J.P.Morgan

Global Index Research
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J.P. Morgan ESG Index Suite (JESG)

Rules and Methodology

The J.P. Morgan ESG (JESG) suite of indices is a global fixed income index family that aims to integrate environmental, social and governance factors in a composite benchmark. Built on the established methodology of the conventional J.P. Morgan indices, JESG offers a familiar baseline for fixed income investors aiming to incorporate ESG integration and negative screening of certain controversial issuer types in their investment process.

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Overview

The J.P. Morgan ESG (JESG) index suite was launched in April 2018 to provide fixed income investors with a framework to navigate and incorporate ESG discipline in the investment process. The JESG indices aim to pursue ESG objectives by harmonising the most common investment strategies into one unified framework, including ESG integration, negative and exclusionary screening, positive screening and norms-based screening.

The JESG methodology integrates proprietary JESG Index scores that are calculated daily, using data from RepRisk, Sustainalytics, Verisk Maplecroft and the Climate Bonds Initiative (CBI), for over 170 sovereign and 7,000 corporate and quasi-sovereign issuers. The JESG Index score aims to measure an issuer's ESG performance and subsequently determines its weight in the JESG benchmarks.

The JESG methodology starts with the benchmark criteria of the respective baseline index. Once the baseline index is selected, a five-step approach is applied to determine the constituent weights in the resulting JESG benchmark. Issuers from the respective baseline index that have not been excluded through the JESG methodology remain eligible for the JESG index.

The JESG index score of each issuer determines the weight it receives in the JESG index relative to the baseline index, with the methodology tilting the weight towards issuers with better JESG scores. Negative and exclusionary screening is then applied to issuers with the lowest JESG Index scores, as well as corporate and quasi-sovereign issuers involved in thermal coal, oil sands, weapons and tobacco. In addition, norms-based screening is applied to exclude corporate and quasi-sovereign issuers that are in violation of the United Nations Global Compact (UNGC). The methodology applies positive screening by assigning an overweight to green bonds to incentivise sustainable financing aligned with climate change solutions.

The environmental, social and governance factors that have been incorporated into the index aim to represent the objectives stated within the methodology. The ESG integration and negative screening framework set out herein may not follow the ESG discipline which is relevant to circumstances and requirements for all. The calculation of the index is based strictly on the methodology, subject to certain

Contents

See page 18 for important disclosures.

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criteria set out in this document. The methodology should be read and understood in order to ensure that the suite of indices is suitable for the purposes for which it is used. Independent professional advice should be sought to determine if the suite of indices are suitable for individual circumstances.

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Data Integrity Disclosure

Where an index administered by GIRG (Administrator) pursues environmental, social or governance (ESG) objectives, the Administrator is, wholly or in part, reliant on public sources of information and other third-party sources. Further, the ability of the Administrator to verify such objectives may be limited by the integrity, quality, and detail of the data available in respect of the underlying constituents at the relevant point in time and the status and evolution of global laws, guidelines, regulations, and market practice in relation to the preparation, tracking and provision of such data. Therefore, such disclosures are made on a commercially reasonable efforts basis and are subject to change. In particular, new laws, guidelines or regulations may be introduced in relation to the methodology used to provide corporate ESG ratings which could impact the Administrator's ESG index score and the relevant screenings and exclusions and cause them to change. ESG data may be inconsistent across providers. The Administrator's ESG index score, relevant screenings and exclusions and related disclosures are also subject to change as a result of periodic reviews conducted by the Administrator in relation to the sources of ESG data.

In calculating the index in line with the methodology articulated herein, GIRG relies on the data provided by the ESG data providers. JPM does not independently source its own ESG data or exercise any discretion with respect to the substitution of third party ESG data. The integrity of the ESG data sourced from third parties is limited by the ability of those providers to source accurate data on the ESG performance of certain corporate structures, such as parent versus subsidiary, including SPVs, holding company versus operating company and the activities of any affiliated entities and derived structures. Further, ESG data pertaining to sovereign issuers is limited to the sourcing of ESG performance data at the level of the relevant country. The current data integrity landscape means it is not possible to screen all issuers for exclusion (e.g. issuers other than corporate and quasi-sovereign issuers). Issuers in respect of whom ESG data is limited may still be included in the index.

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Figure 1: JESG at a Glance

JESG Overlay	Corporate/Quasi-Sovereign	Sovereign
ESG Data Vendors	RepRisk Sustainalytics Climate Bonds Initiative (Green Bonds)	Verisk Maplecroft Sustainalytics Climate Bonds Initiative (Green Bonds)
Scoring Methodology	The JESG index scores are an amalgamation of RepRisk and Sustainalytics on an equal weight basis. The scores range from 0 - 100, with 100 classified as the best possible score.	The JESG index scores are an amalgamation of Verisk Maplecroft and Sustainalytics on an equal weight basis. The scores range from 0 - 100, with 100 classified as the best possible score.
Integration Methodology	Issuers with higher overall JESG index scores are assigned larger weights in the JESG index compared to the baseline index.	
Green Bond Treatment	Green bonds will receive a one-band upgrade compared to conventional bonds from the same issuer (unless the issuer is already in Band 1). Certified Climate green bonds will receive a one-band upgrade in the JESG GENIE and JESG GESSIE (unless the issuer is already in Band 1).	
Negative/exclusionary and Norms-based Screening	Corporate and quasi-sovereign issuers with revenue derived from thermal coal, oil sands, weapons and/or tobacco are excluded. In addition, issuers in violation of the United National Global Compact (UNGC) principles are excluded. Further, issuers with JESG index scores below 20 are excluded.	Sovereigns with JESG index scores below 30 are excluded. Further, sovereigns that have sanctions on their central government debt from the EU, UN, or U.S. are also excluded.

Source: J.P Morgan.

Launched in April 2018 with a focus on emerging market fixed income, the JESG index suite has since expanded to include the global credit and sustainable debt asset classes:

Figure 2: Evolution of the JESG Index Suite

Launch Date	Benchmark Abbreviation	Benchmark Name
Apr-18	JESG EMBI	J.P. Morgan ESG Emerging Markets Bond Index
Apr-18	JESG GBI-EM	J.P. Morgan ESG Emerging Markets Government Bond Index
Apr-18	JESG CEMBI	J.P. Morgan ESG Corporate Emerging Markets Bond Index
Feb-19	JESG GHYCI	J.P. Morgan ESG Global High Yield Corporate Index
Nov-19	JESG JACI	J.P. Morgan ESG Asia Credit Index
Nov-20	JESG GENIE	J.P. Morgan ESG Green Bond Index
Nov-21	JESG GCI	J.P. Morgan ESG Global Corporate Index
Nov-21	JESG GCI IG	J.P. Morgan ESG Global Investment Grade Corporate Index
Sep-22	JESG GENIE EM DIV	J.P. Morgan ESG Emerging Markets Green Bond Diversified Index
Sep-22	JESG GENIE EM CREDIT DIV	J.P. Morgan ESG Emerging Markets Credit Green Bond Diversified Index
Nov-22	JESG GESSIE	J.P. Morgan ESG Green, Social and Sustainability Bond Index
Nov-22	JESG GESSIE EM CREDIT DIV	J.P. Morgan ESG Emerging Markets Credit Green, Social and Sustainability Bond Diversified Index
Mar-24	JESG JACI APAC	J.P. Morgan ESG Asia Pacific Credit Index

Source: J.P. Morgan.

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JESG Methodology

The JESG methodology starts with the benchmark criteria of the respective baseline index. Once the baseline index is selected, the following five-step approach is applied to determine the constituent weights in the JESG benchmark:

1. Define the data inputs
2. Establish JESG index scores
3. Apply integration mechanics
4. Apply negative/exclusionary and norms-based screens
5. Calculate new JESG benchmark weights

1. Define the data inputs

ESG scores for each issuer are sourced from four industry-leading ESG data providers. These inputs include event-driven signals that leverage big data techniques as well as long-term scores based on rigorous fundamental research:

- **Sustainalytics**: A leading independent ESG and corporate governance research, ratings and analytics firm that supports investors around the world with the development and implementation of responsible investment strategies.
- **RepRisk:** An alternative ESG research provider specialising in quantifying reputational risk exposures by leveraging big data techniques. RepRisk has over a decade of expertise in providing ESG event risk signals on a real-time basis. In addition to ESG input scores, RepRisk also provides a letter rating (AAA to D) which is a peer group and sector average ranking enhanced by the integration of ESG and business conduct risks into business processes.
- **Verisk Maplecroft:** A global risk intelligence company that has been quantifying ESG, climate and political risks for over 15 years. Its Sovereign ESG Ratings provide best-in-class analytics on all relevant aspects of sovereign ESG. They are built on a uniquely broad, deep and timely set of proprietary global risk analytics. They use an aggregation methodology based on cluster analysis, which is sensitive to changes in individual factors within the framework, and preserves more information on countries' key sovereign ESG characteristics.
- **Climate Bonds Initiative (CBI):** An international not-for-profit organisation working to mobilise global capital for climate action through the development of the Climate Bonds Standard and Certification Scheme, Taxonomy, Policy Engagement and Market Intelligence. CBI tracks and screens the use of proceeds of the labelled sustainable debt market.

For more information about third-party ESG methodologies, please see the Appendix.

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ESG scores at the issuer level are sourced from each provider as follows:

Figure 3: JESG Data Inputs

Vendor	Corporate/Quasi-Sovereign	Sovereign
Sustainalytics	Corporate ESG Rating	Country Risk Monitor
RepRisk	Average of the Current RepRisk Index and the RepRisk Rating = [(100 - Current RRI) + RepRisk Rating] /2	N/A
Verisk Maplecroft	N/A	Sovereign ESG Rating
Climate Bonds Initiative (CBI)	Labelled Green bonds	

Source: J.P. Morgan. For more information, please refer to the Appendix.

2. Establish JESG Index Scores

Normalising the inputs

For corporate and quasi-sovereign issuers, the ESG scores from RepRisk and Sustainalytics are transformed to a range of 0-100 using a normal distribution function, with 100 being the best possible score. For sovereign issuers, no transformation is applied to the ESG scores from Maplecroft and Sustainalytics.

Finalising the JESG index score

- Corporate and quasi-sovereign issuers: a simple average of each issuer's normalised RepRisk and Sustainalytics score is taken to produce the daily JESG index rank. The final JESG index score incorporates a 3-month rolling average of the daily JESG index rank in order to smooth any noise in the input data.
- Sovereign issuers: a simple average of each country's Verisk Maplecroft and Sustainalytics score is taken to produce the final JESG index score.

Treatment for Missing Coverage

A waterfall logic is applied to calculate alternative issuer-level scores for the JESG score calculation if coverage from the ESG score providers is missing:

- If a quasi-sovereign issuer is not covered by one or both of the input ESG score providers, the respective sovereign's ESG score is utilised. Where a quasi-sovereign is not covered by RepRisk, the respective Maplecroft sovereign score will be used.
- If a corporate issuer is not covered by one or both of the input ESG score providers, the region-sector average ESG rank is utilised. This is calculated at the provider level as needed and will only be used when the region-sector grouping has at least five issuers. If there are four or fewer issuers, the sector average ESG rank is instead utilised.

Sovereign issuers that are not covered by one or both of the input ESG score providers are not eligible for the JESG indices.

Coverage from Sustainalytics, RepRisk and Maplecroft for ESG scores varies by asset class.

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3. Apply Integration Mechanics

Implementation of bands

The JESG index score of each issuer defines which quintile band it falls within. The band functions as a scalar/multiplier that determines the weight an issuer receives in the JESG index relative to the baseline index, as outlined in Figure 4. The bands are designed to minimise the amount of turnover in the JESG indices each quarter, by allowing an issuer's JESG index score to vary within a set range before its index weight is impacted.

In order to apply negative/exclusionary screening based on JESG index scores, issuers in the lowest band (Band 5) are excluded from the JESG indices. Corporate and quasi-sovereign issuers in Band 5, with a JESG index score below 20, are not eligible for inclusion. Similarly, sovereign issuers in Band 5, with a JESG index score below 30, are not eligible for inclusion.

Figure 4: JESG Scalers

Issuer Band	Corporate & Quasi-Sovereign		Sovereign	
	JESG score	Scalar applied to baseline index MV	JESG score	Scalar applied to baseline index MV
1	≥ 80	100%	≥ 80	100%
2	≥ 60, < 80	80%	≥ 60, < 80	80%
3	≥ 40, < 60	60%	≥ 40, < 60	60%
4	≥ 20, < 40	40%	≥ 30, < 40	40%
5	< 20	excluded	< 30	excluded

Source: J.P. Morgan.

Treatment of labelled bonds

The JESG methodology increases the weight of green bonds to incentivise sustainable financing aligned with climate change solutions. If an instrument is categorised as green by the CBI, the bond will receive a one-band upgrade. For example, any green bond issued by a Band 3 issuer will be promoted to Band 2, whereas conventional bonds from the same issuer will remain in Band 3. Green bonds by issuers in Band 1 will not receive any further upgrade. This approach effectively provides positive screening benefits to green bond issuance by increasing their weight relative to conventional bonds issued by the same entity.

4. Apply Negative/exclusionary and Norms-based Screens

- Issuers that fall into band 5 will be excluded from the JESG benchmarks. Green bonds from these issuers will still be eligible for index inclusion due to the one-band upgrade.
- Corporate and quasi-sovereign issuers with revenue derived from thermal coal, oil sands, weapons, and/or tobacco are excluded. Figure 5 provides additional disclosure as to how these negative/exclusionary screens are applied. Data for these exclusions is sourced from Sustainalytics'.Green bonds from issuers involved in thermal coal or oil sands remain eligible for JESG inclusion to incentivise the transition to less pollutive revenue streams. For more information on Sustainalytics' definition of controversial weapons, please see the Appendix.
- Corporate and quasi-sovereign issuers that are deemed non-compliant with the UN Global Compact (UNGC) principles by Sustainalytics are excluded. For more information on how Sustainalytics determines violation/non-compliance with the

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UNGC, please see the Appendix.

- If the central government debt of a country is subject to economic sanctions (primary or secondary markets) by either the US, EU or UN, all sovereign and quasi-sovereign issuance from the sanctioned country will be removed from the JESG indices.

An issuer that is excluded from the JESG indices will not be eligible to re-enter the benchmark for at least 12 months after the time of its initial exclusion.

Figure 5: Negative/exclusionary Screens and Thresholds

Category	Category of Involvement	Sustainalytics Involvement ID	Description	Revenue Threshold
Oil Sands	Extraction	173012171899	The company extracts oil sands.	0%
Thermal Coal	Extraction	172811112999	The company extracts thermal coal.	0%
	Power Generation	172813112999	The company generates electricity from thermal coal.	0%
Tobacco	Production	172911112999	The company manufactures tobacco products.	0%
Military Contracting	Weapons	172111112999	The company manufactures military weapon systems and/or integral, tailor-made components or these weapons.	10%
Small Arms	Civilian customers (Assault weapons)	171711112999	The company manufactures and sells assault weapons to civilian customers.	0%
	Military/law enforcement customers	171713112999	The company manufactures and sells small arms to military/law enforcement.	10%
	Key components	171715112999	The company manufactures and sells key components of small arms.	0%
	Civilian customers (Non-assault weapons)	171721112999	The company manufactures and sells small arms (Non-assault weapons) to civilian customers.	0%
Controversial Weapons	Tailor-made and essential	171611102999	The company is involved in the core weapon system, or components/services of the core weapon system that are considered tailor-made and essential for the lethal use of the weapon.	0%

Source: J.P. Morgan and Sustainalytics.

Treatment for Missing Coverage

Corporate and quasi-sovereign issuers that are not covered for negative/exclusionary screens or norms-based screens by Sustainalytics remain eligible for inclusion. In other words, a lack of coverage from Sustainalytics is not a sufficient threshold for exclusion.

Coverage across both data sets varies by asset class.

5. Calculate New Benchmark Weights

Once the final constituent list has been determined, the bond-level weights are assigned pro rata to market capitalisation. For example, an issuer in Band 3 will inherit 60% of their baseline index market value. This calculated market value determines the weight of each constituent in the JESG index.

Countries in the JESG GBI-EM will be capped at 10%.

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Rebalancing Rules

Timing of additions/removals of instruments
The JESG bands rebalance quarterly at the following dates:

- January month-end
- April month-end
- July month-end
- October month-end

ESG data for corporates and quasi-sovereigns is consumed with a one-month lag, while sovereign JESG bands are rebalanced using the most recent scores from each vendor.

Note that this quarterly rebalance only applies to JESG score/band changes; composition and reference data changes in the underlying conventional index as a result of capital market activity (e.g. new bonds, taps, tenders etc.) will be reflected on a monthly basis (end-of-month rebalance).

Quarterly Rebalance Events

Promotion/Demotion into/out of JESG bands
If an issuer is eligible for a different band than the one it is currently in, it will be moved into the new band at the next quarterly rebalance date. As per index rules, any change in the JESG band will also impact the green bonds issued by the respective issuer. Issuers that are excluded from the JESG indices at the quarterly rebalance date are not eligible to re-enter for at least 12 months.

An issuer must enter a new score quintile by at least one (1) point in order to become eligible for a band change. For example, an issuer in Band 1 will only fall into Band 2 if its score drops below 79, and an issuer in Band 2 will only rise into Band 1 if its score rises above 81.

Figure 6: JESG Band Thresholds

Issuer Band	Corporate & Quasi-Sovereign		Sovereign	
	Score Threshold to Receive Upgrade	Score Threshold to Receive Downgrade	Score Threshold to Receive Upgrade	Score Threshold to Receive Downgrade
1	-	79	-	79
2	81	59	81	59
3	61	39	61	39
4	41	19	41	29
5	21	-	31	-

Source: J.P. Morgan.

Negative/exclusionary screens and Norms-based screens
If an issuer is eligible for exclusion due to changes in the negative/exclusionary screens listed in Figure 5 (e.g. tobacco) or changes to norms-based screens (UNGC), the action will take place at the next quarterly rebalance date. The issuer will thereafter not be eligible to re-enter the JESG benchmark for at least 12 months.

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Intra-Quarter Rebalance Events

Inclusion/Exclusion based on sanctions

If an issuer is eligible for exclusion based on economic sanctions, the exposure of the sanctioned issuer will be removed from the JESG indices starting at the following month's rebalance. For large exposures, a tapered reduction approach will be considered in consultation with investors. The issuer will not be eligible to re-enter the benchmark for at least 12 months after the time of its exclusion.

Green bond changes

Updates to the CBI Green Bond Database will be reflected in the index at the next monthly rebalance. For example, conventional bonds that are newly marked as green will receive a one-band upgrade at the next rebalance after the change.

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Historical Rule Changes

Figure 7: History of JESG Rule Changes

Effective Date	Rule Change
September 4, 2019	United Nations Global Compact violators will need to be flagged by both vendors (Sustainalytics and RepRisk), versus just one, for an issuer to be excluded.
September 4, 2019	Green bonds from issuers with JESG scores below 20 or with revenues from thermal coal will now be eligible within the JESG index suite. In-line with the JESG green bond rules, these green bonds will receive a one-band upgrade from the issuer's JESG band.
September 4, 2019	The JESG indices will allow issuers that earn revenue from non-weapons-based military contracts or issuers with tobacco-related revenue to be included. Issuers that have direct involvement in weapons development and tobacco manufacturing will remain ineligible for the JESG index suite.
September 18, 2020	JESG band (i.e. ESG rank quintile) changes and corresponding index weight changes will be reflected only on a quarterly basis effective from December 31st, 2020.
September 18, 2020	Issuers with any exposure to oil sand assets will be excluded from JESG indices.
September 18, 2020	Green bonds from issuers with revenues from oil sands now be eligible within the JESG index suite. In-line with the JESG green bond rules, these green bonds will receive a one-band upgrade from the issuer's JESG band.
October 4, 2022	The quarterly rebalance schedule of JESG bands will be shifted forward by one month to January, April, July and October.
October 4, 2022	Issuers deriving less than 10% of revenue from military contracting and small arms sales will become eligible for JESG indices.
October 4, 2022	If the central government debt of a country is subject to economic sanctions (primary or secondary markets) by either the U.S, the EU or the UN, all sovereign and quasi-sovereign issuers from the sanctioned country will be removed from the JESG indices.
January 13, 2023	Existing index issuers will be required to enter a new score quintile by more than one (1) point in order to change JESG bands.
April 18, 2023	Maplecroft Sovereign ESG Ratings will replace the RepRisk Country RRI within the sovereign JESG scores from July 31st 2023. For sovereign issuers, a simple average of each country's Verisk Maplecroft and Sustainalytics score is taken to produce the final JESG index score. No normalization or three-month rolling average is applied. In addition, the score threshold for index inclusion is now 30, increased from 20.
January 23, 2024	Beginning at the April 30th, 2024, rebalance, issuers that are deemed to be non-compliant with the UN Global Compact (UNGC) principles by Sustainalytics will be excluded from the JESG indices. RepRisk will no longer be used for UNGC screening in the JESG methodology. This rule will replace the rule used to date, which states that an issuer must be flagged as non-compliant by both Sustainalytics and RepRisk in order to be excluded.

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Index Governance

J.P. Morgan's Global Index Research Group (GIRG) has established the Index Governance Review process to solicit comments and feedback from index users on various index topics that can include potential changes related to index rules, conventions, and overall governance of J.P. Morgan's benchmark indices in accordance with guidelines recommended in the EU/UK BMR and IOSCO principles for financial benchmarks. During the consultation process, feedback will be gathered by GIRG via solicited and unsolicited client, consultant, and other interested party conversations and written communications. The comments collected from these external parties will be considered by GIRG, which makes decisions on the discussed topics and communicates them to the market through the appropriate communication channels.

The methodology documents will be modified whenever a rule change occurs, compatibly with the rules and principles governing the index team.

Where to Find the JESG Indices

Figure 8: How to Access the JESG Indices

Platform	Link	Index Content
Morgan Markets	www.morganmarkets.com	Downloadable files of daily and historical instrument returns, statistics and compositions
DataQuery	www.jpmm.com/#dataquery	User-specific queries, giving access to historical indices' statistics
Bloomberg	<JPMX> : <ESG>	Directory page for all J.P. Morgan JESG Index stats and closing levels

Source: J.P. Morgan.

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Appendix

Third-Party ESG Data Methodologies

Links to Methodologies

- RepRisk: For more information on the RepRisk Index, please visit www.reprisk.com/news-research/resources/methodology.
- Sustainalytics: For more information on Sustainalytics, please see below or visit www.sustainalytics.com.
- Verisk Maplecroft: For more information on Maplecroft's Sovereign ESG Rating methodology, please visit www.maplecroft.com/siteassets/images/pdfs/VM_Sovereign_ESG_Ratings_Methodology.pdf.
- Climate Bonds Initiative (CBI): For more information on the Green Bond Database methodology, please visit www.climatebonds.net/market/green-bond-database-methodology.

Sustainalytics ESG Ratings Research Methodology

Sustainalytics' ESG Ratings measure how well issuers proactively manage the environmental, social and governance issues that are the most material to their business. Based on a structured, objective and transparent methodology, the ESG Ratings provide an assessment of companies' ability to manage ESG issues.

Analyst knowledge is a critical component of the Ratings. The analyst applies expertise based on extensive company and sector knowledge to assess indicators, and provides an opinion of the issuer's performance on key ESG issues as defined by Sustainalytics. The analyst's opinion puts the ESG Rating into perspective.

The Sustainalytics ESG Rating is a quantitative score on a scale of 1-100, based on a balanced scorecard system. The Rating is represented as an Overall ESG Score derived from the sum of the weighted average of underlying indicator scores. The ESG Rating is interpreted in the context of the issuer's peer group. Percentile rankings (relative performance) allow for comparison within the peer group or across multiple peer groups. ESG Rating and ESG Score are used interchangeably in the Sustainalytics ESG Ratings research methodology.

The Rating reflects three dimensions: preparedness, disclosure and performance.

- Preparedness measures an issuer's level of commitment to manage ESG issues. Sustainalytics assesses preparedness by analyzing the quality of an issuer's policies, programmes and systems to manage an ESG issue effectively.
- Performance is a way to measure the effectiveness of an issuer's preparedness. For example, an issuer's persistent involvement in misconduct is indicative of failure in the implementation of management systems, or failure to put in place the appropriate risk mitigation measures. This also calls into question the issuer's motivation behind its commitments and the level of support from top management.
- Performance focuses on historical performance outcomes and assesses an array of quantitative indicators that can be compared to peers in the industry, as well as an issuer's involvement in incidents (alleged or actual misconduct with ESG implications). Performance is measured through two types of indicators:

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Quantitative Performance Indicators (e.g. number of fatalities, GHG emissions) and Qualitative Performance Indicators (e.g. ethical violations).

- Sustainalytics tracks Disclosure to measure an issuer's level of transparency and the extent to which its ESG reporting aligns with best practice. This is done by monitoring an issuer's reporting and by consulting third-party and verification standards. Sustainalytics also views disclosure as a useful proxy for actual preparedness.

Sustainalytics Country Monitor Research Methodology

The Country Risk Monitor (CRM) framework provides a long-term measure of a country's ability to develop sustainably, and, when used alongside economic analysis, provides a more informed assessment of the strength of an economy in the long run. It provides a quarterly updated score out of 100, an ESG grade from A-E, and information on score trends over the past five years. The product has global coverage (172 countries), using the United Nations (UN) member state list as a starting point. As a general rule, Sustainalytics omits countries with less than 50% indicator coverage on any of the dimensions (E, S, or G).

Sustainalytics sources data from reputable and widely-acknowledged third-party sources, such as the World Bank and the United Nations, which provide annual, country-level metrics. These indicators all measure the performance of a country on certain topics, e.g. corruption, child mortality. The following are the sources for the indicators: 1. Food and Agriculture Organization, 2. Freedom House, 3. Global Labour Rights Index, 4. Institute for Health Metrics and Evaluation, 5. International Energy Association, 6. International Labour Organization, 7. Ocean Health Index, 8. UN Office on Drugs and Crime, 9. UNDP, 10. UNICEF, 11. United Nations, 12. Vision of Humanity, 13. World Bank, 14. World Energy Council, and 15. World Health Organization.

Third-Party Screening Definitions

United Nations Global Compact Screening

Corporate and quasi-sovereign issuers that have been deemed non-compliant with the UN Global Compact (UNGC) principles are excluded. An issuer must be flagged by Sustainalytics as being in violation/non-compliant before they are excluded. For more information, please refer to www.unglobalcompact.org.

Sustainalytics analyses publicly reported allegations of adverse impacts caused by businesses and provides assessments based on principles recognised under the UN Global Compact principles, as well as underlying conventions and authoritative guidelines, such as the OECD MNE Guidelines and the UNGPs. The terms Watch list and Non-Compliant should be understood to be Sustainalytics' opinion and a normative assessment of a company with regard to the UN Global Compact principles.

Controversial Weapons Screening

Controversial weapons are weapons that have a disproportionate and indiscriminate impact on civilian populations, sometimes even years after a conflict has ended. The principles of 'distinction' and 'proportionality' are key concepts in International Humanitarian Law, which regulates the methods as well as the means of warfare. Below we detail the definitions applied by Sustainalytics for controversial weapons.

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Sustainalytics captures both Essential (Key) and Tailor-made (Dedicated) use:

- Essential (Key): components or services that are considered essential for the lethal use of the weapon or weapon system
- Tailor-made (Dedicated): components or services that are considered tailor-made for the weapon or weapon system

Figure 9: Controversial Weapons Definitions

Sub-category	Definition Utilized by Sustainalytics
Anti-personnel mines	1997 Ottawa (Mine-Ban) Treaty. http://www.apminebanconvention.org/
Biological and chemical weapons	Sustainalytics utilizes the definitions outlined in the 1972 Biological and Toxin Weapons Convention (BTWC) and the 1993 Chemical Weapons Convention (CWC). http://www.un.org/disarmament/WMD/Bio/ http://www.opcw.org/chemical-weapons-convention/
Cluster weapons	2008 Convention on Cluster Munitions (CCM), which outlines seven criteria to define a cluster weapon, besides weight and submunition quantity. http://www.clusterconvention.org/
Depleted Uranium	Sustainalytics uses a broad definition of DU, i.e. with U-235 concentrations of 0.7% or lower. The current findings of Sustainalytics would not have been different if the company had used a narrower definition given that there is in practice not much debate about classifying DU ammunition. There is currently no convention or legal framework illegalising or regulating depleted uranium.
Nuclear weapons	As the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) does not contain a definition, Sustainalytics bases its definition of a nuclear weapon on the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Tlatelolco). http://disarmament.un.org/treaties/t/tlatelolco
White Phosphorus	A WP munition is any projectile (e.g. flares, grenades, or mortars) that is equipped with WP, in order to act as a smoke-producing agent, or as tracer, illumination, or incendiary munition. There is currently no convention or legal framework comprehensively illegalizing or regulating white phosphorus.

Source: J.P. Morgan and Sustainalytics.

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Third-Party ESG Data Definitions

RepRisk Data Inputs

Figure 10 lists the definitions of key RepRisk data inputs.

Figure 10: RepRisk Data Definitions

Datapoint	Definition
RepRisk Index (RRI)	The RRI is a measure of the reputational risk exposure related to ESG issues of a company or project.
Current RRI	Denotes the current RRI or reputational risk exposure related to ESG issues over the last two years.
RepRisk Rating	The RepRisk Rating is determined by two factors, the Peak RRI and the derived country-sector value.

Source: J.P. Morgan and RepRisk.

The RepRisk Rating is converted into a numerical equivalent based on the following table:

Figure 11: RepRisk Conversion Table

RepRisk Rating	Numerical Equivalent
AAA	95
AA	85
A	75
BBB	65
BB	55
B	45
CCC	35
CC	25
C	15
D	5

Source: J.P. Morgan.

Climate Bonds Initiative (CBI)

The CBI screens self-labelled debt instruments with 100% use of proceeds dedicated to green activities, assets, projects, and/or expenditures to identify bonds and other debt instruments as eligible for inclusion in the CBI Green Bond Database (GBDB). The screening seeks to determine alignment to the Climate Bonds Taxonomy and requires sufficient public disclosures. For more information, please refer to www.climatebonds.net/market/green-bond-database-methodology.

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