
SUSTAINALYTICS' ESG RISK RATINGS

Generating Valuable Insights from ESG Factors

Client Relations
2019

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Introduction to Sustainalytics

Who We Are

- » 17 offices across the globe
- » Supporting 500+ clients worldwide
- » Over 25 years experience in responsible investment
- » ~500 staff
- » Industry leading company coverage (10,000+ ESG ratings and product screening, 15,000+ norms-based screening)



What We Do

Serving investor across the value chain

Voting Services

Communicating with company management and boards around the vote to ensure that the rationale is understood and that recommendations are well-informed and lead to change where necessary.



Post-investment

Engagement Services

Corporate engagement – with companies that form part of the public equity and corporate fixed income holdings of our clients to seek positive change for our clients, the companies and the societies in which they operate



Reporting

Sustainalytics' ESG and Carbon Portfolio Analytics support investors with reporting to key internal and external stakeholders.

Investment

Investment Universe Construction

Portfolio screening – we help our clients to fulfil their stewardship obligations through monitoring their portfolios to regularly identify companies that are in or near breach of international norms and conventions.



ESG Integration


Sustainalytics' *ESG Risk Ratings* and other research products support investors in their fundamental analysis and during the investment decision-making process

Pre-investment

Overview of Mackay Shields' Access

Overview of Sustainalytics Research Products

Service/ Research Module	Universe
ESG Risk Ratings	Ratings+ Global full universe (up to 12,000 companies)
Product Involvement	Ratings+ Global full universe (up to 12,000 companies)
Controversies Research	Ratings+ Global full universe (up to 12,000 companies)
Corporate Governance Research	Ratings Global full universe (up to 4,800 companies)
Carbon Risk Rating / GHG Emissions Data	Ratings Global full universe (up to 4,500 companies) / (up to 10,000 companies)
Sustainable Products Research	Ratings+ Global full universe (up to 12,000 companies)



ESG Risk Ratings: Our Methodology

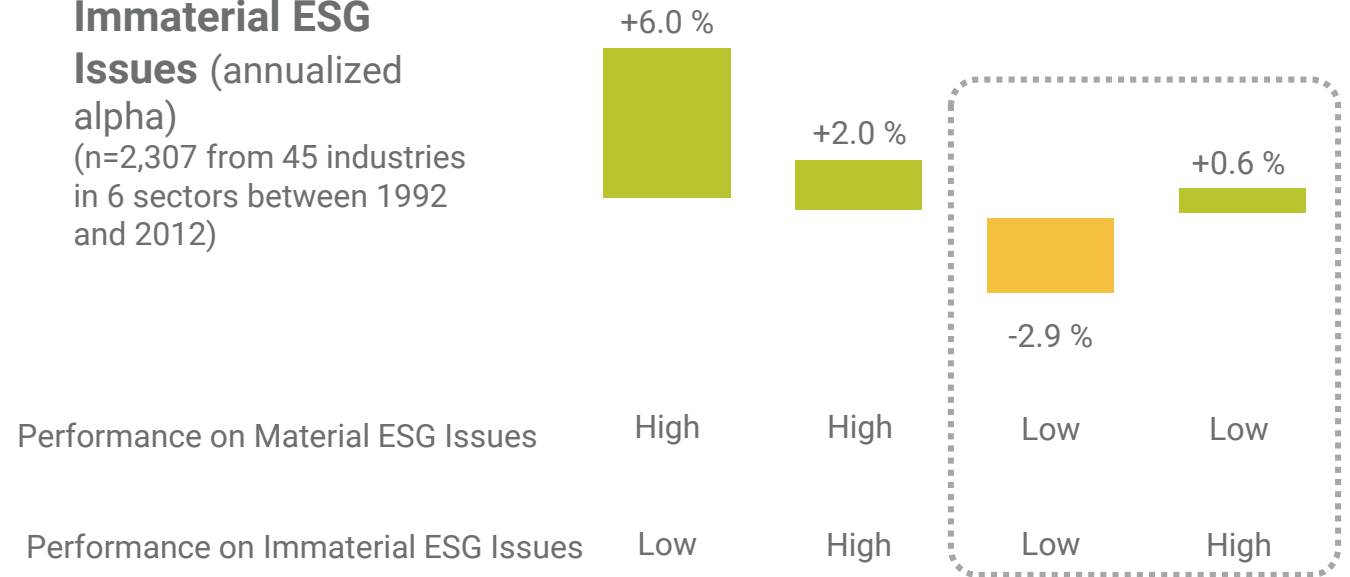
Evolution of an ESG rating

Sustainalytics consulted clients on what they would like to see in a next generation rating. We heard that:

- » There needs to be a **greater focus on financial materiality**
- » That the analysis needs to create **deeper insights**,
- » That full **corporate governance analysis** should be included in the ESG rating, and
- » Clients want **more/better data that is versatile**, i.e. can be used for multiple use cases

Stock Performance on Material & Immaterial ESG Issues

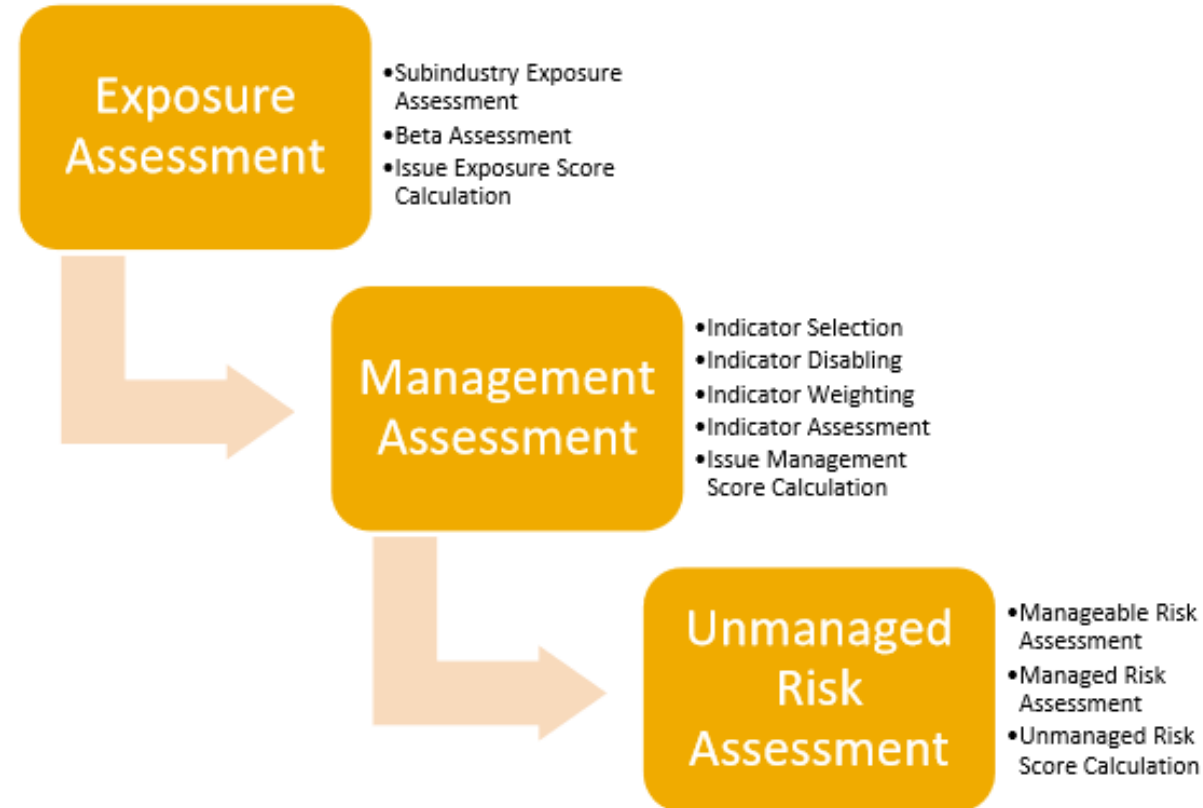
(annualized alpha)
(n=2,307 from 45 industries in 6 sectors between 1992 and 2012)



What does the ESG Risk Rating Measure?

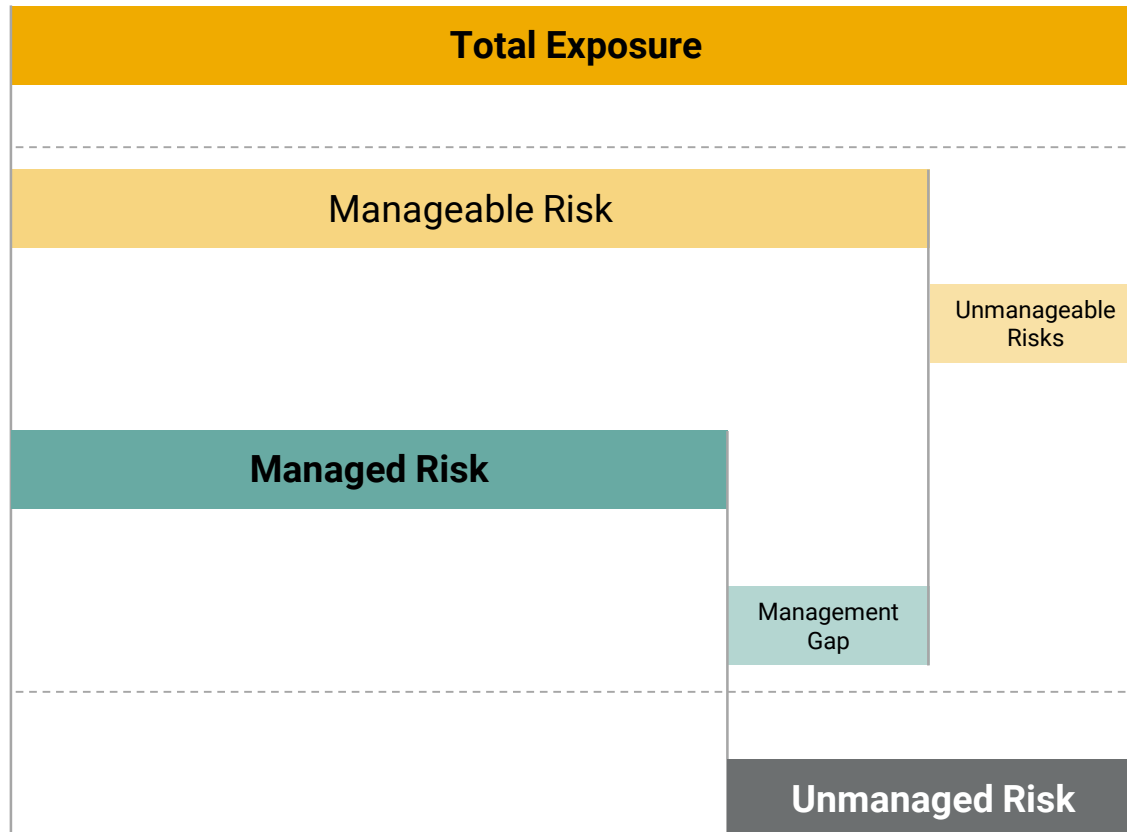
Assessments of exposure and management of exposure presents a clear pictures of *Unmanaged ESG Risk*

Figure 1: The three stages of the ESG Risk Rating scoring system



How Does the ESG Risk Rating Work?

Management gaps and unmanageable risks are added up across all material ESG issues



Exposure

- » Reflects the degree to which a company's enterprise value is exposed to Material ESG Issues (MEIs)

Management

- » Some companies have unmanageable risks, e.g. an oil company will always face risks related to carbon until it changes its business model
- » Of the manageable risk a portion is managed through a company's policies, programs, management systems and events, the remainder is considered unmanaged (Management Gap)

Unmanaged Risk

- » The unmanaged risks across all material ESG issues are added up to arrive at the final rating

Exposure – Step 1

Determining Exposure to Material ESG Issues (MEIs) at Subindustry Level

- » Material ESG issues (MEIs) are determined with a tool combining historical events and materiality matrices
- » Each company is assessed on 3-10 MEIs, selected from a set of 20, which score between 2 (lowest material exposure) and 10 (highest exposure)
- » Corporate Governance assessed for all companies
- » The issues are selected per subindustry based on:
 - » Quant view (e.g. incidents data)
 - » Corporate view (e.g. GRI reports)
 - » Expert view (e.g. SASB, Sustainalytics analysts)

MEIs	Events	Matrices	Final
Corporate Governance	High	High	9
Access to Basic Services	None	None	0
Business Ethics	Med.	High	6
Community Relations	None	Low	0
Carbon Own Operations	Low	Low	3
Carbon Products and Services	High	High	8
Human Capital	Med.	High	6
Human Rights - Supply Chain	Low	Med.	2

Exposure – Step 2

Adjusting to Company-Specific Exposure with Beta

- » A multi-factor risk model that takes into account the subindustry as well as company-specific elements
- » Issue betas combine quantitative and qualitative factors
- » Betas range from 0.25 to 2 and are composed of 4 components:
 1. Business/product lines
 2. Financial metrics
 3. Geographic exposure
 4. Track record of related incidents

MEIs	<u>Subindustry</u> <u>Exposure</u>		<u>Company</u> <u>Exposure</u>
Corporate Governance	9	B=1	9
Business Ethics	6	B=0.5	3
Carbon Own Operations	3	B=1	3
Carbon Products and Services	8	B=1	8
Human Capital	6	B=1.2	7.2
Human Rights - Supply Chain	2	B=0.8	1.6

Management – Step 1

Deriving Manageable Risk from Exposure

- » The exposure to a risk may not be fully manageable without fundamentally altering the company's business model
- » The portion that is manageable is determined by applying a manageable risk factor (%) to the issue exposure
- » Manageable risk factors for each issue are selected by analyst teams

MEIs	Company Exposure		Manageable Risk
Corporate Governance	9	80%	7.2
Business Ethics	3	100%	3
Carbon Own Operations	3	100%	3
Carbon Products and Services	8	100%	8
Human Capital	7.2	100%	7.2
Human Rights - Supply Chain	1.6	50%	0.8

Management – Step 2

Deriving Managed Risk from Manageable Risk

» Management scores are calculated as weighted sum of raw scores

Indicator	Score	Weight	Weighted Score
Eco-design	50	20%	10.0
Fleet emissions	25	35%	8.7
Fleet emissions trend	25	25%	6.3
Sustainable Products & Services	0	20%	0.0
			25

» The manageable risk is multiplied by its management score (taken as a %) to determine the amount of managed risk.

MEIs	Manageable Risk		Managed Risk
Corporate Governance	7.2		
Business Ethics	3		
Carbon Own Operations	3		
Carbon Products and Services	8	25 (%)	2
Human Capital	7.2		
Human Rights - Supply Chain	1.6		

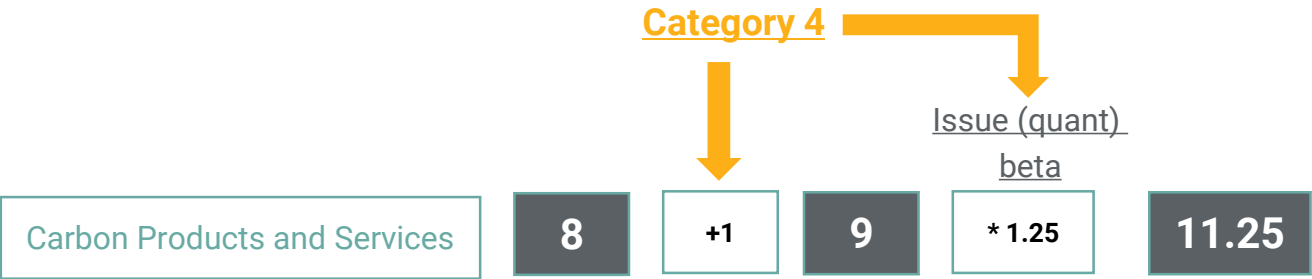
Events

Triggering Exposure Score Increase

Exposure:

- » Events impact the quantitative issue beta via the events beta component, entailing an increase of the company-specific issue exposure
- » For significant events (category 4 & 5), exposure is increased

	Category 0	Category 1	Category 2	Category 3	Category 4	Category 5
Exposure score	default exposure score				+1 (min 6)	+2 (min 8)



Events

Triggering Weight Reduction of Management Indicators

Management:

» Event indicators are scored at 0 and event weight increases with its severity

	Category 0	Category 1	Category 2	Category 3	Category 4	Category 5
Event indicator score	0	0	0	0	0	0
Event indicator weight	0%	5%	10%	25%	50%	75%

» Weights of other management indicators are redistributed and overall Management score automatically decreases

Indicator	Score	Weight	Weighted Score
Eco-design	50	20%	10.0
Fleet emissions	25	35%	8.7
Fleet emissions trend	25	25%	6.3
Sustainable Products & Services	0	20%	0.0
Environmental Impact of Products (Event)	0	0	0
Carbon Impact of Products (Event)	0	0	0

25

Category 4 event

Indicator	Score	Weight	Weighted Score
Eco-design	50	10%	5.0
Fleet emissions	25	17.5%	4.3
Fleet emissions trend	25	12.5%	3.1
Sustainable Products & Services	0	10%	0.0
Environmental Impact of Products	0	0	0
Carbon Impact of Products (Event)	0	50%	0

12.4

ESG Risk Rating

Unmanaged Risk = Exposure – Managed Risk

- » The difference between exposure and managed risk is referred to as **unmanaged risk**
- » When unmanaged risk for all MEIs is added together it can also be referred to as the **Risk Rating**

Risk Category	Score Range - Overall
Negligible Risk	0-9.99
Low Risk	10-19.99
Medium Risk	20-29.99
High Risk	30-39.99
Severe Risk	40-100



ESG Risk Rating

How We Calculate the Final Rating Result

Rating Process

Define MEIs and Exposure

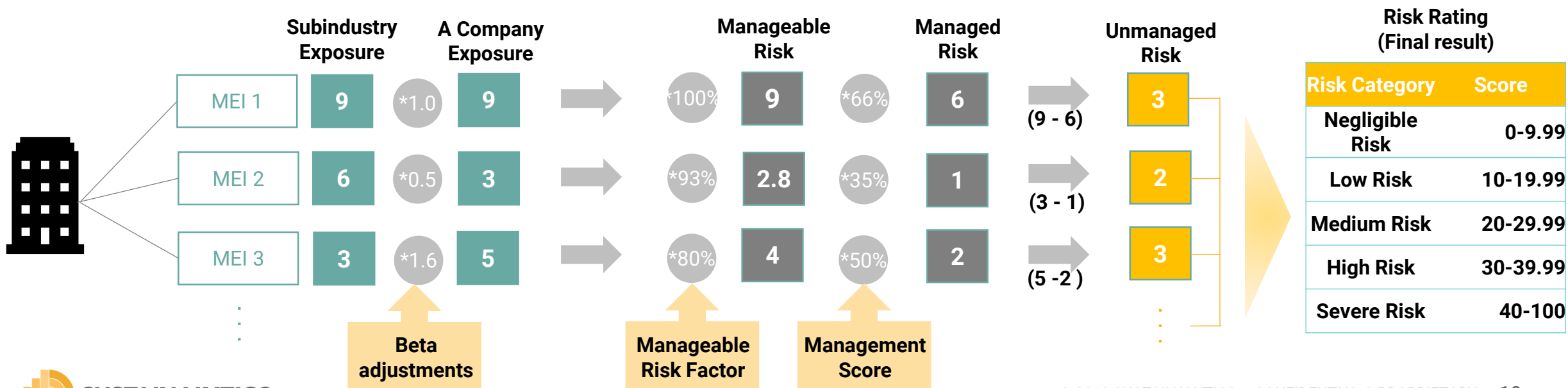
- » Select up to 10 MEIs out of 20 MEIs with “Exposure” score at subindustry level (138)
- » Use Betas to adjust subindustry exposure and derive a company specific exposure score

Calculate Manageable Risk and Managed Risk

- » Apply “Manageable Risk Factor(%)” to each MEI
- » Calculate “Managed Risk” from the management scores of indicators associated to each MEI

Sum up each Unmanaged Risk to the final rating

- » Calculate each MEI’s “Unmanaged Risk”
- » Sum up each “Unmanaged Risk” to show the final rating result scoring from 0 to 100



Our ESG Risk Rating Research Process

A. Annual Review - Preparedness



Sources


- » Public corporate reporting and filings
- » 80,000 media sources via Moreover Technologies (Lexis Nexis)
- » Third-party sources (specialized providers, industry publications, renowned NGOs)

Analysis

- » Industry-teams conduct rating review
- » Stringent Quality Management
- » Company feedback deemed essential

B. Daily News Monitoring





ESG Ratings v ESG Risk Rating: How Do They Compare?

Committed to Advancing ESG Ratings

Main differentiators between existing ESG Ratings and next generation ESG Risk Ratings

Legacy

Broad stakeholder approach
E, S, G structure
1-dimensional rating: ESG Performance
(relative) Performance score (0 to 100), categorized in 5 performance levels (leader – laggard); backward-looking
Sector-specific: all indicators & weights 'identical'
Performance driven rating changes, but static indicator weight matrix
Subjective process for indicator selection and weighting

Approach

Structure

Dimension

Final Rating

Specification

Rating Dynamics

Process

Next Generation

Financial materiality-driven

Issue-focused structure; combination of issues
possible (e.g. carbon, E, S, G)

2-dimensional rating:
ESG exposure and management

(absolute) Risk score (0 to 100), categorized in 5 risk
categories (negligible – severe); forward-looking

Company-specific: Taking business model and
geographic exposure into account

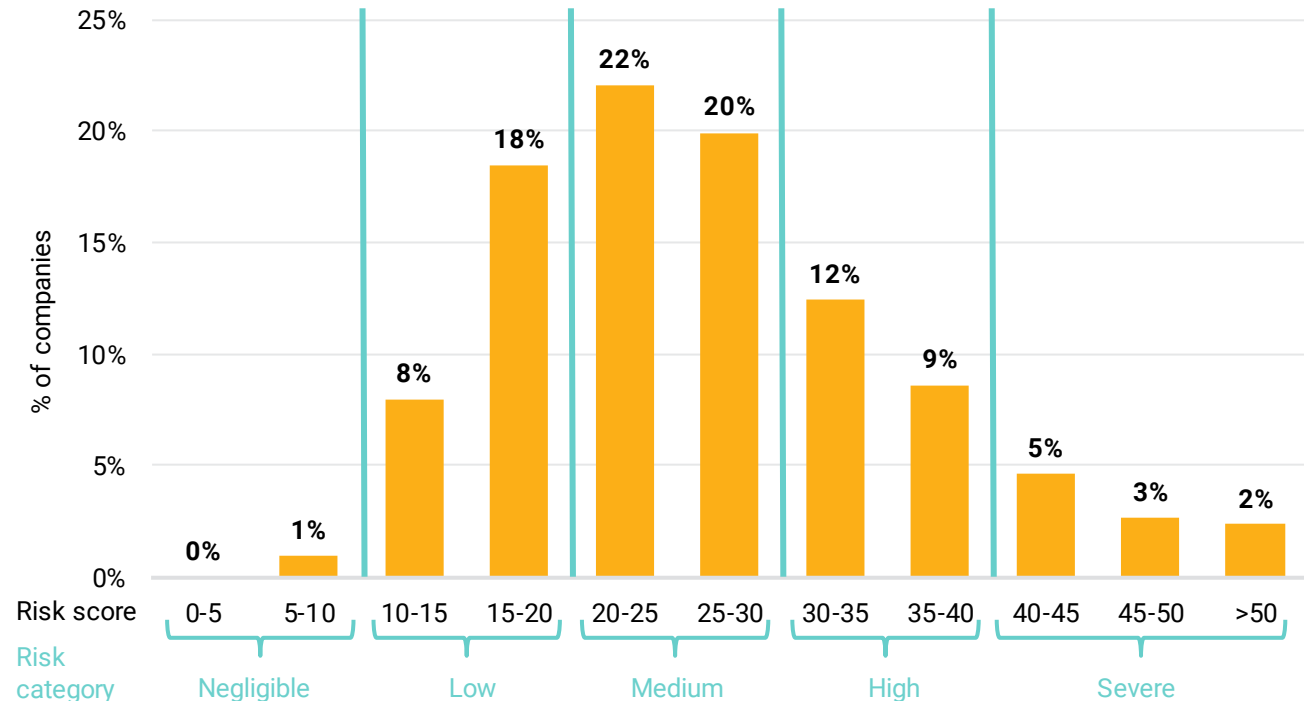
Exposure-based weight matrix driven by incident
changes & incorporation of black swan events

Structured, data-driven process for issue/ indicator
selection and weighting

Distribution of Rating Outcomes

The rating differentiates well between companies with different ESG exposure and management profiles

- » 4,015 coverage entities with comprehensive research framework
- » Allocation across five risk rating categories
- » 31% of entities are in high/severe risk brackets



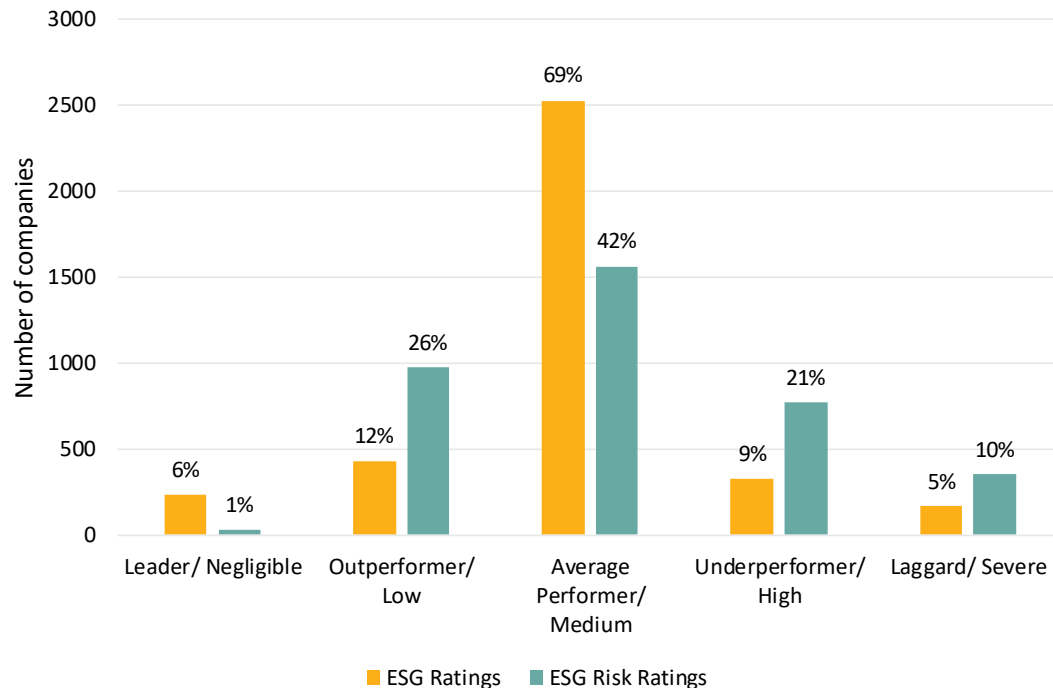
*as of April 2019

Source: Sustainalytics

Comparing ESG Risk Ratings with ESG Ratings

Comparison of frequency distributions across rating category levels

Distribution of Ratings results



*as of Nov 2018

Source: Sustainalytics

- » ESG Risk Ratings: Less clustering in the middle; more differentiation overall;
- » Share of companies in the middle bracket significantly lower for ESG Risk Ratings with 42% compared to 69% in ESG Ratings;
- » Risk Ratings: Significantly more companies in the two lower brackets (1,118 or 31% vs. 492 or 14%);
- » ESG Risk Ratings: Significantly less companies in the top bracket (30 or 1% vs. 231 or 6%).

How to Read a Risk Rating Report

ESG Risk Rating Output

» Overall Rating

» Relative Performance

» Summary of Material ESG Issues

» MEIs are brought into focus

» The magnitude to which a company is exposed to ESG risks and how well the company is managing that risk is measured and explained

SUSTAINALYTICS ESG RISK RATING REPORT

Roche Holding AG

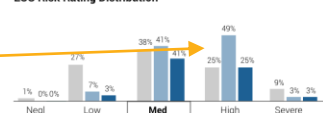
Pharmaceuticals | Switzerland | SWX:ROG

25.4/100 Medium Risk

RATING OVERVIEW

Roche Holding AG's unmanaged risks driven by ESG factors are assessed as Medium, considering that the company has been implicated in several significant ESG-related controversies, its high exposure combined with an average management of material ESG issues.

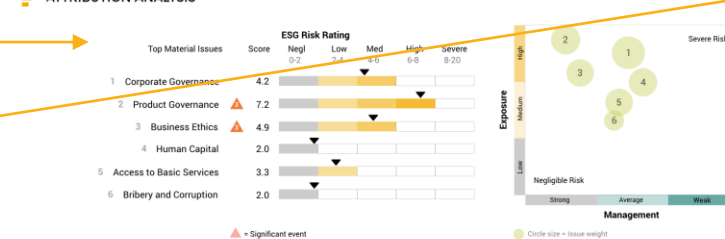
ESG Risk Rating Distribution



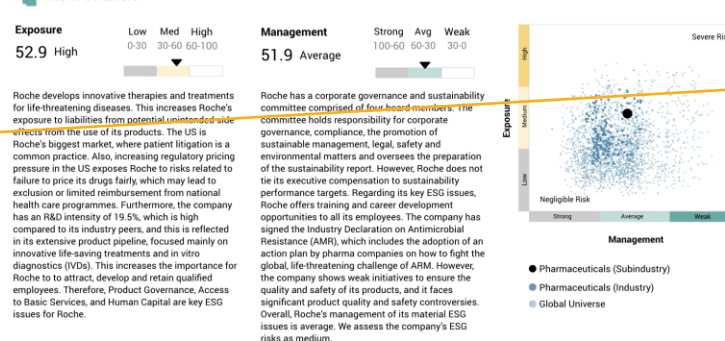
Relative Performance

	Position (1st = lowest risk)	Percentile (1st = lowest risk)
Pharmaceuticals (Subindustry)	113 out of 180	63th
Pharmaceuticals (Industry)	750 out of 1,345	40th
Global Universe	1439 out of 3,625	40th

ATTRIBUTION ANALYSIS



RISK ANALYSIS



SUSTAINALYTICS ESG RISK RATING REPORT

Roche Holding AG

Pharmaceuticals | Switzerland | SWX:ROG

25.4/100 Medium Risk

ATTRIBUTION DETAILS

Issue Name	Weight	Subindustry Exposure	Company Beta	Company Exposure	Excess Exposure	Management Score	ESG Risk Rating
Corporate Governance	18.06 %	9.7	—	9.0	—	4.8	4.2
Product Governance	16.05 %	9.0	1.13	10.0	+1	2.8	7.2
Business Ethics	15.25 %	9.0	1.21	8.0	+1.7	3.1	4.9
Human Capital	15.05 %	6.5	1.08	7.5	+0.5	5.5	2.0
Access to Basic Services	15.05 %	6.1	1.02	7.5	+0.1	4.2	4.2
Bribery and Corruption	11.44 %	6.6	1.10	6.0	+0.6	4.0	4.0
Emissions, Effluents and Waste	5.69 %	5.3	1.06	3.2	+0.3	2.2	2.2
Occupational Health and Safety	3.43 %	5.3	1.06	1.8	+0.3	0.9	0.9
Overall	100.00 %	52.2	1.63	52.9	+0.5	27.5	25.4 Medium

△ = Significant event

RISK DETAILS

Signal	Guidance
Exposure	A company's or subindustry's sensitivity or vulnerability to ESG risks.
Company Exposure 52.9	
Management	Material ESG risk that can be influenced and managed through suitable policies, programmes and initiatives.
Manageable Risk 52.0	
Managed Risk 27.5	Material ESG Risk that has been managed by a company through suitable policies, programmes or initiatives.
Management Gap 24.5	Material ESG Risk that has been managed by a company through suitable policies, programmes or initiatives. 27.5 = 51.9% of Manageable Risk = Sum of all indicators weighted scores
Unmanageable Risk 0.9	Material ESG risk that has not been managed by a company, and includes two types of risk: unmanageable risk, as well as risks that could be managed by a company through suitable initiatives but which may not yet be managed.
Total Unmanaged Risk 25.4	

Comparing the Reports: Old v New

Apple Inc

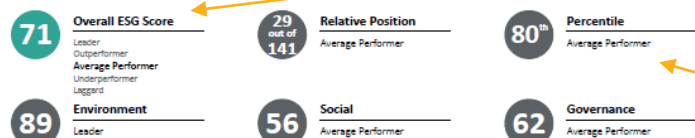


ESG REPORT

Industry: **Technology Hardware** Marketcap.: **1,105,307 mm. USD** Employees: **137,000**
Domicile: **United States** Ticker: **NAS:AAPL**

ESG Summary

Overall Performance



Relative Performance

29 out of 141	Relative Position	Average Performer
Top 5 Companies		
	Company	Score
1.	HP Inc	87
2.	Lenovo Group Limited	86
3.	Nokia Oyj	83
4.	Telefonaktiebolaget LM Ericsson	82
5.	Konica Minolta, Inc.	81
Peers (Market cap \$43-\$110Bn)		
	Company	Score
	Cisco Systems Inc	79
	Apple Inc	71
	QUALCOMM Incorporated	71
	Keyence Corporation	50
	Hangzhou Hikvision Digital Technology Co.,	46

Historical Performance



Qualitative Performance - Controversies



1 | 79

SUSTAINALYTICS ESG RISK RATING SUMMARY REPORT

Date Dec 20, 2019

Apple Inc

Technology Hardware | United States | NAS:AAPL

23.8 Medium Risk



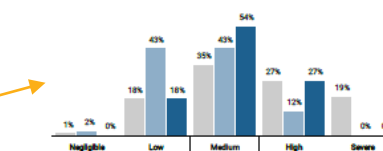
Rating Overview

The company is at medium risk of experiencing material financial impacts from ESG factors, due to its medium exposure and average management of material ESG issues. The company is noted for its strong corporate governance performance, which is reducing its overall risk. Despite its management policies and programmes, the company has experienced a high level of controversies.

Momentum Score: +3.3

The company's ESG Risk Rating score has increased in the past year, but its ESG Risk Rating category has remained stable.

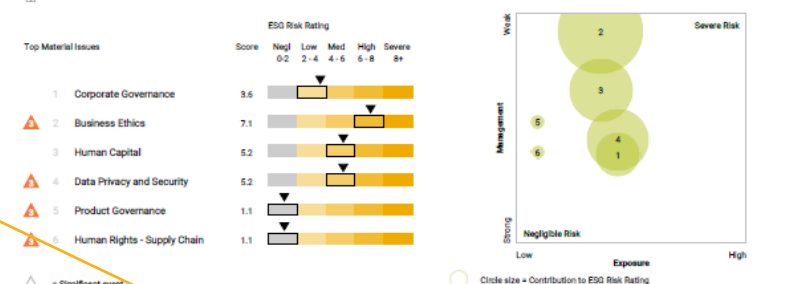
ESG Risk Rating Distribution



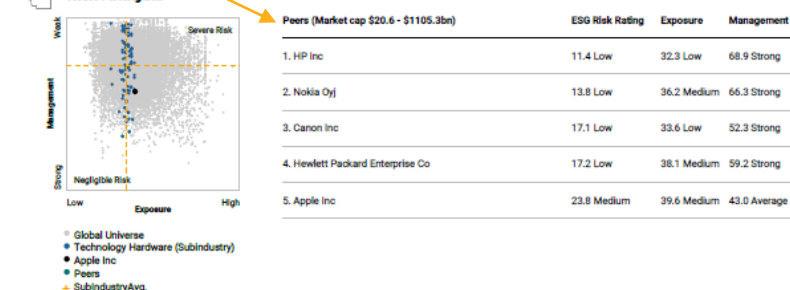
Relative Performance

	Rank (1 st = lowest risk)	Percentile (1 st = lowest risk)
Global Universe	3861 out of 12238	32nd
Technology Hardware (Industry Group)	279 out of 481	58th
Technology Hardware (Subindustry)	36 out of 92	39th

Attribution Analysis



Risk Analysis



Comparing the Reports: Old v New

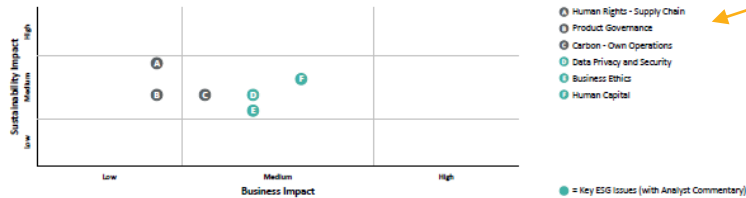
Qualitative Performance - Controversies



Analyst View - Matthew Barg | Industry Lead Analyst

Overview of ESG Issues - Technology Hardware

The Materiality Matrix presents, from the perspective of the industry, the most material ESG issues from a business impact and/or environmental/social impact perspective. ESG issues can be interpreted as the most important management areas, i.e. the issues that could cause the most significant business and/or environmental/social impacts if not managed well. The location on the matrix indicates the relative importance of the ESG issue, with those located in the top right corner being the most material for the industry as a whole. The graph also highlights the 2-3 ESG issues that, for the company under consideration, our analysts have identified as the most relevant to comment on in more detail. This selection takes into account company specific factors such as business model, geographic presence, product offering, as well as important recent developments and trends (e.g. incidents, announcements of new initiatives, management changes). Analyst commentary on the latter ESG issues is provided in relevant sections further below.



Analyst Commentary

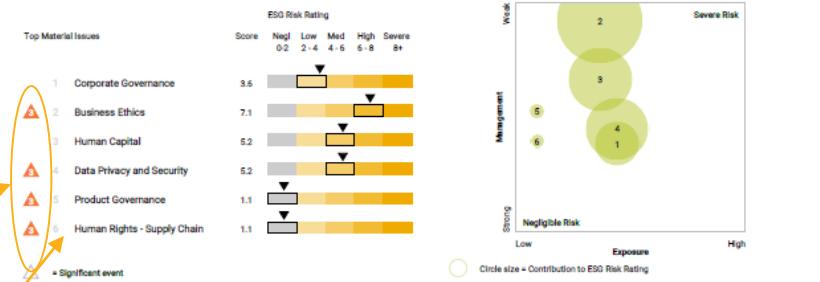
The company is considered an average performer on ESG issues compared to its industry peers. This stems from its average performance on governance and social issues and leading position on environmental issues. The company has been implicated in a moderate level of ESG-related controversies.

Apple Inc. develops mobile devices, personal computers as well as related digital content services and applications. Its annual updates for its iPhone are a major sales driver, accounting for 42% of its net revenues of USD 265 billion in FY2018. Apple is increasingly focused on expanding revenues from its services business (App store, Apple Music, Apple CarPlay, iCloud etc.) including a foray into consumer finance through a credit card offering in partnership with Goldman Sachs.

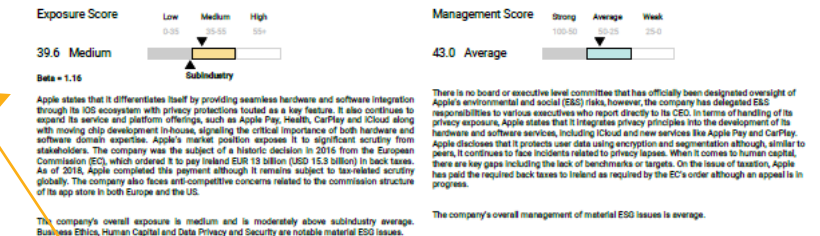
Apple states that it differentiates itself by providing seamless hardware and software integration through its iOS ecosystem with privacy protections touted as a key feature. It also continues to expand its service and platform offerings, such as Apple Pay, Health, CarPlay and iCloud along with moving chip development in-house, signaling the critical importance of both hardware and software domain expertise. Apple's market position exposes it to significant scrutiny from stakeholders. The company was the subject of a historic decision in 2016 from the European Commission (EC), which ordered it to pay Ireland EUR 13 billion (USD 15.3 billion) in back taxes. As of 2018, Apple completed this payment although it remains subject to tax-related scrutiny globally. The company also faces anti-competitive concerns related to the commission structure of its app store in both Europe and the US. Based on its operations, we consider Human Capital, Data Privacy and Security and Business Ethics to be the company's notable ESG issues. There is no board or executive level committee that has officially been designated oversight of Apple's environmental and social (ES&S) risks, however, the company has delegated ESG responsibilities to various executives who report directly to its CEO. In terms of handling of its privacy exposure, Apple states that it integrates privacy principles into the development of its hardware and software services, including iCloud and new services like Apple Pay and CarPlay. Apple disclosed that it protects user data using encryption and segmentation although, similar to peers, it continues to face incidents related to privacy lapses. When it comes to human capital, there are key gaps including the lack of benchmarks or targets. On the issue of taxation, Apple has paid the required back taxes to Ireland as required by the EC's order although an appeal is in progress. The company's overall management of ESG issues is average.

Controversies

Attribution Analysis



Risk Analysis








Attribution Details

Contribution to		Subindustry		Company		Manageable		Management		ESG Risk		Risk Category
Issue Name	Rating	Exposure	Exposure	Exposure	Exposure	Score	Weight	Score	Weight	Rating		
Corporate Governance	15.3%	9.0	9.0	100%	59.5	24.6 %	3.6					
Business Ethics	29.7%	6.0	7.5	95%	6.0	19.5 %	7.1					
Human Capital	22.0%	6.0	7.5	95%	31.6	19.5 %	5.2					
Data Privacy and Security	21.8%	6.0	9.0	80%	53.0	19.7 %	5.2					
Product Governance	4.6%	2.0	2.0	100%	45.5	5.5 %	1.1					
Human Rights -Supply Chain	4.5%	2.0	2.0	80%	58.5	4.4 %	1.1					
Carbon -Own Operations	2.1%	3.0	2.6	100%	80.0	7.0 %	0.5					
Overall	100.0%	34.0	39.6	92.5 %	43.0	100.0%	23.8					Medium

△ Significant event

Appendix: Applications of the ESG Risk Rating

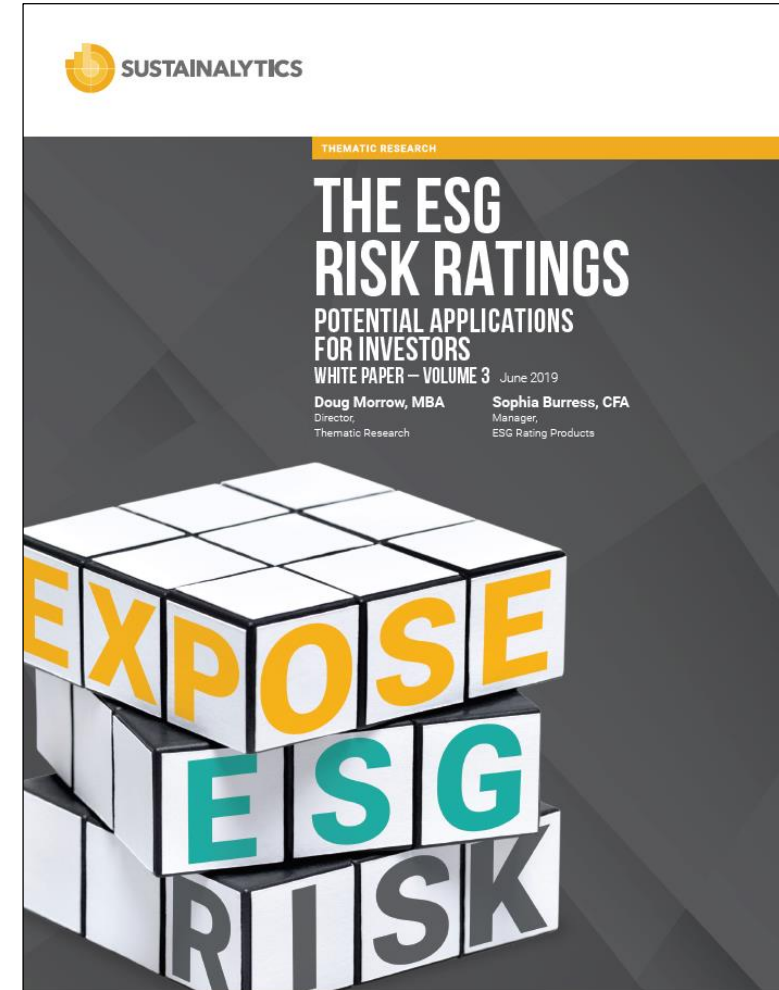
Applications for the ESG Risk Ratings

Risk Rating Data Points	Applications	 ESG Integration	 Best-in-Class	 Engagement & Voting	 Compliance & Screening	 Thematic ESG Investing
Overall risk assessment	<ul style="list-style-type: none"> Differentiate companies based on their overall unmanaged ESG risk within the global universe or the sub-industry/industry Severe and High Risk Ratings can serve as a trigger for added due diligence or a possible screen Feed into valuation models 	✓	✓	✓	✓	
Exposure score	<ul style="list-style-type: none"> Insight into the degree to which a company faces ESG risks Differentiate companies within a sub-industry/industry to analyze relative risk exposure 	✓	✓			
Managed risk scores	<ul style="list-style-type: none"> Differentiate the strength of a company's management on material ESG issues within an industry/sub-industry on strength of ESG management Identify engagement priorities where management gaps exist 	✓	✓	✓		
Material ESG issue level scores	<ul style="list-style-type: none"> Differentiate companies within the global universe or the sub-industry/industry on specific material ESG issues Severe and High Risk Ratings can serve as a trigger for added due diligence or a possible screen Feed into valuation models Identify issue-specific engagement topics 	✓	✓	✓	✓	✓
Events	<ul style="list-style-type: none"> Identify reactive engagement topics Feed into valuation models Flag companies for added due diligence or a possible screen 	✓	✓	✓	✓	

Latest White Paper Explores Use Cases of the ESG Risk Ratings

Fundamental objective is idea generation for Sustainalytics' clients

- » Moving from a description of the ratings to application
- » Generating ideas for Sustainalytics' clients, and contributing to industry dialogue
- » Quantitative testing
 - » Active returns
 - » Standard deviation of returns
 - » Sharpe ratio
 - » Four-factor alpha (Carhart model)
 - » Attribution analysis
 - » ESG risk reduction effects



Analysis of seven potential use cases of the ESG Risk Ratings



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