disclosure in CDP |
| CDP* | Value derived from data provided in CDP |
| CDP* | Value derived from fuel use provided in CDP |
| CDP* | Value split from data provided in CDP |
| CDP* | Value summed up from data provided in CDP |
| OTH* | Estimate based on partial data disclosure in personal communication |
| OTH* | Value derived from data provided in personal communication |
| OTH* | Value derived from fuel use provided in personal communication |
| OTH* | Value split from data provided in personal communication |
| OTH* | Value summed up from data provided in personal communication |
| AR | Exact Value from Annual Report/10K/Financial Accounts Disclosure |
| CDP | Exact Value from CDP |
| ENV | Exact Value from Environmental/CSR |
| OTH | Exact Value from personal communication |

The '*' indicates the value in the respective disclosure source has needed some form of adjustment (*partial disclosures*).