

## J.P. Morgan EM Green Bond Diversified Indices

### Methodology and Factsheet

#### Highlights

The J.P. Morgan Emerging Markets Green Bond Diversified Index (GENIE EM DIV) builds on the flagship GENIE index, providing investors with access to a comprehensive emerging market focused green bond universe. The EM Green Bond Diversified Index suite introduces four variants:

1. The EM Green Bond Diversified Index, the all-encompassing composite benchmark (GENIE EM DIV)
2. The EM CREDIT Green Bond Diversified Index, the hard currency only benchmark (GENIE EM CREDIT DIV)
- 3,4. The JESG EM Green Bond Diversified Index and JESG EM CREDIT Green Bond Diversified Index, ESG-aligned variants of both benchmarks incorporating the J.P. Morgan ESG methodology for fixed income indices (JESG GENIE EM DIV, JESG GENIE EM CREDIT DIV)

#### Index Criteria

	Hard Currency Bonds	Local Currency Government Bonds
Eligible currencies	USD, EUR & GBP	Currencies where local government bonds are liquid, investible and accessible by international investors.
Minimum Amount Outstanding	<u>USD: \$300MM; EUR: €300MM; GBP: £150MM</u>	<u>Local currency bonds:</u> USD \$1 billion <u>Dual-currency Global bonds:</u> USD \$500 million
Minimum Maturity	<u>For inclusion:</u> Bonds should have minimum 2 years remaining to maturity <u>Remain in the index:</u> A bond remains eligible for the index as long as it has 6 months remaining to maturity	
Issuer	GENIE EM DIV: Sovereign, Quasi-sovereign (100% government owned or guaranteed), Corporate or Supranational	Sovereign only
	GENIE EM CREDIT DIV: Sovereign, Quasi-sovereign (100% government owned or guaranteed), Corporate	-
Country	EM countries only	EM Countries where local government bonds are liquid, investible and accessible by international investors.
Instrument Type	Self-labeled green bonds, screened and verified by Climate Bonds Initiative, are eligible	
	<u>Include:</u> fixed rate, floating rate, hybrid, step-up, PIK, amortizers, perpetuals, Sukuk bonds, etc. <u>Exclude:</u> securitized bonds, municipal bonds, structured bonds, collateral trust and equipment trust bonds, bonds with non-transparent cash flows or atypical indices used to reset coupons, etc.	Bullet, fixed-rate or zero coupon bonds
Collateral	<u>Exclude:</u> covered, mortgage backed, asset backed, bank guaranteed	-
Registration Type (for Corporates)	<ul style="list-style-type: none"> <li>• SEC-registered Global, Domestic, MTN, and 144A with or without registration rights, Eurobonds, and EMTNs that trade in accordance with ISMA principals.</li> <li>• Reg-S format for Euro-denominated, Sterling-denominated, and US Dollar-denominated EM bonds.</li> <li>• 144A format for US Dollar-denominated DM bonds.</li> <li>• Reg-S bonds and Private Placements are eligible after 40-day seasoning period, provided liquidity requirements are met.</li> </ul>	-

## JESG Overlay Criteria

The J.P. Morgan ESG EM Green Bond Diversified Index (JESG GENIE EM DIV) and the J.P. Morgan ESG EM CREDIT Green Bond Diversified Index (JESG GENIE EM CREDIT DIV) apply the J.P. Morgan JESG methodology as an overlay to the baseline indices.

For details on the ESG providers, scoring methodology, green bond treatment and exclusions, please refer to the sovereign, quasi-sovereign and corporate methodologies detailed within the [J.P. Morgan ESG Index Suite \(JESG\) Rules and Methodology](#).

JESG Overlay	JESG EM Green Bond Diversified Index
<b>Labeling Scheme for Green Bonds</b>	Self-labeled green bonds, screened and verified by Climate Bonds Initiative are eligible.
<b>ESG Data Provider</b>	Sustainalytics RepRisk Verisk Maplecroft Climate Bonds Initiative
<b>JESG Scoring methodology</b>	<b>Sovereign Issuers:</b> a simple average of each country's Verisk Maplecroft and Sustainalytics score is taken to produce the final JESG index score <b>Corporates and Quasi-Sovereign Issuers:</b> a simple average of each issuer's normalized 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 daily rank in order to smooth any noise in the input data.
<b>JESG Integration methodology</b>	The JESG scores are divided into five bands that are used to scale each issue's baseline index market value.
<b>Treatment for Certified Climate Bonds</b>	"Certified Climate bonds", as per Climate Bonds Initiative's Climate Bonds Standards, will receive one band upgrade (unless they are already in Band 1).
<b>Ethical screening</b>	Green bonds issued by non-sovereign issuers earning revenue from thermal coal*, oil sands*, tobacco, weapons, or in violation of the UNGC Principles will not be eligible.  *Green bonds from issuers involved in thermal coal or oil sands remain eligible for JESG inclusion to incentivize transition to less pollutive revenue streams.

Source: J.P. Morgan.

## Index Characteristics and Methodology

Characteristics	J.P. Morgan EM Green Bond Diversified Index
<b>Inception Date</b>	December 31 <sup>st</sup> , 2014
<b>Prices</b>	Mid prices from Pricing Direct
<b>Weighting Scheme</b>	<b>Baseline:</b> Diversified Market Cap Weighted with 10% cap on Country <b>JESG:</b> JESG overlay with 5 bands and an one band upgrade for Certified Climate Bonds
<b>FX Rates</b>	All FX rates used, including for hedged/unhedged returns, are as of 4pm London time provided by WM/Reuters
<b>Rebalance</b>	Rebalanced on last weekday of every month
<b>Holiday Calendar</b>	Index levels will be available on all weekdays Bond analytics (e.g. accruals) will follow the respective currency holiday calendar (USD: SIFMA & EMTA, EUR/GBP: SIFMA)
<b>Treatment for Defaulted/Called Securities</b>	<b>Defaulted</b> securities will be removed at the subsequent rebalance <b>Called</b> securities will be removed at a month end before the called date if the call is announced before the month end & if not, will be removed at the subsequent rebalance

<b>Credit Rating</b>	Instrument rating will be assigned using middle rating of S&P, Moody's and Fitch. If only two ratings are available the lower rating will be used. The index does not have a minimum rating threshold
<b>Coupon Treatment</b>	All coupons received are immediately reinvested into the index
<b>Hedging Strategy</b>	Assumes a 1-month currency forward position that begins on rebalance day and ends on next rebalance day

Source: J.P. Morgan

## Local Currency Government Bonds - Eligible countries/currencies

Country	Currency	Country	Currency	Country	Currency	Country	Currency
Brazil	BRL	Dominican Republic (Global)	DOP	Mexico	MXN	Serbia	RSD
Chile	CLP	Egypt	EGP	Peru	PEN	South Africa	ZAR
China	CNY	Hungary	HUF	Philippines (Global)	PHP	Thailand	THB
Colombia	COP	Indonesia	IDR	Poland	PLN	Turkey	TRY
Czech Republic	CZK	Malaysia	MYR	Romania	RON	Uruguay (Global)	UYU

Source: J.P. Morgan

### Defining the Index Universe

Eligibility for the index will be determined on a continuous basis by monitoring the index criteria. Any changes to the composition or eligibility will be notified prior to rebalance with an estimated schedule. Only those green bonds that meet the criteria for Climate Bonds Initiative's (CBI) green labelled database will be eligible for inclusion into the index.

Countries of risk for the instruments in the index will be determined based upon the below considerations:

1. The country with the largest source of revenue. Guarantees by other entities including subsidiaries or holding companies in other countries will also be considered.
2. The headquarters or the location of the issuer's majority assets will also be considered.

### New Issue Timing

A new issue that meets the index criteria is added at the month-end rebalancing provided it is present in CBI's green labelled database by the 15th of the month. Bonds entering the database after the 15th of the month will enter the index during the subsequent month-end rebalance.

Instruments issued purely in reliance on Regulation S or "Reg-S" (without an accompanying 144A or registered tranche) or private placements (not registered instruments) are eligible for inclusion after a 40 calendar day seasoning period provided they meet other index criteria. The date at which the seasoning restriction is lifted will effectively be the new "settlement" date. This applies to USD-denominated bonds only.

### Index Diversification: Restrict Country weights with larger debt stocks

The index diversification methodology aims towards the more evenly distribution of weights among the countries in the index. It limits the weights of those countries with larger debt stocks and redistribute those weights to the countries with smaller debt stocks.

The GENIE EM Diversified Index leverages the J.P. Morgan's proprietary index diversification methodology which anchors on the average size (debt stock) of countries in the index and the debt stock of the largest country in the index.

To calculate the diversified (adjusted) face amount for each country, we define:

$$\text{Index Country Average (ICA)} = \frac{\sum(\text{Country Face Amount})}{\text{No. of Countries in the index}}$$

Based on the ICA, the diversified face amount for any country in the index is derived according to the following rules:

1. The largest country based on face amount will be capped at double the average country debt stock in the index (ICA\*2). This is the maximum threshold and sets the scale to determine the diversified face amounts of other countries in the index.
2. If a country's debt stock is below the index country average (ICA), the entire amount will be eligible for inclusion.
3. Countries whose debt stock falls between the index country average (ICA) and double the average (ICA \* 2) will be linearly interpolated. The below formula summarizes the calculation of diversified country face amount:

The below formula summarizes the calculation of diversified country face amount:

**Diversified Country face Amount =**

$$\begin{cases} \text{ICA} * 2 & , \text{if } \text{FA}_{\max} \\ \text{ICA} + \frac{\text{ICA}}{\text{FA}_{\max} - \text{ICA}} * (\text{Country FA} - \text{ICA}) & , \text{if Country FA} > \text{ICA} \\ \text{Country FA} & , \text{if Country FA} \leq \text{ICA} \end{cases}$$

, where Country FA represents the non-diversified country face amount and FA<sub>max</sub> represents the face amount of the largest country.

Subsequently, the diversified (adjusted) face amount determined using the above step is then converted to a market value (based on dirty price), which is then converted to an index weight percentage based on the proportion of the total index market capitalization that the country represents. In addition, country weights will be capped at 10%. Any excess weight above the cap will be redistributed to smaller countries that are below the cap to limit concentration risk. Instrument level weights are then determined by pro rata allocation of diversified country weights according to the market capitalization of each instrument within the country.

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**Global Index Research**

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