

J.P. Morgan ESG Green Bond Focus Index

Methodology and Factsheet

Highlights

J.P. Morgan ESG Green Bond Focus Index tracks green bonds issued across hard currency (USD, EUR and GBP denominated) credit and local currency government bonds across Developed and Emerging markets with a focus on green bonds that have been reviewed independently, to minimize the incidence of 'greenwashing'. The index applies an ESG scoring and screening methodology to tilt toward green bond issuers ranked higher on ESG criteria and 'Certified Climate Bond' issues, and to underweight green bond issues that have not been reviewed independently. The source for green bond labelling, certification and information on independent review is Climate Bonds Initiative. The returns and statistics are available since December 2014.

Index Criteria

	Hard Currency Bonds	Local Currency Government Bonds
Eligible currencies	USD, EUR & GBP	Currencies where local government bonds are liquid, accessible and investible by international investors. Below table mentions the current list of eligible currencies
Minimum Amount Outstanding	USD: \$300MM EUR: €300MM GBP: £250MM	Local currency bonds: USD \$1 billion Dual-currency Global bonds: USD \$500 million
Minimum Maturity	For inclusion: Bonds should have minimum 2 years remaining to maturity Remain in the index: A bond remains eligible for the index as long as it has 12 months remaining to maturity. Bonds will be retained in the index until 6 months remaining to maturity on a going forward basis from January 29th, 2020 onwards	
Issuer	Sovereign, Quasi-sovereign (100% government owned or guaranteed), Corporate or Supranational	Sovereign only
Country	All countries are eligible	Countries where local government bonds are liquid, accessible and investible by international investors. Below table mentions the current list of eligible currencies
Instrument Type	Only green bonds, as labelled 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> 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"> SEC-registered Global, Domestic, MTN, and 144A with or without registration rights, Eurobonds, and EMTNs that trade in accordance with ISMA principals. Reg-S format for Euro-denominated, Sterling-denominated, and US Dollar-denominated EM bonds. <ul style="list-style-type: none"> 144A format for US Dollar-denominated DM bonds. Reg-S bonds and Private Placements are eligible after 40-day seasoning period, provided liquidity requirements are met. 	-

Source: JPMorgan Chase & Co.

JESG Overlay Criteria

ESG providers & Green Bond	Sustainalytics RepRisk Climate Bonds Initiative
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certification authorities	
JESG Scoring methodology	JESG issuer scores are a 0-100 percentile rank calculated based on normalized raw ESG scores from third-party research providers Sustainalytics and RepRisk. An issuer's finalized JESG score incorporates a 3-month rolling average. See <i>Appendix: ESG Methodology</i> for more details.
JESG Integration methodology	The JESG scores are divided into five bands that are used to scale each issue's baseline index market value, with the band rebalance occurring with a one-month lag. See <i>Appendix: ESG Methodology</i> for more details.
Treatment for Certified Climate Bonds	Certified green bonds will receive one band upgrade (unless they are already in Band 1). See <i>Appendix: ESG Methodology</i> for more details.
Ethical exclusions & Negative Screening	Green bonds by issuers earning revenue from Tobacco, or Weapons, or not in adherence with UNGC principles will not be eligible.
	Green bonds that are not independently reviewed will receive a one band downgrade (unless they are already in Band 5)
Frequency of JESG Rebalance	Rebalance actions related to the JESG overlay will be conducted at every month-end until December 31 st 2020, and at the quarter-end date from then onwards. i.e. March 31 st , 2021 will see the next JESG overlay-related rebalance after December 31 st , 2020.

Source: JPMorgan Chase & Co.

Index Characteristics and Methodology

Pricing	Mid prices are taken from a third party pricing source, PricingDirect
Aggregate Return	Index level total return is calculated as a market-weighted average of bond returns using mid prices
Rebalancing	Rebalances on the last weekday of the month
Coupon Treatment	All coupons received are immediately reinvested into the index
FX Rates	All FX rates used for hedged/unhedged returns are as of 4pm London time provided by WM/Reuters
Hedging Strategy	Assume a 1-month currency forward position that begins on rebalance day and ends on next rebalance day
Weighting	Market capitalization based weighting, renormalized based on JESG Band scalar with a 10% issuer cap applied

Source: JPMorgan Chase & Co.

Local Currency Government Bonds - Eligible countries/currencies

Country	Currency	Country	Currency	Country	Currency	Country	Currency
Australia	AUD	Korea	KRW	Dominican Republic (Global)	DOP	Russia	RUB
Austria	EUR	Malaysia	MYR	Finland	EUR	Singapore	SGD
Belgium	EUR	Mexico	MXN	France	EUR	South Africa	ZAR
Brazil	BRL	Netherlands	EUR	Germany	EUR	Spain	EUR
Canada	CAD	New Zealand	NZD	Hungary	HUF	Sweden	SEK
Chile	CLP	Peru	PEN	Indonesia	IDR	Thailand	THB
China	CNY	Philippines (Global)	PHP	Ireland	EUR	Turkey	TRY
Colombia	COP	Poland	PLN	Israel	ILS	United Kingdom	GBP
Czech Republic	CZK	Portugal	EUR	Italy	EUR	United States	USD
Denmark	DKK	Romania	RON	Japan	JPY	Uruguay (Global)	UYU

Source: J.P. Morgan, as of September 30th

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 only USD-denominated bonds.

ESG Methodology

The index applies J.P. Morgan ESG (JESG) issuer scores to adjust the market value of index constituents from the baseline J.P. Morgan Green Bond Index (GENIE). JESG issuer scores are a 0-100 percentile rank calculated based on normalized raw ESG scores from third-party research providers Sustainalytics and RepRisk. An issuer's finalized JESG score incorporates a 3-month rolling average. Corporate issuers with no coverage by either third-party research provider default to their region-sector JESG score. The JESG scores are divided into five bands that are used to scale each issue's baseline index market value, with the band rebalance occurring with a one-month lag.

JESG Score Bands	Scalar
Band 1: Score > 80	1.00
Band 2: 60 < Score <= 80	0.80
Band 3: 40 < Score <= 60	0.60
Band 4 20 < Score <= 40	0.40
Band 5: Score <= 20	0.20

If an instrument is categorized as a 'Certified Climate Bond' by the Climate Bonds Initiative, the security will receive a one-band upgrade. Certified bonds by issuers already in Band 1 will not receive any further upgrades. Instruments that have not been independently reviewed (neither via Third Party Assurance, Second Party Opinion, Green Bond Rating, or Certification) will receive a one band downgrade. Instruments in Band 5 will not receive any further downgrades.

Green Bond issuers considered non-adherent with United Nations Global Compact (UNGC) principles by both Sustainalytics and RepRisk, or earning direct revenues from tobacco or production of weapons will be excluded from the index.

Appendix

The following is a description of our methodology for calculating aggregate returns at the index level. The returns calculated are total return, price (clean) return, interest (coupon) return, treasury return, spread (excess) return, and spot return.

Total return is a means of representing the economic benefit of holding a security or portfolio position. In its simplest form, it is based on the “cash in/cash out” notion – i.e., what is paid for the security at the initial purchase versus what is received at its sale. The means of calculating the total return on a basket containing various instruments is an extension of the single-instrument total return framework.

Index Total Return

The total return is a representative measure of the performance of the underlying instruments between day $t - 1$ and day t . At its most basic, the index total return of a multi-currency portfolio can be explained by five components: price return, interest return, treasury return, spread return, and spot return.

Assume that the portfolio of securities is composed of bonds and markets in proportion to their respective total market value. Market value in this case is calculated using the amount outstanding, as well as the total price inclusive of accrued interest and principal payments. The rate of return for any day can be attributed in one of two ways:

1. Using the clean and coupon returns:

$$\text{Total Rate of Return} = (1 + \text{Price Rtn})(1 + \text{Interest Rtn})(1 + \text{Spot Rtn}) - 1$$

2. Or, alternatively, using the treasury and excess returns:

$$\text{Total Rate of Return} = (1 + \text{Treasury Rtn})(1 + \text{Spread Rtn})(1 + \text{Spot Rtn}) - 1$$

Analytic	Field Name in DataQuery	Description
Return Analytics		
Total Return	CumTotRet	(see above)
Price Return	StatClnRtnRateMid	(see above)
Interest Return	StatsIntRet	(see above)
Spread Return	StatExcessReturnMid	(see above)
Treasury Return	DailyTsyReturnMid	(see above)
ESG Analytics		
ESG JPM Rank	ESGScore	Proprietary J.P. Morgan computed ESG score
ESG Band	ESGBand	ESG band designation
To Worst Analytics		
Yield (to worst)	StatYldWrstRateMid	The lowest potential Yield on a callable security or the highest potential yield on a puttable security. The corresponding date at which this Yield is realized is referred to as the Worst Date, and is the driver for all other To Worst analytics.
Spread (to worst)	StatStpSprRateMid	The Spread Over the Treasury Zero Curve corresponding to the Worst Date. This is the basis point spread over the Treasury Zero Curve that will discount cash flows such that the Present Value will equal the Settlement Price, reflective of the Worst Date.
Modified Duration (to worst)	YTMModDurToWrstMid	A measure of the change in settlement price for a 100 bps shift in the underlying government bond Cash Coupon Curve and reflective of all cash flows to the Worst Date. It is calculated by shifting the government bond Cash Coupon Curve by 100bps up and down and calculating settlement price under each scenario.
Spread Duration (to worst)	EffSpreadDuration_Wrst	A measure of the change in settlement price for a 100 bps shift in the underlying government bond Zero Coupon Curve and reflective of all cash flows to the Worst Date. It is calculated by shifting the government bond Zero Curves by 100bps up and down and calculating settlement price under each scenario.
Spread Convexity (to worst)	EffSpreadConvexity_Wrst	A measure of the sensitivity of Spread Duration to a 100 bps shift in the underlying government bond Zero Coupon Curve and reflective of all cash flows to the Worst Date. It is calculated by shifting the government bond Zero Curves by 100 bps up and down and calculating settlement price under each scenario.
Average Life (to worst)	Avg_Life_Wrst	Average length of remaining time before the bond's principal is repaid (or when optionality is executed) as measured at the To Worst Date.
Base Analytics		
Index Dirty Price (mid)	StatValStlOrgAmtMid	Dirty mid price including adjustments for amortization and capitalization
Market Value (ESG adj.)	MktCap	Market Value (ESG methodology adjusted)
Face Amount	FaceAmtOS	Amount outstanding
Coupon	AM_ACT_PAY	Current coupon rate
Accrued interest	AM_INT_PRD	Accumulated interest since last payout
Amortization amount	AM_AMORT	Aggregated amortized principal amount
Remaining Maturity (days)	StatsDaysToMat	Number of business days from trade date to maturity date
Current Yield	StatClnRtnRateMid	Current yield
Number of bonds	Num_Bonds	Number of bonds in the index

Source: J.P. Morgan

For any questions or for additional information, please contact index.research@jpmorgan.com.

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