

Bank of Montreal Fossil Fuel Free ESG Index



Strategy Brochure

The Index

Description

The BMO Fossil Fuel Free ESG Index (the “Index”) is a proprietary, quantitative and socially screened index that seeks to provide exposure to select components of the Jantzi Social Index® (the “JSI”). The JSI is a market capitalization-weighted, capped common stock index created by Jantzi-Sustainalytics Inc. (“Sustainalytics”) and consisting of 50 Canadian companies that pass a set of broadly based environmental, social and governance screening criteria. Annually, Sustainalytics selects securities for inclusion in the JSI after applying two types of exclusionary criteria: (i) product involvement and (ii) major negative environmental, social and governance impact.

Methodology Construction

Step 1

The BMO Fossil Fuel Free ESG Index is a proprietary, quantitative and socially screened index that seeks to provide exposure to select components of the Jantzi Social Index (the “JSI”).

Step 2

The Index was established on the Start Date and will be adjusted monthly to select the 15 highest dividend yielding securities in the JSI, excluding the Bank of Montreal and companies classified as part of the Global Industry Classification Standard Energy Sector (the “Energy Sector”) weighted by volatility. The selected stocks will be weighted based on their Realized Variances, with the stocks having the lowest Realized Variances receiving the highest weights.

Step 3

The Index will be rebalanced on a monthly basis according to its quantitative rules.

Quick Facts

Weighting Method	Volatility Weighted
Rebalancing Frequency	Monthly
Structure	Price Return
Asset Universe	Jantzi Social Index® (the “JSI”)
Currency	CAD
Annual Index Fee	N/A
Start Date	July 26, 2017

Jantzi Social Index Methodology

Companies are ranked by their overall ESG performance based on a sector-neutral, best-in-class approach. The Jantzi Social Index Methodology is designed to meet these goals:

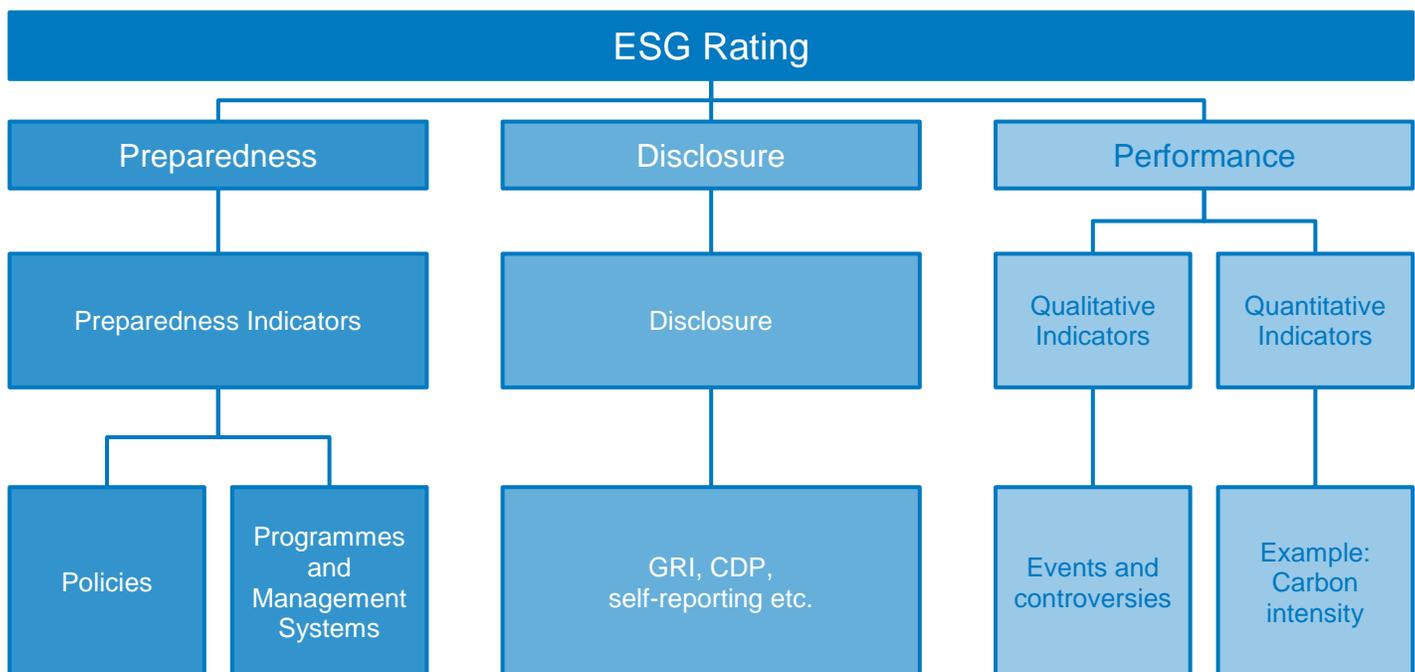
1. Include companies with leading ESG performance
2. Ensure investability (i.e. market cap considerations)
3. Maintain sector weights close to those in the TSX60.

Companies are excluded based on factors relating to military, nuclear, tobacco, and controversies.

Determining the Eligible Portfolios

Companies are ranked by their overall ESG performance based on core and sector-specific metrics:

- **Preparedness** – assessments of company management systems and policies designed to manage material ESG risks
- **Disclosure** – assessments of whether company reporting meets international best practice standards and is transparent with respect to most material ESG issues
- **Quantitative Performance** – assessments of company ESG performance based on quantitative metrics such as carbon intensity
- **Qualitative Performance** – assessments of company ESG performance based on the analysis of controversial incidents that the company may be involved in



Index Rules

Determining Eligible Portfolios

- The BMO Fossil Fuel Free ESG Index is a proprietary, quantitative and socially screened index that seeks to provide exposure to select components of the Jantzi Social Index (the “JSI”).
- The Index was established on the Start Date and will be adjusted monthly to select the 15 highest dividend yielding securities in the JSI, excluding the Bank of Montreal and companies from the Energy Sector, weighted by volatility. The selected stocks will be weighted based on their Realized Variances, with the stocks having the lowest Realized Variances receiving the highest weights.
- Three Step Monthly Rebalancing Process

Step 1

The Index ranks each security represented in the JSI based on its Trailing Twelve-month Dividend Yield

Step 2

The Index then selects 15 Eligible Securities with the highest Trailing Twelve-month Dividend Yield, excluding BMO and companies from the Energy Sector

Step 3

These 15 stocks will then be weighted based on their volatility, with the stocks having the lowest volatility receiving the highest weights in the Index



Index Rules

Index Composition and Adjustment

On each Index Adjustment Date, the Index Calculation Agent will:

1. determine the Trailing Twelve-month Dividend Yield of each Eligible Security on the Index Determination Date in respect of such Index Adjustment Date;
2. select as the Index Components the 15 Eligible Securities having the highest Trailing Twelve-month Dividend Yield on the Index Determination Date in respect of such Index Adjustment Date;
3. determine for the Observation Period in respect of such Index Adjustment Date, the Realized Variance of each Index Component during the Observation Period using the formula set out in Annex A of this Appendix A; and
4. determine the Weights to be assigned to each Index Component in accordance with the formula set out in Annex A of this Appendix A.

On the Start Date the Index comprised notional holdings in the Index Components determined as of the first Index Determination Date weighted using the Weights determined on such date.

On each Index Adjustment Date after the Start Date, the Index Calculation Agent will notionally sell the Index Components comprising the Index at the close of business on such day and notionally reinvest the notionally realized proceeds of such sale in the Index Components chosen in respect of such Index Adjustment Date, weighted according to the Weights determined in respect of such Index Adjustment Date. The Index Level immediately following such reinvestment will be equal to the Index Level immediately prior to such reinvestment.

Index Level

The Index Level on the Start Date was 100. The Index Level on each subsequent Index Business Day will be the Index Level on the previous Index Adjustment Date plus the price return of the Index (which could be negative) since such Index Adjustment Date determined in accordance with Annex A of this Appendix A. The Index Level on any day that is not an Index Business Day will be the Index Level on the immediately preceding Index Business Day.

No assurance can be given that the investment strategy used to construct the Index will be successful or that the Index will outperform any alternative portfolio or strategy that might be constructed from the Index Components.

The Index is described as a “notional” or “hypothetical” portfolio or portfolio of assets because there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Index merely references certain Index Components, the performance of which will be used as a reference point for calculating the Index Level.

DEFINITIONS

“Eligible Securities” means, on any Index Business Day, the common shares or units of issuers represented in the JSI, other than Bank of Montreal and securities of companies classified as part of the Global Industry Classification Standard Energy Sector, on that Index Business Day, and each is an **“Eligible Security”**, subject to the provisions set out under “Special Circumstances” in Appendix B;

“Exchange” means, in respect of an Index Component, the primary exchange or trading system on which such Index Component is listed as determined by the Index Calculation Agent; provided in each case that if the Index Calculation Agent, acting in its sole and absolute discretion, determines that such exchange or trading system is no longer the primary exchange for the trading of the Index Component, the Index Calculation Agent may designate another exchange or trading system as the Exchange for the Index Component subject, in each case, to the Special Circumstances set out in Appendix B;

“Exchange Business Day” means, in respect of an Index Component, any Business Day which is also an Exchange Day on which the Exchange and each Related Exchange for that Index Component are open for trading;

“Exchange Day” means, in respect of an Index Component, any day on which the Exchange and each Related Exchange are scheduled to be open for trading during their respective regular trading sessions;

“Index Adjustment Date” means the Closing Date and the first Index Business Day of each month during the term of the Deposit Notes;

“Index Business Day” means a day on which the Toronto Stock Exchange is scheduled to open for trading for its regular trading session;

“Index Determination Date” means, in respect of an Index Adjustment Date, the last Index Business Day of the calendar month immediately preceding the Index Adjustment Date, subject to the provisions set out under “Special Circumstances” in Appendix B;

“Index Level” means, in respect of an Index Business Day, the closing level of the Index on that Index Business Day calculated in compliance with the Index Rules and in accordance with the formula set out under “Calculation of the Index Level” in Annex A and rounded to two decimal places;

“Index Rules” means the rules governing the constitution and maintenance of the Index, the calculation of the Index Level and other decisions and actions related to the maintenance of the Index, as set out in this Appendix A;

“Issuers” means the issuers of the Index Components represented in the Index from time to time, and each is an **“Issuer”**, subject to the provisions set out under “Special Circumstances – Index Components Special Circumstances – Substitution Event” in Appendix B,

“JSI” means the Jantzi Social Index®, subject to the provisions set out in Appendix B;

“Market Disruption Event” has the meaning ascribed thereto under “Index Components Special Circumstances – Market Disruption Event” in Appendix B;

“Observation Period” means, in respect of an Index Adjustment Date, the period of 21 consecutive Index Business Days ending on and including the Index Determination Date for such Index Adjustment Date;

“Realized Variance” means, in respect of an Index Business Day, the average daily variance of the Index Components over the relevant Observation Period determined in accordance with the formula set out under “Calculation of Realized Variance” in Annex A of this Appendix A;

“Weight” means, in respect of an Index Business Day, the weight assigned to each Index Component on the last Index Adjustment Date preceding such Index Business Day, as determined by the Index Calculation Agent in accordance with the formula set out under “Calculation of Weight” in Annex A of this Appendix A;

Annex A

Calculation of Realized Variance

Realized Variance is calculated for each Index Component on each Index Adjustment Date using Closing Levels of the Index Component on each day during the Observation Period for such Index Adjustment Date. The Realized Variance of an Index Component is determined as follows:

$$VAR_j = Vol_j^2 = \sum_{k=1}^{21} \frac{(S_{kj}/S_{k-1,j} - 1)^2}{21}$$

where:

VAR_j is the Realized Variance of the j^{th} Index Component

Vol_j is the volatility of the j^{th} Index Component

S_{kj} is the Closing Level of the j^{th} Index Component on the k^{th} Index Business Day of the Observation Period

$S_{k-1,j}$ is the Closing Level of the j^{th} Index Component on the Index Business Day immediately prior to the k^{th} Index Business Day of the Observation Period

Calculation of Weight

The Weight of an Index Component determined on an Index Adjustment Date is the inverse of the Index Component's Realized Variance on such Index Adjustment Date divided by the sum of the inverse of the Realized Variances of all Index Components on such date calculated as follows:

$$wt_j = \frac{1/Vol_j^2}{\sum_{j=1}^{20} 1/Vol_j^2}$$

where:

wt_j is the Weight to be applied to the j^{th} Index Component

Calculation of the Index Level

On each Index Business Day from but excluding the immediately preceding Index Adjustment Date to and including the next following Index Adjustment Date, the "Index Level" for the Index will be determined as follows:

$$Ind_i = Ind_0 \sum_{j=1}^{15} wt_j S_{ij}/S_{0j} = Ind_0 \sum_{j=1}^{15} wt_j (1 + ret_{ij})$$

where:

Ind_i is the Index Level on the i^{th} Index Business Day following the most recent Index Adjustment Date

Ind_0 is the Index Level on the most recent Index Adjustment Date

S_{ij} is the Closing Level of the j^{th} Index Component on the i^{th} Index Business Day following the most recent Index Adjustment Date

S_{0j} is the Closing Level of the j^{th} Index Component on the most recent Index Adjustment Date

ret_{ij} is the price return on the j^{th} Index Component from the most recent Index Adjustment Date to the i^{th} Index Business Day following the most recent Index Adjustment Date

The preceding formula reflects that the Index Level on any Index Business Day following an Index Adjustment Date is the Index Level on the Index Adjustment Date plus the sum of the weighted price returns of the Index Components since that Index Adjustment Date.

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