



Guide to FTSE Sustainable Investment Data used in FTSE Indexes

v1.1



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Section 1

Introduction

1.0 Introduction

1.1 This document provides details of the sustainable investment data used in the construction and maintenance of FTSE sustainable investment indexes which has been sourced by FTSE Russell.

1.2 FTSE Russell

FTSE Russell is a trading name of FTSE International Limited, Frank Russell Company, FTSE Global Debt Capital Markets Limited (and its subsidiaries FTSE Global Debt Capital Markets Inc. and MTSNext Limited), Mergent, Inc., FTSE Fixed Income LLC, The Yield Book Inc and Beyond Ratings.

1.3 No liability whether as a result of negligence or otherwise is accepted by FTSE Russell (or any person concerned with the preparation or publication of this Guide) for any losses, damages, claims and expenses suffered by any person as a result of:

- any reliance on this Guide, and/or
- any errors or inaccuracies in this Guide, and/or
- any non-application or misapplication of the policies or procedures described in this Guide.



Section 2

FTSE ESG Ratings Calculation

2.0 Overview

FTSE Russell's ESG Data Model produces ratings that are an objective measure of ESG exposure and performance in multiple dimensions (the FTSE ESG Ratings).

The FTSE ESG Ratings are used in certain FTSE sustainable investment indexes to determine the eligibility of index constituents.

2.1 Key Features

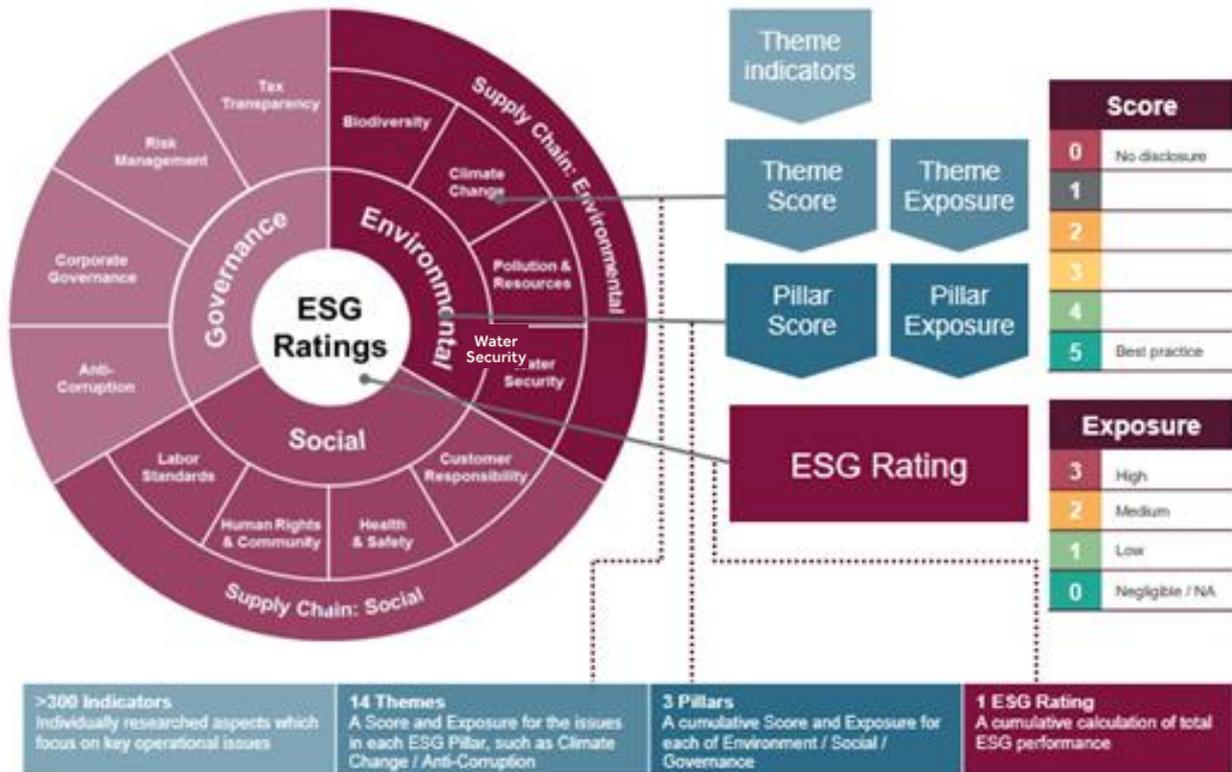
Materiality: Exposure relative scoring at Theme level: It is important that companies that are more exposed to particular Themes such as Climate Change, Corporate Governance, and Labor Standards are doing more to address them. Therefore, higher exposure companies are assessed using higher thresholds than lower exposure companies.

Materiality: Exposure relative scoring at Pillar and Overall level: The Pillar Score is calculated as a weighted average of the Theme Scores. Each Theme Score is weighted by its Exposure Level; Low Exposure has a weight of 1, Medium Exposure a weight of 2, and High Exposure a weight of 3. This principle is also applied to calculate the overall FTSE ESG Rating where the weight for each Pillar is based on the average Exposure Level of the Themes within it.

Industry Relative ESG Ratings and Scores: In addition to the "absolute" Scores and Ratings described above, peer relative Scores and ESG Ratings are also provided. These are calculated by comparing a company's Score or ESG Rating to others within the same FTSE Industry Classification Benchmark (ICB) Supersector. The overall FTSE ESG Rating is represented as a percentile where a "1" indicates that a company is in the bottom 1% and "100" indicates a company is in the top 1%.

2.2 FTSE ESG Ratings Model

The FTSE ESG Ratings use a company's Theme Exposure and Theme Score assessment to calculate a range of assessments that allow investors to understand a company's ESG practices in multiple dimensions.



2.3 ESG Data Model

Hierarchy	Description	Methodology	Output
ESG Rating (1)	Measure of the overall quality of a company's management of ESG issues	Calculated as the Pillar Exposure-weighted average of all three Pillar Scores	0-5 to 1 decimal point (where 5 is highest Rating) <hr/> ICB Supersector relative Rating: 1-100 percentile (where 100 is highest percentile)
Pillars (3) Environmental Social Governance	Scores. Measure of the quality of a company's respective management of ESG issues	Calculated as the Theme Exposure-weighted average of all applicable Theme Scores	0-5 to 1 decimal point (where 5 is highest Rating) <hr/> ICB Supersector relative score: 1-10 decile (where 10 is highest decile)
	Exposure. Measure of the relevance for a company of respective ESG issues	Calculated by averaging the Exposure for all applicable Themes within that Pillar	1-3 to 1 decimal point (where 3 is highest Exposure, i.e. relevance)
Themes (14) 5 Environmental 5 Social 4 Governance	Scores. Measure of the quality of a company's management of the issues related to each Theme	Calculated based on the percentage of total available Indicator Points that a company has "met" in each Theme, except for the Climate Change Theme which uses TPI MQ Score (see section 5).	0-5 as an integer (where 5 is highest Rating)
	Exposure. Measure of the relevance for a company of each Theme	Determined largely on industrial activity and operational presence	0-3 as an integer (where 3 is highest Exposure, i.e. relevance, and 0 indicates that the Theme is not relevant)
Indicators (+300)	Over 300 Indicators in the model with each Theme containing 10 to 35. An average of 125 Indicators are applied per company.	(i) qualitative Indicators assessing quality of management and approach (ii) quantitative Indicators measuring corporate data disclosure (iii) sector specific Indicators tailored for different industrial sectors (iv) geography specific Indicators tailored for different countries (v) performance Indicators that use the quantitative data to make performance judgements	Points are assigned and are generally 0, 1, or 2 per Indicator. However, for highly significant Indicators, the scoring can be greater.

2.4 Calculation Step 1: Determining Theme Exposures

For each Theme a company's Exposure is identified as High, Medium, Low, or Negligible/Not Applicable (N/A).

The Exposure identification is carried out for each company in each applicable Theme applying a rules-based methodology that uses certain aspects tailored to that Theme.¹ These aspects include:

- *Subsector*: The FTSE Industry Classification Benchmark (ICB) Subsector definitions are used to identify the relevance of a Theme for a company.² Note that a company will be identified for multiple Subsectors if it has a significant operations in more than one; hence there is "one to many" Subsector mapping. Subsectors are categorized as Primary, Secondary, or Tertiary Impact according to the relevance of the Theme to companies in the Subsector. For companies involved in multiple Subsectors, the Subsector with the highest relevance (e.g. Primary Impact Subsector) will be used for Theme Exposure assessments.³
 - *Primary, Secondary, or Tertiary Impact Subsectors*: Subsectors are categorized as Primary, Second, or Tertiary Impact according to the relevance of the Theme to the Subsector.
- *Geography*: This assesses whether the company has operations in countries that are defined as being most relevant to the Theme and hence where the associated impacts are considered greatest.⁴
 - *Primary Impact Countries*: those countries where associated impacts are greatest, according to a rules-based methodology which uses publicly available data.
- *Multinational*: This assesses whether a company has over 30% of its revenues derived from outside their domestic region.⁵
- *Other Theme Exposures*: For the Risk Management Theme consideration is given to the company's cumulative Exposures in the other 13 Themes.

¹ The methodology for the Exposure classification methodology is developed in consultation with external experts and the FTSE Russell ESG Advisory Committee.

² The Industry Classification Benchmark (ICB) is a definitive system categorising over 70,000 companies and 75,000 securities worldwide. A company is allocated to the Subsector of ICB whose definition most closely fits the business that accounts for the primary source of the company's revenue. See *the Appendix* and <http://www.icbenchmark.com/>

³ ICB Subsector 2791 Business Support Services: this Subsector is divided into micro-sectors for the purposes of this methodology: Consultancy Services/White-Collar Activities; On-site services; Security Systems Services; Help Supply Services; Cleaning Services

⁴ A wide range of publicly available databases, statistics, indexes, listings and Ratings are used depending on the issue.

⁵ This draws from the FTSE Multinationals Index Series definition. Multinationals are defined as companies that derive 30% or more of their revenue from outside of the domestic region in which they are incorporated.

www.ftserussell.com/products/indices/multinationals

Tailored for each company in each Theme: Exposure Classification is applied in a unique manner for each company in each Theme as summarised below:

Theme	Exposure Measures*	Subsector	Geography	Other
Biodiversity	H/M	✓	✓	Subsector Filter
Climate Change	H/M/L	✓		
Pollution & Resources	H/M	✓		
Supply Chain: Environmental	H	✓		Subsector Filter
Water Security	H/M	✓	✓	Subsector Filter
Customer Responsibility	H	✓		Subsector Filter
Health & Safety	H/M	✓	✓	
Human Rights & Community	H/M/L	✓	✓	
Labor Standards	H/M/L	✓	✓	
Supply Chain: Social	H	✓		Subsector Filter
Anti-corruption	H/M	✓	✓	Multinational
Corporate Governance	M	All		
Risk Management	H	✓		Other Theme Exposures
Tax Transparency	M		✓	Multinational

*High (H), Medium (M), Low (L)

Case Study Example Company X

In each step, to demonstrate the methodology, we build on a case study example.

Company X is an automobile company that designs, builds and sells cars, trucks and automobile parts globally. In addition to the products it sells to its dealers for consumer retail sales, it also sells cars and trucks to fleet customers, including daily rental car companies, commercial fleet customers, leasing companies and governments. Based in the US, it has operations in more than 40 Primary Impact countries. It is categorized in ICB Subsector 3353 Automobiles and is mapped to ICB Subsector 3355 Auto Parts.

Case Study Example Company X

Theme	Legend	Theme Exposure (H/M/L)	Rationale
Biodiversity	EBD	N/A	The company does not operate in any Subsector that is applicable to this Theme.
Climate Change	ECC	Medium	ICB 3353 Automobiles is categorized as Secondary Impact for this Theme, and some sector specific indicators apply.
Pollution & Resources	EPR	High	ICB 3353 Automobiles is categorized as Primary Impact for this Theme.
Supply Chain: Environmental	ESC	High	ICB 3353 Automobiles is categorized as Primary Impact for this Theme, and the Subsector Filter confirms it sources physical inputs from third parties that form part of a final product.
Water Security	EWT	Medium	ICB 3353 Automobiles is categorized as Secondary Impact for this Theme, the Subsector Filter confirms that the company uses water in its industrial processes, and it operates in Primary Impact countries such as India.
Customer Responsibility	SCR	N/A	The company does not operate in any Subsector that is applicable to this Theme.
Health & Safety	SHS	Medium	ICB 3353 Automobiles is categorized as Secondary Impact for this Theme.
Human rights & Community	SHR	Medium	ICB 3353 Automobiles is categorized as Secondary Impact for this Theme, and the company operates in Primary Impact Countries such as China.
Labor Standards	SLS	High	ICB 3353 Automobiles is categorized as Primary Impact for this Theme, and the company operates in Primary Impact Countries e.g. Brazil, China, Colombia, Mexico.
Supply Chain: Social	SSC	High	ICB 3353 Automobiles is categorized as Primary Impact for this Theme, and the Subsector Filter confirms it sources physical inputs from third parties that form part of a final product
Anti-corruption	GAC	High	ICB 3353 Automobiles is categorized as Primary Impact for this Theme, and the company operates in Primary Impact Countries such as China, Haiti and Egypt, and is classified as a Multinational.
Corporate Governance	GCG	Medium	ICB 3353 Automobiles is categorized as Secondary Impact for this Theme.
Risk Management	GRM	High	ICB 3353 Automobiles is categorized as Primary Impact for this Theme.
Tax Transparency	GTX	Medium	The company is operating in Primary Impact Countries such as the Cayman Islands and Switzerland, and is classified as a Multinational.

2.5 Calculation Step 2: Indicator Assessment & Scoring

Once the Exposure has been set for each Theme the Theme Indicators are assessed and scored. Companies with higher Exposure are assessed using higher standards than those with lower Exposure, for example by being assessed against more Indicators as part of the Theme scoring.

Here is a summary of the way Indicators are assessed and scored.

Indicator Points: Points are awarded for each Indicator met in a particular Theme.

Indicator Weights: In addition to the Points awarded for each Indicator, each Indicator has a weight. Some Indicators, such as sector-specific and performance Indicators, are given additional weight.

Percentage of Total Indicator Points: The total number of Points awarded is divided by the maximum number of Points possible to give a percentage. This is done for all Themes.

Case Study Example Company X			
Theme	Legend	Theme Exposure (H/M/L)	% Indicator Points Scored
Biodiversity	EBD	N/A	N/A
Climate Change	ECC	Medium	NAP ⁶
Pollution & Resources	EPR	High	37%
Supply Chain: Environmental	ESC	High	28%
Water Security	EWT	Medium	56%
Customer Responsibility	SCR	N/A	N/A
Health & Safety	SHS	Medium	7%
Human Rights & Community	SHR	Medium	23%
Labor Standards	SLS	High	10%
Supply Chain: Social	SSC	High	33%
Anti-corruption	GAC	High	13%
Corporate Governance	GCG	Medium	89%
Risk Management	GRM	High	30%
Tax Transparency	GTX	Medium	7%

⁶ The Climate Change Theme Score is derived from a combination of the TPI MQ Score (see section 5) and carbon emissions relative to peers.

2.6 Calculation Step 3: Calculating Theme Scores

To determine a company's Score in any Theme:

The Exposure and the percentage of Indicator Points scored in that Theme is required to determine a Theme score.

For each Theme the number of Indicator "Points" a company meets is calculated as a percentage of total applicable Points and a Theme Score is given based on threshold bands. The threshold bands are higher for companies with a High Exposure than the bands for a company with Low Exposure.

The percentage of Points awarded is applied to the framework below to assign a Theme Score from 0-5, with 5 being the highest. This is repeated for all applicable Themes.

		Theme Exposure		
		Low	Medium	High
Theme Score	0	N/A	0%	0%
	1	0–5%	1–5%	1–10%
	2	6–10%	6–20%	11–30%
	3	11–30%	21–40%	31–50%
	4	31–50%	41–60%	51–70%
	5	51–100%	61–100%	71–100%

} Percentage of Indicator Points scored

Case Study Example Company X

The table below builds on the previous example by converting the percentage of Indicator Points Scores to the Theme Score.

Theme	Legend	Theme Exposure (H/M/L)	% Theme Indicator Points Scored	Theme Score (0 to 5)
Biodiversity	EBD	N/A	N/A	N/A
Climate Change	ECC	Medium	NAP ⁷	4
Pollution & Resources	EPR	High	37%	3
Supply Chain: Environmental	ESC	High	28%	2
Water Security	EWT	Medium	56%	4
Customer Responsibility	SCR	N/A	N/A	N/A
Health & Safety	SHS	Medium	7%	2
Human Rights & Community	SHR	Medium	23%	3
Labor Standards	SLS	High	10%	1
Supply Chain: Social	SSC	High	33%	3
Anti-corruption	GAC	High	13%	2
Corporate Governance	GCG	Medium	89%	5
Risk Management	GRM	High	30%	2
Tax Transparency	GTX	Medium	5%	1

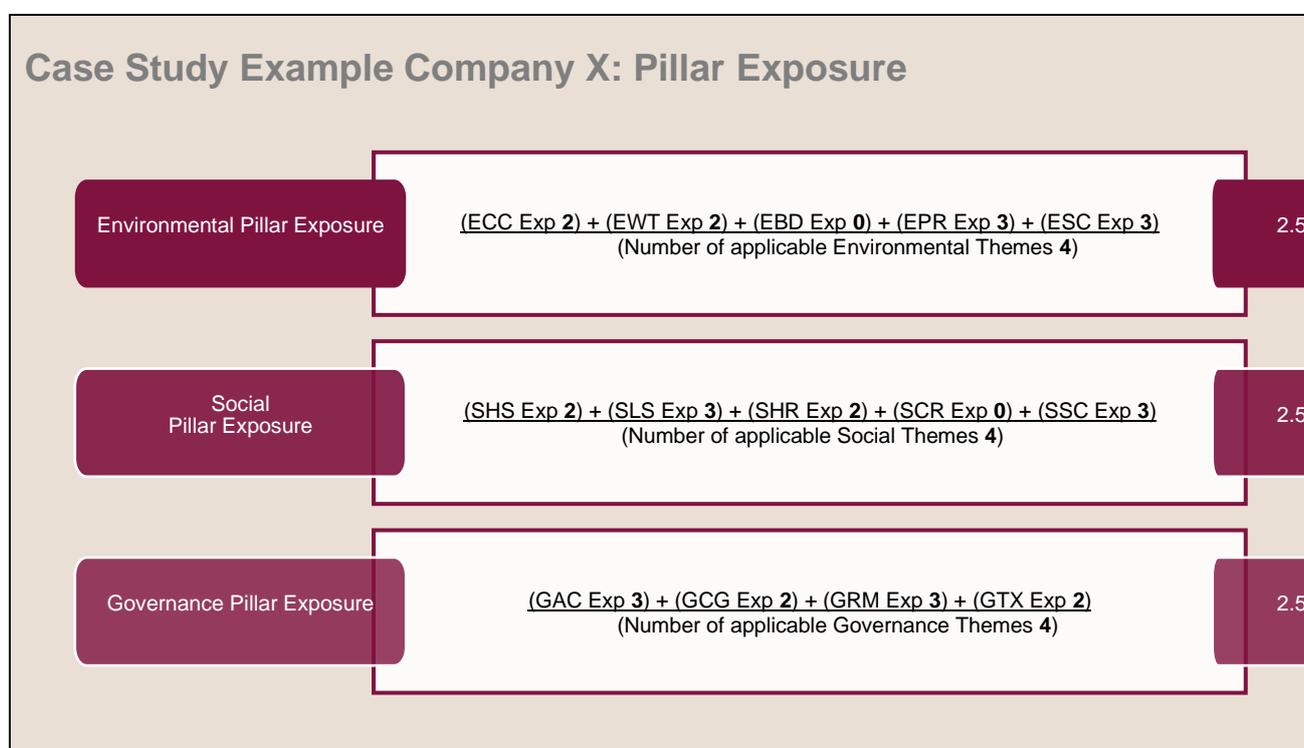
⁷ The Climate Change Theme Score is derived from a combination of the TPI MQ Score (see section 5) and carbon emissions relative to peers.

2.7 Calculation Step 4: Calculating Pillar Exposures and Pillar Scores

Once the Theme Exposures and Theme Scores are calculated it is possible to calculate the Pillar Exposures and Pillar Scores.

2.7.1 Pillar Exposure

Pillar Exposure is calculated as a weighted average of the applicable Theme Exposures; Themes that are “High Exposure” have a weight of 3, “Medium Exposure” have a weight of 2, and “Low Exposure” have a weight of 1.



NB: For Company X the Pillar Exposures happen to be equal as a result of the calculation.

2.7.2 Pillar Scores

Pillar Scores are calculated as Exposure weighted averages of the Theme Scores such that the higher Exposure Themes for a particular company have a greater weight. This results in Pillar Scores of 0-5 to one decimal place.

2.7.3 Pillar Supersector Relative Scores

The Pillar Supersector Relative Score is then calculated in deciles (1-10) where 1 equates to the bottom decile of the ESG Ratings within the Supersector, and 10 equates to the top decile.

Case Study Example Company X: Pillar Score

Environmental Pillar Score	$\frac{(\text{ECC Score } 4)(\text{ECC Exp } 2) + (\text{EWT Score } 4)(\text{EWT Exp } 2) + (\text{EBD Score } 0)(\text{EBD Exp } 0) + (\text{EPR Score } 3)(\text{EPR Exp } 3) + (\text{ESC Score } 2)(\text{ESC Exp } 3)}{(\text{ECC Exp } 2) + (\text{EWT Exp } 2) + (\text{EBD Exp } 0) + (\text{EPR Exp } 3) + (\text{ESC Exp } 3)}$	3.1
Social Pillar Score	$\frac{(\text{SHS Score } 2)(\text{SHS Exp } 2) + (\text{SLS Score } 1)(\text{SLS Exp } 3) + (\text{SHR Score } 2)(\text{SHR Exp } 3) + (\text{SCR Score } 0)(\text{SCR Exp } 0) + (\text{SSC Score } 3)(\text{SSC Exp } 3)}{(\text{SHS Exp } 2) + (\text{SLS Exp } 3) + (\text{SHR Exp } 3) + (\text{SCR Exp } 0) + (\text{SSC Exp } 3)}$	2.2
Governance Pillar Score	$\frac{(\text{GAC Score } 2)(\text{GAC Exp } 3) + (\text{GCG Score } 5)(\text{GCG Exp } 2) + (\text{GRM Score } 2)(\text{GRM Exp } 3) + (\text{GTX Score } 1)(\text{GTX Exp } 2)}{(\text{GAC Exp } 3) + (\text{GCG Exp } 2) + (\text{GRM Exp } 3) + (\text{GTX Exp } 2)}$	2.4

2.8 Calculation Step 5: Calculating the Overall Rating

ESG Ratings: The overall ESG Rating is calculated as an Exposure-weighted average of the Pillar Scores. These are calculated to one decimal place.

ESG Rating Supersector Relative Score: The ESG Rating Supersector Relative Score is then identified as a percentile, where “1” indicates that a company is in the bottom 1% and “100” indicates a company is in the top 1%.

Case Study Example Company X

$$\frac{(\text{Env Exp } 2.5)(\text{Env Score } 3.1) + (\text{Soc Exp } 2.5)(\text{Soc Score } 2.2) + (\text{Gov Exp } 2.5)(\text{Gov Score } 2.4)}{(\text{Env Exp } 2.5) + (\text{Soc Exp } 2.5) + (\text{Gov Exp } 2.5)} = 2.6$$

Section 3

ESG Data Sources

3.0 ESG Data Sources

3.1 The following is a list of data sources used in the construction of the FTSE ESG Ratings and underlying data.

Source (abbreviation)	Source Organisation	Source Report/Article Name	Main Pillar / Theme
Action Aid	Action Aid	Tax Responsibility and Investor Guide	GTX
ATMI	ATMI	Access to Medicine Index	SCR
ATNI	ATNI	Access To Nutrition Index	SCR
B-BBEE	South African Government	Broad-Based Black Economic Empowerment	SLS
BBEnv	Bloomberg	Environmental data fields	EPR
BBRC	Business & Biodiversity Resource Centre	Business & Biodiversity Resource Centre Supporting External Initiatives	EBD
BITC	Business In The Community	Five Key Principles of Community Investment	SHR
BITC Mkt Resp	Business In The Community	Marketplace Responsibility Principles	SCR
BREEAM	Buildings Research Establishment	BREEAM International New Construction Manual	ECC
CBD	Convention on Biological Diversity	[International] Convention on Biological Diversity	EBD
CDP	CDP	CDP Information Request Reporting Guidance	ECC
CDPWater	CDP Research	CDP Global Water Report 2018	EWT
CERESWater	CERES	Murky Waters? Corporate Reporting on Water Risk	EWT
CFA (Consumer Finance Association)	Consumer Finance Association	Consumer Finance Association: Lending Code for Small Cash Advances	SCR

Source (abbreviation)	Source Organisation	Source Report/Article Name	Main Pillar / Theme
Children's Rights BP	Unicef, Global Compact, Save the Children	Children's Rights and Business Principles	SHR
CHRB	Corporate Human Rights Benchmark	2019 Methodology for the Agricultural Products, Apparel and Extractive industries	SHR
Christian Aid	Christian Aid	Tax and Sustainability: A framework for businesses and socially responsible investors	GTX
Cranfield	Cranfield University	Collaboration in the Supply Chain	SSC
DB Beyond Numbers	Deutsche Bank	Beyond the Numbers - Corporate Governance: Implication for Investors	GCG
DEFRA Green Claims	Dept of Environment, Food and Rural Affairs	Green Claims Guidance	SCR
EC-HR-Article 10	European Convention	European Convention on Human Rights - Article 10	SHR
Equator Principles	Equator Principles Financial Institutions	The Equator Principles III June 2013	SSC, SCR
ETI	Ethical Trading Initiative	ETI Base Code	SSC, ESC
EU	European Union	Emissions Standards	ECC
FRC CG	Financial Reporting Council	The UK Corporate Governance Code	GCG
GRI	Global Reporting Initiative	G4 Sustainability Reporting Guidelines	E/S/G
GRI FS	Global Reporting Initiative	G4 Sector Disclosures : Financial Services	E/S/G
GRI	Global Reporting Initiative	G4 Sustainability Reporting Guidelines	SHR
HM 42	HM Revenue & Customs	ERSM 140070 Reporting Requirements Form 42	GCG
HSE - risks	Health & Safety Executive	Health & Safety Made Simple: Risk assessment (web-site)	SHS
HSE benchmarking tool	Health & Safety Executive	Health & Safety Benchmarking - Improving Together	SHS
HSE polity template	Health & Safety Executive	HSE Prepare a health and safety policy	SHS
IAEA	International Atomic and Energy Agency	Environmental impact assessment for uranium mine, mill and in-situ leach projects	SHS
IBE	Institute of Business Ethics	Communicating Ethical Standards	SLS
ICGN	International Corporate Governance Network	ICGN Global Stewardship Principles	GCG

Source (abbreviation)	Source Organisation	Source Report/Article Name	Main Pillar / Theme
ICMM	International Council on Mining and Metals	ICMM Sustainable Development Framework 10 Principles	EBD
IFC	International Finance Corporation	The Risk Management Balancing Act	GCG
IIA	The Institute of Internal Auditors	The Three Lines of Defense in Effective Risk Management and Control	GRM
ILO C100	International Labour Organisation	ILO Equal Remuneration Convention	SLS
ILO C105	International Labour Organisation	ILO Abolition of Forced Labor Convention	SLS
ILO C107	International Labour Organisation	ILO Indigenous and Tribal Populations Convention 1957	SHR
ILO C111	International Labour Organisation	ILO Convention concerning Discrimination in Respect of Employment and Occupation	SLS
ILO C131	International Labour Organisation	ILO Minimum Wage Convention	SLS
ILO C138	International Labour Organisation	ILO Minimum Age Convention	SLS
ILO C169	International Labour Organisation	ILO Indigenous and Tribal Populations Convention 1991	SHR
ILO C173	International Labour Organisation	ILO Protection of Worker's Claims (Employer's Insolvency) Convention	SLS
ILO C182	International Labour Organisation	Worst Forms of Child Labor	SLS
ILO C29	International Labour Organisation	ILO Forced Labor Convention	SLS
ILO C30	International Labour Organisation	ILO Hours of Work Convention	SLS
ILO C87	International Labour Organisation	ILO Freedom of Association and Protection of the Right to Organise Convention	SLS
ILO C94	International Labour Organisation	ILO Labor Clauses (Public Contracts) Convention	SLS
ILO C95	International Labour Organisation	ILO Protection of Wages Convention	SLS
ILO C98	International Labour Organisation	ILO Right to Organise and Collective Bargaining Convention	SLS
ILO-OSH 2001	International Labour Organisation	ILO-OSH 2001 Guidelines on Occupational Safety and Health Management Systems	SHS
IoD and HSE	Institute of Directors and the Health and Safety Executive	IoD and HSE Leading Health and Safety at Work	SHS
IOSCO	International Organization of Securities Regulators ("IOSCO")	IOSCO Principles for Auditor Oversight	GCG

Source (abbreviation)	Source Organisation	Source Report/Article Name	Main Pillar / Theme
IPIECA KPIs	IPIECA the global oil and gas industry association for environmental and social issues	Section 5. Health & Safety Indicators	SHS
IRM	Institute of Risk Management	Risk Management Standard	GRM
ISO 14001	International Organisation for Standardisation	Environmental Management Systems	EPR
ISO 26000	International Organisation for Standardisation	International Standard: Guidance on Social Responsibility	E/S/G
LBG Making a Difference	London Benchmarking Group	Making a Difference: Corporate Community Investment: a whole programme approach to measuring results	SHR
Nat Step	Natural Step Canada	Towards a Gold-Standard Benchmark for a Sustainable Business	EPR
Natural Value	Natural Value Initiative	NVI Toolkit - Ecosystem Services Benchmark VI (excel)	EBD
OECD CG	OECD	OECD Principles of Corporate Governance	GCG
OSHAS 18001	British Standards Institute	Occupational health and safety management systems. Requirements	SHS
PRI	UNEP FI (United Nations Environment Program for Financial Institutions)	Principles for Responsible Investment: The Six Principles	SSC
PRI-Integ-Analysis	Principles for Responsible Investment	Integrated Analysis: How Investors are Addressing Environmental, Social and Governance Factors in Fundamental Equity Valuation	SSC
PRI	Principles for Responsible Investment	Engagement Guidance on Corporate Tax Responsibility	GTX
PSI	UNEP FI (United Nations Environment Program for Financial Institutions)	Principles for Sustainable Insurance	SSC
Salz	Salz Review	Salz Review: An Independent Review of Barclays Business Practices	GCG
SASB	Sustainability Accounting Standards Board	SASB Standards	SHR
SEC	Securities Exchange Commission	SEC Rules for Reserves Reporting	ECG

Source (abbreviation)	Source Organisation	Source Report/Article Name	Main Pillar / Theme
SEDEX	SEDEX	SEDEX Supplier Workbook	SSC
Soc Gen	Societe Generale	SRI: Beyond Integration, research note	E/S/G
SSEI	UN Sustainable Stock Exchange Initiative	2016 SSE Report on Progress Overview	SSC
Stoxx/Dr Axel	Dr. Axel Hesse for German Federal Env Ministry	SD-KPI Standard 2010 – 2014	E/S/G
TEEB	TEEB The Economics of Ecosystems & Biodiversity	Mainstreaming the Economics of Nature	EBD
TI	Transparency International	Business Principles for Countering Bribery	GAC
UN Code Enforcement	United Nations	UN Code of Conduct for Law Enforcement Officials	SHR
UN Force & Firearms	United Nations	UN Basic Principles on the Use of Force and Firearms	SHR
UN OHCR GP	United Nations High Commission for Human Rights	United Nations High Commission for Human Rights Guiding Principles	SHR
UNDR Indigenous	United Nations	United Nations Declaration of the Rights of Indigenous Peoples	SHR
UNEP FI HR Toolkit	UNEP FI (United Nations Environment Program for Financial Institutions)	Human Rights Guidance Tool for the Financial Sector	SHR
UNEP-Translating	UNEP FI (United Nations Environment Program for Financial Institutions)	Translating ESG into Sustainable Business Value UNEP FI and WBCSD	EBD
UNGC	UN Global Compact	UN Global Compact Principle 10	GAC
UNGP	UN Guiding Principles	UN Guiding Principles Reporting Framework	SHR
World Bank	World Bank	Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies	SHR



Section 4

FTSE ESG Ratings Quality Control

4.0 FTSE ESG Ratings Quality Control

To construct the FTSE ESG Dataset, FTSE Russell analysts collect publicly available data from sources including corporate reports, websites and press releases.

Throughout the data collection and calculation process FTSE Russell applies several layers of quality control to ensure data accuracy. These checks are applied at the company level and at the overall dataset level.

At the company level, a combination of automated checks, senior analyst review and key indicator checks are applied.

At the dataset level further automated checks are applied, supplemented by the analysis of trends and targeted review by senior analysts.

Additionally, companies are offered the opportunity to provide feedback on the data sources captured, to ensure that the most suitable have been used; this feedback is reviewed by analysts and incorporated into the assessment where relevant.



Section 5

Transition Pathway Initiative Management Quality Score

5.0 Transition Pathway Initiative Management Quality Score

- 5.1 FTSE Russell uses the methodology developed by the Grantham Institute at the London School of Economics to calculate Management Quality (MQ) Scores used by the Transition Pathway Initiative (TPI).
- 5.1.1 These scores use datapoints incorporated within the ESG Ratings Model and as such the same quality control processes apply in their calculation.
- 5.2 Further information regarding the construction of the TPI MQ Scores can be found here: <https://www.transitionpathwayinitiative.org/>



Section 6

Green Revenues

6.0 The FTSE Green Revenues Data Model

6.1 The FTSE Green Revenues data model helps investors understand the global industrial transition to a green and low carbon economy with consistent, transparent data and indexes.

Companies are analyzed and categorized using the unique Green Revenues Classification System (GRCS) on green products and services that covers 10 sectors, 64 subsectors and 133 micro sectors. The tiering system under the GRCS identifies the level of “greenness”, or net environmental benefits of companies’ business activities and revenues. Each micro sector is allocated to a tier (tier 1, 2 or 3) based on its overall environmental impacts.

For each company with green products or services identified, the Model provides data points on company green revenue percentages (including minimum, maximum and point estimate) and micro sector green revenue percentages for each green product or service offered by the company.

The FTSE Green Revenues data model does not currently utilize international standards in its construction but can be used to determine the degree to which companies are exposed to sustainable activities.

6.2 FTSE Green Revenues Dataset Construction

Information is collected from publicly available reports by FTSE Russell analysts. Companies are also invited to provide more detailed information where the subsegmental revenue breakdown in their annual reports is not granular enough to facilitate the assessment of green revenues.

6.3 FTSE Green Revenues Ratio Construction

The FTSE Green Revenues ratio for a company is:

The ratio of green revenues as classified by the FTSE Green Revenues Classification System to total revenue;

Where an index utilizes a variant of the Green Revenues ratio in their construction, this will be described in that Index’s Ground Rules. In general, green revenues from Tier 3 micro sectors are excluded for index construction.

All constituent securities are assigned an FTSE Green Revenues ratio value. The FTSE Green Revenues ratio can be:

Zero if a constituent company has no exposure to the Green Economy;

A non-zero value, when exact Green Revenues were disclosed by a constituent company;

The minimum of the stated range of possible Green Revenues, when a company discloses insufficient information for a precise determination of the FTSE Green Revenues ratio;

The company-specific estimate or sector-specific estimate of the Green Revenues, when a company discloses insufficient information for a precise determination of the FTSE Green Revenues ratio and estimation methodology is used to produce a point estimate for the company

6.4 Collection Method and Delivery

6.4.1 The data is collected by an analyst who will typically manually extract (e.g. copy and paste) the wording from the data source and apply tags.

6.5 Quality Measures

6.6 Quality measures occur in four stages

- A. Stage 1 Analyst Level Quality Controls - an automated quality check using rules in the system that immediately can be used by the analyst on the data entry screen.
- B. Stage 2 Advanced Quality Controls (conducted during research cycle) - more experienced quality control analyst carries out a further review which includes checking for accuracy of data assessed, and consistency in comparison with companies in the same ICB subsector; this check can also include checks on previous stage 1 checks undertaken.
- C. Stage 3 Company Review of research - all companies are contacted and given the opportunity to comment on the accuracy and completeness of the company's data. Where companies identify pertinent information (i.e. information relevant to its assessment), such as revenues or product-specific attributes which was not included in the assessment, then the analyst incorporates the applicable company changes and the assessment is updated. FTSE contact every company and allow them to respond within a four-week timeframe.
- D. Stage 4 FTSE Quality Monitoring of research (conducted bi-annually during research cycle)- FTSE Russell Sustainability experts conduct quality monitoring checks on quantitative data consistency regarding units, green activity and or revenue gaps, outliers and peer comparisons.
- E. All data is looked over, defended or remedied before being delivered for market consumption.

6.7 FTSE Green Revenues and International Standards

The FTSE Green Revenues Data Model measures the “greenness” of products based on product-based international standards that align to each of the micro sector and subsector classifications.

6.7.1 Certifications are considered if the certification is issued by an independent third party and the environmental performance of the product is better than incumbent products' efforts to adapt, mitigate and/or remediate: environmental erosion, resource depletion and/or climate change.

6.7.2 These standards include, but are not limited to:

- **LEED (full suite)**
- **BREEAM**
- **EnergyStar**
- **RSPO**
- **Marine Stewardship Council**
- **Forest Stewardship Council**
- **Organic**
- **FairTrade**
- **Life Cycle Assessment**
- **Sustainable Forestry Initiative**
- **EcoLabel**
- **Green Seal**
- **Nuclear Grade Certifications**
(i.e. ASME, QSC-597, QSD-665)
- **BOMA 360**
- **BOMA BEST**
- **CASBEE**
- **DGNB**
- **GPR Gebouw**
- **Green Globes**
- **Green Mark**
- **Green Star**
- **Green Star NZ**
- **Green Star SA**
- **HQE**
- **Miljöbyggnad**
- **SKA Rating**

Section 7

Carbon Reserves

7.0 The FTSE Carbon Reserves Data Model

7.1 The FTSE Global Carbon Reserves data model provides granular coverage of fossil fuel reserve ownership among publicly listed companies in developed markets and emerging economies. High levels of reserves and associated future emissions indicate potential 'stranded assets' on the balance sheets of fossil fuel companies, a key component of climate transition risk.

The dataset includes not only company-level data of oil, gas, and coal reserves, but also projections of potential GHG emissions released, if these reserves are extracted and combusted. Fossil fuel potential emissions are calculated by applying standardized emissions factors to each reserve type to adjust for non-energy uses of reserves, to capture carbon emissions from combustion, and to calculate additional operation emissions, such as from leakage and flaring.

The primary goal is to capture companies that own a majority stake in fossil fuel reserves. Only those reserves in which the company owns at least a 50% stake are captured.

7.2 FTSE Carbon Reserves Dataset Construction

Information is collected from publicly available reports by FTSE Russell analysts. The collection methodology captures both Proved (1P) and Proved and Probable (2P) reserves, which reflect the probability of economic extraction. Revenues, production and sales figures, and reserves quantities are captured with no minimum threshold. The raw data can be utilized to create custom and flexible models to suit individual needs.

7.3 Collection Method and Delivery

The data is collected by an analyst who will typically manually extract (e.g. copy and paste) the wording from the data source and apply tags. This process usually takes roughly 5 hours for each company depending on the type of data that is being reviewed, and 1 year for the universe of companies on which data is being collected.

7.4 Quality Measures

To ensure data quality new assessments are reviewed by senior analysts and automated checks are applied.

7.5 Quality measures occur in three stages

- A. Stage 1 Analyst Level Quality Controls - an automated quality check using rules in the system that immediately can be used by the analyst on the data entry screen.
- B. Stage 2 Advanced Quality Controls (conducted during research cycle) - more experienced quality control analyst carries out a further review which includes checking for accuracy of data assessed, and consistency in comparison with companies in the same subsector; this check can also include checks on previous stage 1 checks undertaken.
- C. Stage 3 FTSE Quality Monitoring of research (conducted bi-annually during research cycle)- FTSE Russell Sustainability experts conduct quality monitoring checks on quantitative data consistency regarding units, green activity and or revenue gaps, outliers and peer comparisons.
- D. All data is looked over, defended or remedied before being delivered for market consumption.

7.6 FTSE Carbon Reserves and International Standards

The FTSE Carbon Reserves model does not make use of any international standards.



Section 8

Carbon Emissions

8.0 The FTSE Carbon Emissions Data Model

8.1 FTSE Carbon Emissions Dataset Construction

The FTSE Carbon Emissions Data model provides reported and estimated Scope 1 and Scope 2 emissions data on the assets and activities controlled by global publicly listed companies. High levels of emissions relative to revenues for a specific industry reflect carbon intensive processes or an overreliance on fossil fuels. This indicates that a company's assets could be rendered obsolete or are simply unattractive to investors seeking to incorporate a rapid decarbonization pathway into their investment portfolio.

Coverage extends from 2012 through present day, with reported emissions data covering the majority of global market capitalization as represented by the FTSE Global All Cap with estimated and extrapolated data filling in lacks in company level disclosure.

8.2 FTSE Carbon Emissions Dataset Construction

Disclosed corporate carbon emissions data is collected from publicly available reports by FTSE Russell analysts. Additional Scope 1 and Scope 2 carbon emissions data from CDP (Carbon Disclosure Project) is also used in the dataset construction.

8.3 FTSE Carbon Emissions Dataset Construction

To fill in the gaps left by reported data, we have designed a hierarchical framework which estimates emissions if disclosed data is unavailable. The source of the emissions estimation is an ensemble median of three estimation models:

Sector Median

- Assigns each company to a single sector and region. Takes the median carbon intensity of all the companies reporting carbon emissions for each sector. If enough companies disclose, our implementation utilizes a higher resolution (e.g. Waste Management companies in North America).

Input Output (IO)

- Uses Environmentally Extended Input Output Models to determine the carbon intensity of multiple economic activities a company is involved in. Offers an economy-wide perspective

accounting for production flows within and between sectors and countries, independent of disclosed emissions. Generates more nuanced estimates of carbon emissions for complex firms with multiple business lines.

Inverse Distance Weight Interpolation (IDWI)

- Estimates carbon intensity for each economic activity based on all the companies reporting carbon emissions for each activity, with a weighting towards pure play companies. This approach uses company-level emissions disclosures to estimate the emissions intensity on an activity level. Since a typical company is involved in multiple activities, companies which specialize in a single activity represent the best estimate of that activity's carbon intensity.

Since each strategy has well-documented biases and sources of volatility, we have elected to use an ensemble estimate as our best substitute for disclosed emissions.

Carbon Estimation Median

- Scope 1 and Scope 2 emissions estimates are calculated through the median of the Sector Median, Inverse Distance Weight Interpolation and Input/Output estimates, for any given year of interest.

The multimodel estimation strategy is supplemented with two other estimation techniques in limited situations.

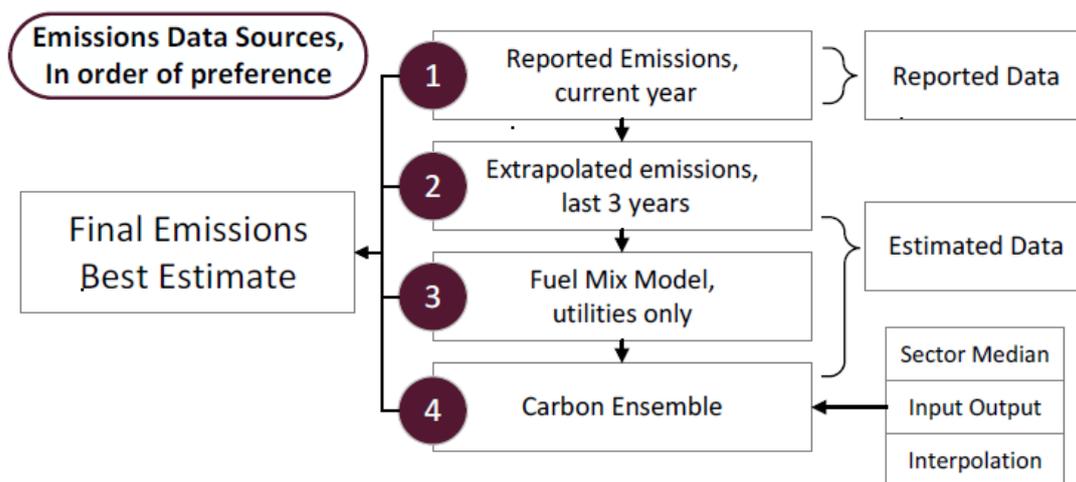
Energy

- Estimates carbon emissions based reported power generation by fuel type (coal, gas, solar etc.) for power utilities.

Extrapolation

- Fills discrete missing data points where a company has reported carbon emissions for earlier years.

Hierarchical Model



8.4 Collection Method and Delivery

The data is collected by an analyst who manually extract data from the data source and apply tags.

8.5 Quality Measures

FTSE Russell applies several layers of quality control throughout the data collection and calculation process to ensure data accuracy. These checks are aligned to other FTSE Russell data models and are in four stages:

- A. Stage 1 Analyst Level Quality Controls - an automated quality check using rules in the system that immediately can be used by the analyst on the data entry screen.
- B. Stage 2 Advanced Quality Controls (conducted during research cycle) - more experienced quality control analyst carries out a further review which includes checking for accuracy of data assessed, and consistency in comparison with companies in the same ICB subsector; this check can also include checks on previous stage 1 checks undertaken.
- C. Stage 3 Company Review of research - all companies are contacted and given the opportunity to comment on the accuracy and completeness of the company's data. Where companies identify pertinent information (i.e. information relevant to its assessment), such as revenues or product-specific attributes which was not included in the assessment, then the analyst incorporates the applicable company changes and the assessment is updated. FTSE contact every company and allow them to respond within a four-week timeframe.
- D. Stage 4 FTSE Quality Monitoring of research (conducted bi-annually during research cycle)- FTSE Russell Sustainability experts conduct quality monitoring checks on quantitative data consistency regarding units, green activity and or revenue gaps, outliers and peer comparisons.

To control for extreme numbers while training carbon estimation models, outliers are automatically truncated at a percentile cut off carbon intensity, relative to each ICB Supersector.

8.6 FTSE Carbon Emissions and International Standards

The FTSE Carbon Emissions model does not make use of any international standards



Appendix A: Further Information

A Glossary of Terms used in FTSE Russell's Ground Rule documents can be found using the following link:
[Glossary.pdf](#)

For contact details please visit the FTSE Russell website or contact FTSE Russell client services at
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